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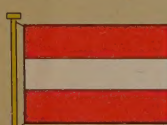
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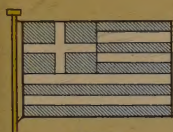
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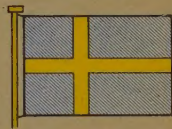
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## HOW PEARS CYCLOPAEDIA BEGAN

In 1865 a young man who was later to become one of the most remarkable figures in the history of advertising joined the already well established 'House of Pears' as a junior partner. His name was Thomas J. Barratt, and by his genius Pears advertisements became famous and Pears Soap known the world over. In many ways, Barratt was ahead of his contemporaries. He argued that posters were 'the poor man's picture gallery' and that Britain's greatest artists should be represented there. In 1886 an opportunity presented itself which he was quick to seize.

Sir John Millais, leader of the pre-Raphaelites and afterwards President of the Royal Academy, had painted the portrait of his grandson (later to become Admiral Sir William James), to which he had given the title 'Bubbles'. After being exhibited at the Royal Academy, the portrait had been sold to the *Illustrated London News* for a coloured supplement and Pears bought it for two thousand guineas to be used as an advertisement. This was a departure so new and revolutionary that it aroused considerable controversy and though at first the idea also displeased Millais, he later took great interest in the reproduction of the picture and its use as an advertisement. 'Bubbles' became the most famous poster in the country. Barratt refused many offers to purchase the painting, and to-day it hangs in the offices of A. & F. Pears at Isleworth.

Raising the standard of British commercial art was only part of a larger aim. Thomas Barratt believed in education, since he was convinced that poverty, squalor and slums were in great measure due to ignorance. The first great Education Act of 1870 had paved the way for universal and free education: the British public was fast becoming literate and eager for knowledge. Barratt, realising that the massive dictionaries and encyclopaedias of those days were far beyond the reach of the general public, decided to publish a book which would combine everyday practical information with general knowledge in one inexpensive volume. That is how Pears Cyclopaedia came to be published by A. & F. Pears, soapmakers, at the close of the 19th century. Over the years the book has grown steadily and changed as new knowledge has come to light but in general design it is the same. If, as has been said, the success of a book can be measured by the extent and duration of its influence, then Pears Cyclopaedia has been unusually successful for since 1897, as one edition succeeds another, countless copies have found their way into homes all over the world.

Thomas J. Barratt believed with equal fervour in Pears Soap and Pears Cyclopaedia as weapons in the fight against disease and ignorance. To-day the portrait of 'Bubbles' on the frontispiece serves to remind us of the link between soap and book, both unique in their different ways, both household words—a tribute to a man of vision.





## ‘BUBBLES’

*By Sir John Millais, Bt., P.R.A.*

From the original in the possession of A. & F. Pears, Limited

*The story of ‘Bubbles’ and how Pears Cyclopaedia began is on the back of this page*

# PEARS CYCLOPAEDIA

AN EVERYDAY WORK OF REFERENCE FOR THE  
HOME, SCHOOL, AND OFFICE

*Sixty-fifth Edition*

1956-57

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*Editor, L. Mary Barker, B.Sc.(LOND.)*

ASSISTED BY TEN SPECIALIST ASSOCIATE EDITORS

A. & F. PEARS LIMITED, ISLEWORTH, MIDDLESEX

*“ Soap and education are not as sudden as a massacre,  
but they are more deadly in the long run.”*

MARK TWAIN

The Editor desires to express her gratitude to  
readers of the sixty-fourth and earlier editions for  
their criticisms and suggestions. Many alterations  
and additions have been made as a consequence  
and future correspondence is welcomed

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# Plan of Volume

This work of reference is divided into sections which fall into three main groups:—

## I. THE WIDER WORLD

- Events
- Prominent People
- A Citizen's Guide
- The World of Science
- Gazetteer of the World
- Atlas of the World

## II. EVERYDAY INFORMATION

- English Dictionary
- Familiar Foreign Phrases
- Abbreviations in common use
- Classical Mythology
- General Information
- Business Dictionary and Legal Notes
- General Compendium

## III. HOME AND PERSONAL

- Medical Dictionary
- First Aid Hints
- National Health Service
- Baby Care
- Hygiene and Cosmetics
- Cookery and Household Hints
- Gardening
- Radio, Television and Radar
- Family Affairs
- Sports and Pastimes
- Poultry and Pigeons
- Domestic Pets and Birds

# Contents

## I. THE WIDER WORLD

	Pages
1. EVENTS . . . . .	9-34
Chronicle of events from the earliest times to the present day . . . . .	10
Historical Calendar . . . . .	30
Story of 1955 . . . . .	34
2. PROMINENT PEOPLE . . . . .	35-120
Lives and leading achievements of distinguished men and women of all ages and countries . . . . .	
3. A CITIZEN'S GUIDE . . . . .	121-50
Local Government . . . . .	122
Central Government . . . . .	125
Law and the Courts . . . . .	128
Industrial Relations . . . . .	130
The British Commonwealth . . . . .	134
The United Nations . . . . .	136
Western European Union . . . . .	139
Asian Changes . . . . .	142
Books and Libraries . . . . .	143
Conduct of Meetings . . . . .	143
Hints for Speakers . . . . .	146
Societies . . . . .	147
Working of the United States Government . . . . .	149
Changes in France since the War . . . . .	149
The Government (1955-56) . . . . .	150
General Election Results . . . . .	150
4. THE WORLD OF SCIENCE . . . . .	151-92
Setting out to give a very brief account of the universe as seen by modern science and discussing some practical issues arising from the present state of scientific knowledge . . . . .	
Origins and Nature of the Universe . . . . .	152
Development of Life . . . . .	162
Origins of Mind and Human Society . . . . .	174
Recent Developments and Discoveries . . . . .	185
5. GAZETTEER OF THE WORLD . . . . .	193-384
Providing a complete index to the maps and descriptions of the more important places throughout the world . . . . .	
Appendices British Commonwealth Countries . . . . .	380
Chart of sea areas used in weather forecasts . . . . .	382
Cross section of typical frontal depression . . . . .	383
World's highest mountains, longest rivers, etc. . . . .	384
6. ATLAS OF THE WORLD . . . . .	32 Plates

## II. EVERYDAY INFORMATION

1. ENGLISH DICTIONARY . . . . .	417-522
Familiar Foreign Phrases . . . . .	515
Abbreviations in common use . . . . .	518
2. CLASSICAL MYTHOLOGY . . . . .	523-34
Brief accounts of the doings of the Classic gods and heroes of ancient Greece . . . . .	
3. GENERAL INFORMATION . . . . .	535-708
Some 5,000 entries on subjects of general interest, alphabetically arranged . . . . .	
Appendices Nobel Prizewinners . . . . .	705
National Trust Properties . . . . .	707
Country Code . . . . .	708
4. BUSINESS DICTIONARY AND LEGAL NOTES . . . . .	709-32
Terms relating to trade, shipping, finance, law, etc. alphabetically arranged . . . . .	
Landlord and Tenant . . . . .	726
Husband and Wife . . . . .	728
Intestacy . . . . .	731
5. GENERAL COMPENDIUM . . . . .	733-62
A collection of useful tables and data on a variety of unrelated subjects, including :— . . . . .	
Academical Hoods, Colours of . . . . .	754
Atomic Weights . . . . .	762
Beaufort Scale of Wind Force . . . . .	752

	Pages
Calendar Information	749
China Marks	746
Chivalry, Orders of	737
Coinage, United Kingdom	738
Elements, list of	762
Exchange Rates	753
Kings and Queens of England	734
London Postal Districts	739
Mathematical Formulae	759
Morse Code	749
Persons of rank, how to address	736
Presidents of the U.S.A.	739
Proof Correcting	748
Roman Numerals	753
Royal Family	735
Russian Alphabet	753
Silver Marks	743
Standard Sizes—Papers, Boards, Books	742
Thermometer Comparisons	753
Type, Sizes and Styles	758
Weights and Measures	740

### III. HOME AND PERSONAL

1. MEDICAL	763-816
Medical Dictionary	764
First Aid Hints	804
National Health Service	806
Baby Care	810
Maternal and Child Care Services in Backward Areas of World	816
2. HYGIENE AND COSMETICS	817-34
Structure of Skin, Hair, Teeth, Nails	818
General Hygiene	820
Care of Skin, Eyes, Hair, Lips, Teeth, Hands, Nails, Feet, Legs	821
Baths, Perfumes, etc.	829
Diet	830
Glossary of Cosmetic Terms	831
3. COOKERY AND HOUSEHOLD HINTS	835-76
Cooking Equipment	836
Basic Cookery Methods	837
Pressure Cooking	841
Wines	843
Directions and Recipes for Typical Dishes	844
Reference Tables	871
Household Hints	872
4. GARDENING	877-910
Flower Cultivation	878
Rock- and Water-Gardens	889
Concrete Paths and Structures	889
Fruit	889
Vegetables	893
Gardening Calendar	904
Garden Chemistry	908
5. RADIO, TELEVISION AND RADAR	911-24
6. FAMILY AFFAIRS	925-38
Human Relations	926
House Purchase	933
Insurance of Life and Property	937
7. SPORTS AND PASTIMES	939-66
Indoor and Outdoor Games, alphabetically arranged	
8. POULTRY AND PIGEONS	967-80
Feeding, management and diseases of: Ducks—Geese—Pigeons—Poultry—Turkeys	
9. DOMESTIC PETS	981-1004
Feeding, management and diseases of: Aquarium Fish—Cage Birds—Cats—Cavies—Dogs—Ferrets—Golden Hamsters—Hedgehogs—Mice—Rabbits—Rats—Tortoises	
BRITISH WILD BIRDS	1003-04
READY RECKONER	1005-23
CALENDARS 1955-58	1024



# Index

The contents of the sections printed in bold type are alphabetically arranged, and consequently self-indexing. They are not shown here, except where it is anticipated some special difficulty in reference may arise.

Where the contents of sections are not alphabetically arranged, a table of contents will also be found on the title page of the section.

	PAGE		PAGE
Abbreviations in common use	518	Cats	989-92, 563
Absolute zero (temperature)	704	Central Government	125-8
Adult Education Societies	147	Chairmen, hints for	145
Address, modes of, persons of rank	736-7	Child Care	775, 810-6
Advertising	537	Chiltern Hundreds	125, 566
Air, composition of	538	China Marks	746-7
Alcoholic strength	539	Chivalry, Orders of	737
Algebraical formulae	759	Chlorophyll	566, 171
Allen.	710	Church of England	567
— naturalisation of	720	Citizen's Guide	121-50
Altimeter	540	Civil Courts	129
Anemometer	541	Civil Law	128
Anglican Communion	541	Civil List	568
Animal Kingdom	542	Civil Service	127
Animals, evolution of	165-7	<b>Classical Mythology, Dictionary of</b>	<b>523-534</b>
— physiology of	168-71	Classical quotations	515-7
Antarctic Exploration	542	Clothes, care of	830
Anticyclone	543	— Baby's	810, 813
Antihistamine drugs	767	Coinage, United Kingdom	738
Apothecaries' Fluid Measure	740, 741	Colour Blindness	777
— Weight	740, 741	Common Law	128, 570
Arctic Exploration	544	Commons, House of	125-6, 570
Areas and volumes	759, 760	Concrete, making of	889
Armaments, Control of	138	Conservative Party	571, 126
Army, The British	546	Consolidated Fund	126
Artificial respiration	768	Constitution, British	125
Asia, recent changes	142	— American	571, 140
Assize, Courts of	129	— French	149
Astronomy	152-5, 185-6, 548	Continents, formation of	156
Atlantic Charter	548	Copyright	714, 572
Atlantic Blue Riband	548	Cortisone	777
Atmosphere, earth's	548, 156	Cosmetics, application of	821-34
— pollution of	663	Cosmic rays, nature of	186
Atom	161, 186, 189, 549	Cosmology, modern theories	153-5
Atomic Bomb	549, 187, 162	Council of Europe	140
— energy, peace time uses of	187, 138-9	Country Code	708
— fuels	162, 187	County Councils	122-4
— injuries	769	County Courts	129
— medicine	769	Cricket	944
— nuclei	161-2, 186	— County Championship	966
— theory	161	Criminal Courts	129
— weights and numbers	762	Criminal Law	128
Automation	549, 134, 188	Culture, Patterns of	176-9, 182-4
Avoirdupois Weight	740, 741	Currencies, Foreign	753
Baby Care	810-6	Cyclone	574
Baghdad Pact	34, 143	Cyclotron	574, 186
Bandung Conference	142	Date Line, International	621
Bank holidays	750	Day, unit of time	575
Barometer, aneroid	541	— longest, shortest	750
— mercury	552	Daylight saving (Summer Time)	686
B.B.C.	559	Debate, rules of	144
Beaufort Scale of wind force	752, 553	Deficiency diseases	576, 778
Bibles	555	Density	576
Birds	556	Depression (cyclone)	576, 574, 383
— Cage	1000	— neurosis	793
— Wild, and identification of	1003-4	Derby, the	578, 966
Blood Transfusion Service	806	Diesel engine	578
Body Temperature	801	Dimensions	578, 761
Bolling points, table of	760	Divorce	728
Books, standard sizes	742	Dogs	982-8, 580
Boyle's Law	762	<b>Domestic Pets</b>	<b>981-1002</b>
Brain	771	Drama	581
Bridge, Auction, Contract	959-60	Drought	582
Bridges	559	Earth	155, 588, 760
British Association	559	— Age of	185
British Commonwealth, The	134-6	Earthquake	584
— Countries of	380-1	— Seismology	678
British Constitution	125	Easter, Determination of	584
British Museum Reading Room	143	Easter Day (1950-70)	749
British Nationality	720	Electric shock	781
Brussels Treaty Organisation	141	Electrical units	741
Budget	712, 126	Electricity and magnetism	158
Burns	805	Electricity meter	749
<b>Business Dictionary</b>	<b>709-26</b>	Electromagnetic waves	912, 159
Cabinet, The	150, 127	Electron microscope	586
Calculating Machines	560	Electronic computers	560, 188, 134
Calendars	561, 625	Elements	762, 161, 152, 586
— 1955-8	1024	Ember days	587
Carat	713, 740	Emotions	781
Caste	563	Employment in Industry	133-4

	PAGE		PAGE
Energy	587, 160	Imperial weights and measures	740-1
— units of	761	Income Tax	718, 936
English Dictionary	417-522	Industrial psychology	133, 619
Entertainments and Museums	124	Industrial relations	130-4
Enzymes	588, 168	Industrial welfare	132-3
Equinox	588, 750	Insecticides	909
Equity	129	Instincts, nature of	192
Estate Duty	716	Insurance, Guide to	937-8
European Coal and Steel Community	140	Intelligence	620, 790, 175
European Defence	141	International Co-operation Societies	148
European Organisation for Nuclear Research	139	International Court of Justice	138
Events	9-34	Intestacy	731-2
Everest Expeditions	589	Ionosphere	621, 157
Evolution, theory and evidence	165-7	Isotopes	622, 162, 189
Exchange rates	753	Jet engine	623
Exploration	590	Jews	624
Eyeshadow chart	822	— anti-semitism	544
Family Affairs	925-38	Joint Industrial Councils	131
F.A.O.	137	Joule	624, 761
Federal Union	139	Justice, High Court of	129
Feeble-mindedness	782	— International Court of	138
Fertilisers, artificial	593, 908	Juvenile Courts	130
First Aid Hints	804-5	Juvenile Delinquency	192
Flower cultivation	878-89	Kilowatt	626, 742
Flying Saucers	595	Kings and Queens of England	734
Folklore	595	Knighthood	627
Food	783, 168	— Orders of	737
Force, unit of	596, 761	Knot (nautical)	627, 760
Foreign exchange rates	753	Labour Party, The	628, 126,
Foreign phrases	515-7	— Socialism	682
Four Freedoms	596	Land Measure	740, 741
Fractures	804	Landlord and Tenant (Legal Notes)	726-8
French Republic	149	Latitude	631
Freudian theory	179	Law and the Courts	128-30
Fruit growing	889-93	Law Sittings	750
Galaxies	152-5, 598	League of Nations	631
Game and Sporting Seasons	750, 598	Legal Aid	130
Gardening	877-910	Legal Notes	726-32
— Calendar	904-7, 910	Legal Tender	738
Gas Laws	762	Legislation, how initiated	125
Gas meter	749	Lend-Lease	632
Gazetteer of the World	183-384	Liberal Party, The	632, 126
General Elections, 1950, 1951, and 1955	150	Libraries, how to use	143
General Information	535-708	Life, adaptation to environment	167-70
Geneva Conference on Atomic Energy for		— evolution of	165-7
— Peaceful Purposes	139	— nature of	164-5
Geneva "Summit" Conference, 1955	141	Light, nature of	158
Geological eras	162-4	— speed of	633
Germany, Government of	140	— year	633, 152
Gestation periods	601	Lighting-up time	751
Glands	784	Linear measure	740
Government, Central	125-8	Liquid measure	740, 741
— Departments	127	Local Authorities	122-3
— Local	122-5	Local Government in England and Wales	122-5
— Members of the (1955-6)	150	Logical positivism	635
Gram	604, 740-1	London	635
Gravity	604, 760, 160	L.C.C.	123
Gulf Stream	606	Long-distance routes	636
Hair	785, 819, 823	Longitude	636
Half Quarter Days	750	Lords, House of	126, 636
Hall marks (Silver)	608, 743-5	— Reform of	128
Hallucination	786	Mach number	637
Health	786	Make-up Guide	821
— Services	806-9	Man, early	174-5
Heat	609	— physiology of	168
— Coefficients of expansion	760	— and society	176-9
— Latent	631, 760	Marshall Aid	139
— Mechanical Equivalent of	761	Marxism	641
— Solar	686	Materialism	641
Heisenberg, theory of	150	Maternal and Child Care	810-6
Heredity, mechanism of	173, 787	Mathematical formulae	759
High Court of Justice	129	Matter, nature of	160-2, 186-7
Hinduism	612	Measures	740-2
Holidays, public	750	— miscellaneous	760
Horizon, distance of	613	Medical Dictionary	763-803
Hormones	170, 188	Medicine, new methods in	188-91
Horse power	760, 700	— social	799
Hospital Services	806	Meetings, conduct of	143-7
Household hints	872-6	Melting points, table of	760
House Purchase	933-6	Mental mechanisms	180
— Legal Charges	934	Meson	643, 186
— Stamp Duties	934	Metric Weights and Measures	740, 741
Human Relations	926-32	Mile, land or statute	740
Husband and Wife (Legal Notes)	728-31	— sea or geographical	760
Hygiene and Cosmetics	817-34	Mind	644, 175
Hypnosis	616	Monsoons	646
Ice Ages	163, 616, 602	Moon	646, 760
Idealism	617	— moon's phases	751
I.L.O.	182	Morse Code	647, 749

	PAGE		PAGE
Motion, Newton's laws of	647, 157	Royal Academy	674
Myxomatosis	648	Royal Society	675
National Debt	720, 126	Royal Family, The	735
National Health Service	806-9	Rulers, English	734
National Parks	648	Russian Alphabet	753
National Service	134	Science, World of	151-92
National Trust	648	— Recent Developments and Dis-	
— properties	707-8	coveries	185-92
Nationality, British	720	Sea Areas Forecast Chart	382
Nature Cure	793	Seasons, the	750
Navy, The Royal (World War II)	649	— Sporting	750
New Deal	650	Silver Marks	743-5
Newton and Gravitation	157	Sins, Seven Deadly	681
New Towns, building of	124	Skin, Care of the	818-31
Night Terrors	794	Slide Rule	682
Nobel Prize Winners	705-6	Social Medicine	799
North Atlantic Treaty, 1949	139	Social problems of modern life	183-4
NATO	141	Social Service Societies	147
Nuclear Physics	161-2, 186-8	Societies, Guide to	147-8
Observatories	652	Solar System	683, 155
Ocean Depths	156, 384	South East Asia Treaty Organisation	142
Olympic Games	653, 966	Speaker, House of Commons	684, 125, 150
Opera	654	Speakers, hints for	146-7
Orchestra	655	Sports and Pastimes	939-66
Organ	655	Stars, evolution of	155
Panama Canal	657	Statute of Westminster	684
Paper	658	Statute Law	128
— measure, sizes of	742	Stock Exchange	724
Parcel Post	658	Stratosphere	686, 157
Parish Council	122	Succession to Throne	735
Parliament	125-7, 658	Suez Canal	686
— Acts of	537, 125	Summer Time	686
— Reform of	127	Sun	686, 760, 155
Parliamentary Parties	126, 150	— sunrise and sunset tables	751
Penicillin	795, 659, 188	Surfax	725, 713
Personality and Culture	177, 188	Technical Assistance to under-developed	
Petty Sessions, Courts of	129	countries	138
Photosynthesis	171-2, 661	Teeth, Care of the	819, 826-7
Physiology of Man	168-70	Telecommunications	689
— Other Animals	170-1	Telepathy	689
Pigeons	979-80	Telescope	689
Planetary systems, origin of	155-7	Television	619, 689
Plants, life of	171-4	Temperature, body	801
Poliomyelitis	796, 189-91	— scales	753
Pool betting duty	721	Therm	749
Population and Food Problems	191	Thermometer	691
Porcelain	664, 746-7	— comparisons	753
Post Office	664	Throne, order of succession to	735
Poultry	967-80	Tides	691
Pragmatism	665	Time	691
Presidents of the U.S.A.	739	— Summer	686
Prime Minister	127, 150	— unit of (day)	575, 160
Privy Council	126	Tobacco Smoking	802
Probationary Officers	130	Trade Unions	130-2
Profits Tax	722	Training within Industry	133
Prominent People	35-120	Troy Weight	740, 741
Proof correcting	748	Type, sizes and styles	758
Psychical research	666	Ultrasonics	695
— Telepathy	689	Ultra-violet rays	695
Psycho-analysis	666	Unconsciousness, treatment of	805
Psychology	666, 178-84	UNESCO	137
— Industrial	133, 619	UNICEF	138, 816
Public Corporations	128	Union Jack	752
Public Libraries	143	United Nations	136-9
Public Schools	667	United States Government, working of	149
Public Speaking	146	Units and dimensions	761
Quarter Days	750, 722	Universe, origins and nature of	153-5, 185, 696
Quarter Sessions	129	Universities	696, 754-7
Quantum Theory	668, 158	University Hoods	754-7
Queen, The—and Parliament,	126	University Boat Race	966
— and the Commonwealth	134	University Terms	750
Quorum	144	Uranium	162, 187, 697, 762
Race (Mankind)	669, 176	Vegetable cultivation	893-910
Radar	922	Virtues, Cardinal	563
Radiation	669	Viruses	803, 165, 190
Radioactivity	669, 161	Vitamins	803, 814
Radioisotopes	189	Vitamin B <sub>12</sub>	191
Radio-sonde	669	Visibility	698
Radio Telescopes	185-6	Wales (local Government)	125
Radio waves	912	Water, latent heat	760
Railway gauges	599	— vapour pressures	766
Rates (Local Government)	123, 722, 935	Watt	700, 742
Rates of exchange	753	Weed Control	192
Rationalism	670	Weights and Measures	700
Ready Reckoner	1005-23	— Imperial and Metric	740-1
Relativity	672, 159	Western European Union	139-42
Rock gardens	889	Wines	702, 843
Roman numerals	753	World Health Organisation	138, 816
Roman walls	674	Zodiac	704



# Events



Setting forth in chronological order the leading events  
in the history of the world

# Chronicle of Events

Note.—Dates given below earlier than the first millenium B.C., and even later, must necessarily be approximate in the absence of contemporary records.

B.C.		B.C.	
5000	Earliest settlements in Egypt and Mesopotamia.	596	Jerusalem destroyed—more prisoners to Babylon.
4000	Susa founded.	578	Etruscan power dominant in Italy.
3500	Sumerian civilisation flourishes. Cuneiform writing.	560	Buddha born. Athenian ascendancy.
3000	First Egyptian Dynasty. Hieratic writing already perfected.	559	Cyrus king of Persia—"Master of the East."
3000	Early Minoan Age (Crete). Pictorial writing, copper, silver, gold in use. Early Mycenaean civilisation begins.	555	Babylonian chronology instituted.
2980	Memphis capital of Egypt.	551	Confucius born.
2870	First settlements at Troy.	549	Crœsus (Lydia) extends his rule. Great wealth of trade routes E. and W.
2850	Golden Age of China begins (700 years).	538	Babylon becomes Persian province.
2700	Great Pyramid age in Egypt begins.	532	Phœnicia becomes Persian province.
2400	Aryan migrations.	530	Carthage independent.
2400	Sargon founds Akade: Semitic empire.	525	Persian conquest of Egypt.
2205	Hsia Dynasty begins in China.	521	Darius founds Persian dynasty. Bas-reliefs at Behistun and palace at Persepolis.
2200	Middle Minoan Age; pottery, linear writing in pen and ink.	490	Greeks defeat Persians at Marathon.
1766	Shang Dynasty begins in China.	480	Third Persian (Xerxes) invasion of Greece. Thermopylae. Athenian fleet saves Athens at Battle of Salamis.
1750	Aryan invasion of Mesopotamia.	479	Greek victories over Persians (Plataea, Mycale).
1720	Hyksos conquest of Egypt. War chariots introduced.	477	Confederacy of Delos against Persians.
1700	Code of Hammurabi at Babylon.	466	Democracy in Syracuse.
1600	Late Minoan Age: bronze in use.	462	Reforms of Pericles in Athens.
1550	Sack of Babylon by Hittites.	458	Athens victory over Corinth.
1546	18th Dynasty in Egypt commences. Civilisation at peak (under Thotmes III, 1490). Chronology more certain.	456	Death of Æschylus.
1500	Powerful Mitanni (Aryan) kingdom in Asia Minor. Phœnicia thriving—trade with Egypt and Babylonia. Vedic literature in India.	443	Athens under Pericles—end of Persian war.
1450	Zenith of Minoan civilisation.	431	Peloponnesian war—Athens and Sparta.
1400	Ugarit (N. Syria) culture at its zenith. Cretan civilisation ends: Knossos burnt. Temple at Luxor built.	430	Great plague in Egypt.
1377	Amenhotep IV (Ikhnaton), the "heretic" Pharaoh.	413	Athenian defeat at Syracuse.
1350	Zenith of Hittite civilisation.	406	Death of Euripides.
1300	Israelite oppression (Rameses II). Phœnician settlements—Hellas and Spain (Cadiz). Tyre flourishing. Etruscan emigration to Italy from Asia Minor.	405	Sparta supreme in Greece.
1250	Assyrian conquest in Babylon: dominant in Western Asia.	404	Death of Sophocles.
1230	Exodus of Israelites from Egypt.	399	Death of Socrates.
1200	End of Hittite Empire. Iron in use in Egypt. Philistines in Palestine.	394	Decline of Sparta after Corinthian war.
1190	Fall of Troy. Achaean expansion.	390	Gauls sack Rome.
1122	Chou Dynasty begins in China (870 years).	380	Death of Aristophanes.
1115	Magnetic needle reputed in China.	371	Thebes predominant in Greece.
1110	Greek migrations commence—Asia Minor settled.	360	Carthaginian settlements in Spain.
1000	Jerusalem capital of Israel—David king. Rig Veda (India)—hymns and prayers.	358	Philip, King of Macedonia.
961	Solomon begins temple at Jerusalem.	347	Death of Plato.
900	Period of Homeric poems.	338	Athens submits to Philip.
893	Assyrian chronological records begin.	336	Accession of Alexander the Great.
846	Carthage founded.	331	Alexandria founded.
820	Laws of Lycurgus in Sparta.	330	Persian Empire, Macedonia and Greece incorporated.
781	Chinese record of an eclipse.	327	Alexander crosses Indus into India.
776	First Olympiad in Greece.	323	Death of Alexander. Ptolemaic period commences in Egypt. Culture and learning encouraged.
753	Rome founded.	322	Deaths of Aristotle and Demosthenes.
750	Greek Mediterranean colonisation begins.	312	Seleucid kingdom of Syria—Antioch built.
728	Assyria incorporates Old Babylonian Empire.	285	Septuagint begun at Alexandria.
727	Tyre subject to Assyrians.	282	Death of Euclid.
723	Sparta victorious against Messenia.	272	Rise of Buddhism and Jainism in India.
722	Israel absorbed into Assyria.	265	Rome supreme in Italy.
680	Byzantium founded. First Mikado and Japanese history commences.	264	First Punic War—Carthaginians and Greeks.
650	Greek colony (Naukratis) in Egypt.	246	Ch'in-Shih-Huang-Ti "Universal Emperor" in China. Great Wall built.
630	Sparta victorious in 2nd Messenian war.	237	Carthaginians invade Spain.
626	Death of Asshur-bani-pal: end of Assyrian Empire.	226	Athens allied to Rome.
625	New Babylonian Empire.	218	Second Punic War. Hannibal crosses Alps.
612	Fall of Nineveh.	217	Roman defeat at Lake Trasimene.
607	Scythians overrun Assyria.	212	Archimedes killed at Syracuse.
600	Greek city states. Thales of Miletus flourishes. Art of writing introduced (India).	210	Sicily becomes Roman Province.
597	Jerusalem captured—prisoners to Babylon.	203	Rosetta Stone—records accession of Ptolemy V.
594	Solon reforms in Athens.	202	Punic War ends—Carthage conquered.
		200	Rome champion of Greek independence. Second Macedonian War.
		189	Antiochus (Syria) defeated by Romans. Asia Minor absorbed by Rome.
		171	First Latin colony—Carteia (Spain).
		167	Maccabean revolt.
		166	Tartar invasion of China.
		146	Carthage destroyed. Roman province of Africa constituted.
		135	Great slave revolt in Sicily.
		133	Siege and destruction of Numantia (N. Spain).
		129	Province of Asia (Pergamum) organised.

- B.C.  
 113 Teutons defeat Romans in Istria.  
 107 Helvetii in Gaul destroy Roman force.  
 82 Sulla dictator.  
 81 Cornelian Laws designed for supremacy of Senate in Rome.  
 78 Death of Sulla.  
 64 Syria annexed by Rome.  
 63 Jerusalem taken by Pompey.  
 60 First Triumvirate—Cæsar, Pompey, and Crassus.  
 58 Cæsar's victories in Gaul.  
 55 Cæsar's invasion of Britain.  
 49 Cæsar in Rome, flight of Pompey.  
 48 Cæsar defeats Pompey in Greece.  
 47 Cæsar sets Cleopatra on Egyptian throne.  
 46 Cæsar returns to Rome—amnesty. Social, economic, and calendar reforms.  
 44 Cæsar assassinated in Senate.  
 41 Antony and Cleopatra meet at Tarsus.  
 31 Defeat of Antony by Octavian at Actium.  
 30 Deaths of Antony and Cleopatra. Egypt a Roman province.  
 28 Restoration of Senate.  
 27 Octavian takes title "Augustus." Restoration of Republic.  
 20 Augustus in Asia.  
 16 Roman incursion across Rhine defeated.  
 4 True date of birth of Jesus of Nazareth.

## CHRISTIAN ERA BEGINS.

- A.D.  
 6 Judea becomes Roman province.  
 8 Death of Horace.  
 9 Arminius defeats Romans (Teutoberg Forest).  
 17 Deaths of Ovid and Livy.  
 19 Death of Virgil.  
 30 (or 33) Crucifixion of Jesus of Nazareth.  
 38 Caligula persecutes Jews.  
 43 Claudius invades Britain.  
 50 Jews banished from Rome.  
 51 Caractacus taken prisoner to Rome. Missionary travels of St. Paul commence.  
 61 Boadicea leads Britons against Romans.  
 63 St. Paul at Rome.  
 64 Nero burns Rome. Persecution of Christians.  
 68 Death of Nero after flight from Rome.  
 70 Jerusalem sacked by Titus.  
 78 Agricola, Governor of Britain.  
 79 Pompeii and Herculaneum destroyed.  
 80 Colosseum at Rome completed.  
 87 Library of Aristotle brought to Rome.  
 89 Ink and paper writing in China.  
 90 Andhra dynasty in India—trade with Rome.  
 102 Trajan penetrates to Dacia.  
 113 Death of Tacitus.  
 115 Trajan crosses the Tigris.  
 121 Hadrian visits Britain, Wall built.  
 180 Decline of Rome begins (Gibbon).  
 193 Emperor Pertinax murdered by Prætorians.  
 197 British soldiers in Gaul under Romans.  
 208 Septimus Severus in Britain.  
 212 Roman citizenship to all free subjects.  
 220 End of great Han dynasty in China.  
 226 New dynasty in Persia under Artaxerxes.  
 238 Goths invade Eastern Europe.  
 251 Emperor Decius killed in campaign against Goths on lower Danube.  
 253 Franks invade Gaul.  
 259 Goths over-run Asia Minor. Destruction of Temple of Diana at Ephesus.  
 265 End of three kingdoms in China.  
 270 Dacia lost to Goths. Ojin 15th Mikado: worshipped as God of War.  
 285 East and West division of Empire.  
 292 Quadruple partition of the Empire.  
 320 Gupta period in India commences.  
 325 Council of Nicæa—Arianism condemned.  
 326 Constantinople Seat of Empire.  
 330 Christianity official religion.  
 337 Three sons of Constantine share Empire.  
 350 Huns invade Europe.  
 364 Empire again divided. Emperor in East and West.  
 360 Picts and Scots appear in Britain.  
 382 Alaric, King of the Goths.  
 396 Visigoths overrun the Balkans.  
 397 Confessions of St. Augustine.

- A.D.  
 406 Franks overrun Gaul.  
 407 Roman withdrawal from Britain.  
 410 Sack of Rome by Alaric (Visigoth).  
 417 Visigoths conquer Vandals in Spain.  
 429 Vandal kingdom in N. Africa.  
 432 St. Patrick's mission to Ireland.  
 433 Attila, King of the Huns.  
 449 Angles, Saxons, and Jutes invade Britain.  
 451 Attila defeated in Gaul.  
 455 Vandal sack of Rome.  
 466 Visigoth conquest of Spain begins.  
 478 End of dual E. and W. Roman Empire.  
 484 First schism—Eastern and Western Churches.  
 489 Theodoric conquers Italy.  
 500 Legendary King Arthur of the Round Table.  
 529 Code of Justinian.  
 542 Great plague in East.  
 543 War with Goths—Rome taken.  
 552 Goths leave Italy.  
 568 Lombard kingdom founded in Italy.  
 570 Mohammed born at Mecca.  
 580 Gregory the Great, Pope.  
 586 Kent Christianised—Augustine mission.  
 600 Rome at nadir of power.  
 610 Mahomet's vision and call as Allah's prophet.  
 617 Supremacy of Northumbria under Edwin. Christianity adopted.  
 618 T'ang Dynasty, China—period of great wealth, culture, and refinement.  
 622 The Hejira or first year of Mohammedan Era.  
 632 Death of Mahomet.  
 641 Egypt under Moslem control.  
 686 Conversion of Britain completed.  
 692 Saracens at Carthage.  
 711 Saracens overrun Spain, Asia Minor, Sardinia, Spanish—Gothic arms annihilated (Guadalete).  
 718 Pelayo defeats Moors in N. Spain.  
 719 Charles Martel king of the Franks.  
 731 Venerable Bede flourished.  
 732 Western Saracen advance broken near Tours.  
 751 Pepin first Carolingian king of the Franks.  
 755 Temporal power of Pope commences.  
 756 Cordova capital of Moorish kingdom in Spain.  
 771 Charlemagne king of the Franks.  
 787 Danish raids on English coasts begin.  
 800 Charlemagne crowned Roman Emperor at St. Peter's.  
 814 Death of Charlemagne.  
 829 Egbert, over-king in England.  
 857 Papacy dispute—Roman and Greek Emperors.  
 860 Ethelbert in England—many Danish raids.  
 875 The Saxon chronicle commences.  
 878 Alfred defeats Danes at Ethandune.  
 882 First bishop to become Pope (Marinus I).  
 886 Normans besiege Paris.  
 888 France separated from Empire.  
 904 Saracens seize Salonika.  
 911 Abd-er Rahman III—Omayyad ruler at Cordova. Period of extensive culture.  
 916 Saracens defeated in Spain.  
 980 Viking attacks begin on English coasts.  
 987 Hugh Capet—beginning of modern French Kingdom.  
 991 Venice an independent Kingdom.  
 1000 Norse discovery of America (Nova Scotia).  
 1002 Massacre of Danes in England.  
 1009 Danes attack London.  
 1016 Canute king of England, Normans in S. Italy.  
 1028 Canute conquers Norway.  
 1035 Partition in Spain after death Sancho III.  
 1054 Separation of Greek and Latin churches reaffirmed by Patriarch of Constantinople.  
 1066 Death of Edward the Confessor; defeat of King Harold by Normans at Hastings; William of Normandy crowned William I.  
 1071 Seljuks take Jerusalem.  
 1073 Struggle between Empire and Papacy.  
 1077 Henry IV at Canossa.  
 1085 Toledo recovered from Moors.  
 1086 Domesday Book completed.  
 1095 Peter the Hermit and First Crusade.



- A.D.  
**1099** Capture of Jerusalem; Knights of St. John instituted.  
**1100** William II. killed in New Forest; Henry I. succeeded.  
**1118** Order of Knights Templars established.  
**1135** Stephen king of England.  
**1138** Battle of the Standard at Northallerton, David, king of Scotland defeated.  
**1141** Stephen taken prisoner; Matilda crowned at Winchester.  
**1145** Matilda, defeated, retires to France.  
**1147** Second Crusade.  
**1154** Henry II. king of England; Nicholas Breakspeare, an Englishman, Pope as Adrian IV.  
**1162** a Becket, archbp. Canterbury.  
**1170** Henry and a Becket reconciled; Dec. 29, Assassination of a Becket.  
**1173** Saladin sultan of Egypt; a Becket canonised.  
**1177** Saladin defeated by Renaud de Chatillon.  
**1180** Carthusian monasteries established in England.  
**1187** Saladin takes Jerusalem; Third Crusade.  
**1189** Siege of Acre; Richard I. king of England.  
**1190** Richard embarks for the Crusade.  
**1191** Crusaders capture Acre. [Austria.  
**1192** Richard held captive by Leopold duke of  
**1198** Richard defeats French at Gisors.  
**1199** John king of England. [war.  
**1202** Fourth Crusade; France and England at  
**1203** Crusaders conquer Constantinople. Prince Arthur murdered by John.  
**1206** Mogul empire founded.  
**1209** Franciscan order established.  
**1212** Moors routed in battle of Las Navas de Tolosa, Spain.  
**1215** Magna Carta signed by John. [England.  
**1216** Henry III. king; first Parliament in  
**1217** Fifth Crusade.  
**1219** Crusaders capture Damietta.  
**1227** Thomas Aquinas b.  
**1228** Sixth Crusade.  
**1229** Jerusalem ceded to Christians.  
**1236** Henry III. marries Elenor of Provence.  
**1248** Seventh Crusade.  
**1253** Jews driven out of France.  
**1264** Battle of Lewes, Barons victorious.  
**1265** First British Commons meet; Battle of Evesham, De Montfort killed.  
**1266** Roger Bacon presents his *Opus Majus* to Pope Clement IV.  
**1272** Edward I. king of England.  
**1282** "Sicilian Vespers" massacre; Edward I. conquers Wales.  
**1290** Jews expelled from England.  
**1295** First regular English Parliament.  
**1296** Edward I. subdues Scotland.  
**1297** Battle of Stirling, Wallace victorious.  
**1298** Battle of Falkirk, Edw. I. defeats Wallace.  
**1302** Battle of the Golden Spurs, Courtrai.  
**1304** Edward I. captures Stirling.  
**1305** Wallace executed in Smithfield.  
**1306** Robert Bruce king of Scotland.  
**1307** Edward II. king of England. [Stirling.  
**1313** Boccaccio b.; Edward Bruce besieges  
**1314** Battle of Bannockburn; English defeated.  
**1318** Edw. Bruce defeated and killed at Dundalk.  
**1324** Wyclif b.  
**1327** Edward III. king of England.  
**1329** David II. (Bruce) king of Scotland.  
**1332** Scotland invaded by Edward III.  
**1333** Edward III. defeats Scots at Halidon Hill.  
**1339** France invaded by Edward III.  
**1340** Edward obtains victory over French fleet at Sluys.  
**1346** Battle of Crécy, Edward III. defeated  
**1347** Calais captured by the English. [French.  
**1348** Black Death plague makes its appearance.  
**1350** Order of the Garter instituted.  
**1351** Statute of labourers passed in England.  
**1353** Rienzi made Senator of Rome.  
**1354** Rienzi killed.  
**1356** Battle of Poitiers, English defeat French.  
**1359** Tamerlane in Persia.  
**1376** Edward "The Black Prince" d.  
**1377** Richard II. king of England.  
**1380** Thomas à Kempis b.  
**1381** Poll tax established in England; peasant rising under Wat Tyler.  
**1384** Death of Wyclif.  
**1385** Scots invade England, and Richard II. retaliates by taking Edinburgh.
- A.D.  
**1386** Duke of Gloucester made Regent.  
**1387** Barons seize Tower of London; Winchester College founded by William of Wykeham.  
**1388** Another invasion of England by Scots; Battle of Otterburn, Scots victorious.  
**1397** Duke of Gloucester murdered. [England.  
**1399** Richard II. deposed, Henry IV. king of  
**1400** Revolt in Wales headed by Owen Glendower.  
**1402** Scots defeat at Homildon Hill, Sept. 14.  
**1403** Battle of Shrewsbury, the Percys defeated.  
**1406** James I., king of Scotland, seized and imprisoned in Tower of London.  
**1413** Henry V. king of England.  
**1414** Council of Constance.  
**1415** Capture of Harfleur; Battle of Agincourt.  
**1417** Henry V. takes Caen.  
**1420** Henry V. regent of France.  
**1422** Henry VI. king of France.  
**1424** James I. of Scotland liberated and crowned.  
**1428** English lay siege to Orleans.  
**1429** Joan of Arc enters Orleans.  
**1430** Joan of Arc made prisoner.  
**1431** Joan of Arc burnt at the stake.  
**1437** James I. of Scotland murdered.  
**1440** Eton College established. First printing at Mainz.  
**1450** Jack Cade's insurrection.  
**1452** Savonarola b.; Leonardo da Vinci b.  
**1455** Battle of St. Albans (May 23) beginning the Wars of the Roses.  
**1460** Battle of Northampton, Henry VI. taken prisoner; Battle of Wakefield, Yorkists defeated, Duke of York killed.  
**1461** Second Battle of St. Albans, Yorkists defeated; Edward IV. king of England; battle of Towton Field, Yorkists victorious.  
**1466** Henry VI. deposed.  
**1467** Erasmus b.  
**1469** Marriage of Ferdinand of Aragon and Isabella of Castile; Machiavelli b.  
**1470** Edward IV. escapes to Flanders.  
**1471** Edward IV. returns to claim his dukedom of York. The battles of Barnet and Tewkesbury are fought, resulting in the victory of the Yorkists, and the deaths of Henry VI. and Warwick.  
**1475** Edward IV. invades France; Michael Angelo b.  
**1476** Caxton begins printing at Westminster.  
**1477** Titian b.  
**1478** Inquisition established in Spain.  
**1493** Edward IV. d. succeeded by his son Edward V., who reigned two months and 13 days, having been confined in the Tower and murdered, Richard III. succeeded; Raphael b.  
**1485** Aug. 22, Battle of Bosworth Field, Richard III. slain; Henry VII. king of England.  
**1486** Lambert Simnel Rebellion.  
**1492** Ferdinand II. captures Granada and drives the Moors from Spain; Columbus sails on his first expedition, Aug. 3; Henry VII. invades France; Perkin Warbeck in Ireland.  
**1494** Columbus discovers Jamaica.  
**1495** Perkin Warbeck rebellion in England.  
**1497** The Cabots discover Newfoundland; Vasco di Gama doubles the Cape of Good Hope.  
**1498** Savonarola put to death; third voyage of Columbus, touches the mainland of the American continent; Vasco di Gama discovers sea route to India.  
**1499** Perkin Warbeck executed.  
**1500** Discovery of Brazil by the Portuguese.  
**1502** Fourth voyage of Columbus.  
**1506** Death of Columbus; foundation stone of St. Peter's, Rome, laid.  
**1509** Henry VIII. king of England, April 22.  
**1510** Spaniards take Cuba; Luther goes to Rome.  
**1513** Battle of Flodden; Scots defeated.  
**1514** Wolsey archbishop of York.  
**1515** French invade Italy; Wolsey made cardinal and chancellor.  
**1519** Cortes conquers Mexico.  
**1521** Luther excommunicated; Henry VIII. opposes Lutheran ideas; Magellan discovers the Philippines. Diet of Worms.  
**1522** Magellan's ship, the *Victoria*, reached Spain (Sept. 6), navigated by Sebastian del Cano, the first voyage round the world.  
**1526** Tyndale's New Testament published.  
**1527** The imperialists capture Rome and make a prisoner of the Pope.

- A.D.  
 1528 Conquest of Peru.  
 1529 Fall of Wolsey.  
 1530 Confession of Augsburg; death of Wolsey.  
 1534 Act of Supremacy passed and the Papal power in England abolished.  
 1535 Fisher and More executed; Barbarossa captures Tunis; Loyola founds Jesuits; Charles V. captures Tunis from Barbarossa; Coverdale's Bible, first printed English Bible.  
 1536 Death of Catherine of Aragon; Anne Boleyn executed May 19; Henry marries Jane Seymour May 26; Wales united to England; dissolution of smaller monasteries.  
 1537 Death of Jane Seymour; Etna in eruption. Henry VIII. granted charter to the Hon. Artillery Compy.  
 1538 Parish registers established in England; Pope Paul III. excommunicates Henry VIII.  
 1539 Revolt of Ghent; general dissolution of monasteries in England.  
 1540 Henry VIII. marries Anne of Cleves Jan. 6; Henry marries Catherine Howard July 28.  
 1542 Catherine Howard executed; Mary Queen of Scots b. Dec. 14; Copernicus d.; Henry VIII. marries Catherine Parr.  
 1544 Henry VIII. invades France. [Trent].  
 1545 Needles first made in England; Council of  
 1547 Earl of Surrey executed; Edward VI. king of Eng. Jan 28; Somerset made Protector.  
 1549 Act of Uniformity.  
 1551 Another Council of Trent.  
 1552 Somerset executed; Charles V. besieges Metz.  
 1553 Mary Tudor queen of England, July 6; Lady Jane Grey proclaimed, July 10.  
 1554 Wyatt's insurrection; Lady Jane Grey executed; Mary marries Philip of Spain.  
 1555 Diet of Augsburg; Ridley and Latimer burnt.  
 1556 Cranmer burnt at stake; Cardinal Pole archbishop of Canterbury.  
 1557 Battle of St. Quentin, Aug. 10, French defeated by English and Spanish forces.  
 1558 Calais taken by French; Mary Queen of Scots marries the Dauphin; death of Charles V., Nov. 17; Elizabeth queen of England.  
 1559 John Knox returns to Scotland from France.  
 1560 Reformation established in Scotland.  
 1561 Mary Queen of Scots returns to Scotland.  
 1562 English occupy Havre.  
 1563 Council of Trent, last sitting of; Church of England's 39 articles settled; Duc de Guise assassinated.  
 1564 Shakespeare b.; Calvin d.  
 1565 Mary Queen of Scots marries Darnley.  
 1566 Pius V. Pope; murder of Rizzio; revolt of the Netherlands.  
 1567 Murder of Darnley (Feb. 10); Mary Queen of Scots marries Bothwell (May 15); Mary forced to resign in favour of her son James VI.; Mary imprisoned, Murray made Regent.  
 1568 Revolt of Moors in Spain; Mary Queen of Scots escapes to England; death of Don Carlos.  
 1569 Battle of Jarnac, Huguenots defeated, and Condé killed.  
 1570 Regent Murray assassinated.  
 1571 Holy League against Turks.  
 1572 Duke of Norfolk executed; massacre of St. Bartholomew, Aug. 24; death of John Knox.  
 1573 Siege of La Rochelle.  
 1577 Drake's first voyage round the world.  
 1580 Spain annexes Portugal.  
 1584 Virginia discovered and colonised.  
 1585 Drake sets out for West Indies.  
 1586 Babington's plot against Elizabeth; Battle of Zutphen, Spaniards defeated by English and Dutch; Sir Philip Sidney receives death wound; trial of Mary Queen of Scots.  
 1587 Mary beheaded, Feb. 8; Drake's expedition against Cadiz; Davis's Straits discovered.  
 1588 Spanish Armada leaves Lisbon June 1; defeat of Spanish Armada; Guise assassinated.  
 1589 Death of Catherine de Medici; Henry IV. of Navarre king of France.  
 1590 Battle of Ivry, League defeated by Henry IV.; Henry IV. lays siege to Paris.  
 1591 Maurice captures Zutphen and Deventer.  
 1594 Henry IV. crowned at Chartres.  
 1595 Tyrone rebellion.  
 1596 Spaniards take Calais; France and England join forces against Spain; English and Dutch capture Calais.

- A.D.  
 1598 Edict of Nantes.  
 1599 Oliver Cromwell b.  
 1600 Gowrie Conspiracy to dethrone James VI. of Scotland; English East India Co. formed.  
 1603 Death of Queen Elizabeth, James VI. of Scotland succeeds as James I.; England and Scotland thus united.  
 1604 Hampton Court Conference between Church prelates and Puritans.  
 1605 Gunpowder plot; *Don Quixote* published; death of Akbar, great Mogul Emperor.  
 1607 Dutch destroy Spanish fleet at Gibraltar.  
 1610 Henry IV. assassinated by Ravalliac; Louis XIII. king of France.  
 1611 Gustavus Adolphus king of Sweden; Ulster plantation; baronets first created.  
 1613 Romanoff dynasty founded in Russia.  
 1615 Arabella Stuart dies in the Tower; Louis XIII. marries Anne of Austria.  
 1616 Death of Shakespeare and Cervantes.  
 1618 Raleigh executed; Thirty Years' War begins.  
 1620 Treaty of Ulm, by which the Elector Frederick lost Bohemia; Spinola invades Palatinate; "Pilgrim Fathers" land in New England in *Mayflower*, Dec. 11, 21 (N.S.).  
 1623 Spanish marriage treaty broken.  
 1624 Monopolies declared illegal in England; Barbadoes colonised by English; Virginia becomes a Crown Colony.  
 1625 Charles I. king of England; Charles marries Henrietta of France; English attack on Cadiz; Parliament dissolved by Charles I.  
 1626 Buckingham impeached; Charles I. dissolves his second Parliament.  
 1627 Siege of Rochelle.  
 1628 Cromwell enters Parliament for Huntingdon; Petition of Right; Buckingham assassinated; Richelieu takes Rochelle.  
 1629 Charles I. dissolves his third Parliament.  
 1630 Italy invaded by Richelieu, Germany invaded by Gustavus Adolphus; death of Spinola.  
 1631 France and Sweden in alliance against Germany; Magdeburg taken by Tilly; Battle of Leipsic, Gustavus defeats Tilly.  
 1632 Death of Tilly; Gustavus seizes Munich and Nuremberg; Battle of Lutzen, Gustavus is slain but victorious; Christina becomes queen of Sweden.  
 1634 France annexes Lorraine; assassination of Wallenstein; Charles I. demands ship-money; East Anglian fens reclaimed.  
 1639 Rebellion in Scotland.  
 1640 Charles I. dissolves Short Parliament; Long Parliament meets.  
 1641 Trial and execution of Strafford; Star Chamber abolished; rebellion in Ireland; the Grand Remonstrance; coffee first used in England.  
 1642 Charles I. orders the arrest of the Five Members; Charles sets up his standard at Nottingham; Cinqu-Mars executed; death of Richelieu; Charles I. occupies Oxford; New Zealand and Tasmania discovered; Battle of Worcester, Sept. 23, Rupert victorious; Battle of Edgehill, Oct. 23.  
 1643 Louis XIV. king of France; Anne of Austria Regent; Mazarin first Minister; death of Hampden; Charles I. besieges Gloucester; Rupert captures Bristol; Battle of Newbury, Falkland killed.  
 1644 Laud tried and condemned; Battle of Marston Moor, July 2, Rupert defeated; second Battle of Newbury.  
 1645 Laud beheaded; Battle of Naseby, Royalists defeated; Rupert surrenders Bristol.  
 1646 Charles I. surrenders to Scots; Oxford surrendered to Roundheads.  
 1647 Charles I. surrendered to Parliament, taken prisoner at Holmby House, June 4.  
 1648 Battle of Preston, Cromwell victor; Fairfax occupies Colchester; end of Thirty Years' War; "Rump" Parliament elected.  
 1649 Execution of Charles I. Jan 30; Commonwealth declared, May 19; Cromwell captures Drogheda and Wexford.  
 1650 Montrose's rebellion; execution of Montrose; Cromwell defeats Lesley at Dunbar.  
 1651 Charles II. invades England, Battle of Worcester, Charles defeated, flees to France; Navigation Act passed.



A.D.  
 1652 England at war with Dutch; Dunkirk captured by Spanish; Blake's victory over Dutch.  
 1653 Blake defeats Van Tromp; Cromwell dismisses "Rump" Parliament; Cromwell made Lord Protector.  
 1654 England and Holland at peace; Scotland incorporated with England; Christina of Sweden abdicates.  
 1655 Cromwell dissolves Parliament; Jamaica captured by British.  
 1656 Warsaw surrendered to Poles, afterwards re-taken by Charles and the Great Elector; Blake takes Spanish treasure fleet off Cadiz.  
 1657 Cromwell declines the English crown.  
 1658 Turenne takes Dunkirk; death of Cromwell; Richard Cromwell named Protector.  
 1659 Richard Cromwell resigns.  
 1660 General Monk occupies London; Charles II. proclaimed May 8.  
 1661 Bodies of Cromwell, Ireton, and Bradshaw exhumed and hung in chains at Tyburn.  
 1662 Act of Uniformity passed; Charles II. marries Catherine of Braganza; Nonconformist clergy deprived of their livings.  
 1664 England and Holland at war; Conventicle Act passed; New Amsterdam (New York) captured by British.  
 1665 Great plague in London; *London Gazette* first issued; Five Mile Act passed.  
 1666 France declares war against England; Dutch fleet defeated off North Foreland, July 25; Great Fire of London.  
 1667 De Ruyter's fleet in the Thames; war with Holland ended; "Cabal" ministry; Clarendon impeached; "Paradise Lost" issued.  
 1668 Triple Alliance (England, Holland, and Sweden) against France; Bombay ceded to East India Co.  
 1670 Second Conventicle Act; Hudson's Bay Co. formed.  
 1672 France and England form treaty; Declaration of Indulgence to Nonconformists; England and France join forces against the Dutch.  
 1673 Withdrawal of Declaration of Indulgence.  
 1674 England and Holland at peace; Sobieski king of Poland.  
 1677 Prince of Orange defeated at Cassel by French; Princess Mary of England marries William of Orange.  
 1678 English and Dutch alliance.  
 1679 Habeas Corpus Act passed; Monmouth obtains victory over Covenanters at Bothwell Bridge.  
 1680 Stafford executed. [sylvania.  
 1681 William Penn receives grant of Penn.  
 1682 Algiers bombarded by French; Peter the Great and Ivan V. joint-Czars of Russia.  
 1683 Rye House plot.  
 1685 Death of Charles II., James II. succeeds, Feb. 6; Monmouth insurrection; Argyll executed, June 30; Battle of Sedgemoor; Monmouth defeated and captured, July 6; Monmouth executed July 15; Judge Jeffreys opens the "Bloody Assize," Aug.; revocation of the Edict of Nantes.  
 1686 Test Act suspended.  
 1687 Declaration of Indulgence.  
 1688 Fresh Declaration of Indulgence by James; trial of seven bishops; William of Orange lands at Torbay, Nov. 5; James II. abdicates and flees to France, Dec. 11; Smyrna destroyed by earthquake.  
 1689 William and Mary proclaimed k. and q. of England, Feb. 13; James II. lands in Ireland, March; James besieges Londonderry, April 20, relieved, July 30; Toleration Act passed; Battle of Killiecrankie, July 27; Bill of Rights passed.  
 1690 English and Dutch fleets defeated by French off Beachy Head; Battle of the Boyne, July 1, William defeated James; William lays siege to Limerick.  
 1691 Nonjuring bishops deprived of their sees; Limerick capitulates Oct. 3.  
 1692 Massacre of Glencoe, Feb. 13; Battle of La Hogue, May 19; Battle of Steinkirk, Aug. 3.  
 1694 Bank of England incorporated.  
 1695 William III. captures Namur.  
 1696 Plot to kill William III.; death of Sobieski.  
 1697 Charles XII. king of Sweden; Peace of Ryswick; Peter the Great in England.

A.D.  
 1701 Frederick III. king of Prussia; Marlborough goes to Holland as commander-in-chief; war of the Spanish Succession begins. Hanoverian Act of Settlement passed.  
 1702 Death of William III., Mar. 8; Anne, queen of Great Britain; England declares war against France and Spain; Marlborough takes Liège, Oct. 23.  
 1703 Battle of Pultusk, Swedes defeat the Poles; Marlborough takes Bonn.  
 1704 Admiral Rooke captures Gibraltar; Battle of Blenheim, Aug. 13.  
 1705 Battle of Cassano; British invest and capture Barcelona; Charles XII. invades Silesia.  
 1706 Battle of Ramillies, May 12; French defeated by Marlborough; English enter Madrid, June 24; Battle of Turin, Prince Eugene defeats French; English enter Milan.  
 1707 Scotch Parliament passes Act of Union; Charles XII. invades Russia; First Parliament of Great Britain, Oct. 23.  
 1708 Pretender James in Scotland; Battle of Oudenarde, Marlborough victorious.  
 1709 Marlborough and Eugene take Tournay; Battle of Malplaquet, Marlborough victorious; Allies take Mons.  
 1710 Allies take Douay; Battle of Saragossa, Aug. 20; French defeated by Austrians.  
 1713 Frederick William I. king of Prussia; peace of Utrecht, Mar. 31.  
 1714 Death of Queen Anne; George I. king of England, Aug. 1.  
 1715 Fresh war between Prussia and Sweden; Riot Act passed; Louis XV. king of France; Jacobite rebellion; Walpole Premier; Battle of Sheriffmuir, Nov. 13; Battle of Preston, Nov. 12, 13, rebels defeated.  
 1716 Lords Derwentwater and Kenmore executed.  
 1717 Triple Alliance, England, France, Holland; Eugene defeats Turks at Belgrade, Aug. 16.  
 1718 Spaniards invade Sicily; Quadruple Alliance, Gt. Britain, France, Holland, and the Emperor; England declares war against Spain.  
 1719 France at war with Spain.  
 1720 Spain joins Quadruple Alliance; South Sea Bubble bursts.  
 1727 Gibraltar besieged by Spaniards; Peter II. Czar of Russia; George I. dies, George II. succeeds July 10.  
 1729 Peace between Britain, France, and Spain.  
 1733 Fred. Aug. II. of Poland died; France and Spain support Stanislas as his successor; Russia and the Emperor declare for Fred. Aug. Elector of Saxony and elect him; war results between France and the Emperor.  
 1734 Siege of Dantzic, French take Treves.  
 1735 Don Carlos king of Two Sicilies.  
 1738 Lorraine ceded to France.  
 1739 Nadir Shah defeats and captures Great Mogul; Turks besiege Belgrade; peace declared between Turkey and the Emperor; England goes to war with Spain.  
 1740 Frederick the Great king of Prussia.  
 1741 Battle of Mollwitz, Frederick defeats Austrians; Maria Theresa crowned queen of Hungary, June 25; Sweden declares war against Russia; Frederick takes Breslau; Ivan VI. deposed, Elizabeth Petrovna made empress; Behring's voyage.  
 1742 Elector of Bavaria elected emperor as Charles VII.; Austrians take Munich; France declares war against Maria Theresa, Holland, and Great Britain.  
 1743 Austrians take Munich; Battle of Dettingen, French defeated by George II.  
 1744 Charles Edward makes attempt to enter England, but is frustrated; Louis XV. declares war against Great Britain; French capture Munich, Oct. 16; Frederick captures Prague, Sept. 16.  
 1745 Battle of Fontenoy (Cumberland defeated); British capture Cape Breton; Charles Edward lands in Scotland, July 23; Battle of Prestonpans, rebels victorious, Sept. 21; Pretender takes Carlisle, Nov. 15, retreats to Scotland, Dec. 20.  
 1746 Battle of Falkirk, Jan. 17 (rebels victorious); Battle of Culloden, April 16 (rebels defeated and rebellion crushed by Cumberland); Marshal Saxe takes Antwerp; Lords Kilmar-



A.D.

- nock and Balmerino executed; French capture Madras.
- 1747 French fleet defeated by Anson off Cape Finisterre, May 14; French invade Brabant; execution of Lord Lovat; Nadir Shah murdered; Pretender escapes to France; Hawke defeats French fleet off Belle Isle, Oct. 14.
- 1748 French capture Maestricht; peace concluded at Aix-la-Chapelle; Afghans invade India.
- 1749 English regain Madras.
- 1751 Clive captures Arcot, Aug. 31.
- 1752 Great Britain adopts New Style Calendar.
- 1755 British expedition against French in Canada fails; Lisbon earthquake; eruption of Etna.
- 1756 Great Britain declares war against France; French defeat Admiral Byng off Minorca, May 20; Calcutta taken by Suraja Dowla, June 18; "Black Hole" atrocity; Seven Years' War begins; Frederick defeats Austrians at Löwowitz, Oct. 1.
- 1757 British recapture Calcutta, Jan. 2; Admiral Byng shot, Mar. 14; Clive victorious at Plassey, June 23; French take Minden, Aug. 3.
- 1758 Russians invade Prussia; French take Arcot, Oct. 4; Prussians defeated at Hochkirchen, Oct. 14.
- 1759 British capture Surat, Mar. 2; Battle of Minden (Aug. 1); French defeated; Charles III. king of Spain; Boscawen defeats French fleet at Lagos, Aug. 18; Battle of Quebec; death of Wolfe after complete victory over Montcalm, who was also killed; Hawke's victory over French in Quiberon Bay.
- 1760 British recapture Arcot; Canada conquest completed; Russians enter Berlin; death of George II., George III. succeeds, Oct. 25.
- 1762 Great Britain declares war against Spain, Jan. 2; British take Martinique; Prussia makes peace with Russia, May 5; Czar Peter III. deposed and succeeded by Catherine II.; British capture Havana.
- 1763 Great Britain, France, Spain and Portugal sign a Treaty of Peace at Paris, Feb. 10, ending the Seven Years' War; John Wilkes arrested.
- 1766 Second Pitt Administration, Aug. 2.
- 1767 Corsica surrendered to France by Genoa.
- 1768 Wilkes elected M.P. for Middlesex.
- 1769 The first letter of "Junius" appears, Jan.
- 1770 Lord North Prime Minister; Captain Cook discovers New South Wales.
- 1772 Treaty for partition of Poland between Russia, Austria, and Prussia; Warren Hastings appointed Governor of Bengal; Cook's second voyage round the world.
- 1773 Strong opposition to the Tea Tax in Boston.
- 1774 Boston Harbour closed until restitution made for tea destroyed; Warren Hastings made first Governor-General of India.
- 1775 Battle of Lexington, April 19, Gage victorious. Washington assumes command of American army; Battle of Bunker's Hill, June 17, and of Long Island, August 27, Americans defeated in both engagements; Washington lays siege to Boston.
- 1776 British troops retire from Boston, March 17; Declaration of American Independence, July 4; British troops in New York, Sept. 15; Battle of Trenton, Dec. 26.
- 1777 Battle of Brandy Wine, Sept. 11; Washington defeated by General Howe, who a few days later takes Philadelphia; Battle of Germantown, Oct. 4, Burgoyne victorious; Battle of Saratoga, Oct. 7, Burgoyne forced to surrender.
- 1778 France recognises American Republic, Jan. 16; death of Earl of Chatham, May 11; siege of Gibraltar; France declares war against Great Britain, July 10; British capture Savannah, Dec. 28.
- 1779 Capt. Cook killed at Owhyhee, Feb. 14; Spain declares war against England, June 16.
- 1780 Rodney's victory over the Spanish fleet off Cape St. Vincent, Jan. 16; Charleston captured by the British, who took 6,000 prisoners; Gordon riots in London.
- 1781 Spaniards lay siege to Gibraltar from April to November without success; Florida conquered by Spaniards; Lord Cornwallis occupies Yorktown, Aug. 1; Washington captures Yorktown, Oct. 19.
- 1782 Rodney defeats French fleet off Dominica,

A.D.

- April 12; loss of the *Royal George*, Aug. 29; British troops retire from Charleston; American Independence acknowledged by Britain, Nov. 30.
- 1783 Fox and North's Coalition Ministry; peace established between England and U.S., Sept. 3; at Paris, and on the same date Great Britain, France, and Spain agree upon terms of peace; Coalition Ministry defeated and Pitt appointed Prime Minister.
- 1786 Warren Hastings impeached; Lord Cornwallis Governor-General of India.
- 1788 Death of Prince Charles Edward; *Times* first published, Jan. 1; trial of Warren Hastings opens Feb. 13.
- 1789 Mutiny of the *Bounty*, April 28; Washington elected first President of U.S.; French Revolution began; Bastille in Paris destroyed, July 14.
- 1791 Death of John Wesley, March 2; death of Mirabeau, April 2; New French Constitution adopted by National Assembly.
- 1792 Gustavus III. assassinated, March 16; slavery abolished in St. Domingo, April 4; attack on the Tuileries, Aug. 10; French royal family imprisoned in the Temple; National Convention, Sept. 21; Royalty abolished in France and Proclamation of the Republic.
- 1793 Louis XVI. executed, Jan. 21; insurrection in La Vendée; Reign of Terror begins; Charlotte Corday assassinates Marat, July 13; she is executed four days later; death of Lord Mansfield; Lord Hood captures Toulon, Aug. 23; 2nd partition of Poland, Sept. 23; Marie Antoinette executed, Oct. 15.
- 1794 Polish insurrection under Kosciuszko; Danton executed, April 6; Lord Howe's victory over French off Brest; defeat of Robespierre and end of Reign of Terror, July 27.
- 1795 Warren Hastings acquitted, April 23; insurrection in Paris; Directory established, Aug. 22; British take possession of Cape of Good Hope; France annexes Belgium, Oct. 1; 3rd partition of Poland, Oct. 24.
- 1796 Battle of Lodi, Napoleon victorious; Napoleon enters Milan, May 15, Bologna, June 18; Spain declares war against England; Battle of Arcola, Napoleon victorious.
- 1797 Battle of Rivoli, Napoleon again victorious, Jan. 14; Mantua surrenders to Napoleon, Feb. 1; Spanish fleet defeated by Jervis off Cape St. Vincent, Feb. 14; mutiny at the Nore; Napoleon enters Venice, May 16; vaccination introduced by Jenner.
- 1798 Rome occupied by the French, Feb. 10, and a Republic proclaimed; the French conquer Switzerland; Napoleon captures Malta, June 11, and in July invades Egypt; Battle of the Pyramids, July 21, Napoleon victorious; Battle of the Nile, Aug. 1-2, French fleet defeated by Nelson. Rebellion in Ireland;
- 1799 French occupy Naples. Napoleon invades Syria, and storms Jaffa, March 7; lays siege to Acre (March 16 to May 21), but is repulsed; Seringapatam attacked by the British and Tipoo killed, May 4; Battle of Aboukir, July 25, Napoleon defeats Turks; French occupy Zurich, French Directory overthrown, Nov. 9, and Napoleon made First Consul, Dec. 24; death of Washington, Dec. 14; Pitt imposes Income Tax.
- 1800 East India Co. obtains possession of Surat, May 13; Napoleon crosses the Great St. Bernard, May 17-20; Battle of Marengo, June 14, Austrians defeated by Napoleon; Legislative Union of Great Britain and Ireland effected, July 2; Battle of Hohenlinden, Dec. 3, Austria defeated.
- 1801 First Parliament of U.K., Jan.; Pitt resigns Feb. 5, is succeeded by Addington; Battle of Alexandria, British victorious, Abercromby killed; Czar Paul murdered, Mar. 24, succeeded by Alexander I.; Battle of Copenhagen; Nelson obtains complete victory over Danish fleet, April 2; French retire from Egypt; Treaty of peace between Great Britain and France, Oct. 1.
- 1802 Napoleon appointed First Consul for life, Aug. 3; France annexes Piedmont, Sept. 11.
- 1803 Dutch recover Cape of Good Hope; Napoleon sells Louisiana to U.S., April 30; Great Brit. declares war against France, May 18; insurrection in Ireland under Robt. Emmet.

- A.D.  
**1804** Code Napoleon published; Napoleon orders Duke of Enghien to be shot; Pitt again Prime Minister, May 12; Napoleon made Emperor, May 18; Napoleon and Josephine crowned by the Pope at Paris, Dec. 2; Spain declares war against Great Britain.  
**1805** Napoleon crowned king of Italy, May 26; Battle of Trafalgar; Nelson's great victory and death, Oct. 21; French occupy Vienna, Nov. 13; Battle of Austerlitz, Dec. 2, Napoleon defeats Austrians and Russians.  
**1806** British re-occupy Cape of Good Hope; death of Pitt, Jan. 23; Administration of Grenville and Fox; England declares war against Prussia; death of Fox, Sept. 13; Napoleon occupies Berlin, Oct. 27, after Battle of Jena; Berlin decree, by which Napoleon declared Great Britain in a state of blockade.  
**1807** Battle of Eylau, Feb. 8; slave trade abolished in British Empire; French occupy Dantzic, May 26; Battle of Friedland, June 14; Russians defeated by Napoleon; Copenhagen bombarded by British forces, Danish fleet to surrender; dissolution of German Empire; Sierra Leone and Gambia are organised as English Crown colonies.  
**1808** Napoleon enters Rome, Feb. 2; Charles IV. of Spain abdicates, March 19; Murat occupies Madrid, March 22; Joseph Bonaparte, king of Spain, June 26; Murat king of Naples, July 15; Spanish defeat French in Battle of Bailén, July 19; Wellington (Wellesley) enters Spain, Aug. 1; Saragossa besieged from June 15 to Aug. 4, when raised; Battle of Vimiera, Aug. 21; British defeat French; Napoleon enters Madrid, Dec. 4.  
**1809** Battle of Corunna and death of Sir John Moore, Jan. 16; Gustavus IV. of Sweden deposed in favour of Charles XIII.; Soult takes Oporto, Mar. 29; Wellington crosses the Douro and enters Oporto, May 12; Napoleon occupies Vienna, May 13; Pope arrested, July 5, after excommunicating Napoleon; Battle of Wagram, July 6, French defeat Austrians; Battle of Talavera, July 27, British victorious; Walcheren expedition sails, July 28; France and Austria sign treaty of peace, Oct. 14; Josephine divorced, Dec. 15; Walcheren evacuated by the English.  
**1810** Ciudad Rodrigo taken by French (July); Napoleon and Marie Louise married, April 1; Russians take Silistria, June 23; France annexes Holland after abdication of Louis Bonaparte; English take Mauritius, Dec. 3.  
**1811** Massacre of Mamelukes at Cairo, Mar. 1; French take Badajoz, Mar. 10; Battle of Fuentes d'Onore, May 4-5, Wellington victorious; Battle of Albuera, May 16, British defeat Soult; Luddite riots.  
**1812** Ciudad Rodrigo taken by Wellington, Jan. 19; storming of Badajoz by British, April 6; Liverpool Administration, June 8; war declared against Great Britain by United States, June 18; Napoleon declares war against Russia, June 22; Battle of Salamanca, July 22, British victory; Wellington occupies Madrid, Aug. 12; Battle of Borodino, Sept. 7, French defeat Russians; burning of Moscow, Napoleon occupies the ruined city from Sept. 14 to Oct. 19.  
**1813** Execution of 14 Luddites at York, Jan. 10; Battle of Lutzen, May 2, Napoleon checks Allies; Battle of Vittoria, June 21, Wellington victorious; Battles of the Pyrenees, July 28 to Aug. 2, Wellington defeats Soult; Wellington storms St. Sebastian, Aug. 31; France invaded by Wellington, Oct. 7; Battle of Leipsic, Oct. 16-18, defeat of Napoleon.  
**1814** Norway ceded to Sweden, Jan. 14; Battle of Orthes, Feb. 27; Wellington defeats Soult; allied sovereigns enter Paris; Napoleon deposed, March 31; Battle of Toulouse, April 10; Wellington defeats Soult; Napoleon abdicates, April 11; Louis XVIII. king of France; Napoleon banished to Elba; peace of Paris, May 30; Belgium annexed to Holland; Washington occupied by General Ross, Aug. 24; peace between England and the United States, Dec. 24.  
**1815** Battle of New Orleans, Jan. 8th, British defeated; escape of Napoleon from Elba, Feb. 26; Napoleon at Cannes, March 1; Napoleon enters Paris, March 20; Murat surrenders Naples to Ferdinand IV., May 20; Napoleon  
A.D.  
proclaims a new constitution, June 1; Battle of Ligny, June 16, Blücher defeated; Battle of Quatre Bras, June 16, defeat of Ney; Battle of Waterloo, June 18, Napoleon defeated and overthrown; re-abdication of Napoleon, June 22; allies enter Paris, July 7; Restoration of Louis XVIII., July 5; Napoleon is placed on board the *Bellerophon*, July 15; Napoleon arrives at St. Helena, Oct. 16; Ney shot, Dec. 7.  
**1816** Algiers bombarded by Lord Exmouth, Aug. 26.  
**1817** Riots at Manchester, rioters scattered by military, March 11; death of Kosciuszko, Oct. 15; Death of Queen Charlotte, Nov. 5; Battle of Mehadupore, Dec. 21, Holkar defeated.  
**1818** Bernadotte made king of Sweden (Charles XIV.), Feb. 6; royal marriages: Duke of Clarence (afterwards William IV.) with Princess Adelaide of Saxe-Meiningen, and Duke of Kent with Princess Mary of Saxe-Coburg, July 13.  
**1819** Florida ceded to U.S. by Spain, Feb. 22; Kotzebue murdered, March 23; Princess (afterwards Queen) Victoria b., May 24; great Reform meeting at Manchester dispersed by military ("Peterloo"), Aug. 17.  
**1820** Death of Duke of Kent, Jan. 23; death of George III., Jan. 29; George IV. succeeds; death of Grattan, May 14; Carbonari revolt in Naples, July 2.  
**1821** Austrians occupy Naples; Victor Emmanuel I., king of Sardinia abdicates in favour of his brother, Chas. Felix, Mar. 23; Napoleon dies at St. Helena, May 5; Provisional Government in Greece, Jan. 9; coronation of George IV., July 19; death of Queen Caroline, Aug. 7.  
**1822** Greek Declaration of Independence, Jan. 1; massacre of 40,000 persons at Scio by Turks, April-May; Greeks take Athens, June 22; Brazilian Independence proclaimed; Caledonian Canal opened, Nov. 1.  
**1823** French invade Spain, Apl. 7; French bombard Cadiz, Sept. 20, and take it, Oct. 1.  
**1824** Bolivar becomes Dictator of Peru, Feb. 10; British take Rangoon, May 11; Louis XVIII. died; Charles X. king of France, Sept. 16.  
**1825** Stephenson drove first steam locomotive, Stockton to Darlington, at 12 m.p.h.; Nicholas I. Czar of Russia.  
**1826** France and England sign treaty of navigation, Jan. 26; Dom Pedro of Brazil becomes king of Portugal, Mar. 10; Menai Suspension Bridge opened, Jan. 30.  
**1827** Kingdom of Greece founded, [July 6; death of Canning, Aug. 8; Lord Goderich Premier, Aug. 11; death of Ugo Foscolo, Oct. 10; Battle of Navarino, Turkish and Egyptian fleets destroyed.  
**1828** Goderich resigns, Jan. 8, Wellington Administration succeeds, Jan. 25; Russia declares war against Turkey, April 26; Dom Miguel king of Portugal; Ibrahim Pasha evacuates Greece, Oct. 4; Russians take Varna, Oct. 11; death of Lord Liverpool, Dec. 4; repeal of Test Act.  
**1829** Death of Leo XII., Feb. 10; Andrew Jackson President U.S.; duel between Wellington and Winchelsea, March 21; Pius VIII. Pope, March 31; surrender of Silistria, June 18; peace of Adrianople signed, Sept. 14.  
**1830** Death of George IV., William IV. succeeds, June 26; French take Algiers, July 5; revolution in Paris, flight of Charles X. (July 30), abdicates, Aug. 2; Louis Philippe proclaimed king of the French, Aug. 9; Belgian independence proclaimed, Oct. 4; Wellington resigns, Nov. 15; uprising in Warsaw, Nov. 29; death of Pius VIII., Nov. 30.  
**1831** Gregory XVI. Pope, Feb. 2; Lord John Russell introduces the first Reform Bill, March 1; revolution in Brazil, Dom Pedro abdicates, April 7; Leopold I. king of the Belgians, June 4; coronation of William IV.; Bristol riots, Oct. 29; first epidemic of Asiatic cholera in England, Nov.; British Association founded.  
**1832** Constitution in Russian Poland overthrown, Feb. 26; Reform Bill passed, June 7; Otho king of Greece, Aug. 30; French besiege Antwerp, Nov. 13, which surrenders, Dec. 24.  
**1833** Slavery abolished in British colonies, Bill passed Aug. 28; Isabella II. queen of Spain,



- A.D.  
Sept. 29; first Government grant made to English schools.
- 1834 Lord Melbourne, Premier, July 14; Houses of Parliament burned, Oct. 16; Sir R. Peel Premier, Dec. 8; Faraday discovers electric self-induction.
- 1835 Lord Melbourne again Premier, April 18.
- 1836 Thiers First Minister of Louis Philippe, Feb. 22; Louis Napoleon attempts a rising at Strasburg, Oct. 29.
- 1837 Death of William IV., Queen Victoria succeeds June 20; Morse alphabet adopted.
- 1838 Royal Exchange destroyed by fire, Jan. 10; National Gallery opened, April 9; coronation of Queen Victoria, June 28; *Great Western* steamer crosses the Atlantic.
- 1839 British occupation of Kandahar, April 26; Chartist riots at Birmingham, July 15; Christian VIII. king of Denmark; gold discovered in Australia; Aden is annexed by England.
- 1840 Penny postage instituted, Jan. 10; Queen Victoria and Prince Albert married; Fred. Wm. IV. king of Prussia; Canton blockaded by British, June 28; Louis Napoleon's attempt to incite insurrection at Boulogne, Aug. 6; William II. king of Holland; Napoleon's remains transferred to Paris, Dec. 15.
- 1841 Second Peel Administration; Prince of Wales (Edward VII.) b., Nov. 9; armoury at Tower of London burnt; Livingstone discovers Lake Ngami.
- 1842 Massacre of British troops, in retreat from Cabul, Jan. 13; Khyber Pass captured by General Pollock, Apr. 5-14; great Chartist procession in London, and presentation of monster petition to Parliament, May 2.
- 1843 Battle of Meeanee, Feb. 17, British defeat Afghans; Thames Tunnel opened, Mar. 25; annexation of Natal; Sindh annexed; Irish Repeal Agitation, O'Connell arrested, Oct. 14; Battle of Maharajpore, defeat of Mahrattas, Dec. 29.
- 1844 Joseph Smith, founder of Mormonism, murdered June 27; Brigham Young succeeds him.
- 1845 Sir John Franklin's Arctic expedition sails, May 23; Maynooth College endowed, June 30; Battle of Moodkee, Gough defeats Sikhs, Dec. 18; Battle of Ferozeshah, Dec. 21, further defeat of Sikhs; famine in Ireland.
- 1846 Battle of Aliwal, Jan. 28; Sikhs defeated; Battle of Sohraon, Feb. 10, Sikhs defeated by Gough; Louis Napoleon escapes from Ham, May 26; repeal of the Corn Laws, June 26; Sir R. Peel resigns, June 29; Lord John Russell Premier; Planet Neptune discovered; Pius IX. elected Pope.
- 1847 Death of O'Connell, May 15; Earl of Dalhousie made Governor-General of India; Abdel-Kader surrenders, Dec. 22; Ten Hours Factory Bill passed; British Museum opened.
- 1848 Gold discovered in California; general revolutionary movement throughout the Continent; riots at Milan, Messina, Munich, Paris, etc.; Louis Philippe abdicates and escapes to England, Feb. 24; French Republic proclaimed; monster meeting of Chartists on Kennington Common, Apr. 10; Lombardy annexed by Sardinia, June 4; Louis Napoleon elected to National Assembly; insurrection in Paris; Louis Napoleon president French Republic, Dec. 20.
- 1849 Annexation of the Punjab; Republic proclaimed at Rome, Feb. 8; Charles Albert abdicates in favour of his son, Victor Emmanuel, March 24; French occupation of Civita Vecchia; Austrians occupy Leghorn, May 12; Rome besieged by French, June 3; Hungary invaded by Russians, June 17; Rome surrenders to French, July 3; Austrians take Venice, Aug. 22; repeal of the old Navigation Laws.
- 1850 Britannia Tubular Bridge opened, March; submarine telegraph between England and France laid, Aug. 28.
- 1851 Great exhibition in Hyde Park, May to Oct.; Paris *coup d'état*, Dec. 2; Louis Napoleon elected President of the French Republic for 10 years, Dec. 20.
- 1852 First Derby Administration, Feb. 27; British capture Rangoon, April 14; Brit. take Pegu, June 4; Paraguay independence recognised, July 17; death of Duke of Wellington,
- A.D.  
Sept. 14; Louis Napoleon proclaimed Emperor, Dec. 2; Lord Derby resigns, Dec. 17; Lord Aberdeen's Ministry, Dec. 27.
- 1853 Napoleon III. marries Eugénie de Montijo, Jan. 29; Brit. and French fleets in the Dardanelles; Russia and Turkey at war, Oct. 23; Turkish fleet destroyed off Sinope by Russians.
- 1854 Brit. and French fleets enter the Black Sea, Jan. 4; war declared against Russia by France, March 27, Great Brit., March 28; allied fleets bombard Odessa, April 22; Crystal Palace opened, June 10; allied armies land in the Crimea, Sept. 14; Battle of the Alma, Sept. 20; siege of Sebastopol begins, Oct. 17; Battle of Balaklava, Oct. 25; Battle of Inkerman, Nov. 5.
- 1855 Sardinia joins England and France against Russia, Jan. 26; first Palmerston Administration, Feb. 6; death of Czar Nicholas, March 2, Alexander II. succeeds; great exhibition in Paris, May to Oct.; newspaper stamp abolished, June 15; Malakoff and Redan stormed, Sept. 8; Russians defeated before Kars, Sept. 29; Kars capitulated, Nov. 28.
- 1856 Oudh annexed, Feb. 7; peace treaty signed at Paris, March 30; Crimea evacuated by allied armies, July 12; Persia declares war against India, Nov. 1; British bombard Canton, Nov. 3.
- 1857 Indian Mutiny breaks out; Persians defeated at Khooshab, Feb. 8; treaty of peace with Persia, March 4; mutineers at Lucknow, May 10-11, at Delhi, May 11, Meerut, May 10-11; Cawnpore massacre, July 15; Havelock occupies Cawnpore, July 17; Delhi stormed, Sept. 14; Relief of Lucknow, Sept. 25; Lucknow garrison rescued, Nov. 22; death of Havelock, Nov. 25; visit to England of Emperor and Empress of the French, Aug. 8; Canton captured by English and French, Dec. 28-29.
- 1858 Attempted assassination of Napoleon III. by Orsini and others, Jan. 14; *Great Eastern* launched, Jan. 31; Derby Ministry succeeds that of Palmerston, Feb.; siege of Lucknow, March 18-21, when captured; Queen Victoria and Prince Albert visit Napoleon III. at Cherbourg, Aug. 4-5; Atlantic cable's first message, Aug. 20; Crown assumes Government of India.
- 1859 Victor Emmanuel declares war against Austria, May 3; Battle of Montebello, May 20, Austrians defeated; Garibaldi takes Como, May 27; Battle of Magenta, Austrians defeated; Napoleon III. and Victor Emmanuel enter Milan, June 8; Lombardy annexed to Sardinia; Derby Ministry defeated, Palmerston succeeds again; Battle of Solferino, June 24, Austrians defeated; peace treaty signed at Villafranca, where Nap. III. and Empr. Franc. Jos. meet, July 11; Chinese repulse British, June 25; Harper's Ferry insurrection, Oct. 17; John Brown hanged, Dec. 2.
- 1860 Treaty of commerce between Great Britain and France signed, Jan. 23; Tuscany annexed to Sardinia, Mar. 22; Savoy and Nice ceded to France, Mar. 24; Garibaldi enters Palermo, May 27; *Great Eastern's* first trip across Atlantic, June 17-27; Prince of Wales (Edward VII.) visits Canada and the United States; French and English forces occupy Tientsin, Aug. 23; Garibaldi occupies Naples and proclaims Victor Emmanuel king of United Italy, Sept. 9; Battle of Volturno, Garibaldi defeats Neapolitans, Oct. 1; treaty of peace with China, Oct. 24; Two Sicilies annexed to Sardinia, Nov. 3; S. Carolina secedes from Union, Dec. 20; first English ironclad (*The Warrior*) launched.
- 1861 William I. king of Prussia, Jan. 2; further secession of American States—Mississippi, Jan. 9; Florida, Georgia, Alabama, Louisiana, and Texas followed between Jan. 10 and Feb. 1; Confederate States proclaimed with Jeff. Davis Pres., Feb. 4; Abraham Lincoln Pres. U.S.; Victor Emmanuel recognised as king of Italy, March 17; Confederates capture Fort Sumter, April 13; Virginia joins Confederate States, April 17; Arkansas, Tennessee, and N. Carolina secede, May 6, 8, 20; Southern ports blockade, April 19; death of Count Cavour, June 6; Great Britain and France recognise Confederate States as belligerents, June 15; Jeff. Davis elected President Confederate States for six years; death of Prince Albert, Dec. 14.



A.D.

**1862** Fight between *Merrimac* and *Monitor*, March 9; second great exhibition S. Kensington, May 1-Nov. 1; Battle of Williamsburg, May 5, Confederates victorious; *Alabama* leaves the Mersey, July 29; Garibaldi captured at Aspromonte, Aug. 29; second Battle of Bull Run, Aug. 30, Federals defeated; Battle of South Mountain, Sept. 14, Confederates defeated; cotton famine in Lancashire.

**1863** Slavery abolished in U.S. by proclamation of President Lincoln, Jan. 1; Ismail Pasha Khedive of Egypt, Jan. 18; uprising in Warsaw, Jan. 22; Prince of Wales (Edward VII.) marries Princess Alexandra of Denmark, March 10; Prince George of Denmark elected king of Greece, March 18; French in Mexico, General Forey enters city of Mexico, June 10; Vicksburg surrendered to General Grant, July 4; Battle of Gettysburg, July 1-3; Maximilian of Austria made emperor of Mexico, July 10; Battle of Chantanooga, Confederates defeated, Nov. 24.

**1864** Sir J. Lawrence Viceroy of India, Jan. 12; German ultimatum to Denmark on Schleswig-Holstein question, Jan. 16; Holstein entered by German army, Jan. 21; Prussians take Duppel, April 18; war suspended May 12, resumed June 26; peace signed Oct. 30; *Alabama* sunk off Cherbourg by *Kearsage*, June 19; Federal army enters Atlanta, Sept. 2; Lincoln re-elected for his second term, Nov.; General Sherman captures Savannah, Dec. 21; Geneva Convention originated.

**1865** Death of Cobden, April 2; surrender of General Lee to Grant, April 9; Lincoln assassinated, April 14; Jeff. Davis captured, May 10, war ends; death of Palmerston, Oct. 18; Earl Russell Premier, Oct. 19; death of Leopold I. king of Belgians, Leopold II. succeeds, Dec. 10; Lister introduces antiseptic surgery in Glasgow.

**1866** Bank of England Charter Act suspended, May 11; Fenian raids in Canada, May 31, June 7; demobilisation of Prussian army demanded by Austria, April 9; Prussians enter Saxony and Hanover, June 15; Austria declares war, June 17; Prussia and Italy do the same, June 18-20; Battle of Custoza (June 24), Austrians defeat Italians; Battle of Sadova (July 3), Austrians defeated by Prussians; Austria surrenders Venetia to France, July 5; Prussians take Frankfurt, July 16; Battle of Lissa, July 20; Italians defeated by Austrians in naval fight; Prussia and Austria sign treaty of peace, Aug. 23; peace signed between Austria and Italy, Oct. 3; Venetia annexed to Italy, Nov. 4; French evacuate Rome, Dec. 3-11.

**1867** Schleswig-Holstein annexed to Prussia, Jan. 24; ships pass through the Suez Canal; French retire from Mexico, March 16; Second Reform Bill passed, Apr. 12; Emperor Maximilian of Mexico shot, June 19; Dominion of Canada established, March 29; Garibaldi advances on Rome, Oct. 26; French enter Rome, Oct. 30; Garibaldi taken at Mentana, Nov. 3; British Abyssinian expedition.

**1868** Resignation of Lord Derby, Disraeli succeeds, Feb. 29; Magdala taken and K. Theodore of Abyssinia committed suicide, April 13; Michel III. of Servia assassinated, June 19; succeeded by Prince Milan, July 2; Isabella II. escapes from Spain, and her deposition declared, Sept. 29; provisional Government formed; Disraeli resigns, Dec. 2; Gladstone's Ministry succeeds, Dec. 9; Lord Mayo Viceroy of India.

**1869** General Grant, President U.S.; Hudson Bay Territory added to British America, April 9; Serrano becomes Regent of Spain, June 18; Irish Church disestablished, Act passed, July 26; Suez Canal formally opened, Nov. 17.

**1870** Death of Dickens, June 9; Isabella II. formally abdicates, June 25; Spanish Government propose to grant kingship to Leopold of Hohenzollern, July 4; French Government express disapproval, July 6; France declares war against Prussia, July 19; French take Saarbrück, Aug. 2; Battle of Woerth, Aug. 6, French defeated; Battle of Gravelotte, Aug. 18, French defeat; Battle of Sedan, Sept. 1, and surrender of Napoleon III. and his army, Sept. 2; 25,000 French were taken prisoners in the battle and 83,000 surrendered; Napoleon III. taken a prisoner to the castle of Wilhelmshöhe, Sept. 5; Republic proclaimed in Paris, Sept. 4;

A.D.

Empress escapes to England; Germans besiege Paris, Sept. 19; Strasburg surrenders, Sept. 28; Rome and Papal States annexed to kingdom of Italy, Oct. 23; Insurrection by revolutionaries in Paris, Oct. 31; Germany proclaimed an united empire, Dec. 10; Duke of Aosta elected king of Spain, Nov. 16; Marshal Prim assassinated, Dec. 28, Irish Land Act passed, Aug. 1; smokeless powder invented.

**1871** William I. of Prussia proclaimed emperor of Germany at Versailles, Jan. 18; Paris capitulates, Jan. 28; National Assembly at Bordeaux, Feb. 12; Thiers First Minister; Peace preliminaries confirmed, Mar. 1; National Assembly at Versailles, Mar. 20; Commune proclaimed, Mar. 28; formal treaty of peace concluded, May 21; Communards destroy Tuileries, Hôtel de Ville, Vendôme Column, and set fire to Louvre, Palais Royal, and other Parisian public buildings, May 24; Archbishop of Paris shot, May 24; Government troops enter Paris and crush Communards, May 28; Thiers made President of the Republic, Aug. 31; Purchase system abolished in British army, July 20; Mont Cenis Tunnel opened, Sept. 17; Great Fire at Chicago, Oct. 8-10; Tichborne trial from May 11 to March 6, 1872, claimant non-suited; Trade Unions are legalised.

**1872** The Ballot is introduced in England; Earl Mayo assassinated, Feb. 8; Lord Northbrook succeeds him as Viceroy of India, Feb. 22; death of Mazzini, Mar. 10; fresh commercial treaty between England and France, Nov. 5; Alabama Convention at Geneva on Sept. 14 award damages over £3,000,000 to U.S.A.

**1873** Death of Napoleon III., Jan. 9; General Grant President U.S. (2nd term); death of Dr. Livingstone, May 4; Marshal MacMahon succeeds Thiers as President of the French Republic, May 24; Ashantee War; Shah visits England, June 18-July 5; Alabama claims paid, Sept. 9; Marshal Bazaine tried and sentenced; Schöles invents Remington type-writing machine.

**1874** British capture Coomassie, Feb. 4; Gladstone Ministry resigns, Feb. 17; Disraeli succeeds, Feb. 18; Tichborne claimant sentenced to 14 years' imprisonment for perjury, after a trial lasting 188 days, Feb. 28; Czar Alexander II. visits England, May 13-21; Marshal Bazaine escapes from prison, Aug. 9; Alfonso (son of Isabella II.) declared king of Spain.

**1875** Gladstone retires; Prince of Wales (King Edward) left England for Indian tour, Oct. 11; England purchased Khedive's shares in the Suez Canal, Nov. 26.

**1876** Prince of Wales in Calcutta, Jan. 1; Philadelphia Exhibition, May-Oct.; Bulgarian massacres; Sultan Abdul Aziz deposed, May 29; Disraeli becomes Earl of Beaconsfield, Aug. 16.

**1877** The Queen declared Empress of India, Jan. 1; Col. Gordon made Governor of the Sudan, Feb. 12; Diaz formally proclaimed President of Mexico, Feb. 18; Transvaal annexed to British Empire, April 12; Russia declares war against Turkey, April 24; Roumania declared independent, May 21; Russians repulsed at Plevna, July 30; fall of Plevna, Dec. 10.

**1878** Death of King Victor Emmanuel, Jan. 9; Russians take Adrianople, Jan. 20; Leo XIII. elected Pope; Cleopatra's Needle arrives in London, Jan. 21; Paris Exhibition, May to Oct.; Berlin Congress; Cyprus ceded to England; *Princess Alice* sunk in collision in the Thames, 700 lives lost, Sept. 3; war with Afghanistan; death of Princess Alice, Dec. 4; electric lighting is introduced; David Hughes discovers microphone.

**1879** Gen. Roberts occupies Kandahar, Jan. 8; war in Zululand, Isandhlwana and Rorke's Drift, Jan. 22; Alexander of Battenberg elected prince of Bulgaria, April 29; Prince Louis Napoleon killed in Zululand, June 1; Khedive Ismail Pasha deposed, Tewfik succeeds, June 26; death of Lord Lawrence, June 27; Battle of Ulundi, July 4; Cetewayo captured, Aug. 28; Cavagnari and his escort massacred by Afghans, Sept. 3; Gen. Roberts occupies Cabul, Oct. 12; Gladstone's Midlothian campaign, Nov.; Tay Bridge destroyed, Dec. 28.

**1880** Beaconsfield Ministry succeeded by second

- A.D.  
Gladstone Ministry, April 23; Garfield President U.S., Nov. 2; Parnell arrested for conspiracy, Nov. 3; Transvaal declared a Republic, Dec. 16.
- 1881 Parnell conspiracy trial ends, Jan. 25; jury disagree; British defeat at Lang's Neck, Jan. 28; Battle of Majuba Hill, Feb. 27; assassination of Czar Alexander II., Mar. 13; Peace arranged with Boers, Mar. 22; death of Lord Beaconsfield, April 19; President Garfield shot, July 2, died Sept. 19; Transvaal Convention signed, reserving British suzerainty, Aug. 3.
- 1882 Arabi Pasha Egyptian War Minister, Feb. 2; Servia proclaimed a kingdom, March 6; assassination of Lord F. Cavendish and Mr. Burke in Phoenix Park, Dublin, May 6; Alexandria bombarded, July 11; British military expedition to Egypt under command of Sir G. Wolsley; Battle of Tel-el-Kebir, Sept. 13; Cairo occupied by British troops, Sept. 14; Arabi Pasha made prisoner, and (Dec.) banished from Egypt.
- 1883 Phoenix Park murderers arrested on evidence of James Carey, Feb.; Royal Coll. of Music opened, May 7; Fisheries Exhibition in London, May-Oct.; trial and condemnation of Phoenix Park murderers (April), five of whom were hanged; Lord Lansdowne, Gov.-Genl. of Canada; Capt. Webb drowned at Niagara, July 24; Carey the informer murdered, July 29; Mahdi's forces destroy Hicks Pasha's army, Nov. 3; tribute of £38,000 presented to Parnell in Dublin.
- 1884 Gen. Gordon starts for Khartoum, Jan. 18; death of Odetwayo, Feb. 8; death of Duke of Albany, Mar. 8; Health Exhibition in London, May-Oct.; Lord Wolsley heads an expedition to Khartoum to rescue Gordon; the Fabian Society founded.
- 1885 Battle of Abu Klea, Col. Burnaby killed, Jan. 17; Khartoum captured, Gordon slain, Jan. 26; Inventions Exhibition in London, May-Oct.; Gladstone resigns, June 12, Lord Salisbury succeeds; King Theebaw of Burma surrenders to British, Nov.
- 1886 Upper Burma annexed, Jan. 1; Salisbury Government defeated; Gladstone again Premier, Feb.-Aug.; Indian and Colonial Exhibition in London, May-Oct.; Home Rule Bill defeated in Commons, June 8; King Ludwig of Bavaria commits suicide, June 15; General Election, Conservative majority, Lord Salisbury again Premier.
- 1887 H. M. Stanley sets out on Emin Pasha relief expedition, Jan.; Queen Victoria's Jubilee celebration, June 21.
- 1888 Lord Dufferin resigns Viceroyalty of India; Lord Lansdowne succeeds, Feb. 8; death of Emperor William I., March 9; death of Emperor Frederick, June 15; William II. succeeds; Parnell Commission opened, Oct. 22.
- 1889 Tragic death of Prince Rudolf of Austria, Jan. 30; Milan of Serbia abdicates, March 6; Paris Exhibition, May-Oct.; Shah visits England, July; Princess Louise of Wales and Duke of Fife married, July 27; great London dock strike, Aug. 15-Sept. 16; Republic proclaimed in Brazil, Dom Pedro deposed; Parnell Commission concludes sittings, Nov. 23 (129th day); disappearance of Piggott after confessing forgery; death of Jeff. Davis, Dec. 6.
- 1890 Opening of Forth Bridge, March 4; Bismarck resigns, March 17, Caprivi succeeds; H. M. Stanley returns from Emin Pasha expedition, April 26; Heligoland ceded to Germany, Aug. 9.
- 1891 German Emperor and Empress visit England, July 4; death of Parnell, Oct. 6; United States of Brazil formed; Education Act passed, giving free education in England.
- 1892 Death of Duke of Clarence, Jan. 14; death of Cardinal Manning, Jan. 14; death of Spurgeon, Jan. 31; hurricane in Mauritius, April 29; Parliament dissolved, June 28; General Election, Salisbury defeated; fresh Gladstone administration.
- 1893 Home Rule Bill introduced, Feb. 13; Home Rule Bill, second reading, April 21; Chicago World's Fair, May-Oct.; Nansen's Arctic expedition starts, June 24; Duke of York marries Princess Mary of Teck, July 6; Duke of Edinburgh becomes Duke of Coburg, Aug. 22; Home Rule Bill passes third reading in Com-
- A.D.  
mons, Sept. 1; Lords reject Home Rule Bill, Sept. 8.
- 1894 Opening of Manchester Ship Canal, Jan. 1; Gladstone resigns, March 3, Lord Rosebery succeeds; death of Kossuth, March 20; President Carnot assassinated, June 24; opening of Tower Bridge, June 30; Japan declares war against China, Aug. 1; death of Czar Alexander III., Nicholas II. succeeds, Nov. 1; Dreyfus (wrongfully) convicted of treason, Dec. 22.
- 1895 Faure President French Republic, Jan. 17; Mr. Gully elected Speaker, April 10; opening of Kiel canal, June 21; Rosebery resigns, June 22, Salisbury Ministry succeeds; Parliament dissolved, July 12; Lord Wolsley succeeds Duke of Cambridge as Commander-in-Chief, Nov. 1; Ashanti expedition, Nov.; Jameson raid, Dec. 29.
- 1896 Jameson raiders defeated by Boers, Jan. 1; Cecil Rhodes resigns Cape Colony Premier, Jan. 6; British forces occupy Kumassi, Jan. 18; Shah of Persia assassinated, May 1; conviction of Jameson raiders, July 28; McKinley President of U.S.A., Nov. 3; Röntgen discovers X-rays.
- 1897 Turkey declares war against Greece, April 17; Sir A. Milner appointed High Commissioner in South Africa, May; Queen Victoria's Diamond Jubilee, June 22.
- 1898 Maine, U.S. warship, blown up in Havana harbour; Port Arthur ceded to Russia, March 23; U.S. goes to war with Spain, April 21; Dewey destroys Spanish fleet at Manila, May 1; Death of Gladstone, 19; Peace between U.S. and Spain, Aug.; Battle of Omdurman, decisive defeat of the Mahdists, Sept. 2; Empress of Austria assassinated, 10;
- 1899 Hague Peace Conference, May-July; Boer war begins, Oct. 10; Battle of Elandslaagte, Oct. 21; British defeat at Nicholson's Nek, Oct. 30; Battle of Modder River, Nov. 28; Buller's forces defeated at Colenso, Dec. 15; Lord Roberts appointed Commander-in-Chief in South Africa and Lord Kitchener Chief of Staff, Dec. 16; retrial, condemnation and pardon of Capt. Dreyfus; Marconi experiments in wireless telegraphy.
- 1900 Boers attack Ladysmith, Jan. 6; Battle of Spion Kop, Buller repulsed with severe losses, Jan. 24; Lord Roberts begins advance from Modder River, Feb. 11; relief of Kimberley, Feb. 15; surrender of Cronje, Feb. 27; Ladysmith relieved, Feb. 28; Roberts enters Bloemfontein, Mar. 13; Paris Exhibition opened, May-Oct.; Mafeking relieved, May 17; Boxer outbreak in China, May; annexation of Orange Free State, May 26; Roberts occupies Johannesburg, May 31; King Humbert assassinated, July 29; Parliament dissolved, Sept. 25; General Election, Unionist majority; Lord Roberts Commander-in-Chief, Sept.; proclamation of annexation of Transvaal, Oct. 25; Australasia Commonwealth proclaimed, Dec. 30.
- 1901 Queen Victoria died, Jan. 22; proclamation of King Edward VII., Jan. 24; Empress Frederick of Germany d. Aug. 5; President McKinley assassinated, Sept. 14.
- 1902 Treaty concluded between Britain and Japan, Jan. 30; death of Cecil Rhodes, Mar. 26; St. Pierre destroyed by eruption of Mont Pelée, 38,000 lives lost, May 8; accession of King Alfonso of Spain, May 17; surrender of Boer leaders at Pretoria, war ended, May 31; Peace rejoicings through the kingdom, June 8; Lord Salisbury resigned, July 11; Mr. A. J. Balfour became Premier, July 12; coronation of King Edward VII., Aug. 9.
- 1903 Coronation Durbar at Delhi, Jan. 9; wireless telegraphic messages passed between King Edward and President Roosevelt, Jan. 20; King Edward left England on a visit to Portugal, Mar. 31; disaster to British Somaliland expedition, 180 men and 10 officers killed, April 17; Royal Family of Serbia assassinated, June 11; Pope Leo XIII. d., July 20; Cardinal Sarto elected Pope Pius X., Aug. 4; Lord Salisbury d., Aug. 22; Ministerial crisis; Mr. Chamberlain and other members of the Government resign over the Protectionist proposals, Sept. 17; first controlled flight in heavier-than-air machine—Orville and Wilbur Wright at Kitty Hawk, U.S.A., Dec. 17.



A.D.

- 1904** Russo-Japanese War commenced, FEB. 8; Great Japanese victory on the Yalu River, MAY 1; excursion steamer "General Slocum" caught fire at New York, 1,021 lives lost, JUNE 15; British force reaches Lhasa, AUG. 3; Russian Port Arthur fleet defeated by the Japs., 10; Vladivostok squadron defeated, 14; treaty with Tibet signed at Lhasa, SEPT. 7; *Discovery* returned to Spithead from the Antarctic expedition, 10; Russian forces defeated in four days' fight and driven back into Mukden, OCT. 10.
- 1905** Port Arthur forts transferred to the Japs., JAN. 3; "Red Sunday" massacre at St. Petersburg, 22; Grand Duke Sergius of Russia assassinated, FEB. 17; King Edward visited President Loubet in Paris, APR. 6; Togo defeated remnant of Russian fleet, and captured Admiral Rozhdestvensky in battle of Sea of Japan, MAY 27; peace signed at Portsmouth (U.S.A.) between Russia and Japan, SEPT. 5.
- 1906** Disturbances in Russia, over 1,000 persons shot dead in Moscow alone, JAN. 2; San Francisco destroyed by earthquake and fire, APR. 18; Simplon tunnel opened for railway traffic, JUNE 1.
- 1907** Earthquake at Kingston, Jamaica, great loss of life and property, JAN. 14; Mr. Wm. Whiteley murdered by Horace G. Rayner, 24; wreck of the s.s. *Berlin* off the Hook of Holland, with great loss of life; the King opens new Central Criminal Court, Old Bailey, 27; discovery of theft of State regalia at Dublin Castle, JULY 8; new docks at Cardiff opened, by the King and Queen, 17; Deceased Wife's Sister Bill passed the Lords, AUG. 26; accident to bridge over St. Lawrence, 70 killed, 31.
- 1908** King and Crown Prince of Portugal assassinated while driving through Lisbon, APR. 3; Rotherhithe Tunnel opened, JUNE 12; terrible earthquake, destroying a great part of Calabria and Sicily, 156,500 lives lost, DEC. 28.
- 1909** Old age pensions came into operation, JAN. 1; despatch published claiming the discovery of the North Pole by Commander Peary, APR. 6; Blériot made first cross-Channel flight, 37 min., JULY 25.
- 1910** King Edward d., MAY 6; King George V. proclaimed, 9; funeral of King Edward, 20; revolution in Lisbon, fall of the monarchy, proclamation of a Republic, OCT. 3; colliery disaster at Pretoria Pit, Bolton, 344 lives lost, DEC. 21.
- 1911** Coronation of King George V. and Queen Mary, JUNE 22; Leonardo da Vinci's "La Gioconda" stolen from Louvre, AUG. 22; T. W. Burgess swam the Channel, SEPT. 6; Italy declared war against Turkey, OCT. 6; Capt. Amundsen reaches South Pole, DEC. 14.
- 1912** Republic established in China, FEB. 12; *Titanic* disaster off Cape Race, 1,517 lives lost, APR. 14-15; first Alexandra Day in London, over £12,000 realised for charities, JUNE 26; dedication of Rhodes memorial, Rhodesia, by Lord Grey, JULY 5; war declared against Turkey by Montenegro, OCT. 8.
- 1913** Home Rule Bill passed H. of Commons, majority 110, JAN. 17; war in Balkans resumed, FEB. 3; news received of Antarctic tragedy, involving deaths of Capt. Scott and Oates, Evans, Wilson and Bowers, in March, 1912, from exposure and privation, 10; King George of Greece assassinated, MAR. 18; recovery of Leonardo da Vinci's "Mona Lisa."
- 1914** s.s. *Empress of Ireland* sunk in St. Lawrence after collision with *Stortstadt*, 1,014 lives lost, MAY 29; Archduke Francis Ferdinand and his consort assassinated at Sarajevo, JUNE 28; Austria-Hungary declares war against Serbia, JULY 28; Germany declares war against Russia, AUG. 1; Germany declares war against France, 3; Great Britain declares war against Germany, 4; Great Britain declares war on Austria-Hungary, 12; first British Expeditionary Force lands in France, 16; Japan declares war on Germany, 23; Germans capture Namur, 24; Germans destroy Louvain, 25; Ostend occupied by British marines, Germans take Amiens, SEPT. 1; great defeat of Austrians at Lemberg, 2; Dinant sacked, 3;

A.D.

- Germans take Rheims, 5; Allies begin to drive the Germans back from the north-east of Paris. British army crosses the Marne, 9; Louvain retaken by Belgians, 11; Germans in retreat. Verdun relieved, 15; three British cruisers (*Aboukir*, *Hogue* and *Cressy*) sunk. German cruiser *Emden* shells Madras, 22; Malines bombarded for the third time, cathedral destroyed, 26. Seat of the Belgian Government removed to Ostend, OCT. 7; Germans impose a war levy of £20,000,000 on Antwerp, 10; Franco-British forces occupy Ypres. German forces enter Ostend. Lille taken by the Allies. German cruiser *Emden* reappears in the roadstead of Penang, flying the Japanese flag, and succeeds in torpedoing two warships—a Russian cruiser and a French destroyer, 30; naval battle between German and British ships off the coast of Chile, *Good Hope*, *Monmouth*, and *Glasgow* cruisers engaged the *Scharnhorst*, *Gneisenau*, *Leipzig*, and *Dresden* in stormy weather, the action lasting an hour. The *Good Hope* and the *Monmouth* caught fire and sank; the *Glasgow* was not greatly damaged, NOV. 1; Great Britain declares war against Turkey, 5; Admiralty makes official announcement of the capture and destruction of the German raiding cruiser *Emden*, at Keeling (Cocos) Islands, by H.M.A.S. *Sydney*; H.M.S. *Bulwark* blew up and entirely disappeared, nearly 800 lives being lost; only 12 saved, 26. Russian army of Galicia wins a signal victory; 25,000 Austrians have been taken prisoners within the past fortnight, 29; De Wet is captured by the S. African forces, DEC. 1; four German warships—the raiding cruisers *Scharnhorst*, *Gneisenau*, *Nürnberg*, and *Leipzig*—sunk off the Falkland Islands by a British squadron commanded by Sir F. Sturdee, 8; Germans make another attempt to "smash through" the Allies' lines near Ypres, but without success, 11; British submarine B 11 dives under five rows of mines in the Dardanelles and torpedoes the Turkish warship *Messudiyeh*, 13; Serbians recapture Belgrade, 14; British Protectorate over Egypt proclaimed, 17.
- 1915** H.M.S. *Formidable* sunk, JAN. 1; complete defeat overtakes the Turkish army in the Caucasus, 5; Turks made an attempt to cross the Suez Canal at Toussoum, near Ismailia, FEB. 2; 32 British and French warships attack the forts at the mouth of the Dardanelles, 19; Great Britain declares the blockade of Germany, MAR. 1; an action is fought between the combined British and French squadrons against the great fortress of the Narrows in the Dardanelles. Four of the forts were silenced, but three vessels of the Allied fleets—the *Irresistible* and the *Ocean*, of the British fleet, and the *Bowet* of the French squadron—were sunk by mines, 18; British troops gain a notable success near Ypres, conquering Hill 60, APR. 19; Germans first use gas on Western front, 23; First landing of British, Australian, New Zealand and French troops on Gallipoli Peninsula, 24; the *Leon Gambetta*, French cruiser, torpedoed by an Austrian submarine, nearly 700 lives lost, 27; Cunard liner *Lusitania* torpedoed by a German submarine off the Old Head of Kinsale. Nearly 1,500 lives lost, MAY 7; Italy declares war on Austria, 22; H.M.S. *Triumph* torpedoed off the Gallipoli Peninsula, 26; Italian army crosses the Isonzo. Austrians defeated, JUNE 2; Zeppelin destroyed by R. A. J. Warneford, 7; conquest of German S.W. Africa, JULY 9; fall of Warsaw, AUG. 4; British troops win a notable success north and west of Hooge. Second landing of allied troops at Suvla Bay. Italy declares war on Turkey, 20; fall of Brest Litovsk, 25; Vilna falls, SEPT. 18; Turks defeated at Kut-el-Amara, 28; Bulgarians enter Serbia, OCT. 11; Great Britain declares war against Bulgaria, 14; fall of Monastir, DEC. 2; General Townshend reaches Kut-el-Amara, 3; French and British troops occupy Salonika, 13; British forces withdraw from Anzac and Suvla, 19.
- 1916** Evacuation of Gallipoli completed, JAN. 8; Germany declares war on Portugal, MAR. 11; British defeated on the Tigris, APR. 9; capture of Trebizond, 17; fall of Kut, 30; First Day-



A.D.

light Saving Bill passed. White Star steamer *Cymric* sunk, MAY 8; Battle off Jutland, 31; Lord Kitchener drowned, JUNE 5; British offensive begun in the West, JULY 1; heavy battles on the Thiepval Plateau, 5; second stage of great British advance on the Somme begins, 7; Delville Wood taken by the British, 15; British capture Pozieres, 25; Italians capture Gorizia, AUG. 10; Russians take Stanislaw, 11; great defeat of Prussian Guards at Guillemont, 25; Rumania declares war against Austria and Germany, 27; Tanks first used by British, SEPT. 15; Allies take Thiepval and Combles, 26; P. & O. liner *Arabia* sunk, NOV. 8; Monastir captured by the Allies, 19; British hospital ship *Britannic* sunk, 21.

1917 H.M.S. *Cornwallis* sunk, JAN. 7; H.M.S. *Laurentic* sunk, 29; British capture Grandcourt, FEB. 7; fall of Kut-el-Amara, Sanna-I-Yat evacuated and Turks in retreat; over 1,700 prisoners taken, 24; British troops occupy Baghdad, MAR. 11; Revolution in Russia, 12; St. Pierre Vaast Wood occupied by British, 16; British take Bapaume, 17; British take Peronne, Neesle and Chaumes, 18; British hospital ship *Asturia* torpedoed, 21; General Murray gains a complete victory over 20,000 Turks at Gaza, capturing 900 prisoners, 27; Cuba declared war against Germany, APR. 7; Vimy Ridge taken by Canadians, 10; General Maud annihilates 18th Turkish Army Corps, taking 1,217 prisoners, 18; General Foch appointed Chief of Staff of the French Army, MAY 15; British victory in the Ypres salient, Messines Ridge taken, JUNE 7; first American contingents arrive in France, 26; Gen. Allenby assumes Palestine command, 29; Austrian front west of Stanislaw broken, JULY 8; H.M.S. *Vanguard* blown up, over 700 lives lost, 9; Russian retreat begins, 16; British capture Hill 70, AUG. 15; Canadians enter Lens, 21; Russia proclaimed a Republic, SEPT. 15; British victory on Passchendaele Ridge, OCT. 4; French victory on the Aisne, 23; Italians in retreat, 24; Russian Revolution, 27; Passchendaele won by Canadians, NOV. 6; Hindenburg Lines smashed on a 10-mile front, 20; United States declares war with Austria-Hungary, DEC. 7; fall of Jerusalem, 9; Russo-German armistice signed, 15; German attacks at Cambrai, aided by liquid fire, 31.

1918 Naval engagement at Imbros; *Goeben* and *Breslau* emerge from the Straits and sink H.M.S. *Raglan* and a small monitor; *Breslau* sunk and *Goeben* beached, JAN. 20; Treaty of Brest Litovsk signed, MAR. 3; Rumania agrees to enemy peace terms, 4; massed German onslaught at Vimy Ridge, 28; General Foch appointed Generalissimo of the Allied armies in France, APR. 14; British naval raid on Zeebrugge and Ostend, 22; peace signed between Rumania and the Central Powers, MAY 7; H.M.S. *Vindictive*, laden with concrete, sunk in Ostend harbour, 9; Germans bomb Paris, 30; Australians and Americans captured Hamel, JULY 4; British press forward, recapturing Albert, taking 5,000 prisoners, AUG. 22; Australians capture Peronne, SEPT. 1; French capture St. Quentin, OCT. 3; Germans retreat on Lille, 4; great Italian advance, 29; Turkey surrenders unconditionally, 30; British enter Valenciennes, NOV. 2; Austria accepts imposed terms, and makes full surrender, 3; American troops enter Sedan, 6; Popular Government in Poland (Lublin), 7; revolutionary movement spreads over Germany, 8; Kaiser abdicates and escapes to Holland, 9; armistice signed by German plenipotentiaries; firing stopped on all fronts; great jubilation throughout Britain and allied countries, 11; King Nicholas of Montenegro deposed; Montenegro unites with Serbia under King Peter, 29.

1919 Peace Conference in Paris, FEB. 3; first direct air-flight across the Atlantic by Sir J. Alcock and Sir A. W. Brown, JUNE 15; interned German fleet scuttled at Scapa Flow, 19; Treaty of Peace with Germany signed at Versailles, 28.

1920 Peace Treaty ratified in Paris and League of Nations came formally into existence, JAN. 13;

A.D.

Prohibition came into force in U.S., 17; Joan of Arc canonised at St. Peter's at Rome, MAY 16; Protocol containing the Allies' disarmament terms signed by Germany at Spa, JULY 9; Peace Treaty with Turkey signed at Sevres, AUG. 10; Women graduates admitted for first time to degrees in Oxford University, OCT. 14; Cenotaph unveiled by the King in Whitehall; an Unknown Warrior buried in Westminster Abbey, NOV. 11.

1921 Sinn Fein outrages in Dublin, FEB. 7; Riots in Egypt, MAY 23; Battle in Dublin, Customs House burnt down, 25; Official end of Great War, 31; Heligoland fortresses demolished, OCT. 14.

1922 Dublin Castle handed over to Provisional Government, JAN. 16; Four-power Pacific Treaty ratified by U.S. Senate, MAR. 24; P. & O. steamer *Egypt* sunk off Ushant, MAY 20; Heavy fighting in Dublin, the Four Courts blown up, JULY 2; King opens new L.C.C. County Hall, 17; Defeat of Greek armies, AUG.-SEPT.; Great find of treasures in tomb of King Tutankhamen near Luxor in Egypt by Lord Carnarvon, NOV. 29.

1923 French troops despatched to Ruhr, JAN. 8; Treaty of Lausanne, JULY 24; Great earthquake in Japan, Tokio and Yokohama in ruins, SEPT. 1; Gordon-Bennet balloon race ends disastrously, 5 lives and 3 balloons lost, 24; Rhine Republic proclaimed, Bavaria defies the Reich, OCT. 20; Turkish Republic proclaimed, Kemal Pasha first president, 29; Luxor Tomb re-opened, NOV. 23.

1924 Lenin died, JAN. 21; King George II of Greece deposed and a Republic declared, MAR. 25; Wembley Exhibition opened by King, APR. 23; Dawes Scheme accepted by London Conference, Ruhr evacuation agreed to, AUG. 16.

1925 Madame Tussaud's burnt down, MAR. 18; Hindenburg elected German President, 26; U.S. airship *Shenandoah* destroyed, 18 killed, SEPT. 3; Treaty of Locarno signed in London, DEC. 1; Summer Time Act made permanent.

1926 Ibn Saud proclaimed king of the Hedjaz in Yeddah, JAN. 11; Evacuation of Cologne by British troops, 31; Shakespeare Memorial Theatre burned, MAR. 6; General Strike.

1927 Beam service to Australia starts, APR. 8; New Zealand offers £1,000,000 towards cost of Singapore base, 23; Canberra, the new capital of Australian Commonwealth, inaugurated by Duke of York, MAY 9; Lindbergh flies Atlantic alone, 21; Temme swims Channel in 14 hrs 29 min., AUG. 5; South African flag agreement, OCT. 24.

1928 Hinkler flies London to Australia in 16 days, FEB. 22; Capt. Wilkins flies across Arctic Regions, no land seen, APR. 16; Earthquake in Greece, Corinth destroyed, 23; Capt. Kingsford-Smith flies the Pacific, JUNE 9; General Nobile rescued by aeroplane from Arctic one month after disaster, 24; Kellogg Peace Pact accepted by Gt. Britain and Colonies, JULY 18; German airship with 60 persons crosses Atlantic, OCT. 15; Women in Britain enfranchised.

1929 King Amanullah of Afghanistan abdicates, JAN. 14; Vesuvius in eruption, JUNE 5; Graf Zeppelin flies from New York to Friedrichshaven in 56½ hours, AUG. 10; Graf Zeppelin at Los Angeles, having crossed Pacific from Japan in 68 hours, 28; Graf Zeppelin reaches New York, having flown round the world with three stops in 21 days 7 hours. Actual flying time 12 days, 29; Hatry Group Crash, SEPT. 20; New Tilbury Dock opened, 26; Prince of Wales' dinner to 321 V.C.s at House of Lords, NOV. 9; Commander Byrd flies over South Pole, 30.

1930 End of Boards of Guardians, APR. 1; Sir H. Seagrave killed on Lake Windermere, JUNE 13; Maltese Constitution suspended; *Enterprise* beats *Shamrock* in 4 races during September; R 101 destroyed in France on first flight to India, 48 lives lost, OCT. 5.

1931 New Road Traffic Act comes into force, JAN. 1; Opening of new Zoological Gardens at Whipsnade, MAY 23; Great floods in China, 16; provinces devastated, 4,000,000 homes

A.D.

destroyed and 23,000,000 people affected, AUG. 5.

1932 Sydney Harbour Bridge opened, MAR. 19; Consecration of Buckfast Abbey by Cardinal Bourne, AUG. 25.

1933 Hitler appointed Chancellor by Hindenburg, JAN. 30, and step by step gains supreme control; German Reichstag set on fire by incendiaries, FEB. 27; The Soviet Balloon "Stratostat S.S.S.R." ascended 19,000 metres, SEPT. 30; The *Discovery* left England on an Antarctic expedition, OCT. 21.

1934 An appalling earthquake occurred in N. India, resulting in a loss of 7,252 lives, JAN. 15; The first vertical bridge in England opened by the Duke of York at Middlesbrough, FEB. 28; Herr Dolfuss, the Austrian Chancellor, assassinated by Austrian Nazis, JULY 25; Death of Hindenburg, AUG. 2; Hitler becomes Dictator.

1935 A severe earthquake occurred in Formosa, Japan, 3,185 killed and 10,630 injured, APR. 21; Silver Jubilee of the King's Accession celebrated with great splendour and rejoicing, MAY 6; 30,000 lives lost in earthquake at Quetta, British Baluchistan, 31; British offer of a piece of Somaliland Territory, to avert Abyssinian War, refused by Italy, JUNE 27; Queen Astrid of the Belgians killed in a motoring accident near Lucerne, Switzerland, AUG. 29; War commences between Italy and Abyssinia, OCT. 3.

1936 Death of King George V. at Sandringham, aged 70, accession of King Edward VIII, JAN. 20; Repudiation of the Locarno Treaty by Germany, MAR. 7; The Emperor of Abyssinia and his family fled from Addis Ababa, MAY 2; Italian troops occupy Addis Ababa, 5; Civil War breaks out in Spain, JULY 18; Foundation stone of Guildford Cathedral laid by the Archbishop of Canterbury, 22; Crystal Palace at Penze, near Sydenham, destroyed by fire, NOV. 30; King Edward VIII abdicates after a reign of 325 days, DEC. 10; The Duke of York succeeds his brother as King George VI, 12.

1937 King George VI and Queen Elizabeth crowned in Westminster Abbey with traditional ceremony and pageantry, MAY 12; Salaries of M.P.s raised from £400 to £600 p.a., JUNE 22; U.S.A. retained the America's Cup after beating the English challenger by 4 races to nil, AUG. 5.

1938 Singapore Naval Base opened, FEB. 14; Austria annexed by Germany, MAR. 12; World Speed record of 126 m.p.h. by L.N.E.R. steam locomotive *Mallard*, JULY 3; The Queen Mary gained the "Blue Riband" of the Atlantic by making a record West-to-East crossing in 3 days 20 hrs. 42 mins., AUG. 14; the largest liner, *Queen Elizabeth*, launched at Clydebank by H.M. the Queen, SEPT. 27; British Navy mobilised, 28; Munich Agreement between Chamberlain, Daladier, Hitler and Mussolini, 29.

1939

February 27 Great Britain recognises General Franco's Government.

March 16 Bohemia and Moravia annexed by Hitler and proclaimed a German Protectorate; 17 Mr. Chamberlain warns Germany against domination by force in that Great Britain will resist to the utmost limit of her power; 21 Memel ceded to Germany by Lithuania; 23 Anti-Polish press campaign begun by Germany.

April 1 Spanish War ends; 7 Italy seizes Albania; 14 First British talks with Russia; 27 Consecration introduced in Great Britain; 28 Hitler denounces Anglo-German Naval agreement and the Polish Non-Aggression Treaty.

May 12 Great Britain signs defensive agreement with Turkey; 22 Italy and Germany sign pact; 13 Mr. Strang arrives in Moscow to assist Anglo-Russian negotiations; 23 France and Turkey sign defensive agreement; 25 Anglo-Polish treaty signed in London.

July 10 Mr. Chamberlain re-affirmed British pledge to Poland.

August 18 Intensive German press campaign against Poland; 23 German-Soviet Pact signed

A.D.

by Von Ribbentrop; 25 Japan breaks away from the Anti-Comintern Pact; 28 Holland mobilises; 31 British fleet mobilised.

September 1 Poland invaded by German forces; Great Britain and France mobilise; 2 Compulsory military service for all men aged 18 to 41; 3 War declared (11 a.m.) between England and Germany; France at war with Germany as from 5 p.m.; 4 British liner *Athenia* sunk by submarine; R.A.F. raid the Kiel Canal entrance and bomb German warships; 5 Germans advance into Silesia and the Polish Corridor; 6 First enemy air raid on Britain; Allied war planes bomb Saar objectives; 7 Polish garrison at Westerplatte surrenders; 8 Russia mobilises; 10 Fighting on Western Front intensified; Russian troops on Polish border; 11 British troops on French soil; 12 Warsaw fights back; 14 Poland's only seaport falls; 15 Germans repulsed on Western Front; 17 Polish resistance collapsed; Russian troops crossed the Polish frontier along its entire length; Russian and German troops meet near Brest Litovsk; H.M.S. *Courageous* sunk with a loss of 515 lives; 27 Capitulation of Warsaw; 29 Nazi-Soviet pact signed in Moscow approving of the partitioning of Poland; R.A.F. units attacked ships of the German Navy in the Heligoland Bight.

October 3 Japanese losses of 18,000 against Russia on the Manchukuo and Outer Mongolian border; 4 British steamer *Clement* sunk in South Atlantic by an armed raider; 14 *Royal Oak* sunk with a loss of 810 lives; 16 German bombers raid Rosyth and the Firth of Forth; 17 H.M.S. *Iron Duke* attacked and slightly damaged by an air raid on Scapa Flow; 21 Four German planes shot down during an unsuccessful attack on a North Sea Convoy; 31 German heavy guns in action on the Western Front.

November 8 Hitler violently attacks Britain and orders Goering to prepare for a five years' war; Bomb explosion occurred in the Bürgerbräukeller at Munich after Hitler's speech, as a result of which 9 persons lost their lives; 10 Russo-Finnish negotiations hitch; 13 Enemy aircraft reached the outskirts of Paris; 18 Dutch ship *Simon Bolivar* sunk by German mine with a loss of 130 lives; Germans using magnetic mines; 23 British armed merchant cruiser *Rawalpindi* sunk; 25 Polish liner *Pilsudski* sunk; 29 Diplomatic relations between Russia and Finland severed; 30 Finland attacked by Russia on land, sea, and air; Helsinki, the capital, bombed.

December 1 Finns fighting back; A number of Russian aircraft and tanks destroyed; Air raids on Helsinki; 11 Italy leaves the League of Nations; 14 The rejection by Russia of the League of Nations' offer of mediation in the Russo-Finnish war; Russia expelled from the League of Nations; 13 *Admiral Graf Spee* scuttles herself in the entrance of Montevideo harbour; 19 German liner *Columbus* of 32,000 tons scuttled; 27 Russian attacks in Finland fail; 31 Finnish troops secure a big victory over the Russians near Lake Kianta, destroying a whole division.

1940

January 16 Submarines *Seahorse*, *Undine* and *Starfish* lost; 23 H.M.S. *Ezmouth* lost.

February 14 Finnish advanced posts captured by Russians; 16 299 British prisoners taken off the German Naval Auxiliary *Altmark*; 28 Finns lose the island fortress of Koivisto; Finns retreat from Petsamo.

March 1 Russian troops enter Vipuri suburbs; 12 British ships to be fitted with a protective device against magnetic mines; Finland concludes a peace treaty whereby she cedes to Russia the Karelian Isthmus, the town of Vipuri and a military base on Hangö Peninsula.

April 9 Invasion of Denmark and Norway by Germany; 10 German cruisers *Blücher* and *Karlsruhe* sunk; 13 Seven German destroyers destroyed at Narvik; 15 British troops arrive in Norway; 19 British soldiers landed in the Faeroes; 23 Fighting in Norway near Trondheim.



A.D.

**May 2** British troops withdrawn from Norway; 10 Holland, Belgium and Luxembourg invaded by vast enemy forces; Parachute troops landed near Rotterdam; British troops cross the Belgian border; British troops land in Iceland; Rotterdam bombed; 11 National Government formed under Mr. Churchill; 13 Queen Wilhelmina arrived in London; 14 Rotterdam captured; Holland ceased fighting; Allied troops landed near Narvik; 16 Heavy fighting near Brussels; 17 Belgian Government moved to Ostend; 24 Enemy forces enter Boulogne; 28 Belgian army capitulated on the order of King Leopold; British forces to be withdrawn from Flanders; Narvik captured by Allied forces; 29 Ostend, Ypres, Lille and other Belgian and French towns lost to the Germans; 30 Allied troops commence evacuation.

**June 1** Bulk of the B.E.F. in Dunkirk safely landed in England; 3 887 British ships of all types used in the evacuation of 335,000 troops from Dunkirk; 5 Hitler proclaims a war of total annihilation against his enemies; 8 Enemy armoured forces penetrate French defences in the West near Rouen; 10 Italy declared war on Great Britain and France; H.M.S. *Glorious*, two destroyers and one transport lost; 11 R.A.F. raid aerodromes in Libya and Italian East Africa; Malta bombed by Italian planes; 13 Evacuation of school children in Greater London begins; 14 Paris captured by enemy forces; 15 Soviet troops occupy Lithuania; 17 Prime Minister broadcasts that Great Britain and the British Empire to be the sole champions in arms to defend the world cause; Russian troops occupy both Latvia and Estonia; 22 French delegates accept terms for an Armistice; Alexandria bombed; 25 Hostilities in France cease at 12.35 a.m.

**July 1** Channel Islands occupied by Germany; 2 R.A.F. raid Kiel docks; 3 British liner *Arandora Star* torpedoed and sunk; 16 Japanese Cabinet resigned; 18 Krupp's works bombed by R.A.F.; 19 Italian cruiser *Bartolomeo Colleoni* sunk in Mediterranean by H.M.A.S. *Sydney*; 21 Rumania cedes the Southern Dobruja to Bulgaria; 29 Dover harbour raided by 80 enemy planes of which 17 were destroyed.

**August 4** British Somaliland invaded by Italian forces; 15 180 enemy planes destroyed over Great Britain; 18 152 enemy planes destroyed whilst attacking Great Britain; 19 British Somaliland evacuated; 22 S.E. Kent shelled by German guns from the French coast; 24 Central London bombed.

**September 6** King Carol of Rumania abdicated in favour of his son Michael; 7 London sustained severe damage in the largest aerial attack since war commenced; 103 enemy aircraft destroyed; 13 Five bombs dropped on and around Buckingham Palace, but the King and Queen escaped injury; 15 55 enemy planes destroyed; 23 Japanese troops entered Indo-China.

**October 2** Military objectives in Berlin and other parts of Germany bombed; 7 German troops enter Rumania; 450 enemy planes attack London; 8 R.A.F. bombers raid Berlin military objects; 25 *Empress of Britain* lost; 28 Greece rejects an Italian ultimatum; Skoda works in Czechoslovakia bombed.

**November 1** Greeks repel Italian attacks; 6 Southampton bombed; 7 Bari and Brindisi bombed; 11 Krupp's works at Essen heavily attacked from the air; 14 Coventry heavily attacked by German bombers, the Cathedral being destroyed; 22 Albanian town of Koritza captured by the Greeks; 25 Greeks capture 7,000 Italians; 27 Cologne attacked by the R.A.F.; 28 Merseyside raided by German bombers; 30 Southampton heavily attacked.

**December 2** Bristol heavily attacked; Naples bombed; 11 Sidi Barrani captured by British forces; 12 Sheffield bombed; 15 Laval dismissed from the Vichy Government; 16 Sollum and Port Capuzzo captured; 20 Berlin raided; 22 Manchester severely raided; 29 City of London severely burned by incendiary bombs; The Guildhall destroyed and eight Wren Churches; 30 Naples raided.

A.D.

1941

**January 1** Bremen heavily raided; 3 Cardiff raided and extensive damage done; 5 Bardia captured; 10 Portsmouth bombed; British fleet in Mediterranean dive-bombed; 13 Plymouth bombed; 22 Tobruk captured by Australian troops; 29 Naples again raided.

**February 7** Benghazi captured; 15 Kismayu, Italian Somaliland, captured; 19 Swansea heavily attacked; 26 Mogadishu, capital of Italian Somaliland, occupied by Imperial troops; German mechanised troops in Libya; 27 Cologne heavily attacked.

**March 3** Cardiff attacked by fire bombs; 4 Naval raid on the Lofoten Islands; 11 U.S.A. Lease and Lend Bill signed by Mr. Roosevelt; 17 Berbera, capital of British Somaliland, recaptured; 19 British forces capture Jijiga in Abyssinia; 20 Plymouth heavily attacked; 27 Keren and Harar fall; 28 Cologne and Düsseldorf heavily attacked; 30 Naval victory in Mediterranean resulted in the loss of three Italian cruisers and two destroyers and one battleship damaged.

**April 1** Asmara, cap. of Eritrea, captured; 5 Addis Ababa entered by Imperial troops; 6 Greece and Yugoslavia invaded by German troops; 8 Massawa capitulates; 9 Salonika occupied by Germans; Berlin State Opera House destroyed; 10 Birmingham and Coventry raided; 11 Belgrade occupied by German forces; 13 Bardia given up; Tobruk holds out; 23 H.M.S. *Rajputana* torpedoed and sunk; 24 Empire forces withdrawing from Greece; 27 Athens captured by the Germans; 28 Portsmouth severely attacked by night planes; 29 Plymouth again severely raided.

**May 1** Enemy infantry and tanks penetrate the outer defences of Tobruk; 2 Evacuation from Greece completed; 10 Heavy attack on London; Westminster Abbey, Houses of Parliament, and the British Museum damaged; 33 night bombers destroyed; Rudolf Hess descended by parachute, in Scotland; 30 Crete invaded by air-borne troops; 23 Crete heavily attacked by German bombers; 24 H.M.S. *Hood* sunk; 27 German battleship *Bismarck* sunk.

**June 1** British forces withdrawn from Crete; Iraqi armistice signed; 2 Clothes rationing commenced; 4 William II (Ex-Kaiser of Germany) died; 13 Treaty of friendship between Turkey and Germany signed; 22 German attacks Russia; 24 Russia loses Brest Litovsk. **July 3** Palmyra (Syria) and Debra Tabor (Abyssinia) surrender to Allied forces; 7 U.S.A. forces arrived in Iceland; 9 General Dentz, the High Commissioner in Syria, asks for Armistice terms; 10 Beirut occupied by Australian forces; 14 Rumanian oil centre bombed by the Soviet Air Force; 22 Moscow raided; 23 Japan demands air bases in Indo-China; 25 Fighting round Smolensk.

**August 7** Japan concentrating troops on Thai border; 25 British and Russian troops enter Persia; 27 The Dnepropetrovsk dam blown up by the Russians.

**September 8** Allied troops land in Spitzbergen and destroy coal-mines; 18 Crimea cut off from mainland; 19 Kiev entered by Germans; 21 Bitter fighting round Odessa; 30 Poltava evacuated by Russians.

**October 6** German attack on Moscow; 16 Soviet Government leaves Moscow; Odessa occupied by German and Rumanian troops; 19 Taganrog on Sea of Azov captured by Germans; 26 Kharkov captured by the Germans.

**November 10** H.M.S. *Cossack* sunk; 14 Aircraft Carrier *Ark Royal* sunk; 17 Russians evacuate Kerch; 21 Libyan battle opens, 130 German tanks destroyed; 23 Bardia and Port Capuzzo captured; Rostov claimed by the Germans; 25 H.M.S. *Barham* lost; 27 Gondar captured; 30 Russians re-take Rostov.

**December 1** Points rationing scheme in force; 2 Our forces in Tobruk isolated; H.M.A.S. *Sydney* lost; 7 Hostilities break out in the Pacific; Japan declared war on Great Britain and the U.S.A.; Pearl Harbour, Hawaii and Manila attacked from the air; 8 Japanese forces land in Malaya; 10 H.M.S. *Repulse* and *Prince of Wales* sunk off Malaya; Philippines



A.D.

invaded; 11 Penang raided; 12 Burma raided; 14 Germans in retreat on Moscow front; 17 Sarawak invaded; German forces in Libya in full retreat; 18 Kedah evacuated; 20 Japanese forces land on Hongkong; 22 Rangoon raided; 26 Hongkong surrendered; 30 Kerch and Feodosia re-captured; 31 Kaluga re-captured.

1942

January 1 Lofoten Islands raided; 2 Manila and Cavite evacuated; 13 Tarakan Island surrendered; 14 Pahang State cleared by Japanese; 23 Japanese forces land in New Guinea and the Solomon Islands.

February 7 Japanese forces land on Singapore Island; 9 Soap rationed; 15 Singapore surrendered; 16 Palembang occupied by the Japanese; 19 Port Darwin raided.

March 1 Japanese land troops in Java; 9 Surrender of Java; 25 Andaman Islands occupied by Japanese forces.

April 7 Malta receives its heaviest raid; 10 British Aircraft Carrier *Hermes* sunk; 15 George Cross awarded to the Island of Malta; 18 Tokyo raided by U.S. aircraft.

May 5 Madagascar invaded by British forces; 7 U.S. forces sink 11 Japanese warships off the Solomon Islands; H.M.S. *Edinburgh* lost; 23 Fighting in Libya commences again; 31 Over 1,000 bombers raid Cologne; Canterbury bombed.

June 1 1,036 bombers raid Essen and the Ruhr; 2 Dutch Harbour, Alaska, raided by the Japanese; 21 Tobruk captured by the Germans; 25 Bremen attacked by a force of 1,000 bombers.

July 1 Battles raging near El Alamein; Sevastopol captured; 2 Rommel withdraws his forces from El Alamein; 16 R.A.F. make first daylight raid on the Ruhr; 22 The 8th Army in Egypt attacks on all fronts; 27 Tobruk heavily attacked by Allied bombers; Rostov evacuated by the Russians; 31 Russians resisting pressure in the Don elbow.

August 6 Germans advancing towards the Caucasus; 10 American forces land in the Solomon Islands; 11 Aircraft Carrier *Eagle* torpedoed and sunk; 25 Duke of Kent killed in air crash.

September 6 German progress halted outside Stalingrad.

October 23 Allied offensive opened in Egypt.

November 4 Rommel's army in full retreat; 5 Axis forces in Egypt continue to retreat; Red Army holding firm at Stalingrad; Cessation of hostilities in Madagascar; 8 U.S. troops land on French North Africa coast, Algiers occupied; 9 British troops also landed; 10 Oran captured by U.S. forces; 11 Casablanca capitulates; Hostilities cease in French North Africa and French Morocco; 13 Allied armies advancing in Tunisia; Tobruk, Bardia and Sollum taken by the Eighth Army; 16 U.S. Naval forces secure a great victory over the Japanese near Guadalcanar; 25 German forces retreating before the Red Army offensive at Stalingrad; 27 German forces enter Toulon; French Fleet scuttled.

December 15 Buna in Papua captured by U.S.A. forces; 17 Rommel's army cut in two; 24 Admiral Darian assassinated.

1943

January 3 Russians capture many important towns; 6 German armies in the Caucasus and the Don elbow in retreat; 16 Iraq declares war against the Axis; 18 Leningrad siege raised after sixteen months' investment; 23 Tripoli occupied by the Eighth Army; 27 American bombers make their first attack on Germany; 31 Remnants of the German army outside Stalingrad surrender, among whom are Field-Marshal Paulus, Commander of the Sixth German Army and 16 other Generals.

February 2 Surrender of 45,000 Germans in Stalingrad; 9 Russians re-take Byelorod; Guadalcanal Island cleared of Japanese troops; 12 Russians capture Krasnodar; 13 1,000 tons of bombs dropped on L'Orient; 14 Russians capture Rostov and Voroshilovgrad; 16 Kharkov retaken by the Russians; 24 German

A.D.

forces in Tunisia driven back after 3 days of severe fighting.

March 7 Rommel attacks Eighth Army and is repulsed, losing 50 tanks; 12 Germans claim the re-capture of Kharkov; 21 Byelorod evacuated by the Russians; 23 8th Army penetrates the Mareth Line; 29 Axis forces withdraw from the Mareth Line.

April 10 Sfax occupied; 12 Sousse taken by the 8th Army; 16 Bremen attacked by U.S.A.F. in daylight; 18 German air convoy smashed off Tunisia; Spezia bombed.

May 7 Tunis and Bizerta captured; 12 All organised resistance by the enemy in Tunisia ceased and 291,000 prisoners have been taken; 16 Dams in the Ruhr breached by the R.A.F.; great flooding and devastation; 18 Japanese submarine sinks the Australian hospital ship *Centaur* with a loss of 263 lives; 22 Moscow dissolved the Comintern; 23 Dortmund receives 2,000 tons of bombs.

June 3 French Committee for National Liberation formed in Algiers; 4 Pantellaria bombed by sea and air.

July 5 German forces attack the Orel, Kursk and Byelorod sectors; 7 Russian forces holding German attacks; 10 Sicily invasion successfully begun; 11 Ten Sicilian towns taken; 14 Ragusa, Florida and Augusta taken; 15 Russians change over to the offensive near Orel; 19 Military targets in Rome bombed; 21 Allied forces capture Enna in the centre of Sicily; 23 Palermo and Western Sicily in Allied hands; 25 Mussolini, the Dictator of Italy, resigns; 26 All Italy under Martial Law; 28 Fascist Party in Italy dissolved.

August 1 Ploesti oilfields bombed by American aircraft; 4 Russians take Orel; 5 Byelorod captured by the Russians; Catania falls to the 8th Army; 17 Sicily in Allied hands; Peenemunde, Regensburg and Schweinfurt bombed; 215 Japanese planes destroyed in the Pacific; 21 Kiska Island occupied; 30 Taganrog captured; Germans take over full control of Denmark.

September 3 Italian mainland invaded; 6 Southern Calabria evacuated by the Germans; 8 Italy surrenders; Stalino taken by the Russians; 9 British and American troops land near Naples; 10 Rome seized by the Germans; Mariupol taken by the Russians; 12 Italian warships arrive in Malta harbour; 13 Heavy fighting at Salerno; 14 Salamaua captured from the Japanese; 17 5th and 8th Armies join up in Italy; Brianks captured; 19 Sardinia evacuated by the Germans; 23 British midget submarines penetrate Norwegian fjords and damage the German battleship *Tirpitz*; 25 Smolensk taken by the Russians; 28 Foggia captured.

October 1 Naples taken; 4 Corsica in Allied hands; 25 Russians capture Dnepropetrovsk and Dneprodzerzhinsk; Berlin admits position in Southern Russia as being grave.

November 1 Russians cut retreat of Germans from the Crimea; 6 Kiev taken by the Russians; 14 Sofia raided; 22 Samos evacuated; 23 Berlin again very heavily blitzed; 26 Gmel recaptured after 24 years in German occupation; 27 Mr. Churchill, President Roosevelt and Marshal Stalin met in Teheran for a 4-day conference; 29 8th Army opens offensive; 30 Mr. Churchill, President Roosevelt and General Chiang Kai-shek met in North Africa.

December 2 Men between 18 and 25 to be directed to the mining industry by ballot; 6 Mr. Churchill, President Roosevelt and President Inonu conferred in Cairo; 11 American heavy bombers destroy 138 German aircraft over Emden for the loss of 20; 13 20-year treaty signed between the Soviet Union and Czechoslovakia; 19 Bangkok bombed; 26 German battleship *Scharnhorst* sunk.

1944

January 12 Russians break through Poland on a 40-mile front; U.S.A. Bombers raid Germany by day; 15 1,500 deaths in earthquake in Argentina; 21 Russians advancing on Leningrad sector; Novgorod captured; 23 Fifth Army successfully land troops at Nettuno.

A.D.

south of Rome; 23 Argentina breaks with the Axis Powers.

February 1 American forces land on the Marshall Islands; 2 Russians penetrate Estonia; 7 Plans announced for the rebuilding of Coventry Cathedral; 10 Heavy fighting in the Anzio beach-head; 22 Russians capture Krivoi Rog.

March 15 Cassino (Italy) destroyed by Allied bombers; Over 1,000 R.A.F. four-engined bombers raid Stuttgart; 17 Airborne troops land behind the Japanese in Burma; 19 Russians cross Dniester into Bessarabia; Heavy fighting for Cassino; 24 Berlin has its heaviest raid of the war.

April 3 German battleship *Tirpitz* attacked by Naval aircraft; 9 U.S.A. bombers hit targets in Poland; 11 Soviet forces advance into the Crimea; 16 Yalta taken.

May 9 Sevastopol captured; 11 Air bombardment of enemy targets in France and Belgium continued on an ever-increasing scale; 12 Fifth and Eighth Armies attack the Gustav Line; 18 Capture of Cassino and Abbey; 19 50 Allied officers shot after escaping from a German prison camp; 30 Battle for Rome commences.

June 5 Allied forces pass through Rome; King of Italy signed a decree transferring his powers to Prince Umberto, his son; 6 Invasion of Europe commenced; Masses of ships, troops and aircraft take part—all going well; 7 Operations in Normandy proceeding favourably; 8 Enemy resistance in Normandy increasing but we steadily advance; 9 Heavy fighting near Caen; 11 Normandy beach-head widened; Allied armies in Italy advancing on all fronts; Russians striking against the Finns; 12 Mr. Churchill visits Normandy beach-head; 14 Heavy fighting for Caen in progress; Gen. de Gaulle in Normandy; Japan bombed by "Super Fortresses"; 16 Flying bombs being used by the Germans; 17 The King visits Normandy; 18 Cherbourg peninsula cut by the Americans; Allies land on Island of Elba; Russians break through the Mannerheim Line; 23 Soviet forces open offensive on Central Front; 27 Cherbourg in Allied hands; Finland decides to stay in the war.

July 3 Minsk captured; 6 During the first three weeks of the "flying bomb" menace 2,754 have been launched, resulting in the death of 2,752 persons and about 8,000 detained in hospitals; 9 Caen and La Haye du Puits captured; 13 Vilna liberated; 20 Attempt on Hitler's life with high explosive; U.S.A. troops land on Guam; 24 Dublin captured; 26 Narva taken; 27 Lvov, Dvinsk and Bialystok captured; 29 Brest Litovsk, Przemyśl and Yaroslavl captured.

August 1 Uprising in Warsaw; Kaunas stormed; 3 Rennes occupied; 4 Myitkyina falls to Allied forces; 13 Enemy retreating on Normandy front; Florence liberated; 15 Southern France invaded by Allied forces; 17 Orleans, Chartres and Falaise captured; 21 Toulon captured; 23 Paris liberated from within; Marseilles taken; Rumania surrenders; 24 American tanks in Paris; Kishinev captured; 1,300 U.S. bombers attack oil installations in Germany; 25 General de Gaulle in Paris; Cannes and Grasse taken; Rumania declares War on Germany; 31 Amlens captured; Rouen taken; Bucharest entered.

September 1 British enter Arras; Dieppe and Verdun captured; Bulgarian Government resigns; Gothic line penetrated; 3 Allies in Belgium; Lyons, Pesaro and Pisa taken; 4 Antwerp, Brussels, Mons and Abbeville liberated; Holland entered; Finland "ceases fire"; 6 Bulgaria asks for an armistice; 7 Boulogne entered; Bulgaria declares war on Germany; 8,000 Flying bombs were launched during the attack of which 2,300 reached the London area; 8 Besançon captured; Russian troops cross the Bulgarian frontier; 9 Hostilities between Bulgaria and Russia cease; 10 American troops cross into Luxembourg; Members of the Belgian Government return to Brussels; 11 Allied forces fighting on Reich Territory; City of Luxembourg freed; Dijon captured; 12 Le Havre surrendered; U.S.A. armoured forces cross into Germany in strength; 15

A.D.

Nancy, Maastricht and Eindhoven captured; 17 Allied air-borne troops landed in Holland; 19 The *Tirpitz* bombed again; 22 Rimini and Tallinn captured; 30 Germans counter-attacking near Arnheim; Calais surrendered.

October 3 U.S. 1st Army break through the Siegfried Line when capturing Ubach; Warsaw falls to the Germans; 5 Troops land on the mainland of Greece; 13 Riga taken; 14 Athens occupied; 15 Hungary asks for armistice terms; Petsamo captured; 20 Aachen captured by the Americans; Belgrade liberated; 25 Japanese fleet in action off the Philippines—2 Battleships, 4 Carriers, 6 Heavy Cruisers, 3 Light Cruisers and 9 Destroyers sunk, many probably sunk and damaged; 29 Breda, Holland, captured.

November 12 *Tirpitz* sunk by R.A.F. Lancasters; 21 U.S. force of 2,300 aircraft struck oil plants in Germany.

December 5 U.S.A. forces capture Saarlautern; 6 Civil war breaks out in Athens; 14 Infantry reinforcements flown to Athens; 15 U.S. forces land in Island of Mindoro; 17 German forces counter-attacking and have crossed into Luxembourg and Belgium; Faenza captured by New Zealand forces; 26 Budapest encircled; 27 German armoured columns halted near the Meuse; 31 Polish provisional Government in Lublin; Hitler said that Germany would never capitulate.

1945

January 5 Organized fighting in Athens ceased; 9 U.S. forces land on Island of Luzon; 11 Germans withdrawing from the Ardennes salient; 17 Warsaw captured by the Russians; 18 Cracow taken; 21 Tannenberg and Gumbinnen taken; Russian troops in Silesia; 23 Burma road to China re-opened; 29 Russians invade Pomerania.

February 3 Berlin bombed in daylight by more than 1,000 Fortresses; 9 Field-Marshal Montgomery moves forward; 11 Elbing taken by the Russians; 16 Tokio and Yokohama heavily bombed; 19 Americans land on Iwojima Island; 23 American forces cross the Roer; Poznan taken by the Russians; Turkey declares war on the Axis Powers.

March 1 München-Gladbach captured by the Americans; 2 The Rhine reached by U.S.A. forces; 6 Cologne captured; 20 Mainz, Worms and Kaiserslautern captured; 21 Ludwigshafen taken; 23 Gen. Patton's 3rd Army crosses the Rhine; 24 Field-Marshal Montgomery's forces across the Rhine in great strength; 27 Argentina declares war on the Axis Powers.

April 1 Germans evacuating Holland; 4 Munster occupied; Ruhr encircled; Bratislava captured by the Russians; Russians within 12 miles of Vienna; 5 Russian Government denounces the Soviet-Japan neutrality pact; Japanese Cabinet resigns; 8 Japanese battleship *Yamato*, 2 Cruisers and 3 destroyers sunk by U.S.A. carrier-borne aircraft; 9 Königsberg captured; 10 Hanover captured; 11 U.S.A. forces within 70 miles of Berlin; Brunswick and Essen captured; Russian Army enter Vienna after 7-day battle; 12 Death of President Roosevelt; Weimar and Celle captured; 18 Nuremberg entered; German battleship *Lutzw* sunk; 25 Berlin surrounded by Russian troops; 26 Stettin, Bremen, Brno and Verona occupied; Goering relieved of his command of the Luftwaffe; 1,050 Rocket bombs fell on Southern England—killing 2,754 persons; 27 Russians and Americans link up; Regensburg captured; Genoa entered; 29 Mussolini executed by Italian partisans; Venice and Milan entered; Himmler offers surrender to Great Britain and the U.S.A., which was rejected.

May 1 Turin captured; Death of Hitler announced on German radio; Munich captured; 2 German armies in Italy surrender; Berlin captured by the Russians; 3 German collapse in Northern Germany; Hamburg and Trieste taken; Rangoon and Prome captured; 4 German forces in N.W. Germany, Holland and Denmark surrender; 7 German Foreign Minister broadcast to the Germans that all



A.D.

fighting troops surrendered unconditionally; 8 End of World War II against Germany officially declared to be one minute past midnight (Tuesday); VE Day; Channel Islands liberated.

June 15 Ribbentrop captured; 26 World Security Charter signed in San Francisco.

July 5 Polish Government in Warsaw recognised by Allies; 26 Labour Party successful in General Election; 30 Tokio district bombed by over 1,000 aircraft.

August 5 Atomic bomb first used against Japan, causing terrific devastation; Hiroshima laid waste, estimated death toll 78,150; 8 Russia declares war against Japan; 9 Russia advances into Manchuria; Nagasaki target for atomic bomb No. 2, estimated 75,000 killed and wounded; 14 Japan surrenders unconditionally to the Allies; 15 VJ Day; 21 Lend-Lease terminated; 26 Russia and China sign 30-year treaty of friendship and alliance.

September 5 Singapore re-occupied.

October 9 U.S.A. to keep secret of manufacture of atomic bomb; 15 Laval executed.

November 20 Trial of major war criminals opens at Nuremberg.

December 26 French franc devalued to 480 to £.

1946

January 31 Field-Marshal Montgomery appointed Chief of the Imperial General Staff.

February 1 Mr. Trygve Lie elected Secretary-General of U.N.O.

April 19 League of Nations formally wound up.

June 5 Italy votes for Republic; 8 Victory Day celebrated throughout the Empire; 9 King of Siam found shot dead; 28 Signor Enrico de Nicola elected first President of Italian Republic; 29 Nuremberg Trial of Nazi war leaders ends; 30 United States atom bomb tests at Bikini.

July 1 Sarawak formally ceded to the British Crown; 13 United States House of Representatives approves loan to Britain; 15 Newton tercentenary celebrations in London; General Mihailovitch sentenced to death; 22 Bread rationing in Britain; British H.Q. in Jerusalem blown up; 24 Under-water atom bomb test at Bikini.

August 1 Peace Conference opens in Paris; 13 Death of H. G. Wells.

September 2 Greece polls for monarchy; 6 United Nations F.A.O. considers establishment of World Food Board; 15 Faroes vote for Republic.

October 1 Verdict and sentences on Nazi leaders announced; 16 Nuremberg sentences on Nazis carried out, Goering commits suicide; 23 General Assembly of the United Nations opens in New York.

November 4 Council of Foreign Ministers meets in New York; 10 Communists head poll in French General Elections; 14 Death of Manuel de Falla.

December 2 Agreement signed for economic fusion of British and American zones in Germany.

1947

January 1 British coal industry nationalized; 14 M. Vincent-Auriol elected first President of Fourth Republic; 30 Great Britain endures worst snow blizzard since 1894.

February 1 The Royal Family sail for South Africa in H.M.S. *Vanguard*.

March 4 Anglo-French Treaty of Alliance signed at Dunkirk; 15 Floods in England worst ever known; 24 Netherlands Government and Indonesian Cabinet sign agreement in Batavia for a United States of Indonesia; New comet discovered by Harvard Observatory, South Africa.

April 1 School leaving age raised to 15 in Great Britain; King George of the Hellenes dies suddenly in Athens; 8 Death of Mr. Henry Ford; 20 Death of King Christian of Denmark.

May 11 Royal Family arrive at Portsmouth after their South African tour; 22 President Truman signs Bill for American aid to Greece and Turkey.

June 5 U.S. Secretary of State, Mr. Marshall, makes important statement on economic aid to Europe.

A.D.

July 2 Discussions in Paris on Marshall offer end without agreement; 3 Britain and France invite 22 European countries to co-operate; 9 Betrothal of Princess Elizabeth to Lieutenant Philip Mountbatten; 18 Royal Assent given to Indian Independence Act.

August 3 Dutch military action in Indonesia ends; 15 India and Pakistan assume Dominion Status; Viscount Mountbatten appointed Governor-General of India and Mr. Jinnah Governor-General of Pakistan; 26 Russian parachutist beats international record by jump from stratosphere of over 8 miles; 29 Palestine Committee agrees British Mandate should end, majority report recommends partition.

September 22 First Atlantic automatic flight in history by U.S. pilotless aircraft.

October 4 Death of Professor Max Planck; 6 Cominform, new international Communist organization, set up in Belgrade; 13 Death of Sidney Webb.

November 20 Princess Elizabeth and Prince Philip, Duke of Edinburgh, married in Westminster Abbey; 25 Conference of Foreign Ministers opens in London; 29 Palestine Committee of U.N. Assembly votes in favour of partition of Palestine into Jewish and Arab States.

December 14 Russia devalues rouble and ends rationing; 15 Breakdown of 4-Power Conference on Germany; 30 King Michael of Rumania abdicates and Rumania becomes a People's Republic.

1948

January 1 British Railways nationalized; 4 Burma became independent Republic; 30 Mahatma Gandhi assassinated in New Delhi.

February 1 New Malayan federal constitution comes into force; 4 Ceylon Independence Act came into force; 25 New Czechoslovak Government formed under Communist leadership.

March 10 Death of Jan Masaryk; 13 U.S. Senate passes Aid to Europe Bill; 17 Treaty of Brussels signed by 6 Western European Powers; Belgium, France, Luxembourg, Netherlands and Great Britain.

April 1 British electricity industry nationalized; 3 Foreign Aid Bill signed by President Truman; 5 First European Aid shipments sail from America; 16 O.E.E.C. established.

May 3 Mr. Rajagopalachari appointed Gov.-Gen. of India in succession to Earl Mountbatten; 11 Signor Einaudi elected President of Italy; 14 British Mandate for Palestine ended at mid-night; Jews proclaim new State of Israel; 27 Gen. Smuts loses seat in South African election.

June 7 Dr. Benes resigns; 14 Mr. Gottwald succeeds Dr. Benes as President of Czechoslovakia; 28 Yugoslavia expelled from Cominform.

July 1 American, British and French zones of Berlin supplied by air; 5 New Social Security Services come into operation; 14 Attempt to assassinate Signor Togliatti, Italian Communist leader; general strike throughout Italy; 23 Malayan Communist party outlawed; 29 Bread rationing in Great Britain ends; XIV Olympiad opens at Wembley; 30 Conference of Danubian navigation opens in Belgrade.

August 15 Republic of Korea proclaimed; 18 Danube Conference ends, Western Powers refusing to accept new Convention; 31 Death of Gen. Zhdanov.

September 3 Death of Dr. Benes; 4 Queen Wilhelmina abdicates after a reign of 60 years; 6 Princess Juliana invested as Queen of the Netherlands; 11 Death of Mohammed Ali Jinnah; 14 Khwaja Nazimuddin sworn in as Gov.-Gen. of Pakistan; 21 Count Bernadotte, U.N. Mediator for Palestine, assassinated.

October 17 Trafalgar Square fountains floodlit; 30 Chinese Communist forces capture Mukden.

November 3 Mr. Truman elected President of U.S.A.; Chinese cabinet resigns; 12 Greek Government resigns; 14 Birth of a son to Princess Elizabeth.

December 15 Prince Charles of Edinburgh christened; 21 Republic of Ireland Bill signed in Dublin; 28 Egyptian Prime Minister, Nokrashy Pasha, assassinated.



A.D.  
1949

**January 1** British Nationality Act came into force; 21 Gen. Chiang Kai-Shek retires as President of China.

**February 1** Women's Services incorporated with Regular Forces.

**March 15** Clothes rationing ends in Great Britain; 31 Russia protests against Atlantic Pact.

**April 1** Newfoundland becomes part of Canada; 4 North Atlantic Treaty signed in Washington; 27 Commonwealth Conference of Prime Ministers meeting in London ends with agreement that Republican India shall continue in full membership of the Commonwealth.

**May 1** Vesting date for Gas Industry; 3 Ten-power conference in London establishes Council of Europe; 12 Berlin blockade lifted.

**June 20** Council of Foreign Ministers which met in Paris May 23 ends with minor agreement on Germany and Austria.

**July 2** Death of Dimitrov, Prime Minister of Bulgaria; 21 North Atlantic Treaty ratified by U.S. Senate.

**August 14** President and Prime Minister of Syria shot; 24 North Atlantic Treaty comes into force.

**September 12** Professor Theodor Heuss elected first President of West German Republic; 18 Devaluation of pound from \$4.03 to \$2.80; 21 General Mao Tse-Tung proclaims People's Republic of China; 23 Evidence announced of atomic explosion in U.S.S.R.; 29 Russia denounces 1945 Treaty of Friendship with Yugoslavia.

**October 2** Russia recognizes newly-established Chinese People's Republic; 11 Herr Wilhelm Pieck elected first President of East German Republic; 20 Yugoslavia elected to seat on U.N. Security Council.

**December 8** Chinese National Government leaves mainland and sets up H.O. in Formosa; 15 International Court of Justice gives judgment for Britain in Corfu Channel case against Albania; 26 Prof. Einstein announces new generalized theory of gravitation; 27 United States of Indonesia came into being.

**1950**

**January 6** Britain recognizes Communist Government of China; 24 Dr. Rajendra Prasad elected first President of Indian Republic; 26 New Constitution of Indian Republic comes into force.

**February 14** 30-year treaty of alliance between Russia and China signed in Moscow; 23 Labour Party wins General Election with narrow majority.

**March 5** Lord Boyd Orr warns world that communism spreads where hunger prevails; 9 Control of Engagement Order abolished; 22 First of U.S. super-fortresses arrive in Norfolk.

**April 1** Italy takes over from Britain administration of Somaliland; 13 First shipment of military aid to France under N.A. Pact unloaded at Cherbourg.

**May 1** New Chinese marriage law abolishes polygamy and child marriages and gives both sexes equal rights; 19 Points rationing ends in Britain after 8 years; 26 Petrol rationing ends in Britain.

**June 20** Schuman 6-Power conference opens in Paris; 25 N. Korean troops advance into S. Korea; Security Council calls for cease fire; 27 Pres. Truman orders U.S. air and sea forces to support S. Korea and protect Formosa; U.N. Commission in Korea proposes neutral mediator; military assistance to S. Korea endorsed by Security Council; 28 Seoul captured by N. Korean troops; British naval forces to be placed at disposal of U.S. in support of S. Korea; 30 Pres. Truman authorizes use of American ground troops in Korea.

**July 2** American troops land in S. Korea; 4 Gen. MacArthur designated C-in-C. of U.N. forces in Korea; 19 America reported to have rejected Pandit Nehru's suggestion to accept delegate of Communist China in Security Council; 22 King Leopold returns to Belgium after 6 year exile.

**August 1** Security Council meets under chairmanship of M. Malik, the Soviet delegate; 2 Seretse Khama ordered to leave Bechuanaland; 7 American forces in Korea open offensive and

A.D.

halt drive on Pusan; 15 Princess Elizabeth gives birth to a daughter; severe earthquake in Assam; 17 Independence Day in Indonesia.

**September 6** British troops in action in Korea; 9 Soap rationing ends in Britain; 11 Death of Field Marshal Smuts.

**October 9** U.N. forces across the 38th parallel in strength; 15 Pres. Truman meets Gen. MacArthur on Wake I.; 19 Sir Stafford Cripps retires from public life on account of illness; Pyongyang, N. Korean capital, captured by U.N. forces; 21 Princess Anne Elizabeth Alice Louise christened; 26 New Chamber of House of Commons opened at Westminster; 29 King Gustav V of Sweden dies.

**November 2** Death of George Bernard Shaw aged 94; 6 Chinese forces from Manchuria reported fighting in Korea; 27 Delegates from China present at U.N. Political Committee.

**December 3** Mr. Attlee flies to Washington for talks with Pres. Truman; 4 Pyongyang occupied by Chinese; 16 Russia protests against rearming Western Germany; 19 Gen. Eisenhower appointed Supreme Commander of West European Defence Forces set up by Atlantic Powers; 25 Stone of Scone stolen from Westminster Abbey.

1951

**January 1** New Gold Coast Constitution comes into force; Marshall Aid to Britain suspended; 30 U.N. Assembly rejects resolution of 12 Asian and Arab nations calling for 7-nation conference for peaceful settlement of Korean question; 31 Decree confiscating property of Alfred Krupp cancelled.

**February 1** U.N. Assembly adopts American resolution condemning Chinese aggression; 7 U.N. Assembly rejects Soviet motion accusing U.S.A. of aggression in Formosa; 15 Vesting date for Iron and Steel; 19 Death of André Gide.

**March 7** Prime Minister of Persia assassinated.

**April 11** Gen. MacArthur relieved of all his commands by Pres. Truman and replaced by Lt.-Gen. Ridgway; 13 Coronation Stone returned to Westminster Abbey; 14 Death of Ernest Bevin.

**May 2** Persian oil industry nationalized; Germany admitted to Council of Europe; 3 H.M. the King opens Festival of Britain from steps of St. Paul's.

**June 21** Meeting of Foreign Ministers' deputies in Paris ends without agreement; 23 M. Malik, Russian delegate to the U.N., appeals for settlement of Korean war; 29 new constitution for Nigeria promulgated.

**July 1** Colombo plan comes into force; 9 State of war between Britain and Germany officially ended; 10 Armistice negotiations open at Kaesong; 17 King Leopold abdicates in favour of his son Baudouin, who becomes fifth King of the Belgians; 20 King Abdullah of Jordan assassinated.

**August 30** Mutual Defence Treaty between U.S. and Philippines signed in Washington.

**September 1** Tripartite Security Treaty between U.S.A., Australia, and New Zealand signed in San Francisco; 5 Emir Talal proclaimed King of Jordan; 8 Japanese Peace Treaty—to which Russia, China, and India are not parties—signed at San Francisco; Security Pact between Japan and U.S.A., providing for retention of American forces in Japan, also signed; 23 H.M. the King undergoes successful operation; 30 Festival of Britain ends.

**October 8** Princess Elizabeth and Duke of Edinburgh leave London Airport for Canadian tour; 15 Egyptian Parliament passes unanimously Bills abrogating Anglo-Egyptian treaty of 1936 and 1899 Sudan Condominium Agreement; 16 Liaquat Ali Khan assassinated at Rawalpindi; 25 General Election won by Conservatives with small majority; 31 Princess Elizabeth and Duke of Edinburgh in Washington from Canada.

**November 5** Mr. Attlee receives the Order of Merit; 17 Princess Elizabeth and Duke of Edinburgh return from Canadian tour.

**December 11** M. Spaak resigns presidency of Consultative Assembly of Council of Europe; 13 French Assembly ratifies Schuman Plan; 17 London foreign-exchange market reopens after

A.D.  
12 years; 24 Libya becomes independent state;  
31 I.R.O. closes down.

1952  
January 2 Mutual Security Agency replaces Economic Co-operation Administration; 31 Princess Elizabeth and Duke of Edinburgh leave London on first stage of Commonwealth tour.

February 6 King George VI died at Sandringham aged 56; 7 Queen Elizabeth II and the Duke of Edinburgh arrive home by air from Kenya; 15 Funeral of King George VI at Windsor; 21 Identity cards abolished.

March 20 South African Supreme Court rules invalid Dr. Malan's Act which places Cape coloured voters on separate electoral register.

April 11 H.M. the Queen declares that she wishes her children and descendants to bear the name of Windsor; 21 Death of Sir Stafford Cripps in Switzerland; 28 Japan regains status as sovereign and independent power.

May 5 H.M. the Queen takes up residence at Buckingham Palace; 26 Contractual Agreements with Federal Germany signed in Bonn; Gen. Sir John Harding appointed C.I.G.S. from November 1; 27 Treaty setting up European Defence Community signed in Paris; 31 Volga-Don canal (Stalingrad to Kalach) opened.

June 23 Power plants along Yalu River attacked by U.S. aircraft in biggest single attack of the war; 25 Debate in House of Commons on bombing power plants in Korea.

July 7 American ship *United States* wins Atlantic Blue Riband; 19 Fifteenth Olympic Games held in Helsinki; 23 Military *coup d'état* takes place in Cairo; 26 King Farouk abdicates in favour of seven-month old son.

August 1 Ratification of Bonn Agreement, by which W. Germany again becomes independent nation, and Treaty of Paris, which sets up the European Defence Community, approved by Government against Labour opposition; 11 King Talal deposed and his son Prince Hussein proclaimed King of Jordan; 16 Severe thunderstorms in Somerset and N. Devon cause rivers to flood; W. Lyn changes course bringing devastation to Lynmouth; 26 Passive resistance campaign against racial laws in S. Africa gains momentum.

September 2 Sir William Slim appointed Gov.-Gen. of Australia (from 1953); 8-New Egyptian Cabinet appoints Gen. Neguib military Gov.-Gen. of Egypt and approves land reforms.

October 3 Britain's first atomic weapon exploded in Monte Bello Islands, off N.W. Australia; 5 Tea de rationed and decontrolled; 20 State of emergency declared in Kenya as a result of Mau Mau activities.

November 1 Reported explosion of U.S. hydrogen bomb at Eniwetok atoll in mid-Pacific; 4 Gen. Eisenhower, Republican Candidate, wins sweeping victory in American Presidential election; 9 Death of Dr. Chaim Weizmann, Pres. of Israel; 20 Death of Benedetto Croce.

December 17 Yugoslavia breaks off diplomatic relations with Vatican; 29 Fish recently caught off Madagascar confirmed as species of the prehistoric Coelacanth.

## 1953

January 20 Inauguration of General Eisenhower as 34th President of the United States; 31 Violent N.E. gales combined with surging high tides caused extensive flooding with loss of life along coasts of eastern England, the Netherlands, and Belgium.

February 4 Sweet rationing ended; 23 War-time deserters in Britain granted amnesty.

March 4 Sergei Prokofiev, Russian composer, died; 6 Marshal Stalin died, aged 74; M. Malenkov succeeded as Chairman of the Council of Ministers of the Soviet Union; 24 Death of Queen Mary at Marlborough House, aged 85; 31 Hr. Dag Hammarskjöld elected U.N. Sec.-Gen. in succession to Mr. Trygve Lie.

April 1 New Constitution in British Guiana came into force; 14 Income tax reduced 6d., purchase tax 25 per cent, excess profits levy abolished from Jan. 1, 1954; 15 Dr. Malan's National Party again returned to power in S. Africa with increased majority; 18 Mr. Gromyko appointed

A.D.  
first Deputy Foreign Minister and Mr. Malik Soviet ambassador in London; 24 Mr. Churchill created a Knight of the Garter by the Queen.

May 4 Duke of Edinburgh received his pilot's "wings"; 29 E. P. Hillary and Sherpa Tenzing of the Everest Expedition led by Colonel John Hunt reached summit of Everest (29,002 ft.).

June 2 Coronation of H.M. Elizabeth II in Westminster Abbey amid scenes of magnificent pageantry; ceremony televised; 4 U.S. Atomic Energy Commission's first breeder pile in successful operation; 13 India and Switzerland agree to serve on neutral commission set up under terms of proposed Korean armistice agreement; 18 Gen. Neguib proclaimed Egypt a republic with himself as President and Prime Minister. All royal titles abolished; 26 Egypt accorded *de facto* recognition by Britain.

July 4 German-Austrian Expedition reached summit of Nanga Pambat in the Himalayas; 10 L. P. Beria, Soviet Minister of Internal Affairs, expelled from Communist Party as "an enemy of the people"; 13 De-nationalisation of British steel industry; 14 Royal Assent given to Central African Federation Bill; 27 Armistice signed at Panmunjom.

August 9-12 Disastrous earthquakes in Greek Ionian Islands; 12 Explosion of Russian hydrogen bomb reported.

September 17 Bank rate reduced from 4 to 3½ per cent; 23 Royal Commission on Capital Punishment recommended that juries should decide whether death sentence or life imprisonment should be imposed on prisoners found guilty of murder, and that the M'Naughten Rules on insanity should be abrogated or amended; 26 Sugar rationing ended after nearly 14 years; 30 Professor Piccard in his bathyscaphe dived 10,000 ft. off Italian coast.

October 5 British Guiana Constitution suspended by Order in Council; 15 British atomic weapon exploded at Woomera Range, Australia; Sir Winston Churchill awarded 1953 Nobel Prize for Literature; 26 Third British atomic explosion successfully made at Woomera.

November 1 Tourist foreign-currency allowance raised from £40 to £50; 9 King Abdul Aziz Ibn Saud of Saudi Arabia died, aged 73; 11 Great bell at Notre Dame rung by electricity for first time; 21 Piltdown skull, discovered in Sussex in 1911, found by anthropologists to be partial hoax; 23 The Queen and Duke of Edinburgh left in stratocruiser *Canopus* on first stage of 6-months' tour of Commonwealth.

December 1 Agreement signed for laying first transatlantic telephone cable; Government withdrew recognition from Kabaka of Buganda; 23 M. René Coty elected Pres. of France at the 13th ballot; L. P. Beria, former chief of Soviet Secret Police, and six associates sentenced to death and shot; 25 The Queen gave her Christmas broadcast from Auckland; 31 Mildest December for 20 years, and before that for over 200 years.

## 1954

January 9 Self-government began in the Sudan; 12 M. Le Trouquer (Socialist) elected President of French National Assembly on retirement of M. Herriot; 16 M. René Coty became President of France in succession to M. Vincent Auriol; 31 Intense cold covered most of Europe.

February 3 The Queen and the Duke of Edinburgh arrived in Australia; First Parliament of newly formed Federation of Rhodesia and Nyasaland opened in Salisbury; 5 Britain's first "breeder" pile in operation at Harwell; 18 Four Power conference meeting in Berlin agreed to call a conference (including the Chinese People's Government) in Geneva in April to try to settle Korean problem and bring peace to Indo-China. No agreement reached on Germany and Austria; 25 Lt.-Col. Nasser succeeded Gen. Neguib as Prime Minister of Egypt.

March 1 American hydrogen bomb exploded at Bikini; 22 London gold market reopened after 15 years; 31 Soviet Government sent note to Western Powers declaring readiness to join NATO.

April 1 The Queen and the Duke of Edinburgh left Australia; 3 Oxford won 100th Boat Race; 21 Russia joined UNESCO; 26 Conference on Far



A.D.

East opened in Palais des Nations, Geneva, Mr. Chou En-lai representing China; Russia joined I.L.O.

May 6 Roger Bannister ran the mile in under 4 min., the first man in the world to do so; 7 Fortress of Dien Bien Phu fell to Viet-Minh after siege of 8 weeks and final battle of 20 hours; 11 Bank rate reduced from 3½ to 3 per cent; 15 The Queen and the Duke of Edinburgh returned from their six-months' tour of the Commonwealth; 18 Liverpool Cotton Exchange reopened.

June 1 Television licence fee raised from £2 to £3 a year; 2 Mr. John A. Costello (Fine Gael) elected Prime Minister of Ireland; 17 Indo-Chinese crisis brought M. Mendès-France to power in France; 22 First all-African Cabinet in British Africa appointed in the Gold Coast; 27 First electric power station using atomic energy began working in Soviet Union; 30 Eclipse of the sun.

July 3 All food rationing ended in Britain; 8 Mr. Nehru opened the world's longest canal (Bhakra-Nangal project); 27 Agreement reached in Cairo for withdrawal of British troops from Suez Canal Zone; 31 K2 (Mount Godwin Austen), second highest peak in the world, climbed by Italian team led by Prof. Ardito Desio of Milan Univ.

August 5 Persian oil dispute settled; 11 Cessation of hostilities in Indo-China after 8 years of fighting; 14 Labour Party delegation to China welcomed in Peking; 10 French National Assembly voted against ratification of E.D.C. Treaty.

September 8 South-East Asia collective defence treaty signed at Manila by the U.K., U.S.A., France, Australia, New Zealand, Pakistan, and Siam; 14 Sheffield-Manchester electrified railway opened.

October 3 Nine-Power conference in London ended with agreement to permit German integration into Western defence; 5 Travel allowance in foreign currencies doubled (£100); 14 Mr. Anthony Eden created a Knight of the Garter by the Queen; 21 Foreign Ministers of nine Powers meeting in Paris agreed to expansion of Brussels Treaty Organisation to include Western Germany and Italy; 23 Agreements signed in Paris restoring sovereignty to Western Germany, admitting her to NATO, and settling the Franco-German dispute over the Saar; 28 Lord Mountbatten appointed First Sea Lord; 29 Egyptian Government dissolved the Muslim Brotherhood.

November 1 French settlements in India passed under Indian control; 3 Death of Henri Matisse, the French painter; 14 General Neguib deposed as President of Egypt; 18 London and Paris Agreements approved by House of Commons; 22 Death of Andrei Vyshinsky; 30 Sir Winston Churchill celebrated his 80th birthday and was presented by both Houses of Parliament with a portrait of himself by Graham Sutherland.

December 30 France approved legislation to ratify London and Paris Agreements.

1955

January 2 Pres. Rémon of Panama assassinated; 27 Bank rate increased from 3 to 3½ per cent; 31 Princess Margaret left for tour of W. Indies; Conference of Commonwealth Prime Ministers opened in London.

February 5 M. Mendès-France's Government defeated on North African policy; 8 Marshal Bulganin succeeded Mr. Malenkov as chairman of the Soviet Council of Ministers; 15 Plans to build 12 atomic power stations in Britain during next 10 years announced; 17 Britain to proceed with manufacture of hydrogen bombs; 22 S.E. Asia defence treaty conference opened in Bangkok; 23 M. Edgar Faure became Prime Minister of France; 24 Bank rate raised to 4½ per cent and restrictions on hire purchase announced; Dr. Albert Schweitzer appointed honorary member of the Order of Merit; Turco-Iraqi pact signed at Baghdad (Britain, Pakistan, and Persia acceded later).

March 11 Death of Sir Alexander Fleming, discoverer of penicillin; 12 The Royal Mint to be rebuilt

A.D.

April 5 Sir Winston Churchill resigned as Prime Minister; 6 Sir Anthony Eden succeeded as Prime Minister; Egypt and India signed treaty of friendship in Cairo; 13 France decided not to make atomic or hydrogen bombs but to concentrate on use of atomic energy in industry; American atomic information to be shared with other NATO countries; 18 Afro-Asian conference (29 nations) opened at Bandung; Death of Dr. Albert Einstein; 19 Standard rate of income tax reduced by 6d; Gen. Sir Gerald Templer to succeed Field Marshal Sir John Harding as C.I.G.S. in November; 25 Lady Megan Lloyd-George joined Labour Party; 29 Signor Gronchi elected President of Italy.

May 5 Ratification of London and Paris agreements completed; Germany attained full sovereignty and Western European Union came into being; 25 Summit of Kanchenjunga (less 5 vertical feet) reached by British expedition led by Charles Evans; 26 British general election resulted in Conservative majority of 59; Marshal Bulganin and Mr. Khrushchev visited Belgrade.

June 7 Mr. Nehru arrived in Moscow for talks; 14 Railway strike of footplate men ended; 15 U.S. and Britain agreed to co-operate on atomic energy; 16 Revolt against the Perón government in Argentina.

July 4 Dock workers returned to work after strike of 6 weeks; 9 Leading world scientists issued appeal for renunciation of war because of possible effects of hydrogen bomb; 18 Four-Power conference opened in Geneva (Pres. Eisenhower, Sir Anthony Eden, M. Faure, Marshal Bulganin), the first meeting between heads of Government since Potsdam, 1945; 27 Austrian State Treaty came into force.

August 8 International conference on peaceful uses of atomic energy opened in Geneva (1200 scientists from 72 countries attended); 23 Canberra twin-jet aircraft flew Atlantic from E. to W. and back in one day (av. speed 481-935 m.p.h.); 24 Russian and Chinese scientists among those to visit Harwell atomic research establishment; 29 Canberra aircraft set up new world altitude record of 65,876 ft.

September 13 Diplomatic relations to be resumed between Russia and W. Germany; 16 Universal Copyright convention came into force, bringing U.S. into agreement with European countries; 19 General Perón resigned after rebels threatened to bombard Buenos Aires; Round Table Conference on future of Malta opened in London; Russo-Finnish pact of friendship signed and military and naval base of Porkkala to be returned to Finland; 22 Independent television service began; 24 President Eisenhower had heart attack; 27 Egypt to buy arms from Russia.

October 2 City of London became a "smokeless zone"; 12 British and Soviet warships exchanged courtesy visits; 16 Kabaka of Buganda left London for Kampala after two years' exile; 18 Britain to double contribution to Colombo Plan; 20 Syria and Egypt signed mutual defence treaty; 23 Referendum on Saar European Statute gave victory to pro-German parties; 27 Conference of Four Foreign Ministers at Geneva; 31 Treaty of friendship between Russia and Yemen signed in Cairo.

November 5 Vienna State Opera House re-opened; 14 Advance party of Commonwealth Trans-Antarctic expedition left England; 16 Donald Campbell broke own world water-speed record (216.2 m.p.h.); 18 Marshal Bulganin and Mr. Khrushchev in India for 18-day state tour; 23 Russia detonated hydrogen bomb; *Hamlet* played on Russian stage by British company, the first since Tsarist times.

December 7 Mr. Attlee announced his retirement and was created an earl; 12 Completion of 830-mile pipeline through Urals, crossing 6 rivers; 14 Mr. Hugh Gaitskill elected leader of the Parl. Labour Party; 15 Sixteen new members admitted to U.N.; 16 Round table conference on Malta recommended Malta sending 3 M.P.s to Westminster; 20 Cardiff became capital of Wales; 22 U.K. and India to co-operate in peaceful development of atomic energy; 24 In Christmas broadcast the Pope spoke of need to suspend nuclear test explosions.



## HISTORICAL CALENDAR (1957)

*This calendar includes all the important 50th, 100th, 150th (etc.) anniversaries*

## JANUARY

- 1 New Year's Day. Circumcision. Bank Holiday in Scotland. Federation of Australia, 1901. Nationalisation of British coal industry, 1947.
- 2 General James Wolfe, hero of the Heights of Abraham, b. 1727.
- 3 Rt. Hon. C. E. Attlee b. 1883. Sidney Street siege, 1911.
- 4 Jakob Ludwig Karl Grimm, German philologist and folklorist, b. 1785.
- 5 King Edward the Confessor d. 1066. Sir Ernest Shackleton, Antarctic explorer, d. 1922.
- 6 Epiphany. Twelfth Day. Joan of Arc b. 1412. Frederick, Prince of Wales, eldest son of George II, b. 1707.
- 7 Plough Monday. Britain lost Calais to the French, 1568.
- 8 Galileo, Italian astronomer and scientist, d. 1642. Sir John Dalrymple, Earl of Stair, who was implicated in the Massacre of Glencoe, d. 1707.
- 9 Marco Polo, Venetian traveller to China, d. 1324. Karel Capek, Czech playwright and novelist, b. 1890.
- 10 League of Nations founded, 1920.
- 11 Ezra Cornell, American philanthropist who founded Cornell University, b. 1807. Thomas Hardy, novelist and poet, d. 1928.
- 12 Johann Heinrich Pestalozzi, educational reformer, b. 1746.
- 13 St. Hilary. George Fox, founder of the Quakers, d. 1691.
- 14 Terrible earthquake in Jamaica, 1907.
- 15 Jean Baptiste Pequeulin Molière, great French playwright, baptised, 1622.
- 16 Battle of Corunna and death of Sir John Moore, 1809.
- 17 John Ray, the "father" of English natural history, d. 1705. Benjamin Franklin, American ambassador, scientist, and writer, b. 1706.
- 18 Captain Scott reached the South Pole, 1912. Rudyard Kipling, poet and novelist, d. 1936.
- 19 Robert E. Lee, American soldier who commanded the Confederate Army in the Civil War, b. 1807. Alfred Myrns, cricketer, b. 1807. Henry Bessemer, inventor of steel-making process, b. 1813. Paul Cézanne, French artist, b. 1839.
- 20 David Garrick, actor, d. 1779. George V d., Edward VII succeeded, 1936.
- 21 Louis XVI executed by the Revolutionists, 1793. Lenin d. 1924.
- 22 Queen Victoria d. 1901.
- 23 Luxembourg National Day. William Pitt the Younger, Prime Minister, d. 1806.
- 24 Edward Jenner, pioneer advocate of vaccination against smallpox, d. 1823. Naval Battle of Dogger Bank, 1915.
- 25 Conversion of St. Paul. Robert Burns, Scottish poet, b. 1759.
- 26 Foundation Day, Australia (1788). India proclaimed a Republic, 1950.
- 27 Wolfgang Mozart, composer, b. 1756. Charles Ludwidge Dodgeon, better known as "Lewis Carroll," author of *Alice in Wonderland*, b. 1832.
- 28 Henry VII b. 1457. Sir Francis Drake, English admiral, d. 1596. Peter the Great, Czar of Russia, d. 1725.
- 29 Francis Moore, originator of "Old Moore's Almanac," b. 1657. Victoria Cross instituted, 1856. Gino Watkins, Arctic explorer, b. 1907.
- 30 King Charles I executed, Whitehall, 1649. Assassination of Mahatma Gandhi, 1948.
- 31 Guy Fawkes and other Gunpowder Plot conspirators executed, 1606. James Stanley, Earl of Derby ("the Martyr Earl"), b. 1607. Anna Pavlova, Russian ballerina, b. 1885. Violent floods on coasts of Eastern Britain, Holland, and Belgium, 1953.

## FEBRUARY

- 1 John Philip Kemble, actor, b. 1757. Admiral Thomas Troubridge lost at sea, 1807. Rt. Hon. L. S. St. Laurent, Canadian Premier, b. 1882.
- 2 Purification. Candlemas. Scottish Term Day. Michael Ivanovich Glinka, Russian composer, d. 1857. Dmitri Ivanovich Mendeleev, Russian chemist, d. 1907.
- 3 St. Blasii. Ceremony of blessing the throats, St. Etheldreda's, London.
- 4 Ceylon Independence Day (1948). W. Harrison Ainsworth, novelist, b. 1805.
- 5 Pascal Paoli, Corsican patriot leader, d. 1807.
- 6 George VI d., Elizabeth II succeeded, 1952.
- 7 Charles Dickens b. 1812. Viscount Goschen, statesman, d. 1907. Earl of Harewood b. 1923.
- 8 Mary Queen of Scots executed at Fotheringhay, 1587. Sir Leander Starr Jameson, leader of the "Jameson Raid," b. 1853.
- 10 Samuel Pimmsoll, "the sailors' friend," b. 1824.
- 11 René Descartes, French philosopher, d. 1650. Thomas Edison, inventor (incandescent lamp and gramophone), b. 1847.

- 12 Lady Jane Grey, "nine days' queen," executed, 1554. Abraham Lincoln, American President, b. 1809.
- 13 Massacre of Glencoe, 1892. Richard Wagner, composer of operas, d. 1883.
- 14 St. Valentine's Day. James Cook, explorer, killed by natives on Hawaii, 1779.
- 15 Singapore surrendered to the Japanese, 1942.
- 16 Giosuè Carducci, Italian poet, d. 1907.
- 17 Septuagesima. Tamerlane the Great, Tartar conqueror, d. 1406.
- 18 Nicolo Paganini, famous violinist, b. 1784.
- 19 Rt. Hon. Clement Davies, Liberal leader, b. 1884.
- 20 Luca della Robbia, Italian sculptor and originator of the glazed terracotta reliefs known as "Robbia ware" d. 1482. Henri Moissan, French chemist who isolated fluorine, d. 1907.
- 21 Nikolai Vasilievich Gogol, Russian playwright and novelist, d. 1852. W. H. Auden, poet, b. 1907.
- 22 George Washington b. 1732. Lord Baden-Powell, founder of the Boy Scout movement, b. 1857.
- 23 Samuel Pepys, diarist, b. 1633. Dams Nellie Melba, singer, d. 1931.
- 24 St. Matthias. Sexagesima.
- 25 Carlo Goldoni, Italian playwright, b. 1707.
- 26 Napoleon escaped from Elba, 1815.
- 27 John Evelyn, diarist, d. 1706. Henry Wadsworth Longfellow, poet, b. 1807.
- 28 Michel de Montaigne, French essayist, b. 1533. Relief of Ladysmith (Boer War), 1900.

## MARCH

- 1 St. David's Day. Sir Samuel Romilly, who was largely responsible for reforms to the English legal code, b. 1757.
- 2 John Wesley, founder of Methodism, d. 1791.
- 3 Quinquagesima. Aurangzib, last of the Mogul Emperors, d. 1707. Vincent Van Gogh, Dutch painter, b. 1853. Alfred Bruneau, French composer, b. 1857.
- 4 Forth Bridge opened, 1890. William Willett, proposer of daylight saving, d. 1915.
- 5 Shrove Tuesday. Flora Macdonald, Jacobite heroine who assisted Prince Charles Edward, d. 1790. Josef Stalin d. 1953.
- 6 Ash Wednesday. Michelangelo, Italian artist and sculptor, b. 1475. Memorial Theatre, Stratford-on-Avon, destroyed by fire, 1926.
- 7 Sir Edwin Landseer, animal painter, b. 1802.
- 8 William Branwell Booth, Salvation Army leader, eldest son of the founder, b. 1856. Count Ferdinand von Zeppelin, airship inventor, d. 1917.
- 9 John Alexander Dowrie, religious eccentric, d. 1907.
- 10 Giuseppe Mazzini, Italian nationalist leader, d. 1872. Jan Masaryk, Czech Foreign Minister, d. 1948.
- 11 Torquato Tasso, Italian poet, b. 1644.
- 12 Caesar Borgia, Italian ruler, d. 1507.
- 13 Aid to Europe Bill passed American Senate, 1948.
- 14 Admiral Byng shot after court martial for loss of Minorca, 1757. Albert Einstein, great mathematical physicist of the century and framer of theory of relativity, b. 1879.
- 15 The Ides of March. Assassination of Julius Caesar, 44 B.C. Salvatore Rosa, Italian artist, d. 1673.
- 16 Sir Hyde Parker, admiral, victor of Battle of Copenhagen, d. 1807. Hitler occupied Czechoslovakia, 1939.
- 17 St. Patrick's Day. Jewish Feast of Purim.
- 18 Fra Angelico, Italian friar-artist, d. 1455. Pierre Eugène Berthelot, French chemist, d. 1907.
- 19 Sydney Harbour Bridge opened, 1932.
- 20 Vernal equinox. Henrik Ibsen, Norwegian dramatist and poet, b. 1828.
- 21 Thomas Cranmer burnt at the stake, 1556. Johann Sebastian Bach, composer, b. 1685.
- 22 Carl Rosa, founder of famous Opera Company, b. 1842. Paul Doumer, French statesman and President, b. 1857. Stephen Senanayake, 1st Prime Minister of Dominion of Ceylon, d. 1952.
- 23 August Kotzebue, German dramatist and reactionary, assassinated, 1819.
- 24 Queen Elizabeth I d. 1603. Michael de Ruyter, Dutch admiral, b. 1607. Jules Verne, French novelist, d. 1905. Queen Mary d. 1953.
- 25 Annunciation. Lady Day. English Quarter Day. Greek Independence Day (1821). Ernst von Bergmann, German physician, d. 1907.
- 26 Ludwig van Beethoven, German composer, d. 1827. Claude Achille Debussy, French composer, d. 1918.
- 27 W. K. Röntgen, discoverer of X-rays, b. 1845. Sir James Dewar, chemist, who introduced the thermos flask, d. 1923.
- 28 Surrender of Madrid to Spanish Fascist forces, 1939.
- 29 Charles Wesley, Methodist hymn writer, d. 1788.
- 30 Francisco José de Goya, Spanish painter, b. 1746.
- 31 Mothering Sunday. Humble Petition and Advice presented to Cromwell, 1657. Charlotte Brontë, novelist, d. 1855. Duke of Gloucester b. 1900.

## APRIL

- 1 All Fools' Day. Otto Bismarck, German Chancellor, b. 1815.
- 2 Hans Christian Andersen, writer of fairy tales, b. 1805.
- 3 Sir James Clark Ross, explorer who discovered the North Magnetic Pole, d. 1862.
- 4 Grinling Gibbons, wood-carver, b. 1648. J. J. L. de Lalande, French astronomer, d. 1807.
- 5 Income Tax Year ends, Great Britain. Joseph Lister, founder of modern antiseptic surgery, b. 1827. Sir Winston Churchill resigned the office of Prime Minister, 1955.
- 6 Thomas Beecham, pharmacist and manufacturer of "Beecham's pills," d. 1907. W. H. Drummond, Canadian poet, d. 1907. Commander Robert Edwin Peary reached North Pole, 1909.
- 7 Passion Sunday. William Wordsworth, poet, b. 1770.
- 8 Dame Fanny Houston, philanthropist, b. 1867. Sir Adrian Boult, musical conductor, b. 1889.
- 9 Francis Bacon, author, philosopher, and politician, d. 1626. F. K. Brunel, civil engineer, b. 1806. John Opie, artist, d. 1907.
- 10 Algernon Charles Swinburne, poet, d. 1909.
- 11 John Davidson, poet and novelist, b. 1857.
- 12 F. D. Roosevelt, American President, d. 1945.
- 13 F. W. Woolworth, b. 1852.
- 14 Palm Sunday. Pan-American Day. *Titanic* disaster off Cape Race, 1912.
- 15 Leonard Euler, Swiss mathematician, b. 1707. Abraham Lincoln died from assassin's shot, 1865.
- 16 Jewish Passover begins. Prince Charles Edward defeated at Culloden, 1746. George Cross awarded to Malta, 1942.
- 17 Syrian National Day.
- 18 Maundy Thursday. Distribution of Royal Maundy Money, Westminster Abbey. Judae Jeffreys, who committed many to death after the Battle of Sedgemoor, d. 1689.
- 19 Good Friday. Lord Exmouth, who conducted the campaign against the Barbary Corsairs, b. 1757. Benjamin Disraeli, Lord Beaconsfield, d. 1881. Pierre Curie, famous French scientist, killed in an accident, 1906.
- 20 Spanish Fleet defeated by English off Santa Cruz, 1657. Adolf Hitler b. 1889.
- 21 Easter Sunday. H.M. Queen Elizabeth II b. 1926.
- 22 Bank Holiday. Israel State Day. Henry Fielding, novelist, b. 1707. Immanuel Kant, philosopher, b. 1724. Pierre Charles Villeneuve, French admiral at Trafalgar, d. 1806.
- 23 St. George's Day. William Shakespeare b. 1564, d. 1616. Miguel de Cervantes Saavedra, author of *Don Quixote*, d. 1616. Rupert Brooke d. 1915.
- 24 Edmund Cartwright, inventor of power loom, b. 1746.
- 25 St. Mark. Anzac Day. Battle of Almanza, British defeat (War of Spanish Succession), 1707. Princess Royal b. 1897.
- 26 King George VI and Queen Elizabeth married, 1923.
- 27 S. F. B. Morse, inventor of Morse Code, b. 1791.
- 28 Low Sunday. President Monroe, who first proclaimed the Monroe Doctrine, b. 1758. Mutiny on the *Bounty*, 1789.
- 29 George Farquhar, Restoration playwright, d. 1707. Sir Malcolm Sargent, conductor, b. 1895. Benito Mussolini, Italian dictator, executed, 1945.
- 30 Heektide. Ceremony at Hungerford, Berks.

## MAY

- 1 SS. Philip and James. May Day. Union of England and Scotland, 1707. Death of Adolf Hitler announced, 1945.
- 2 Leonardo da Vinci, Italian artist, d. 1519. Alfred de Musset, French writer, b. 1817.
- 3 Poland National Day. Japanese Constitution Day.
- 4 General Strike began in Britain, 1926.
- 5 Karl Marx, German socialist philosopher, b. 1818.
- 6 Scottish Bank Holiday. Sigmund Freud, originator of the science of psycho-analysis, b. 1856. Maria Montessori, Italian educationist, d. 1952.
- 7 Johannes Brahms, composer, b. 1833.
- 8 End of World War II against Germany, 1945.
- 9 Liberation Day, Jersey (1945). William Bradford, one of the founders of New England, d. 1657. Richard Evelyn Byrd, American polar explorer, flew over the North Pole 1926.
- 10 Robert Bruce beat the English at London Hill, 1307. Indian Mutiny began at Meerut, 1857.
- 11 Edward Dyer, poet, buried 1607. Garibaldi, Italian liberator, landed with the "thousand" on Sicily, 1860.
- 12 Thomas Wentworth, Earl of Strafford, executed, 1641. Coronation of King George VI, 1937.
- 13 Jamestown, Virginia, founded, 1607. Sir Ronald Ross, who discovered that the mosquito carries malaria parasite, b. 1857. F. W. Sanderson, great headmaster of Oundle School, b. 1857. Alexander Buchan, meteorologist, d. 1907.
- 14 Liberation Day, Germany (1945). Independence Day, Paraguay. Johan August Strindberg, Swedish author, d. 1912.
- 15 Scottish Term Day. Prince von Metternich, Austrian Chancellor, b. 1773.
- 16 David Hughes, inventor of microphone, b. 1831.

- 17 Norway Constitution Day (1814). Relief of Mafeking, 1900.
- 18 British Museum Reading Room opened, 1857. Present Eddystone Lighthouse opened, 1882.
- 19 St. Dunstan. Battle of La Hogue, English fleet beat the French, 1692. Sir Benjamin Baker, engineer, d. 1907. Lawrence of Arabia killed in accident, 1935.
- 20 Cuba Independence Day. Christopher Columbus d. 1506.
- 21 Marquess of Montrose, Royalist leader, executed, 1650. Karl Blind, German radical statesman and folklorist, d. 1907. Charles Lindbergh flew the Atlantic alone, 1927.
- 22 Battle of St. Albans, beginning the Wars of the Roses, 1455. Sir Laurence Olivier b. 1907.
- 23 Carl Linnaeus, founder of modern botany, b. 1707. Henrik Ibsen, Norwegian dramatist, d. 1906.
- 24 Empire Day. John Wesley's "conversion," 1738. John Brown ordered the massacre at Pottawatomie Creek, 1856.
- 25 Argentine National Day (1810). Gustav Holst, musical composer, d. 1934.
- 26 Rogation Sunday. Queen Mary b. 1867.
- 27 Great Japanese naval victory over the Russians at Tsushima, 1905.
- 28 Removal Day, Scotland. Louis Jean Rodolphe Agassiz, Swiss scientist and naturalist, b. 1807.
- 29 Oak Apple Day. King Charles II b. 1630. E. P. Hillary and Tenzing Norkay reached summit of Everest, 1953.
- 30 Ascension. Memorial Day, U.S.A. Joan of Arc burnt at the stake, 1431. Indian Mutiny spread to Lucknow, 1857. Henry Addington, Viscount Sidmouth, Prime Minister, b. 1757. Dunkirk evacuation began, 1940.
- 31 Union Day, South Africa (1909). Naval battle off Jutland, 1916.

## JUNE

- 1 "Glorious 1st of June," British naval victory off Ushant, 1794. John Masefield, Poet Laureate, b. 1878. Sir Frank Whittle, pioneer in the field of jet propulsion, b. 1907.
- 2 Coronation of Elizabeth II, 1953. Edward Elgar, composer, b. 1857. Giuseppe Garibaldi, Italian patriot and liberator, d. 1882.
- 3 William Harvey, discoverer of the circulation of the blood, d. 1657.
- 4 King George III b. 1738. Birthday celebrations at Eton College.
- 5 Denmark Constitution Day. H.M.S. *Hampshire* lost with Earl Kitchener on board, 1916.
- 6 D Day, 1944. Pierre Corneille, French dramatist, b. 1606. Dean Inge b. 1860.
- 7 Parliamentary Reform Bill passed, 1832.
- 8 Tom Paine, radical writer, d. 1809.
- 9 Whit Sunday. Charles Dickens d. 1870. Great fire at Alexandra Palace, 1902.
- 10 Bank Holiday. Duke of Edinburgh b. 1921. Crystal Palace opened at Sydenham, 1854.
- 11 St. Barnabas. Kamehameha (first King) Day, Hawaii.
- 12 Rt. Hon. Sir Anthony Eden b. 1897. Rotherhithe Tunnel opened, 1908.
- 13 St. Anthony. Mutiny at the Nore ended, 1797.
- 14 Battle of Naseby, 1645. Women granted the vote in Norway, 1907.
- 15 Magna Carta signed at Runnymede, 1215.
- 16 Trinity Sunday. John Churchill, Duke of Marlborough, military commander, d. 1722.
- 17 St. Alban. Iceland Independence Day. John Wesley, founder of Methodism, b. 1703.
- 18 Battle of Waterloo, overthrow of Napoleon, 1815.
- 19 Blaise Pascal, French philosopher and mathematician, b. 1623. *Alabama* sank off Cherbourg, 1864.
- 20 Corpus Christi. Admiral Byng lost Minorca to the French, 1756. Black Hole of Calcutta, 1756. Queen Victoria came to the throne, 1837. Rimsky-Korsakov, Russian composer, d. 1908.
- 21 Summer solstice (longest day), Great Britain. Kiel Canal opened, 1895.
- 22 Giuseppe Mazzini, Italian patriot and liberator, b. 1805. Haakon VII crowned first king of independent Norway, 1906.
- 23 Battle of Plassey, 1757. Duke of Windsor b. 1894.
- 24 St. John Baptist. Midsummer Day. English Quarter Day. Battle of Bannockburn, 1314. South Kensington Museum opened, 1857.
- 25 Title of Prince Consort bestowed on Prince Albert, 1857. Outbreak of war in Korea, 1950.
- 26 Corn Laws repealed, 1846. United Nations Charter signed at San Francisco, 1945.
- 27 Charles Stewart Parnell, Irish leader, b. 1846.
- 28 Lord Raglan, Crimean commander-in-chief, d. 1855. Assassination of Archduke Francis Ferdinand at Sarajevo, 1914.
- 29 SS. Peter and Paul. Trial of the Seven Bishops, 1688.
- 30 American atom-bomb test at Bikini, 1946.

## JULY

- 1 Dominion Day, Canada (1867). Battle of the Boyne; William III defeated James II, 1690. Union Jack Club founded, 1907. D.P.T.B. created, 1933.



- 2 Battle of Marston Moor, Cromwell defeated Prince Rupert, 1644. Emile Coué, French doctor and advocate of auto-suggestion, d. 1926.
- 3 Dog Days begin. Henry Grattan, Irish nationalist politician, b. 1746.
- 4 Independence Day, U.S.A. (1776). Giuseppe Garibaldi, Italian patriot, b. 1807. Thomas Jefferson, American President, d. 1826. Henry Lawrence, outstanding soldier and administrator in India, d. 1857. Prince Michael b. 1942.
- 5 Tynwald Day, Isle of Man. Sarah Siddons, actress, b. 1755. Cecil John Rhodes b. 1853.
- 6 Battle of Sedgemoor, Monmouth's troops routed, 1685. John Flaxman, sculptor, b. 1755.
- 7 St. Thomas's More executed, 1535. Edward I ("Longshanks") d., Edward II succeeded, 1307. Treaty of Tilsit (France, Prussia, and Russia), 1807. Sir Arthur Conan Doyle, creator of Sherlock Holmes, d. 1930.
- 8 Edmund Burke, politician and author, d. 1797. William Edward Parry, Arctic explorer, d. 1855.
- 9 Amedeo Avogadro, Italian scientist, well known for Avogadro's Law, d. 1856. Foundation stone of the University College of North Wales, Bangor, laid, 1907. H.M.S. *Vanguard* blown up with great loss of life, 1917.
- 10 John Calvin, Protestant Reformer, b. 1509.
- 11 Robert Bruce, King of Scotland, b. 1274. Gertrude Bell, traveller, "uncrowned Queen of Arabia," d. 1926.
- 12 Orangeman's Day. Bank Holiday, Northern Ireland. Battle of Aughrim, 1691. Titus Oates, informer, d. 1705.
- 13 Henry Benedict, Cardinal York, styled "Henry IX." by the Jacobites, son of the Old Pretender, d. 1807.
- 14 Fête Nationale, France. Fall of the Bastille, 1789. William Henry Perkin, chemist and founder of aniline-dye industry, d. 1907.
- 15 St. Swithin's Day. Rembrandt, Dutch artist, b. 1606. Massacre at Cawnpore, Indian Mutiny, 1857.
- 16 Jewish Fast of Tammuz. Pierre Jean de Béranger, French song-writer, d. 1857. Roald Amundsen, Norwegian Polar explorer, b. 1872.
- 17 Charlotte Corday, assassin of Jean Paul Marat, executed, 1793. County Hall, London, opened, 1922.
- 18 W. G. Grace, famous cricketer, b. 1848. Laurence Housman, poet and playwright, b. 1865.
- 19 Matthew Flinders, navigator and explorer in Australia, d. 1814.
- 20 St. Margaret. Colombia Independence Day.
- 21 Belgium Independence Day (1831). Repulse of the Spanish Armada began, 1588.
- 22 St. Mary Magdalen. Earl of Shaftesbury b. 1621.
- 23 Prince Charles Edward landed in Scotland, 1745.
- 24 Simon Bolívar, "the Liberator," b. 1783.
- 25 SS. James and Christopher. Louis Blériot made first crossing of English Channel in an aeroplane, 1909.
- 26 St. Anne. Battle of Hastenbeck, Britain defeated by France, 1757. George Bernard Shaw, dramatist, b. 1856. Eva Perón d. 1952.
- 27 Alexandre Dumas ("Fils"), French novelist and playwright, b. 1824.
- 28 Peru Independence Day (1821). Anne of Cleves, fourth wife of Henry VIII, d. 1557. Robespierre, French Revolutionist leader, executed, 1794.
- 29 Robert Schumann, composer, d. 1856.
- 30 William Penn, Quaker and founder of Pennsylvania, d. 1718.
- 31 St. Ignatius Loyola, founder of the Jesuits, d. 1556.
- AUGUST**
- 1 Lammas. Scottish Term Day. Battle of Minden, 1759. Battle of the Nile, 1798. D. C. Murray, novelist, d. 1907.
- 2 Thomas Gainsborough, artist, d. 1788. Enrico Caruso, singer, d. 1921.
- 3 Haakon VII, King of Norway, b. 1872. Augustus Saint-Gaudens, American sculptor, d. 1907.
- 4 H.M. the Queen Mother b. 1900. Percy Bysshe Shelley, poet, b. 1792. World War I began, 1914.
- 5 Bank Holiday. Oyster Day, Great Britain. Laying of Atlantic cable completed, 1857. Atom bomb dropped on Hiroshima, 1945.
- 6 Transfiguration. Anne Shakespeare (née Hathaway) d. 1623. Gertrude Ederle, first woman to swim English Channel, 1926.
- 7 American offensive opened in Korea, 1950.
- 8 George Canning, statesman, d. 1827.
- 9 Thomas Telford, road and bridge builder, b. 1757. Atom bomb dropped on Nagasaki, 1945.
- 10 St. Lawrence. Battle of St. Quentin (French defeated by the English and Spanish), 1557. Rt. Hon. W. S. Morrison, Speaker of the House of Commons, b. 1893.
- 11 Andrew Carnegie, philanthropist and library benefactor, d. 1919. Terrible earthquake, Ionian Isles, 1953.
- 12 "The Glorious Twelfth." Grouse shooting begins in Great Britain.
- 13 Battle of Blenheim, Marlborough's first great victory, 1704. John Logie Baird, pioneer of television, b. 1888. Florence Nightingale d. 1910.
- 14 Pakistan National Day (1947). Johann Fust of Mainz published first printed dated book, 1457. Japan surrendered to the Allies, 1945.
- 15 Assumption. India Independence Day (1947). Princess Anne b. 1950. Macbeth killed by Malcolm, 1057. Joseph Joachim, Hungarian violinist, d. 1907.
- 16 Peterloo Massacre, 1819. R. W. Bunsen, inventor of the bunsen burner, d. 1899.
- 17 Robert Blake, admiral, d. 1657.
- 18 William Cavendish, Duke of Devonshire, statesman, d. 1707.
- 19 Frans Snyder, Flemish artist, d. 1657. James Watt, maker of early steam engines, d. 1819.
- 20 St. Bernard of Clairvaux, "the last of the Fathers," d. 1153.
- 21 Princess Margaret b. 1930.
- 22 Royalist standard raised at Nottingham, beginning the Civil War, 1642.
- 23 William Wallace, Scottish leader, executed, 1305.
- 24 St. Bartholomew. Massacre of St. Bartholomew, 1572. Selina Hastings, Countess of Huntingdon, religious revivalist, b. 1707.
- 25 Uruguay Independence Day. Mary Coleridge, poet and novelist, d. 1907.
- 26 Battle of Crécy, Edward III defeated the French, 1346. Prince Richard b. 1944.
- 27 Sir Donald Bradman, Australian cricketer, b. 1908.
- 28 David Hartley, English physician and philosopher, who propounded the theory of "association of ideas," d. 1757. Leo Tolstoy, Russian writer, b. 1828. Abolition of Slavery Bill passed in British Parliament, 1833.
- 29 John Lilburne, political agitator of Cromwellian period, d. 1657. Maurice Maeterlinck, Belgian dramatist and poet, b. 1862.
- 30 Sir John Ross, Arctic explorer, d. 1856.
- 31 Leofric, Earl of Mercia, Lady Godiva's husband, d. 1057. John Bunyan d. 1688. Robert Clive captured Arcot, 1751.
- SEPTEMBER**
- 1 St. Giles. Jacques Cartier, French navigator and pioneer explorer in Canada, d. 1557.
- 2 Great Fire of London began, 1666. British naval victory at Copenhagen, 1807.
- 3 Oliver Cromwell won battles at Dunbar, 1650. Worcester, 1651, and d. 1658. World War II began, 1939.
- 4 Edvard Grieg, composer, d. 1907.
- 5 Louis XIV of France b. 1638. Auguste Comte, French philosopher, d. 1857. Singapore re-occupied, 1945.
- 6 Marquis de Lafayette, French soldier, b. 1757. George Bradshaw, inventor of railway time-tables, d. 1853. René François Sully-Prudhomme, French poet and Nobel prize-winner, d. 1907.
- 7 Elizabeth I b. 1533. George Louis Leclerc, Comte de Buffon, French writer and naturalist, b. 1707. W. Friese-Greene, pioneer of the cinematograph, b. 1855.
- 8 Malta National Day (1656). Richard I, Cœur de Lion, b. 1157.
- 9 Battle of Flodden, Scots defeated by English, 1513. Archbishop Trench, writer and theologian, b. 1807. Allies entered Sevastopol after long siege, 1855. John Russell Colvin, administrator in India, d. 1857.
- 10 Battle of Pinkie, Scots defeated by English, 1547.
- 11 Pierre Ronsard, French poet, b. 1524. Jan Christian Smuts, South African Prime Minister, d. 1950.
- 12 William Dugdale, antiquary, b. 1606.
- 13 Battle of Hightes of Abraham, death of General James Wolfe, 1759. Sir John Cheke, Renaissance scholar, d. 1557. Charles James Fox, statesman, d. 1806.
- 14 Holy Rood Day. St. Chrysostom d. 407. Alighieri Dante, greatest of Italian poets, d. 1321. Napoleon occupied Moscow, 1812.
- 15 William Huskisson killed at opening of Liverpool-Manchester Railway, 1830. William Howard Taft, American President, b. 1857.
- 16 Mexico Independence Day. Gabriel Daniel Fahrenheit, German scientist after whom the thermometer is named, d. 1736.
- 17 Arnhem Day (1944). Opening of Cromwell's third Parliament, 1657. Tobias Smollett, novelist, d. 1771.
- 18 Dr. Samuel Johnson b. 1709.
- 19 Battle of Poitiers, 1356. Siege of Paris began, 1870. Dr. Thomas John Barnardo, philanthropist, d. 1905.
- 20 Delhi retaken, Indian Mutiny, 1857.
- 21 St. Matthew. John Loudon McAdam, road-builder, b. 1756. End of French monarchy, France became a republic, 1792.
- 22 Marconi transmitted first wireless message, England to Australia, 1918.
- 23 Autumnal equinox. Sigmund Freud, founder of psycho-analysis, d. 1939.
- 24 Ben Greet, famous actor-manager, b. 1857. George Cross instituted, 1940.
- 25 Relief of Lucknow, Indian Mutiny, 1857.
- 26 Dominion Day, New Zealand (1907). George Santayana, Spanish author, d. 1961.
- 27 Stockton-Darlington Railway opened for public use, 1825. Engelbert Humperdinck, composer of *Hansel and Gretel* opera, d. 1921.
- 28 Louis Pasteur, French chemist and bacteriologist, d. 1895.



- 29 St. Michael and All Angels. English Quarter Day. Emilia Zola, reformer and novelist, d. 1902.
- 30 St. Jerome. Field-Marshal Earl Roberts b. 1832. Hermann Sudermann, German writer, b. 1857. Rudolf Diesel, German engineer, lost at sea, 1913.

## OCTOBER

- 1 Henry III b. 1207. Johannes Sturm, German reformer, b. 1507.
- Richard III ("Crookback") b. 1452. Mahatma Gandhi b. 1869.
- 3 St. Francis of Assisi d. 1226. Capitulation of Limerick, 1691.
- 4 Rembrandt, Dutch painter, d. 1669.
- 5 Jewish Day of Atonement, Yom Kippur. British airship, R101, crashed in France, 1930.
- 6 William Tyndale, early translator of the Bible into English, burned at the stake, 1536. Sir Henry Hawkins, Lord Bampton, great advocate, d. 1907.
- 7 Battle of Lepanto at which the Christians beat the Turks, 1571. Fall of Saratoga (American War of Independence), 1777.
- 8 Kathleen Ferrier, singer, d. 1953.
- 9 St. Denys. Duke of Kent b. 1935. Miguel de Cervantes Saavedra, author of *Don Quixote*, b. 1547.
- 10 Count Alexei Tolstoy, Russian writer, d. 1875. Lord Nuffield b. 1877.
- 11 Ulrich Zwingli, Swiss Reformer, d. 1531.
- 12 Columbus Discovery Day (1492). Nurse Edith Cavell shot by the Germans, 1915.
- 13 Henry Irving, actor, d. 1905. Successful helicopter flight at Farnborough, 1925.
- 14 Battle of Hastings, 1066. Eamon De Valera b. 1882. President Dwight David Eisenhower b. 1890.
- 15 Henry Lyte, antiquary and botanist, d. 1607. Friedrich Wilhelm Nietzsche, German philosopher, b. 1844. Oscar Wilde b. 1856.
- 16 Bishops Ridley and Latimer burnt at the stake, Oxford, 1555. Battle of the Nations began, Leipzig, Napoleon defeated, 1813.
- 17 René Antoine Réaumur, French scientist and inventor of thermometer, d. 1757.
- 18 St. Luke. Revocation of Edict of Nantes, 1685.
- 19 Napoleon's retreat from Moscow began, 1812.
- 20 Sir Christopher Wren, architect and designer of St. Paul's Cathedral, London, b. 1632.
- 21 Pietro Aretino, Italian poet, d. 1556. Battle of Trafalgar and death of Nelson, 1805.
- 22 Sir Cloudesley Shovel, admiral, who was in joint command at the capture of Gibraltar, d. 1707. Thomas Sheraton, cabinet-maker, d. 1806. Franz Liszt, composer, b. 1811.
- 23 First Parliament of Great Britain after Union of England and Scotland, 1707. Robert Bridges, poet, b. 1844. Paul Cézanne, French artist, d. 1906.
- 24 United Nations Day. Pierre Gassendi, mathematician and philosopher, d. 1655.
- 25 St. Crispin. Battle of Agincourt, 1415. Charge of the Light Brigade, Balaklava, 1854.
- 26 Heinrich Friedrich Carl von Stein, German statesman, b. 1757. Georges Jacques Danton, French Revolutionist, b. 1759.
- 27 Napoleon occupied Berlin, 1806.
- 28 SS. Simon and Jude. Erasmus, Dutch philosopher and scholar, b. 1466.
- 29 Turkish National Day (1923). Sir Walter Raleigh executed, 1618. Edmund Halley, astronomer, b. 1656. Gerald Massey, poet, d. 1907.
- 30 Edward Vernon, admiral, d. 1757. Bishop Christopher Wordsworth b. 1807. Feodor Mikhailovich Dostoevsky, Russian novelist, b. 1821.
- 31 Hallowe'en. Martin Luther nailed his 95 theses to the door of the Church of Wittenberg, 1517.

## NOVEMBER

- 1 All Saints. Benvenuto Cellini, Italian goldsmith, sculptor, and engraver, b. 1500. Antonio Canova, Italian sculptor, b. 1757.
- 2 All Souls. Marie Antoinette, Queen of France, b. 1755. George Bernard Shaw, dramatist, d. 1950.
- 3 Karl Baedeker, German publisher, famous for his guide-books, b. 1801.
- 4 Felix Mendelssohn-Bartholdy, composer, d. 1847.
- 5 Gunpowder Plot, 1605. William of Orange landed at Brixham, 1688. Battle of Rossbach (Seven Years War), Prussian victory, 1757. Angelica Kaufmann, Anglo-Swiss artist, d. 1807.
- 6 George Williams, founder of the Y.M.C.A., d. 1905.
- 7 Marie Curie, discoverer of radium, b. 1867.
- 8 John Milton, poet, d. 1674. First train completed journey across Canada, 1886.
- 9 Lord Mayor of London's Day.
- 10 Stanley found Livingstone at Ujiji, 1871.
- 11 Martinmas. Scottish Term Day. Armistice Day (1918).
- 12 Alexander Porfirievich Borodin, Russian composer and chemist, b. 1834. German battleship, *Tirpitz*, sunk, 1944.
- 13 Gioachino Antonio Rossini, composer, d. 1868. Occupation of Portugal by Napoleon, Portuguese royal family fled to Brazil, 1807. Francis Thompson, poet d. 1907.
- 14 Prince Charles, Duke of Cornwall, b. 1948. Emanci-

C (65th Ed.)

- patton Run, end of red flag law for motorists, 1896. B.B.C. instituted, 1922.
- 15 Brazil National Day.
- 16 Gustavus Adolphus Day, Sweden. John Walter, founder of *The Times*, d. 1801. Oklahoma became a member of the United States, 1907.
- 17 Queen Mary I d., Elizabeth I succeeded, 1558. Viscount Montgomery b. 1887. Augusta Rodin, French sculptor, d. 1917.
- 18 Dr. Archibald Barr, Scottish scientist, inventor of the optophone, b. 1855.
- 19 Ferdinand de Lesseps, designer of Suez Canal, b. 1805.
- 20 Jamaica Constitution Day (1944). Marriage of H.M. Queen Elizabeth II and Prince Philip, Duke of Edinburgh, 1947. Naval battle of Quiberon Bay (Seven Years War), 1759. Manasseh ben Israel, mainly responsible for persuading Cromwell to readmit Jews to Britain, d. 1657.
- 21 Henry Purcell, English composer, d. 1695.
- 22 St. Cecilia. Thomas Cook, tourist pioneer, b. 1808. G. R. Gissing, author, b. 1857.
- 23 Richard Hakluyt, voyager and writer, d. 1616.
- 24 John Knox, Scottish Reformer, d. 1572. Sir Henry Havelock, famous general (Indian Mutiny), d. 1857.
- 25 St. Catherine. Lillian Baylis, theatrical manager (Old Vic and Sadler's Wells), d. 1937.
- 26 Joseph von Eichendorff, German author, d. 1857. Britain bought Suez Canal shares from the Khedive of Egypt, 1875.
- 27 Tehran Conference (Winston Churchill, President Roosevelt, and Marshal Stalin), 1943.
- 28 Thanksgiving Day U.S.A. Removal Day, Scotland. William Blake, poet and artist, b. 1757. Anton Rubinstein, pianist, b. 1829.
- 29 John Harvard, founder of Harvard University, b. 1607.
- 30 St. Andrew. Anniversary of the Royal Society. Sir Winston Churchill b. 1874.

## DECEMBER

- 1 Advent Sunday. Lorenzo Ghiberti, Italian goldsmith and sculptor, d. 1455. Lady Astor entered Parliament as first woman M.P., 1919.
- 2 Napoleon defeated Austrians at Austerlitz, 1805. John Brown, the hero of Harper's Ferry, abolitionist, executed, 1859.
- 3 Battle of Hohenlinden, French defeated the Austrians, 1800. Mary Baker Eddy, founder of Christian Science, d. 1910.
- 4 Eddystone Lighthouse destroyed by fire, 1755.
- 5 Earl Jellicoe, British admiral, b. 1859.
- 6 St. Nicholas. Joseph Conrad, novelist, b. 1857.
- 7 Napoleon's Milan Decree against British shipping, 1807. Captain William Bligh (of the *Bounty*), d. 1817. Japanese attack on Pearl Harbour, 1941.
- 8 Jean Sibelius, Finnish composer, b. 1865.
- 9 John Milton, poet who wrote *Paradise Lost*, b. 1608.
- 10 Alfred Nobel, Swedish manufacturer, who left a large fortune for annual prizes, d. 1896.
- 11 C. F. Cross, inventor of artificial silk, b. 1855.
- 12 Colley Cibber, actor and playwright, d. 1757. Marconi transmitted wireless signals across the Atlantic, 1901.
- 13 Samuel Johnson d. 1784. Duchess of Kent b. 1906.
- 14 Prince Albert, Consort of Queen Victoria, d. 1861. King George VI b. 1895. Roald Amundsen reached the South Pole, 1911.
- 15 Isaac Walton, author of *The Compleat Angler*, d. 1683.
- 16 Dingnan's Day, South Africa and Swaziland. Sir J. B. Hobbs, English cricketer, b. 1882.
- 17 John Greenleaf Whittier, American poet, b. 1807. Wilbur and Orville Wright made their first flight, 1903. William Thomson, Lord Kelvin, scientist, d. 1907.
- 18 Charles Wesley, Methodist hymn-writer, b. 1707. Prince William b. 1941.
- 19 Albert Abraham Michelson, American physicist, famous for the Michelson-Morley experiment, b. 1852.
- 20 Rt. Hon. R. G. Menzies, Prime Minister of Australia, b. 1894.
- 21 St. Thomas. Forefathers' Day, U.S.A., commemorating the landing of the Pilgrim Fathers, 1620. Nat Gould, novelist, b. 1857.
- 22 Winter solstice (shortest day), Great Britain. Francis Trevelyan, suspected betrayer of Gunpowder Plot, d. 1605.
- 23 Joseph Smith, founder of Mormonism, b. 1805.
- 24 Christmas Eve. William Makepeace Thackeray, novelist, d. 1863.
- 25 Christmas Day. English Quarter Day. Duchess of Gloucester b. 1901. Princess Alexandra b. 1936.
- 26 St. Stephen. Boxing Day. Bank Holiday.
- 27 St. John. Evangelist. Johann Kepler, German astronomer, b. 1571.
- 28 Holy Innocents. Thomas Woodrow Wilson, American President, who helped in the establishing of the League of Nations, b. 1856.
- 29 Thomas à Becket, Archbishop of Canterbury, murdered in the Cathedral, 1170. Robert William Philp, physician and pioneer worker on tuberculosis treatment, b. 1857.
- 30 Josephine Butler, social reformer, d. 1906.
- 31 Hogmanay. Catherine of Braganza, Queen Consort of Charles II, d. 1705. John Newton, slave ship captain and divine (after conversion), d. 1807.

# Story of 1955

THE international scene changed during the year in a dramatic way, and the pattern at the end of the year could scarcely have been predicted.

First, in regard to the dominant tension between Russia and the West, there was a curve of hope in the spring and summer which descended abruptly again before the year was out. In February Marshal Bulganin had replaced Malenkov as head of the Government in Russia; and optimism grew when, next month, the way was cleared for a peace treaty with Austria. Soon after it was announced that a "Summit" Conference of the Heads of the four Governments of Russia, America, Britain, and France, such as had been suggested by Sir Winston Churchill, would take place at Geneva in the summer. Proposals for German unity, European security, and disarmament were discussed in a friendly manner. But the Conference dealt only with generalities, and it left their application to be worked out by the four Foreign Ministers in the autumn. Great disappointment was caused by the failure of the second conference to agree on any topic discussed. The story is explained in the Outline of Western European Union on page 139. Early in the year, the Paris Agreements, which brought Western Germany into N.A.T.O., were ratified; and this was quickly followed by a counterbalancing Warsaw Pact on the Soviet side. Both these developments are also explained in the Outline referred to.

Early in the year, too, a tense situation arose in the Far East when it seemed that communist China would attack the off-shore islands occupied by the Kuomintang. But, fortunately, Peking refrained from such an attack.

As the year went on the immediate centre of gravity shifted to the Middle East. Two groupings were formed there. Britain joined four countries—Turkey, Iraq, Persia, and Pakistan—in what was called the Baghdad Defence Pact, presumably against Russian aggression. The Pact met with a good deal of criticism. On the other hand, Egypt was served with arms from Russian sources and an impetus was given to the hostility to Israel shown by that country and other countries in the Middle East.

The area of trouble grew. It expanded westward to Cyprus, where there were riots over a demand for self-determination; and to North Africa, where Tunisia eventually obtained self-government and where, in Morocco, further steps were taken on the road to independence.

It is difficult to generalise about such a complicated pattern. But a cardinal feature which seemed to emerge was the poverty of millions in Asia and Africa. There was nothing new, of course, about that. What was new was the growing realisation that the peoples of those continents would not continue to endure their poverty passively; that their refusal to do so would have important political results; and a race developed between Russia and the West as to who could bring the most beneficial aid to the undeveloped countries.

Things to come took clearer shape in two fields, nuclear power and automation. The peaceful uses of atomic energy were dramatically delineated at the first full international conference on the subject at Geneva. Automation is already changing production in the United States and is a feature of Russia's next Five Year Plan.

The illness of President Eisenhower came as a shock, and the question remained undecided as to whether he would run for the Presidency again in 1956.

Another important fact from America was the fusion of the two great labour organisations—the American Federation of Labour and the Congress of Industrial Organisations—into a single federation nearly sixteen millions strong.

Sixteen new members were admitted to the United Nations, but Japan and Outer Mongolia were excluded.

At home there were important political changes. Sir Winston Churchill resigned in April with no press, owing to a printers' strike, to do justice to the occasion. Sir Anthony Eden became Prime Minister, and eight days later announced the dissolution of Parliament. The Conservatives gained 49.7 per cent. of the votes at the ensuing General Election and Labour 46.4 per cent., the Conservative majority in the Commons rising from seventeen to fifty-eight. In December Mr. Attlee resigned as Leader of the Opposition and received an earldom; and Mr. Gaitskell was elected in his place with a clear majority over Mr. Bevan and Mr. Morrison. Mr. Butler, before being succeeded by Mr. Macmillan as Chancellor of the Exchequer, introduced an autumn budget and announced a "credit squeeze" to check home consumption and maintain gold and dollar reserves. In January the Bank Rate rose from 3 to 3½ per cent. and next month rose again to 4½ per cent.

Among the controversies of the year was the subject of the death penalty. The House of Commons in February decided, upon a free vote by 245 to 214, against a suspension of the death penalty for five years. Public interest in the subject grew throughout the year.

There were three important strikes—on the railways, at the docks, and the newspaper strike already mentioned. All three were the result of an inter-union conflict. The occurrence of these strikes strengthened the view that it was not only the relations between individual unions and the T.U.C. which needed remodelling but also the relations between the unions themselves.

England enjoyed the best summer since 1911, after a long, cold winter and a cold spring. In September commercial television made its first appearance on the screen.

After a long period of Governmental pondering Cardiff was recognised as the capital of Wales.

After persistent rumours for two months from the date of her twenty-fifth birthday Princess Margaret announced that she had decided not to marry Group Captain Peter Townsend.

Records of all kinds continued to be broken. A Canberra twin-jet aircraft flew from London to New York and back in one day at an average speed of over 481 m.p.h. The new Comet III jet air liner reached Sydney from London in 24 hours 23 minutes. It completed a round-the-world flight, covering 30,000 miles in 66 hours 43 minutes.

In sport the M.C.C. retained the Ashes in their Australian tour. C. J. Chataway beat the world record for three miles, and Gordon Pirie beat Zatopek the triple Olympic champion three times in four races. Donald Campbell broke his world water-speed record at an average speed of 216.2 m.p.h.

It was scarcely a distinguished year in the Arts. Perhaps the best play was "Tiger at the Gates," by Jean Giraudoux, translated by Christopher Fry; and one of the most artistic and popular entertainments was provided by a visit to London of the Chinese National Theatre. The first "Hamlet" to be played on a Russian stage by a British company since Tsarist days opened at the Moscow Art Theatre in November. Sir Laurence Olivier produced a striking and popular film version of "Richard III," taking the title rôle.

Among the honours which gave special pleasure was the award of the Order of Merit to Dr. Albert Schweitzer; and the award of the Silver Pears Trophy for 1956 to Earl Russell, the distinguished philosopher, for his work in clarifying the possible paths to world peace.

The year dissolved in an outlook of rising prices and stiffer world economic competition; and men were wondering whether nuclear energy and automation could arrive soon enough to satisfy a global demand for better standards.

# Prominent People



Lives and leading achievements of distinguished  
men and women of all ages and countries



# Prominent People

## A

- Abbot, George** (1562-1633), Archbishop of Canterbury in 1611, and one of the translators of the authorised version of the Bible.
- Abdul-Hamid II** (1842-1918), succeeded his brother as Sultan of Turkey, 1876, and was deposed, 1909, after a long conflict with the Young Turk party, led by Enver Pasha. An autocratic ruler and earned the names Abdul the Damned and the Red Sultan because of his ruthless cruelty.
- Abdullah ibn Husein** (1882-1951); King of Jordan; made ruler under the British mandate in 1921 and proclaimed King in 1946 when Transjordan (renamed Hashimite Kingdom of the Jordan in 1949) was created an independent state by treaty with Britain. His assassination in 1951 removed a friend of Britain and a wise and constructive statesman of the Arab world.
- A'Becket, Thomas.** (See Becket, Thomas A')
- Abel, Sir Frederick Augustus, 1st Bart., G.C.V.O., K.C.B., F.R.S.** (1827-1902). Joint inventor, with Prof. Sir James Dewar (q.v.), of cordite.
- Abelard, Peter** (1079-1142), mediæval philosopher and divine, born near Nantes, pupil of William of Champeaux, the most celebrated dialectician of the day. Unrivalled in philosophy, he acquired great popularity as a teacher and attained great scholastic glory. His romance with Héloïse, niece of Canon Fulbert, has been much written about and will be familiar to most readers. The Canon had Abelard castrated and they retired from the world, he to the monastery at St. Denis and she to a nunnery at Argenteuil. The correspondence between Abelard and Héloïse has been published. Their remains now lie in one tomb at Père la Chaise, to which they were removed after the Revolution.
- Abercrombie, Lascelles** (1881-1938), English poet and critic. Was Professor of English Literature at London University, 1929-35; Lecturer in Poetry at Queen's University, Belfast, 1931-32. Author of many noteworthy publications.
- Abercrombie, Sir (Leslie) Patrick, M.A., F.S.A., F.R.I.B.A.** (b. 1879), architect and town-planner. Brother of the above. Lever Professor of Civic Design at Liverpool, 1915-35, and Professor of Town Planning at University College, London, 1935-46. Consulted on the replanning of Plymouth, Hull, Bath, the Clyde Valley, Dublin, Addis Ababa, Colombo, and Cyprus. Produced the famous plan for Greater London, 1943.
- Aberdeen, 4th Earl of, K.G., P.C., K.T., F.R.S.** (1784-1860), distinguished statesman and diplomat. Prime Minister between 1852 and 1855 of a coalition government of Whigs and Peelites.
- Abney, Sir William de Wiveleslie, K.C.B., D.Sc., F.R.S.** (1844-1921). English chemist and physicist, who made valuable researches in photography and spectrum analysis, and contributed largely to the progress made in colour photography and colour printing.
- Abruzzi, Duke of, the Prince Luigi Amadeo Giuseppe Maria Ferdinando Francesco** (1873-1933), greatly distinguished himself by Arctic exploration. In 1899 he advanced nearer to the North Pole than any previous explorer had done, his expedition reaching 86 degrees 34 minutes N. Lat. or 20 minutes beyond Nansen's 1893-1896 achievement. C-in-C. Italian Navy, 1915-17.
- Acheson, Dean Gooderham, A.B., LL.B.** (b. 1893). U.S. Secretary of State in the Truman Administration, 1949-52.
- Acton, John Emerich Edward Dalberg, 1st Baron, K.C.V.O., D.C.L., LL.D.** (1834-1902), English historian and brilliant scholar; Professor of Modern History at Cambridge, 1895-1902.
- Adam, Robert** (1728-1792), one of four Scottish brothers, all distinguished architects. Developed a characteristic style in planning and decoration and designed many important public and private buildings and interiors. His achievements include the great aristocratic houses of Harewood, Yorks; Osterley, Middlesex; Syon, Middlesex; Kedleston, Derbyshire.
- Adams, John** (1735-1826), succeeded Washington as President of the United States, and was the first of the Republic's ambassadors to England.
- Adams, John Couch, F.R.S.** (1819-92), English mathematician and astronomer. Shared credit for discovery of the planet Neptune, 1846, with the French astronomer, Leverrier (1811-77).
- Adams, Samuel** (1722-1803), American statesman, known as the "American Cato," who worked all his life for American Independence and signed the Declaration (1776). He organised the "Boston Tea Party."
- Addams, Jane, B.A., M.A.** (1860-1935), famous American sociologist who founded Hull House, Chicago, in 1889.
- Addison, Christopher, 1st Viscount, K.G., P.C., M.D., F.R.C.S.** (1689-1951). As a Liberal was Min. of Munitions, 1916-17, and the first Min. of Health, 1919-21. After joining the Labour Party held successive Ministerial offices in 3 Labour Governments. Formerly Prof. of Anatomy in the Univ. of Sheffield.
- Addison, Joseph** (1672-1719), achieved fame both as a writer and a politician. Held many offices under various governments; contributed to the *Tatler* started by his friend Steele and with him founded the *Spectator*. His tragedy *Cato* was a brilliant success.
- Adeler, Max** (1841-1915), the famous American humorist who wrote, among other works, *Out of the Hurly Burly* (1874) and *Elbow Room*.
- Adenauer, Dr. Konrad** (b. 1876), Chairman of the Christian Democratic Union and its founder in 1945; Chancellor of the West German Federal Republic since 1949.
- Adler, Alfred** (1870-1937), Austrian physician and psychiatrist and founder of the school of individual psychology. An earlier pupil of Freud, he broke away in 1911, rejecting the emphasis on sex, and regarding man's main problem as a struggle for power to compensate for feelings of inferiority.
- Adrian, Edgar Douglas, 1st Baron, O.M., M.A., M.D., F.R.S., F.R.C.P.** (b. 1889), Prof. of Physiology, Cambridge Univ. 1937-51; Master of Trinity Coll., Cambridge 1951-; Pres. of the Royal Society 1950-55; Pres. of the British Association 1954. Nobel Prize for Medicine 1932.
- Æschylus** (525-456 B.C.), father of Greek tragic drama. Composed seventy plays and gained the prize for dramatic excellence thirteen times.
- Æsop** (b. in Greece about 620, d. 544 B.C.). His fables are the most celebrated productions of the kind.
- Aga Khan, His Highness the Aga Sultan Sir Mahomed Shah, P.C., G.C.S.I., G.C.M.G., G.C.I.E., G.C.V.O.** (b. 1877), head of the Ismaili Moslems. A leading race-horse owner and winner of 2000 Guineas, Derby, and St. Leger (Triple Crown) with Bahram, 1935. Also won the Derby with Blenheim, 1930, Mahmoud, 1936, My Love (part-owned), 1948, and Tulyar, 1952.

- Agassiz, Louis Jean Rodolphe** (1807-73), Swiss-American naturalist and authority on ichthyology. He was the author of a five-volume work on *Researches on Fossil Fishes* (1833-43), and his scientific investigations into the movements of glaciers resulted in *Studies on Glaciers* (1840). His great work, *Contributions to the Natural History of the United States*, was left unfinished.
- Agate, James Evershed** (1877-1947), English dramatic critic, essayist and diarist. His numerous writings include essays on the theatre, novels, and an autobiography, *Ego*, in nine vols.
- Agricola, Cnaeus Julius** (A.D. 37-93), became Roman Consul of Britain A.D. 78. Strengthened the power of the Romans in this country, corrected many abuses, and did much to encourage trade and industry. Remained in Britain seven years.
- Agrippa, Marcus Vipsanius** (63-12 B.C.), the greatest military commander of Rome after Julius Caesar.
- Aird, Sir John, Bart.** (1833-1911), a contracting engineer of eminence, associated with the carrying out of many great undertakings in different parts of the world, the wonderful Assouan Dam, on the Nile, being one of his most remarkable achievements.
- Airy, Sir George Biddell, K.C.B., F.R.S.** (1801-1892), for many years Astronomer Royal (1835-1881) at Greenwich Observatory, where his brilliance and industry led to many important researches.
- Akbar, Jalal-ud-din Mohammed** (1542-1605), the greatest and wisest of the Mogul emperors and one of the great figures of history. He initiated economic and social reforms and succeeded in unifying his vast empire. His courts at Delhi and Agra were centres of culture and learning.
- Alanbrooke, Field-Marshal Viscount, K.G., G.C.B., O.M., G.C.V.O., D.S.O.** (b. 1883). Chief of Imperial General Staff, 1941-46; Lord Lieut. of London; Chan. Queen's Univ., Belfast.
- Alaric I** (376-410), the famous chief who led the Visigoths against the Romans, and afterwards invaded both Greece and Italy. He took Rome in 410, died the following year, and was buried with a vast treasure in the bed of the River Busento, and so that the Romans might not discover his remains, the slaves who buried him were put to death.
- Alban, St.,** who flourished in the latter part of the 3rd century, was born at Verulamium (where St. Albans now stands) and served as a soldier under Diocletian at Rome. Later he was converted to Christianity, and was for a time a renowned preacher of that religion, finally suffering martyrdom. Offa, king of the Mercians, built a monastery to his memory near Verulamium, four or five hundred years later. St. Alban's Day in the Calendar of the Roman Church is June 22nd, and in that of the Anglican Church June 17th.
- Albani, Madame** (1852-1930), stage name of Marie Louise Emma Lajeunesse, Canadian operatic soprano. Made her first appearance in England at Covent Garden in 1872 and was for many years a leading prima donna, achieving great celebrity as Elsa in *Lohengrin*.
- Albert, King of the Belgians, K.G., D.F.C.** (1875-1934), son of the Count of Flanders, succeeding his uncle, Leopold II., Dec. 17, 1909. His brave part in the war of 1914-18 won him lasting fame. Killed while mountaineering in the Ardennes.
- Albert, Prince Francis Augustus Charles Emmanuel, Consort of Queen Victoria** (1819-1861). On his marriage with the Queen in 1840 Parliament granted him an income of £30,000 a year. The prince adapted himself with considerable success to the difficulties of his position, and gradually secured the confidence and esteem of statesmen and public alike. The great Exhibition of 1851 owed much of its success to his efforts. He died of typhoid fever in December, 1861. The Albert Memorial forms a national tribute to his memory.
- Albertus Magnus, St.** (c. 1206-80) was a distinguished German philosopher, and voluminous writer on the occult sciences. Bishop of Ratisbon from 1260. His dabbings in alchemy and astrology gained him wide notoriety.
- Alciades** (c. 450-404 B.C.), treacherously killed in battle at Melissa, Phrygia, was the celebrated Athenian statesman and general, pupil and friend of Socrates.
- Alcock, Sir Walter Galpin, M.V.O., Mus. Doc., F.R.C.O.** (1861-1947), English musician, eminent both as organist and composer of church music. He played at the Coronations of King Edward VII, King George V and King George VI. Organist to Salisbury Cathedral, 1916-47, and Professor of Organ at Royal College of Music, 1893-1939. Asst. Organist at Westminster Abbey 1896-1916. Elected Chairman of Council of English Church Music, 1937.
- Alcott, Louisa May** (1832-88), leading American authoress; the charm and naturalness of her writings made her a favourite among children's authors, and her books are still read on both sides of the Atlantic. Her most famous book, *Little Women*, appeared in 1868.
- Alcuin** (735-804), scholar and ecclesiastic, was a leader of the Carolingian Renaissance. His works include poems and historical and theological writings.
- Aldred** (d. 1069), a powerful ecclesiastic of the 11th century in great favour with the Conqueror, whom he crowned. Was Bishop of Worcester (1044-60), and Archbishop of York (1060-1069).
- Alekhine, Dr. (Aliechin) Alexander** (1892-1946), world chess champion, 1927-35, 1937-46. 1937-46.
- Alembert, Jean le Rond D' (1717-1783)**, a Parisian mathematician and philosopher who achieved great eminence by his numerous scientific works, including the *Theory of the Winds* and the *Precession of the Equinoxes*.
- Alexander of Hillsborough, Viscount, P.C., C.H.** (b. 1885), Chan. of Duchy of Lancaster, 1951; Min. of Defence, 1946-50; First Lord of the Admiralty, 1929-31 and 1940-46.
- Alexander of Tunis, Field-Marshal Earl, P.C., K.G., G.C.B., G.C.M.G., D.S.O.** (b. 1891), soldier and statesman. - Commander of 1st Div. at Dunkirk; C.-in-C. Southern Command, 1940-42; G.O.C. in Burma, 1942, when he conducted a masterly retreat; C.-in-C. Middle East, 1942-43, when he was largely responsible for driving the enemy out of North Africa; C.-in-C. Allied Armies in Italy, 1944; and Supreme Allied Commander, Mediterranean, 1944-45, when he successfully led a force drawn from many different nations. Gov.-Gen. of Canada, 1946-52; Min. of Defence, 1952-54.
- Alexander, Samuel, O.M., LL.D., Litt.D.** (1859-1938), a British philosopher. Was Professor of Philosophy at the Victoria University of Manchester, 1893-1924. Author of *Moral Order and Progress*, *Art and the Material*, and many papers on philosophical subjects.
- Alexander II. of Russia** (1818-1881), succeeded his father, the Emperor Nicolas, in 1855. In 1861 he emancipated 23 millions of serfs. On March 13, 1881, was assassinated by bombs thrown beneath his carriage in St. Petersburg by nihilists.
- Alexander the Great** (356-323 B.C.), King of Macedon, succeeded his father Philip in 336 B.C., and from the first showed himself fitted for mighty military exploits. He conquered in turn the Thebans, the Persian Satraps, overthrew Darius, overran Syria and Phoenicia, possessed himself of all the cities along the Mediterranean, conquered Egypt, founded Alexandria, and finally retired upon Babylon, where he died eleven days later.
- Alexandra, Queen** (1844-1925), d. of Christian IX. of Denmark, married to the Prince of Wales (afterwards Edward VII.) on March 10, 1863. Queen from Jan. 22, 1901, to May 6, 1910.
- Alfieri, Count Vittorio** (1749-1803), the Italian poet, was the author of twenty-one tragedies and six comedies.
- Alfonso the Wise** (1221-1284), a celebrated King of Leon and Castile, founder of the legal code which became the basis of Spanish jurisprudence, a liberal patron of literature and science, particularly of astronomy; dethroned by his son Sancho in 1282.
- Alfred the Great** (849-99), king of Wessex, son of Aethelwulf; succeeded his brother as king in 871 and found himself in conflict with the Danes from the outset. After six years of unsuccessful effort he took refuge in the Isle of Athelney, but the following year defeated the Danes in great force at Edington (Ethanundun). Later, the



- Danes again invaded the country, and the rest of Alfred's reign was occupied in conflict. Besides being a great warrior he was a man of letters, a philosopher, and a very able legislator and administrator. He was buried at Winchester.
- Alington, Very Rev. Cyril Argentine, D.D.** (1872-1955), Headmaster of Shrewsbury, 1908-16, and of Eton, 1917-38, and Dean of Durham, 1934-51.
- Allbutt, Rt. Hon. Sir (Thomas) Clifford, K.C.B., M.D., F.R.S.** (1836-1925), an eminent English physician, known for his studies of nervous pathology, and as the inventor of the short clinical thermometer. Was Regius Professor of Physics at Cambridge University, 1892-1925.
- Allen, (Charles) Grant Blairfrankie** (1848-1899), better known as Grant Allen, a popular writer and novelist possessing a wide range of subjects, writing equally well on science, literature, and art, and achieving note in the field of fiction.
- Allen, Sir Hugh Percy, G.C.V.O., Mus.D.** (1869-1946). Director of the Royal College of Music, 1918-37; Professor of Music at Oxford, 1918-46.
- Allenby, Field-Marshal Viscount, G.C.B., G.C.M.G., G.C.V.O.** (1861-1936), brilliant cavalry soldier. Served on Western front, 1914-16; commanded in Palestine, 1917-18, capturing Jerusalem on December 9th, 1917. High Commissioner for Egypt, 1919-25.
- Alleyne, Edward** (1566-1628), a famous actor, contemporary of Shakespeare and founder of Dulwich College.
- Alma-Tadema, Sir Lawrence, O.M., R.A.** (1836-1912), the son of a Netherlands notary, was educated at Antwerp, and came to England in 1869, where he soon made a name for himself as a painter of classical pictures of great beauty of colour and delicate design.
- Amery, Rt. Hon. Leopold Stennett, C.H.** (1873-1955), politician, war correspondent, mountaineer, and author. Served as Sec. of State for Colonies, 1924-29, and for India and Burma, 1940-45. His works include *The Times History of the South African War*, *The Stranger of the Ulysses*, and *In the Rain and the Sun*.
- Ampère, André Marie** (1775-1836), a celebrated French mathematician who devoted himself successfully to the study of electricity and magnetism, and was the first to propound the electro-dynamic theory.
- Amundsen, Captain Roald** (1872-1928), Norwegian explorer, the first to navigate the North-west Passage and the first to reach the South Pole. Sailing in the fishing smack *Gjøa*, he negotiated the North-west Passage in the 3 years, 1903-6. In 1911 he sailed south in the *Fram* and reached the Pole on December 14th, 1911, a month before his English rival Scott. He failed to complete a flight across the North Pole in 1925, but succeeded the next year. He lost his life in the Arctic while attempting to rescue Nobile, who had crashed in the *Italia*. See also *Antarctic Exploration*, Gen. Inf.
- Anacreon** (c. 560-475 B.C.), the celebrated Greek poet whose Odes held a high place in poetic literature.
- Anaxagoras** (500-428 B.C.) was a famous Greek philosopher of the Ionic School, among whose pupils were Socrates, Pericles, and Euripides.
- Anaximander** (611-547 B.C.), a celebrated Greek philosopher. He is said to have been the first to note the obliquity of the ecliptic, invented geographical maps, and laid down the theory that the moon shone with light borrowed from the sun.
- Andersen, Hans Christian** (1805-1875), perhaps the most gifted writer of fairy tales the world has known. *Mit Lævs Eventyr* (The Story of My Life) is as interesting as his fairy tales, which include *The Ugly Duckling*, *The Little Mermaid*, *The Emperor's New Clothes*, *The Little Match-seller*. Born and died in Denmark.
- Anderson, Elizabeth Garrett, M.D.** (1836-1917), one of the first Englishwomen to enter the medical profession. Practised in London for many years. In 1908-9 was Mayor of Aldeburgh, her native town, and the first woman to be a mayor.
- Andrade, Professor E. N. da C., D.Sc., Ph.D., I.L.D., F.R.S.** (b. 1887), physicist; Dir. Royal Institution, 1950-52; Quain Professor of Physics, University of London, 1928-49; author of *The Atom and its Energy*; *Isaac Newton*.
- Andrea del Sarto** (1487-1531). This celebrated son of a Florentine tailor was one of the great Italian artists of his time, known as the "faultless painter." Most of the famous galleries of the world contain examples of his magnificent fresco and other painting, mainly dealing with religious subjects.
- Andrée, Salomon August** (1854-1897), a Swedish explorer who attempted in 1897 to reach the North Pole by balloon, but, except for a message by pigeon despatched two days after his ascent, was not heard of again until in August 1930 a Norwegian scientific expedition led by Dr. Gunnar Horn discovered the remains of the Andrée expedition on White Island. The discovery included a log-book, sketch maps and the diaries kept by Andrée. A translation of these was published in English in 1931.
- Angelico, Fra** (1387-1455), a famous Italian painter of religious subjects, mostly in the form of frescoes, of which the best examples are at Florence.
- Angell, Sir Norman** (b. 1874), a distinguished author and publicist. Was Labour M.P. for N. Bradford 1929-31. His works include *The Economic Chaos* and *The Peace Treaty* (1919), *The Great Illusion* (1910) and *The Money Game* (1928). Was awarded the Nobel prize for Peace 1933.
- Angstrom, Anders Jonas** (1814-74), Swedish physicist, whose life was devoted to the study of heat, magnetism and spectroscopy, and in all three he contributed greatly to scientific knowledge. The unit used for measuring the wavelength of light was named Angstrom in his honour.
- Anne, Queen** (1665-1714), Queen of Great Britain and Ireland from 1702 to the time of her death, was a daughter of James II., and succeeded William III., her cousin. During her reign England, in alliance with Austria, Holland, Prussia, Savoy, and Portugal, entered upon the War of the Spanish Succession. Anne's reign has been called the Augustan Age of Britain because of the many eminent men of letters who flourished during that period. She was the last of the Stuarts to occupy the British throne, and the first monarch to be styled Sovereign of Great Britain, the union between England and Scotland dating from 1707.
- Anouilh, Jean** (b. 1910), most successful contemporary playwright in France; writes in the French classical tradition of happiness, conflict, and suffering. Several plays have been translated into English, including *Roméo et Jeannette* (Fading Mansion), *Eurydice* (Point of Departure), *L'Invitation au Châteaud* (Ring Round the Moon), and he has made a number of films, including *M. Vincent* and *Pattes Blanches*.
- Anselm, St.** (1033-1109), Archbishop of Canterbury, was a native of Aosta, and succeeded Lanfranc as English Primate. He was in serious conflict with William Rufus on the question of ecclesiastical rights, and for a time suffered exile. Under Henry I. he regained power, making a compromise with that monarch which enabled him to carry on his theological work in comparative harmony. He died at Canterbury, and was canonised in 1494, his day being celebrated in the Roman Church on April 21st.
- Anson, George, 1st Baron** (1697-1762), a navigator of great eminence, whose *Voyage round the World* is still a popular book of adventure. He won many victories, obtained a peerage, rose to full Admiral's rank in the Navy, and served two terms as First Lord of the Admiralty.
- Anstey, Fred**, pseudonym of Thomas Anstey Guthrie (1856-1934), English humorist and playwright. *Vice Versa* (1882) is his best known work. His other works included *The Brass Bottle*, *The Man from Blankley's*, *The Last Load*, also translations from the works of Molière and numerous contributions to *Punch*, whose staff he joined in 1886.
- Antoninus Pius** (86-161), Emperor of Rome from A.D. 138 to 161, was the successor of Hadrian, and formed an agreeable contrast to most of the Roman Emperors, in that he endeavoured to govern more with an eye to the public well-being than his own personal pleasure. It was during his reign that the wall between the Forth and Clyde was built.
- Antonius Marcus or Mark Antony** (c. 83-30 B.C.), celebrated Roman Triumvir and General; a



- warm supporter of Caesar; but engaged in intrigues after the latter's death, and was opposed by Brutus and Cassius. His association with the Egyptian Queen Cleopatra is the subject of Shakespeare's play. Committed suicide after defeat by Octavian.
- Anthony, St. (or Anthony)** (c. 251-356), was a native of Upper Egypt, and according to his own account spent much time in conflict with the devil. He is one of the best-known saints of the Roman calendar, and his festival is on January 17th. He was believed to give relief to those who appealed to him when suffering from erysipelas, from which tradition the name St. Anthony's Fire is given to the disease.
- Apelles**, the famous Greek painter, flourished in the time of Alexander the Great, whose friendship he enjoyed. His *Aphrodite Anadyomene*, painted for the temple of Aesculapius in Cos, has been accounted the most perfect picture of antiquity.
- Appert, Nicholas** (1752-1841), sometimes known as Francois Appert, invented the method of preserving animal and vegetable foods by means of hermetically sealed cans or tins. He had no scientific training, but his painstaking work and countless experiments bore the mark of a true scientist. His revolutionary methods paved the way for the creation of a vast world industry which cans millions of tons of food a year.
- Appleton, Sir Edward Victor, G.B.E., K.C.B., D.Sc., F.R.S.** (b. 1892), physicist. From 1920 worked under Rutherford at Cambridge. His researches into the propagation of wireless waves led to a great advance in this branch of science. Awarded Nobel Prize for Physics in 1947; Pres. Brit. Ass., 1953.
- Aquinas, Thomas St.** (1225-1274), the "Father of Moral Philosophy," was a native of Southern Italy and came of a noble family. In 1243 he joined the Dominicans, and the remainder of his life was spent in religious pilgrimages and disputations. In 1263 he visited London. He left behind him numerous theological and philosophical writings of great power. He was canonised in 1323.
- Arago, Dominique François Jean** (1786-1853), a French astronomer and natural philosopher of great eminence, whose researches added much to our knowledge of electricity and magnetism. His expositions of the polarisation of light did much to advance that branch of science.
- Aram, Eugene** (1704-1759), was a schoolmaster of considerable learning, and lived at Knaresborough, in Yorkshire, from 1734 to 1745, in which latter year a friend of his, one Daniel Clark, suddenly disappeared. Soon after, Aram also quitted Knaresborough. In 1759, while Aram was teaching in a school at Lynn, a skeleton was discovered at Knaresborough, and it was declared to be that of Daniel Clark. This was denied by a man named Houseman in such a manner as to cause suspicion to fall upon him, and he was arrested, whereupon he confessed that Clark had been murdered in his presence by Aram, and that his body would be found in St. Robert's Cave. Search disclosed the actual skeleton, and Aram was also arrested, tried at York, found guilty, and executed. Lord Lytton's novel, *Eugene Aram*, and Tom Hood's dramatic poem, *The Dream of Eugene Aram*, effectively deal with the romantic story.
- Archer, Frederick James ("Fred")** (1857-1886), a favourite jockey for several years, winner of many leading races, his first Derby falling to him in 1877. Rode 2,748 winners during his turf career.
- Archer, William** (1856-1924), British author and dramatic critic who was a disciple of Ibsen, and had a large part in introducing that dramatist to the English public, and edited Ibsen's complete works in eleven volumes. His own writings include the very successful drama, *The Green Goddess*.
- Archimedes** (287-212 B.C.), a Greek geometrician and philosopher of remarkable power, to whom we are indebted for the discovery of the principles of the lever and of specific gravity, and for the invention of the famous archimedean screw.
- Argand, Aimé** (1755-1803), inventor of the lamp bearing his name, which for the first time introduced a current of air to permeate and increase the power of the flame, by using a chimney glass and circular wick. He was a Swiss physician.
- Ariosto, Ludovico** (1474-1533), the author of *Orlando Furioso*, was one of the most celebrated of the Italian poets. In addition to his famous epic he wrote many comedies, satires and poems.
- Aristeides (or Aristides)**, a Greek writer, and founder of the school of prose romance; flourished in the 2nd century B.C. His *Milesian Tales* are among the most celebrated works of fiction.
- Aristides** (530-467 B.C.) the Athenian general, was of noble descent, and first achieved fame at the battle of Marathon, 490 B.C. He was renowned no less for his valour than for his scrupulous honesty and a desire to do justice to others; hence he was surnamed "the Just."
- Aristippus** (c. 435-356 B.C.), founded the Cyrenaic school of philosophy, which taught that sensual pleasure was the only happiness. He was a native of Cyrene, in Africa, but became a pupil of Socrates, and settled in Athens.
- Aristophanes** (c. 444-c. 385 B.C.) was one of the foremost Athenian play-writers and the greatest of the Greek comic poets. He is said to have composed fifty-four plays in all. Eleven of these only have survived. They are full of satire, and deal unsparingly with the people and institutions of his time.
- Aristotle** (384-322 B.C.), the most famous of all the Greek philosophers, was a disciple of Plato, after whose death he retired from Athens, and later on undertook the education of Alexander, afterwards known as Alexander the Great. Subsequently at Athens he established the Lyceum and founded the peripatetic school of philosophy, which has had great influence upon the expansion of thought.
- Arkwright, Sir Richard** (1732-1792), was a native of Preston, and in early life a barber and travelling hairdealer. Becoming interested in mechanical problems, he set himself the task of inventing an improved cotton-spinning machine. Hargreaves' spinning-jenny was then the leading machine, but the yarn it produced could only be used for weft; it was not compact enough for warp threads. Arkwright therefore experimented until, by adopting an arrangement of rollers that moved with different velocities, he succeeded in perfecting his "spinning-frame," which successfully produced a yarn that could be used for warp as well as for weft. He took out his first patent in 1769, and, entering into partnership with Mr. Jedediah Strutt, of Derby, became a manufacturer on a large scale, in 1771 establishing the first spinning-mill worked by water-power.
- Armstrong, Lord, C.B., F.R.S.** (1810-1900), inventor of the hydraulic crane and other machinery for the better utilisation of water-power. During the Crimean War he produced his famous "Armstrong gun," the biggest that had up to that time been constructed. Later his immense works at Elswick became the chief establishment in this country for the manufacture of guns and ships of war.
- Armstrong, Anthony** (Anthony Armstrong Willis), O.B.E., M.C. (b. 1897), British novelist, playwright, and contributor to *Punch*. His many works include *Warriors at Ease*, *Ten Minute Alibi*, *The Naughty Princess*.
- Armstrong, Prof. Henry Edward, F.R.S.** (1848-1937), a distinguished English chemist who for many years was Professor of Chemistry at the City and Guild's College, South Kensington, and made extensive researches in organic and general chemistry.
- Arne, Dr. Thomas Augustine** (1710-1778), an English musical composer of considerable merit and of great popularity in his day. He composed numerous ballad operas, and at Drury Lane, Covent Garden, and Vauxhall organised the chief performances for long periods. His best-known opera was *Artaxerxes*, and his most popular songs were *Rule, Britannia!* and *Where the Bee Sucks*.
- Arnold, General of the Army Henry H.** (1886-1950), Deputy Chief of Staff and Chief of the U.S. Army Air Corps during the second world war.
- Arnold, Matthew** (1822-1888), son of Dr. Thomas

- Arnold, achieved a high reputation as poet and critic. As the propounder of the principles of "sweetness and light," as well as by his graceful verse, he secured a high place amongst the literary men of the Victorian era.
- Arnold, Thomas, D.D.** (1795-1842), headmaster of Rugby from 1828 to his death. His influence at Rugby was such as to give that institution a supreme position among English public schools. A man of intense spiritual feeling, of a sympathetic and lovable nature, yet possessed of all the necessary attributes of scholarship, he was greatly esteemed and venerated.
- Arrhenius, Prof. Svante August** (1859-1927), became Director of the Physico-chemical Dept. of the Nobel Inst., 1905. An eminent scientist, the originator of the theory of electrolytic association.
- Arrol, Sir William** (1839-1913), the well-known contractor and engineer, whose firm built the Tay, Forth, and London Tower Bridges as well as the Manchester Ship Canal. Originally a piecer in a cotton-mill, and later a working blacksmith.
- Artaxerxes** was the name borne by several ancient Persian kings, some of whom achieved great distinction. The first Artaxerxes was the son of Xerxes, and reigned from 465 B.C. for 40 years; he was succeeded by Darius II. (424-405 B.C.), who in turn was followed by Artaxerxes II., who reigned 45 years. The last to bear the name of Artaxerxes was the founder of the Sassanide dynasty, A.D. 223.
- Arthur**, a famous British chieftain and supposed king, who is stated to have flourished in the 6th century, and around whose life many beautiful legends have been written, including Lord Tennyson's *Idylls of the King*.
- Arundel, Thomas, Archbishop of Canterbury** (1353-1414), in the reigns of Richard II. and Henry II., previously Bishop of Ely and Archbishop of York, and for a time Lord Chancellor. An active politician and bitter enemy of heresy.
- Ashfield, Lord, P.C.** (1874-1948), President Board of Trade, 1916-19; M.P. Ashton-under-Lyne, 1916-20; appointed first Chairman of the London Passenger Transport Board created in 1933.
- Aske, Robert**, the leader of the Pilgrimage of Grace, directed against the Reformation; executed 1537.
- Asoka** (273-232 B.C.), Emperor of India (c. 255-c. 237 B.C.), and the most powerful ruler of his time, his Empire extending from the Himalayas to what is now Madras. He was the first ruler to embrace Buddhism and accord it recognition. Becoming a Buddhist (c. 257 B.C.) he turned aside in disgust from the thought of his earlier military conquests, and attempted by missionary propaganda to spread Buddhism throughout his lands. There are some 35 valuable and interesting inscriptions on rocks and pillars, etc., mainly of religious or moral import. He gave great impetus to Buddhism by organising it as the state religion.
- Asquith, Herbert Henry**, 1st Earl of Oxford and Asquith (1852-1928), Liberal statesman; Home Sec. in Gladstone's 1892-95 government; Chancellor of the Exchequer in Campbell-Bannerman's government; introduced first provision for old-age pensions and succeeded as Prime Minister in 1908, which he held till 1916. Resigned leadership of Liberal Party in 1926. His second wife, Margot Asquith, a witty and brilliant society woman, died in 1945.
- Asser**, a Welsh monk of the tenth century, author of a remarkable life of King Alfred.
- Astor, John Jacob** (1763-1848), the founder of the Astor family of millionaires, was a native of Heidelberg, and emigrating to America, went out to the North-West and began trading in furs, soon building up a large fortune, which he wisely invested in New York real estate, which rapidly increased in value.
- Astor, Nancy Witcher, Viscountess, C.H.** (b. 1879), widow of the 2nd Viscount Astor (1879-1952). First woman M.P. to take her seat in the House of Commons, an American by birth.
- Ataturk, Kemal** (1881-1938), builder of modern Turkey. A fine soldier, he defended the Dardanelles against the British in 1915 and drove the Greeks out of Turkey in 1922. President of the Turkish Republic, and virtually dictator 1923-38.
- Athanasius, St.** (296-373), was Bishop of Alexandria. He spent much of his time in bitter theological controversy, and was driven from Alexandria; taking refuge in the desert, he wrote numerous letters in support of Christian doctrine, and under Julian was recalled to Alexandria. The Athanasian creed is supposed to reflect his belief.
- Athelstan** (895-940), grandson of Alfred the Great, was crowned King of England in 925, and was the first ruler of all England.
- Atherstone, William Guybon** (1813-98), South African geologist and an originator of the South African diamond industry. He drew attention to the possibility of diamonds near Kimberley and in 1867 identified a crystal found near the Vaal River, thus helping to start mining development. Was for many years a member of the Cape Parliament.
- Athlone, Earl of, K.G., P.C., G.C.B., G.C.M.G., G.C.V.O., D.S.O.** (b. 1874), brother of Queen Mary, and until 1917 known as Prince Alexander of Teck, Gov.-Gen. of South Africa, 1923-31, and of Canada, 1940-46.
- Atkins, Robert** (b. 1886), Shakespearian actor and producer, primarily noted for his work in connection with the Open Air Theatre in London.
- Attila** (406-453), King of the Huns, was a warlike leader, who achieved many conquests over the Roman forces, committing great ravages and laying large tracts of country waste. He marched through Germany and Gaul, and died as he was preparing for another invasion of Italy.
- Attlee, Clement Richard**, 1st Earl, O.M., P.C. C.H. (b. 1883), Prime Minister in two successive Labour Governments, 1945-51; served as Deputy Prime Minister to Mr. Churchill, 1942-45. He was educated at Haileybury and University Coll., Oxford. Called to the Bar in 1905; tutor and lecturer in social science at the London School of Economics, 1913-23. Became Mayor of Stepney in 1919, Labour M.P. for Limehouse in 1922, and Parliamentary Leader of the Labour Party in 1935. During his Premiership the welfare society was established and the freedom and independence of India was granted. He was responsible for the system of Cabinet committee organisation. Retired in 1955 and was created an Earl. His autobiography, *As It Happened*, was published in 1954.
- Auber, Daniel François Esprit** (1782-1871), a distinguished French composer of light operas, *Masaniello*, *Fra Diavolo*, *Le Domino Noir*, etc.
- Auchinleck, Field-Marshal Sir Claude J. E., G.C.B., G.C.I.E., D.S.O.** (b. 1884), Indian Army officer who was C-in-C. Middle East, 1941-42, and the last British C-in-C. in India, 1943-46.
- Auden, Wystan Hugh** (b. 1907), influential modern poet, born in England and naturalised an American. His work includes verse plays as well as poems and he edited *The Oxford Book of Light Verse*. Succeeded C. Day Lewis as Prof. of Poetry, Oxford Univ., 1956.
- Auer, Leopold** (1845-1930), the famous Hungarian violinist and teacher of the violin, among his pupils being Mischa Elman and Jascha Heifetz. Was Professor of the violin at the St. Petersburg Conservatory for nearly fifty years (1868-1917).
- Augustine, St., of Hippo** (354-430), was born at Tagaste in Africa of a pagan father and a Christian mother, but went to Rome, and under the influence of St. Ambrose became deeply religious, writing much upon doctrinal subjects. His works include *The City of God* and *The Confessions*.
- Augustine, St.**, was the missionary monk who was sent to Britain by Gregory the Great in 597. He succeeded in converting King Ethelbert, after which he made good progress with the people generally, and became the first Archbishop of Canterbury. He died in 604.
- Augustus, Caius Octavianus** (63 B.C.-A.D. 14), was the first Emperor of Rome, succeeded Julius Cæsar. After a triumvirate of twelve years, in which he was associated with Mark Antony and Lepidus, he became supreme ruler and for forty-five years exercised a beneficent and powerful sway. He was a devoted patron of Horace and Virgil. The Augustan Age is still held among the most memorable in the history of letters.



**Aurelius, Marcus Antoninus.** See Marcus Aurelius Antoninus.

**Auriol, Vincent** (b. 1884), French politician. Voted against surrender in 1940, was interned and escaped to London in 1943. President of the French National Assembly, 1946, and of the Fourth Republic, 1947-54.

**Aurangzib** (1618-1707), the last of the Great Moguls, Emperors of Hindustan; succeeded his father Shah Jehan in 1658 and reigned until his death. He was a ruler of ability, and greatly extended his empire by conquest, but his zeal for Mohammedanism aroused the hatred of the Hindus, and when he died the disruption of the vast Mogul territory followed rapidly.

**Austen, Jane** (1775-1817), author of *Emma*, *Mansfield Park*, *Northanger Abbey*, *Persuasion*, *Pride and Prejudice*, and *Sense and Sensibility*. Though confining herself to the personal relations of the English middle classes, she combined artistry, accuracy, imaginative power, satiric humour, sense, and genuine feeling with the ability to create a vast range of living characters, and is often considered the most perfect English novelist.

**Austin, 1st Baron, K.B.E.** (1866-1941), was the well-known English motor manufacturer. He was the pioneer of the small car—the 7-horsepower car—which he put on the market in 1921.

**Austin, Alfred** (1835-1913), was educated at London University, and in 1861 published a satire called *The Season*, which contained some vigorous verse of undoubted promise. For some years he was connected with *The Standard* as leader writer, and also wrote for the *Quarterly Review*. Between 1870 and his death some half-dozen volumes of poems were issued by him. He was appointed Laureate in 1896, after the office had been vacant four years.

**Avebury, Lord, P.C., F.R.S.** (1834-1913), banker, scientist, and politician. Best known to the world under the name he bore until 1900 of Sir John Lubbock. His writings cover a considerable field, and are marked by a keen observation of natural phenomena and animal and vegetable life. As a member of the House of Commons he had the credit of securing the statutory observance of Bank Holidays.

**Avenzoar (Ibn Zuhr)** (c. 1090-1162), a Moslem physician, born in Seville, the greatest of his time. His chief work was the *Tasir*.

**Averroës (Ibn Rushd)** (1126-98), Arab philosopher and medical writer, born in Cordova, last and most famous thinker of Moslem Spain. He studied philosophy, theology, mathematics, medicine, and jurisprudence. His greatest work was his commentaries on Aristotle. Friend of Avenzoar.

**Ayrton, William Edward, F.R.S.** (1847-1908), English physicist, who devoted himself to the study of electrical physics, and spent some years in the public service of India, and in teaching science in Japan. Was the inventor of electrical measuring instruments. His wife, Mrs. Hertha Ayrton (1854-1923), assisted him in his researches, and became known for her scientific work on the electric arc and other subjects. Was the inventor of the Ayrton anti-gas Fan, which was first used by the British Forces in 1916.

## B

**Baber or Babar (Zahir ud-din-Mahomet)** (1483-1530), founder of the Mogul dynasty which ruled Northern India for three centuries, and a descendant of Tamerlane.

**Bach, Johann Sebastian** (1685-1750). Born at Eisenach, Germany, he became one of the greatest composers in history and has been called the father of modern music. During his appointment as organist at the Thomaskirche, Leipzig, he composed all his great devotional music, including the wonderful St. Matthew and St. John Passions, and the Mass in B Minor. His incessant labour affected his eyes, and in 1749 he became totally blind.

**Bach, Karl Philipp Emanuel** (1714-88), 3rd son of the foregoing. His numerous compositions include over 200 sonatas and other solos, 52 concerti, and many songs. Was an eminent musician of his time and was largely responsible for the sonata form.

**Backhaus, Wilhelm** (b. 1884), a German pianist who made early and highly successful appearances as a virtuoso, and first appeared in London in 1901. One of the most gifted of present-day pianists, he became Professor of the Piano at the Royal College of Music, Manchester, 1905.

**Bacon, Francis, Lord Verulam, and Viscount St. Albans** (1561-1626), was one of the greatest of English philosophers and statesmen, who was Attorney-General to Elizabeth, and under James I. became Lord Chancellor. His political career was tarnished by certain acts of corruption, for which he paid the penalty, but his writings were marked by keen insight, brilliancy of language, and a depth of thought which place them in the first rank of philosophical literature. His *Novum Organum* and his *Essays* are splendid monuments of learning and wisdom.

**Bacon, Roger** (1214-1294), the Franciscan friar, was a man of remarkable gifts, of great learning and inventive power. In an age of darkness he was the first to insist on the importance of experiment and can claim the title of founder of experimental science. Optics, explosives, engines, mechanical flight came within the range of his researches. The invention of gunpowder has been attributed to him, but without adequate evidence. For a long time he was looked upon as an alchemist and sorcerer, though of late his discoveries have been more truly appreciated.

**Baden-Powell, Lt.-Gen. Lord, O.M., G.C.M.G., G.C.V.O., K.C.B.** (1857-1941), brilliant cavalry soldier, famous for his defence of Mafeking in the South African War. Founded the organisation of Boy Scouts (1908) and Girl Guides (1910) to promote good citizenship in the rising generation. Chief Scout of the World, 1921-41.

**Baer, Karl Ernst von** (1792-1876), Russian zoologist, born in Estonia and studied in Germany; he was the founder of the science of comparative embryology, and was the discoverer of the human ovum.

**Baffin, William** (1584-1622), was a distinguished navigator and explorer who, in 1616, discovered the bay which separates the north-east coast of British North America from Greenland, and bears his name.

**Bagehot, Walter** (1826-77), English economist and journalist. Editor of the *Economist*, 1860-77. Wrote three books of lasting importance, *The English Constitution*, 1867, *Physics and Politics*, 1872, and *Lombard Street*, a description of the Money Market, 1873. He was among the first to advocate the creation of Life Peers to strengthen the House of Lords.

**Bailey, Sir Abe, Bart., K.C.M.G.** (1864-1940), was a millionaire mine-owner in S. Africa, where he owned over 100,000 acres. Donor of £100,000 to the Royal Institute of International Affairs, of which he was an active supporter. Born near Keighley, Yorkshire; fought in the Boer War with the South African Light Horse, which force he largely helped to finance.

**Baird, John Logie** (1888-1946), Scottish television pioneer; inventor of the television and the noctovisor.

**Baker, Sir Benjamin, K.C.B., K.C.M.G., F.R.S.** (1840-1907), an eminent engineer. He was consulting engineer to the Egyptian Government for the Assouan Dam, joint engineer with Sir John Fowler of the Forth Bridge, and engineer of the Central London Tube Railway.

**Baker, Sir Herbert, K.C.I.E., E.A.** (1862-1946) was an eminent architect who designed the Bank of England, Rhodes House, Oxford, and, with the late Sir E. Lutyens, New Delhi.

**Bakst, Leon** (1868-1924), a famous Russian painter and scene—and costume—designer who designed settings for Greek tragedies and after 1908 increased his fame by painting scenery and designing costumes for the Russian Ballet of Serge Diaghilev (q.v.). From 1909 until his death he lived in Paris. Examples of his paintings are in the Victoria and Albert Museum, London, and the Metropolitan Museum, New York.

**Balboa, Vasco Nunez de** (1475-1517), Spanish explorer, who was the first European to set eyes upon the Pacific Ocean. As a discoverer he ranks second only to Columbus.

**Baldwin of Bewdley, 1st Earl, K.G., P.C.** (1867-



- 1947) (as Mr. Stanley Baldwin) was the leading Conservative politician between the two world wars and Prime Minister, 1923-24, 1924-29, and 1935-37. Author of *On England and Service of Our Lives*.
- Balfour, Earl of, K.G., P.C., O.M., F.R.S.** (1848-1930). (Better known as Rt. Hon. Arthur James Balfour.) Statesman, scholar, and philosopher. Became a Conservative M.P. in 1874 and was Prime Minister, 1902-05. In the course of his distinguished career was also Chief Secretary for Ireland, First Lord of the Admiralty, Foreign Secretary, and Lord President of the Council. Author of the Balfour Declaration on Palestine.
- Baliol, John de**, whose widow in 1269 founded the college at Oxford which bears his name. Fought for Henry III. against Simon de Montfort. Died in exile in 1269.
- Baliol, John** (1249-1315), son of the above, competed with Robert Bruce for the Scottish throne, and Edward I. decided in his favour. Only reigned four years, when Edward deposed him, committing him to the Tower, and finally banished him from the country. He retired to Normandy. His son, Edward Baliol, recovered his father's kingdom in 1332, and was upheld by Edward III. whilst very unpopular by reason of his having given up the south of Scotland to the English. He renounced his title and throne in 1356, and retired to England on an annuity.
- Ball, John** (d. 1381), English priest and a leader of the Peasants' Revolt, after which he was executed. Author of the couplet *When Adam delved, and Eve span, Who was then the gentleman?*
- Ball, Sir Robert Stawell, LL.D., F.R.S.** (1840-1913), a distinguished astronomer, mathematician and a popular lecturer.
- Balzac, Honoré de** (1799-1850), one of the greatest of French novelists, and the author of over eighty novels to which he gave the covering title of *La Comédie Humaine*, depicting the appetites and passions of the new social class born of the revolution and Napoleon.
- Bampton, John** (1689-1751), an eminent divine, who founded the Oxford Bampton Divinity lectures.
- Bancroft, Sir Squire** (1841-1926), one of the best-known actor-managers of the later Victorian period. Managed the old Prince of Wales Theatre in London, in conjunction with Marie Wilton (Lady Bancroft), for many years, producing there the popular Robertsonian comedies.
- Banks, Sir Joseph, Bt., F.R.S.** (1743-1820), was president of the Royal Society for upwards of forty years. As a naturalist he was one of the most eminent men of his time, and encouraged science in every form. When Captain Cook made his voyage to the South Seas in 1768, Sir Joseph accompanied him for the purpose of observing the transit of Venus. He left very valuable botanical collections to the British Museum.
- Bannister, Dr. Roger Gilbert, C.B.E.** (b. 1929). British athlete who set up a new world and British record for the mile at Oxford on May 6, 1954, in 3 min. 59.4 sec., the first mile ever run in under 4 min.
- Banting, Sir Frederick Grant, K.B.E., M.C., D.Sc., M.D., F.R.S.** (1891-1941), Canadian physician and discoverer of insulin. Prof. of Medical Research, Toronto University, 1923-41.
- Bantock, Sir Granville, Mus. Doc.** (1868-1946), Professor of Music at Birmingham University 1908-34; Chairman of Trinity Coll. of Music, London.
- Barbirolli, Sir John, F.R.A.M.** (b. 1899), British musician. Appointed conductor of the Hallé orchestra, 1943. Succeeded Toscanini as conductor of the New York Philharmonic Symphony Orchestra, 1937-42.
- Barbarossa** (Red Beard), name given to Frederick I (c. 1122-90), greatest of the medieval Holy Roman emperors who struggled (1159-77) to free the Empire from the domination of the Pope. The two brothers who were Barbary pirates also had this name: Uruij (c. 1482-1518) was killed by the Spaniards, and Khairuddin (c. 1482-1546) conquered Tunis for the Turks in 1534 and died in Constantinople.
- Barbusse, Henri** (1874-1935), noted French author and writer of the famous war novel *Le Feu*, which is one of the most remarkable and realistic of all war books, and portrays in a starkly vivid way the experience of the common soldier.
- Baring, The Hon. Maurice, O.B.E.** (1874-1945), English author, poet and essayist and an interesting writer on Russia.
- Barker, Dame Lillian, D.B.E.** (1874-1955), governor of the Borstal Institution for Girls at Aylesbury, 1923-35; Ass. Commissioner of Prisons, 1936-43.
- Barnardo, Dr. Thomas John** (1845-1905), the founder of the well-known homes for orphan-waifs, for some forty years devoted himself to the protection, education and advancement of destitute children.
- Barnato, Barney** (1853-97), born in London and originally named Isaac: took the name Barnato after using it as a comic turn in an East End music-hall. Emigrated to South Africa when twenty-two, and, after working in a circus and as a pedlar, made a vast fortune in diamonds and gold and became a big land-owner on the Rand. Committed suicide by jumping overboard the ship that was carrying him to England on a health cruise. His son, Woolf Barnato (1895-1948), was well-known as a racing motorist and all-round sportsman.
- Barnes, Rt. Rev. Ernest William, D.D., F.R.S.** (1874-1953), Bishop of Birmingham, 1924-53. A distinguished mathematician and both the most admired and attacked Churchman of his time. Believed in the reconciliation of religion and science. Author of a number of scientific and religious works, including *The Rise of Christianity* (1947), and the famous sermon *Should Such a Faith Offend?*
- Barnum, Phineas Taylor** (1810-1891), was America's most famous showman, and originator of Barnum and Bailey's "Greatest Show on Earth."
- Barr, Archibald, D.Sc., LL.D., F.R.S., F.R.S.E.** (1855-1931), Scottish engineer and inventor: his numerous inventions include range-finders and the optophone for enabling the blind to read books by sound. He was Prof. of Civil Engineering at Leeds and Glasgow Universities.
- Barrie, Sir James Matthew, Bt., O.M.** (1860-1937), popular Scottish author and playwright. Among his novels are *A Window in Thrums* and *The Little Minister*, while his plays include *Quality Street*, *The Admirable Crichton*, *Dear Brutus*, *Mary Rose*, *Shall We join the Ladies?* and the children's classic, *Peter Pan*. His work is clever and entertaining and is tinged with mysticism.
- Barrow, Isaac** (1630-1677), a famous divine, mathematician, Greek scholar, and tutor of Sir Isaac Newton. His "Sermons" are amongst the finest in the language.
- Barry, Sir Charles, R.A.** (1795-1860), architect of the Houses of Parliament at Westminster which took twenty years to build. Knighted in 1852, and buried in Westminster Abbey. His son:
- Barry, Sir John Wolfe Wolfe, K.C.B., F.R.S.** (1836-1918), an eminent engineer, designed and carried out some of the most prominent undertakings of the time, including Barry Dock and Tower Bridge.
- Bartok, Bela** (1881-1945), Hungarian composer and musician. Early compositions influenced by Brahms and Liszt. From an early age deeply interested in folk-song which inspired him in his researches into Hungarian and Rumanian peasant music. His compositions include string quartets, violin sonatas, concertos, orchestral music, a ballet and an opera, and a collection of over 7,000 melodies. Professor at Budapest Conservatory, 1907-12, when he retired into private life as a result of the opposition his compositions aroused.
- Bartolommeo, Fra** (1469-1517), the distinguished Florentine painter and friend of Savonarola, at whose death he became a monk.
- Bartolozzi, Francesco, R.A.** (c. 1728-1815), a Florentine engraver who came to England in 1764, and for many years was engaged upon engravings, of which he produced an enormous number, many of them of great artistic merit and highly valued by collectors to-day.
- Baruch, Bernard Mannes** (b. 1870), American economist. Assisted U.S. Government in both world wars, and in 1946 was chairman of the United Nations Atomic Energy Commission.
- Bates, Herbert Ernest** (b. 1905), novelist and short-story writer. Author of *Fair Stood the Wind for France*, *The Bride Comes to Evenaford*, *The Purple Plain*, and *Jacaranda Tree*.

**Batten, Jean Gardner, C.B.E.** (b. 1909): the famous New Zealand airwoman who made aviation history by her record solo flight from England to Australia in 1934.

**Baudelaire, Charles Pierre** (1821-67), French poet of startling originality and great sensitivity, he is best known for his book of verse *Les Fleurs du Mal*. He was also a brilliant critic, and his influence is still felt. He was inordinately attached to his mother and allowed his life to be ruined by poverty, despair, and ill-health.

**Bax, Sir Arnold Edward Trevor, K.C.V.O., F.R.C.M., F.R.A.M.** (1888-1953), Master of the King's Musick, 1942-52; Master of the Queen's Musick, 1952-53. His work included numerous piano compositions, songs, and chamber works.

**Bax, Clifford** (b. 1886), English dramatist who is the author of many plays, of which the most outstanding have been *Midsummer Madness*, *The Immortal Lady*, and *The Rose Without a Thorn*.

**Baxter, Richard** (1615-91), a great Nonconformist divine, remarkable for the ability and boldness of his writings. His *Saint's Everlasting Rest* is a masterpiece.

**Bayard, Pierre du Terrail, Chevalier de** (1475-1524), a French knight of exemplary conduct and remarkable for his chivalry. Fell at the Battle of Sessa, and was named "Le Chevalier sans peur et sans reproche."

**Baylis, Lillian Mary, C.H.** (d. 1937), manager of the Old Vic theatre from 1898 and of Sadler's Wells from 1931. Did great work for the British stage.

**Beaconsfield, Benjamin Disraeli, Earl of, K.G., P.C.** (1804-81). Son of Isaac D'Israeli (q.v.). Statesman and novelist; with Burke (q.v.) exercised most influence on Conservative political theories. His first novel, *Vivien Grey*, published when he was only twenty-one, was a brilliant success and the author was able to enter Society. *Coningsby* and *Sibyl*, published twenty years later, helped to rouse the social conscience to the evils of industrial life and of the deplorable relations existing between rich and poor (the "two nations"). Disraeli entered Parliament in 1837, but had only short periods of office before his terms as Prime Minister in 1868 and 1874-80. The second period was marked by the purchase of the Suez Canal shares, by the conferment on the Queen of the title, Empress of India, and by a diplomatic triumph at the Congress of Berlin, abroad, and by a continuation of measures for social reform, at home. He was a gifted orator, the rival and antithesis of Gladstone and the friend of Queen Victoria, who favoured his policies, honoured his wife, and called him "Dizzy."

**Beardsley, Aubrey Vincent** (1872-98), black-and-white artist, whose illustrations in the *Yellow Book* aroused much controversy.

**Beatty, 1st Earl, Admiral of the Fleet, P.C., G.C.B., O.M., G.C.V.O., D.S.O.** (1871-1936). First Sea Lord, 1919-27. From 1912 to 1916 Commander of Battle Cruiser Squadron. From Nov. 1916 to 1919 succeeded Lord Jellicoe as Admiral of the main British Fleet. On Aug. 28, 1914, fought the German fleet in the Heligoland Bight. On May 31, 1916, Lord Beatty with his battle cruisers was engaged in a great sea fight with the Germans off Jutland, for which he was granted £100,000 and an Earldom in 1919.

**Beaumont, Francis** (1584-1616), and Fletcher, John (1579-1625), joint authors of many plays, including *The Maid's Tragedy* and *Philaster*. Beaumont was buried in Westminster Abbey, and Fletcher interred in St. Saviour's, Southwark. Thought by some to be authors of plays attributed to Shakespeare.

**Beaverbrook, Lord, P.C.** (b. 1879) (William Maxwell Aitken), British newspaper proprietor and politician. A Canadian by birth and a man of tremendous energy and will-power, who rendered great service as Minister of Aircraft Production in the crucial years, 1940-41. His papers have sponsored various political campaigns, notably the Empire Free Trade Movement, and have achieved a very large circulation.

**Becket, Thomas A'** (1118-1170), Archbishop of Canterbury under Henry II. A powerful and ambitious prelate who boldly supported the authority of the Pope against the dictates of the King, and was assassinated in Canterbury Cathedral December 29th, 1170, being canonised two years later.

**Bequerel, Antoine Henri** (1852-1908), French physicist who in 1896 discovered radio-activity in uranium. Shared with the Curies the 1903 Nobel Prize in Physics.

**Bede, "The Venerable"** (673-735), a monk of great influence and ability whose historical works cover a great range and are valuable in the outline they give of the early history of this country.

**Beecham, Sir Thomas, Bt.** (b. 1879), conductor and impresario. Founded the London Philharmonic Orchestra in 1931; introduced into England the operas of Richard Strauss, Russian operas, and the Diaghilev ballet; championed the music of Delius. Recognised as one of the world's great conductors, especially in the interpretation of Mozart and Wagner. Conductor of the Royal Philharmonic Orchestra since 1946.

**Beecher, Henry Ward** (1813-1887), an eminent American preacher and lecturer, whose church at Brooklyn was for many years the most popular in the United States. Brother of Mrs. H. B. Stowe.

**Beerbohm, Sir Max** (b. 1872), brilliant critic and caricaturist who contributed to the *Saturday Review* during his "twelve years' bondage to dramatic criticism" (1898-1910).

**Beethoven, Ludwig van** (1770-1827), one of the world's greatest musicians and composers, born at Bonn of a poor but musical family, his father being a tenor singer in the service of the electoral prince at Bonn. As a child he was already remarkable for his playing of the harpsichord and violin and for his power of extemporization. Some of his compositions, sonatas, songs and pianoforte variations were published when he was only 13. At 17 he visited Vienna and played before Mozart who promptly recognised his genius. When he was about 30 he began to suffer from the worst malady that could possibly have befallen him; he became deaf. He faced his fate with indomitable courage and perhaps more than any other artist continued to develop until he reached the loftiest pinnacle of musical fame. Between the years 1805 and 1808, Beethoven composed some of his greatest works: the oratorio *Mount of Olives*, the opera *Fidelio*, and the *Pastorale* and *Eroica* symphonies besides a number of concertos, sonatas and songs. He composed four overtures to *Fidelio* at different periods: *Leonore No. 2* (1805), *Leonore No. 3* (1806), *Leonore No. 1* (1807) and *Fidelio* (1814). The *Mass in C* was first performed in 1810 and the *Mass in D* was written between the years 1819 and 1822. The symphonies, nine in number, rank as the greatest ever written and the pianoforte sonatas and string quartets are unequalled in beauty. He died at Vienna at the age of 56.

**Behring, Emil von** (1854-1917), German bacteriologist and father of the science of immunology. Awarded Nobel Prize in 1901.

**Behring, Vitus** (1680-1741), Danish navigator who entered the Russian service and in 1728 discovered Behring's Strait, afterwards being wrecked on Behring's Island, where he died.

**Belisarius** (505-565), famous Roman general under Justinian. His defeats of the Goths and Vandals, and of the Persians were great achievements.

**Bell, Alexander Graham, LL.D., Ph.D., D.Sc., M.D.** (1847-1922), born in Edinburgh, went to America in 1870, became Professor of Physiology in Boston University. In 1876 exhibited an invention which was developed into the telephone. Invented the photophone, and devoted much attention to the education of deaf-mutes.

**Bell, Sir Charles** (1774-1842), an eminent anatomist to whom we owe the discovery of the distinct functions of the sensory and motor nerves. His Bridgewater treatise on the Hand is well known.

**Bell, Gertrude Margaret Lowthian, C.B.E.** (1868-1926), the "uncrowned Queen of Arabia," was a famous traveller in the East, especially in Arabia. Was an authority on Asia Minor and Iran and an associate of "Lawrence of Arabia" during the Great War.

**Bellamy, Edward** (1850-1898), American journalist and author of *Looking Backward*, a utopian novel in which he foretells of many changes that have since come to pass.

**Bellini, Gentile** (c. 1429-1507), a celebrated Venetian painter, whose "Preaching of St. Mark



- at Alexandria," in St. Mark's College, Venice, is one of the renowned pictures of the world.
- Bellini, Giovanni** (c. 1430-1516), brother of the last-named, and a more celebrated painter.
- Bellini, Vincenzo** (1802-1835), an Italian operatic composer of great popularity during the first half of the 19th century. His *I.a Sonnambula*, *Norma*, and *I Puritani*, are still performed.
- Belloe, (Joseph) Hilaire (Pierre)** (1870-1953), a writer of great versatility whose works include *The Bad Child's Book of Beasts*, *The Path to Rome*, *Hills and the Sea*, *Cautionary Tales*, and historical studies of Danton, Robespierre and Richelieu.
- Belzoni, Giovanni Battista** (1778-1823), a renowned explorer of Egypt who settled in England at the beginning of the 19th century. After a precarious existence began to turn his attention to hydraulic experiments, and went to Egypt with a view to getting the Government to sanction a scheme of his for raising the water of the Nile. He was then attracted to the study of Egyptian antiquities, and engaged in highly successful researches.
- Benedict, St.** (480-544), built twelve monasteries, and founded the Order of the Benedictine Monks, at Monte Cassino, near Naples.
- Benes, Dr. Eduard** (1884-1948), Czechoslovak statesman, co-founder with Thomas Masaryk of the Czech republic, Foreign Minister, 1918-35, and President 1935-38 and 1940-48. An all-party ministry was overthrown by a communist coup d'état in February 1948, and Benes, in failing health, resigned the Presidency in June, dying in September.
- Benavente y Martinez, Jacinto** (1866-1954), one of the greatest of Spanish dramatists. Author of *Los Intereses Creados* and other famous plays. Nobel Prizewinner, 1922.
- Ben-Gurion, David** (b. 1886), Zionist leader. Educated at Istanbul University. Helped to organise the Jewish Legion in 1918, and was prominently connected with the Labour movement in Palestine in between the world wars. Prime Minister of Israel, 1948.
- Bennett, Enoch Arnold** (1867-1931), author and journalist. His stories of the Pottery Towns, where he was brought up, are of high merit. *The Old Wives' Tales*, *Clayhanger*, and *Hilda Lessways* are among his most successful novels. He also wrote plays, including *Milestones*, *The Great Adventure*, and *Mr. Prohack*.
- Bennett, James Gordon** (1841-1918), proprietor of the *New York Herald*, and a famous yachtsman and motorist. He sent out Stanley on the expedition which resulted in the finding of Livingstone.
- Bennett, Sir William Sterndale** (1816-1875), an English composer of eminence, who did much for the advancement of musical art in this country. Schumann pronounced him to be "the most musical of all Englishmen." His Cantatas are among the best produced in England, and include *The May Queen* and *The Woman of Samaria*.
- Bentham, Jeremy** (1748-1832), the founder of the school of political philosophy, the tenets of which were extended by John Stuart Mill. His works on *Government*, *Usury*, and *The Principles of Morals and Politics*, expound the Utilitarian system with great lucidity.
- Bentley, Richard** (1602-1742), an eminent classical scholar and critic, for long Master of Trinity College, Cambridge. He was a formidable controversialist and did pioneer work in textual criticism.
- Benz, Karl** (1884-1929), German engineer whose motor car produced in 1885 was one of the first to be driven by an internal-combustion engine.
- Beranger, Jean Pierre de** (1780-1857), was the most popular song-writer that France has produced. His songs were often written to serve some passing political purpose, and were invariably in harmony with popular sentiment.
- Beresford, William Carr Beresford, Viscount** (1768-1854), British General. Participated in capture of Cape Colony and of Buenos Ayres. Reorganised Portuguese Army. Master-General of Ordnance in Wellington administration.
- Berg, Alban** (1885-1935), Austrian composer whose best known work is the three-act opera *Wozzeck*, based upon a drama by Büchner (q.v.), which has become a modern classic.
- Bergson, Henri Louis** (1859-1941), was leading French philosopher of the present century. Able exponent of the theory of vitalism and the life force. Bergson's philosophy is practical, regarding action as the supreme good and marks a modern trend in its revolt against reason. Member of French Academy 1941; Nobel Prize for Literature 1927. Author of *Matter and Memory* (1896) and *Creative Evolution* (1907).
- Berkeley, George, D.D.**, Bishop of Cloyne (1685-1753), the propounder of the philosophy that the only things that are real are our ideas of what is presented to our senses. In support of this philosophy he wrote several works of great ingenuity of argument, chief amongst them being his *Alciphron*, or the *Minute Philosopher*.
- Berlin, Irving** (b. 1888), American composer of popular songs, and the pioneer of both rag-time and jazz music; his songs including *Alexander's Rag-time Band*, *Atavacs*, *What'll I Do?* were the beginning of popular jazz.
- Berlioz, Hector** (1803-1869), was an eccentric but highly endowed French musical composer who studied in Paris and Rome, and afterwards, settling in Paris, devoted himself to conducting and composing with much energy. He suffered hardship and humiliation before he got a hearing, but his originality and his ardent romanticism fascinated such men as Paganini and Liszt, and though musical convention to a great extent prevented the realisation of his aims, he ranks as one of the truest musical geniuses of the 19th century. His *Damnation de Faust* and his *Romeo and Juliet* symphony are his most inspired productions. His wife was an English actress, Miss Smithson, for whom he formed a romantic attachment while she was appearing in Shakespearean parts in Rome.
- Bernadotte, Count Folke** (1895-1948), nephew of the late King Gustav of Sweden. As head of the Swedish Red Cross arranged for the exchange of prisoners in the second world war. In April 1945, he was the intermediary through whom Himmler attempted to capitulate. Appointed United Nations mediator for Palestine in 1947 and brought about a truce between the Arabs and Jews, but was assassinated by Jewish terrorists.
- Bernadotte, Jean Baptiste** (1764-1844), was a French commander of great distinction who served under Napoleon, and in 1810 was chosen heir to the throne of Sweden. In 1818 he succeeded as Charles XIV., and was a capable ruler.
- Bernal, John Desmond, M.A., F.R.S.** (b. 1901), Professor of Physics, Birkbeck College, 1938- . Author of *The Social Function of Science*, *Science in History*, and of many other works on scientific and social subjects, notably crystallography, poison gases, and post-war housing.
- Bernard of Menthon** (923-1008), patron saint of mountaineers. Founded the alpine hospices of Saint Bernard on the famous Great Saint Bernard Pass between Switzerland and Italy.
- Bernard, Saint, of Clairvaux** (c. 1090-1153), famous French abbot of the monastery of Clairvaux whose sermons and letters had very great influence in Western Europe.
- Bernhardt, Sarah** (1845-1923), the most renowned tragedienne of her time. Became a member of the Comédie Française after the Siege of Paris, and thereafter occupied a specially prominent position as an actress. Her first performance in London was in 1879. Among her most conspicuous successes are *Theodora*, *Fédora*, and *La Tosca*, while she also appeared as Hamlet with distinction.
- Berthelot, Marcellin Pierre Eugene** (1827-1907), French chemist and politician, and the first to produce organic compounds synthetically.
- Berzelius, Jöns Jakob** (1779-1848), Swedish chemist, whose researches laid the foundations for modern chemical science. He devised the system of chemical symbols in use today and discovered several elements.
- Bessemer, Sir Henry, F.R.S.** (1813-1898), famous for his invention of the well-known process of converting cast-iron direct into steel. His invention entirely revolutionised steel manufacture, greatly reducing the cost of production and making it possible to utilise steel in many directions where previously iron only had been used.
- Bevan, Rt. Hon. Aneurin, M.P.** (b. 1897). Minister of Health 1945-51 and responsible for intro-



- ducing the National Health Service which came into operation in 1948; Minister of Labour, Jan.-Apr. 1951. Married to a fellow Socialist M.P., Miss Jennie Lee.
- Beveridge, Lord, K.C.B.** (b. 1879). British economist. Director of the London School of Economics, 1919-37, and Master of University College, Oxford, 1937-44. Drew up the Beveridge Plan, published in 1942, which formed the basis of the present Health and Insurance Schemes.
- Bevin, Rt. Hon. Ernest, M.P.** (1881-1951). Secy. of State for Foreign Affairs 1945-51; Minister of Labour and National Service, 1940-45. A British Trade Union Leader who became prominently associated with the Dockers Union, of which he was Assistant General Secretary and of the Transport and General Workers Union of which he was still General Secretary when he entered the Coalition Government as Minister of Labour. He was Chairman of the General Council of Trades Union Congress, 1937.
- Bichat, Marie Francois Xavier** (1771-1802). French physiologist who founded the study of general anatomy, on which he wrote several important works. In one of these he showed the important connexion between the brain, heart and lungs.
- Bidault, Georges** (b. 1899). French Foreign Minister, 1953-54. Originally a professor, he became the editor of the Christian Democrat newspaper, *L'Aube*, fought for the Republicans in the Spanish civil war, and then took a leading part in the French resistance movement. Is the leader of the M.R.P. Married the only woman in the French Foreign Service, 1945.
- Biddle, John** (1615-62), the first English Unitarian. He was fined, imprisoned and banished for his publications attacking the Holy Trinity. Under a general Act of Oblivion in 1652 he resumed his teachings, which led to further imprisonment, and as a result he died of fever. He is known as the "Father" of Unitarianism.
- Binyon, (Robert) Laurence, C.H.** (1869-1943), a poet, art critic and Orientalist; Assistant Keeper of Dept. of Prints and Drawings, British Museum, 1909-13; Deputy Keeper in charge of Sub. Dept. of Oriental Prints and Drawings, 1913-32; Keeper of Prints and Drawings, 1932-33.
- Birch, (Samuel John) Lamorna, R.A.** (1869-1955). English landscape painter in oils and water-colours, well known for his charming Cornish landscapes and sea studies. His pictures are hung in all the principal galleries of England.
- Bird, Cyril Kenneth, C.B.E., B.Sc.** (*nom de plume* Fougasse) (b. 1887), humorous artist who edited *Punch* from 1948 to 1952. His witty drawings, many under the title *The Changing Face of Britain*, enlivened the pages of *Punch* for many years and the "Careless Talk Costs Lives" series of the second world war were his creation.
- Birkbeck, George** (1776-1841), physician, philanthropist, and philosopher. A Yorkshireman who settled in London in 1804, and became the chief founder of Mechanics' Institutes.
- Birkenhead, 1st Earl of, P.C., G.C.S.I.** (1872-1930). Sec. for India, 1924-1928. Lord Chancellor, 1919-1922. Attorney-General 1915 to 1919. M.P. for the Walton Divn. of Liverpool from 1906 to 1918, and West Derby Divn. thereof from Dec. 1918 to Jan. 1, 1919.
- Birkett, Rt. Hon. Sir (William) Norman, Q.C.** (b. 1883), one of the ablest and most prominent members of the English Bar. Lord of Appeal, 1950; Judge King's Bench Div. 1941-50; British Mem. (Deputy) Int. Mil. Tribunal at Nuremberg 1945-46. Was M.P. (L.) for East Nottingham, 1923-24 and 1929-31.
- Birmingham, Bishop of.** (See Barnes, Ernest W.)
- Bishop, Sir Henry Rowley** (1786-1855), composer of many popular ballad operas and songs. *Maid Marian, Guy Mannering* and *The Miller and his Men*, are his best-known operas. He was also a very successful glee-writer, and was the composer of *Home, Sweet Home*. Was the first musician to be knighted in 1842.
- Bishop, Air Marshall William Avery, V.C., C.B., D.S.O., M.C., D.F.C.** (b. 1894). Canada's greatest airman. Officially credited with the destruction of seventy-two enemy aircraft in the first world war.
- Bismarck, Prince Otto Eduard Leopold von** (1815-1898), the most prominent and capable of the German statesmen of the 19th century, entered the diplomatic service in 1851, and filled positions in succession at Vienna, Petrograd, and Paris. In 1862 he was appointed Minister of Foreign Affairs, from which time dates the strong Bismarckian policy which was destined to achieve so much for Prussia. As Imperial Chancellor he may be said to have directed the destinies of his country down to the death of the Emperor William in 1888, when Emperor William II. began to assume a direct control, which Bismarck resented, and in 1890 the "old pilot" was dropped, to use a figure of speech made memorable by one of Tenniel's cartoons. Bismarck retired to his country estates, and did not again interfere seriously in political affairs. Made Count in 1865 and Prince in 1871. Germany has over two hundred monuments to him. He presided at the famous Berlin Conference of 1878. His son, Count Herbert von Bismarck (1849-1904), was appointed German Foreign Minister in 1885, but, like his father before him, did not get on well with William II.
- Bizet, Georges** (1838-1875), a French musical composer, who gave the operatic stage several operas full of charming melody, and who in *Carmen* achieved one of the leading operatic triumphs of the latter half of the 19th century.
- Björnsen, Björnsterne** (1832-1910), the Norwegian poet, dramatist, and novelist is one of the great names in modern European literature, his poems, plays, and stories being marked by a strong intellectuality and a rich imagination.
- Black, Joseph** (1728-99), Scottish chemist. Prof. of anatomy at Glasgow (1756-60) and of medicine and chemistry at Edinburgh (1760). Specially known for discoveries of carbon dioxide (he called it "fixed air") and latent heat. His original work earned him the title father of quantitative chemistry.
- Blackett, Patrick M.S., F.R.S., M.A.** (b. 1897). Professor of Physics, Imperial College of Science and Technology, 1953; Manchester University, 1937-52. Author of *The Military and Political Consequences of Atomic Structure*, publ. 1948. Awarded Physics Nobel Prize 1948 for his work on nuclear physics and his development of the Wilson cloud chamber method of tracing tracks of swift atomic particles.
- Blackmore, Richard Doddridge** (1825-1900), a novelist who in 1869 made a great reputation with his romantic story of *Lorna Doone*.
- Blackstone, Sir William** (1723-1780), was a Justice of the Court of Common Pleas. His great work, *Commentaries on the Laws of England*, became one of the British classics.
- Blackwood, Algernon, C.B.E.** (1869-1951), British author. As a young man, farmed in Canada and worked on New York newspapers. Then, from 1906, produced a steady flow of books, plays, and short stories of high quality.
- Blair, Robert** (1699-1746), a noted Scottish poet, whose poem, *The Grave*, entitles him to a place in all collections of British poetry.
- Blake, Robert** (1599-1657), Parliamentary general and an admiral in the Cromwellian navy in the Dutch and Spanish wars.
- Blake, William** (1757-1827), painter, poet, and mystic, whose *Songs of Innocence* and scriptural drawings reveal an intense spirituality. He was a highly independent and original thinker and has been called "the great teacher of the modern western world."
- Bland-Sutton, Sir John, Bt., M.D.** (1855-1936), an eminent surgeon, whose association with the Middlesex Hospital is commemorated by the Bland-Sutton Institute of Pathology. Was an authority on diseases of women.
- Blasco-Ibanez, Vicente** (1867-1928), a Spanish man of letters who wrote *The Four Horsemen of the Apocalypse* and other novels which made him world-famous.
- Blieriot, Louis** (1872-1936), French airman; the first to fly the English Channel from Calais to Dover, July 25, 1909.
- Blind, Karl** (1826-1907), was a native of Mannheim, and in 1847 associated himself with the German revolutionary movement, but was arrested and imprisoned. Gaining his liberty, he resided in Brussels for a time, and afterwards settled in London, remaining in close touch with men like Mazzini and Louis Blanc, and by pen and speech constantly advocating political freedom.

- Bliss, Sir Arthur** (b. 1891), English composer, succeeded Sir Arnold Bax as Master of the Queen's Musick in 1953. His best known works are the *Colour Symphony* (1922), *Morning Heroes* (1930) and his ballet *Checkmate* (1937). Mus. Dir. B.B.C., 1941-44.
- Boch, Ernest** (b. 1880), composer, whose music is characterised by its Jewish and oriental themes. He was born in Geneva, Switzerland, and is a naturalised American citizen.
- Blomfield, Sir Reginald, R.A., M.A., F.S.A.** (1856-1942): was a prominent architect, designer of gardens and country houses.
- Blondin, Charles** (Jean François Gravelet) (1824-1897), a famous French rope performer, who crossed Niagara Falls on a tight-rope.
- Blücher, Field-Marshal Gebhard Leberecht von** (1742-1819), was the famous Prussian commander who, after a long and brilliant military career, joined forces with Wellington in the final campaign against Napoleon, and materially helped to win the great victory of Waterloo by advancing to Wellington's support.
- Blum, Leon** (1872-1950), statesman and architect of French socialism. Led a "popular front" government in 1936 and a "caretaker" government for a brief period 1946-47. Served as vice premier 1937-38. During 1940-45 was interned in Germany.
- Blunden, Edmund Charles** (b. 1896), English poet who was Prof. of Literature at Tokyo University 1924-27. Gained the Hawthornden Prize in 1922 for his poem *Shepherd*. Fellow and Tutor in English Literature, Merton College, Oxford, 1931-43. Prof. of Literature Hong Kong University, 1954-.
- Blunt, Wilfrid Scawen** (1840-1923), best known for the part he took in Egyptian affairs in 1881-1882 and his continued support of what is called the Egyptian national movement. He was a devoted admirer of Arabi Pasha, and spent much money in his defence. In 1907 he published his *Secret History of the English Occupation of Egypt*, which aroused much controversy. He married a granddaughter of Lord Byron.
- Boadicea**, queen of the Iceni tribe of Britons, who raised an army against and defeated the Roman invaders, but was afterwards vanquished by Suetonius and committed suicide in 62.
- Boccaccio, Giovanni** (1313-1375), an Italian author who has often been called the father of the novel. He had a lively imagination and a graceful style, and his famous *Decameron*—condemned by two Popes and by the Council of Trent—has been a fount of inspiration to poets and story-tellers from Shakespeare to Keats.
- Boccherini, Luigi** (1743-1805), Italian composer who first gained fame for his virtuosity on the violoncello. Settled in Madrid in 1769 as composer to the Chapel of the Infante, which position he held until 1785. Was appointed composer to the Court of Frederick William II. of Prussia, but returned to Spain in 1797, and died in poverty in Madrid.
- Bode, Johann Elert** (1747-1826), German astronomer remembered mainly for his law (known as Bode's Law) for the calculation of the relative distances of the planets from the sun.
- Boehm, Sir Joseph Edgar, Bt., R.A.** (1834-90), British sculptor. Executed several famous monuments and statues including that of Carlyle on the Chelsea Embankment, the monument to Dean Stanley in Westminster Abbey, Darwin in the Natural History Museum, Kensington, and the equestrian statue of the Duke of Wellington at Hyde Park Corner.
- Bohr, Niels Henrik David** (b. 1885), famous Danish physicist who has received universal recognition and fame by his experiments in atomic structure. With Lord Rutherford applied the quantum theory to the study of atomic processes. Awarded Nobel Prize for Physics, 1922.
- Boieldieu, François Adrien** (1775-1834), French composer whose masterpiece, *La Dame Blanche*, was published in 1825. Composed many works in collaboration with Cherubini and Mehul. Succeeded Mehul as Professor of Composition at the Conservatoire, Paris, in 1817.
- Bolleau-Despreaux, Nicolas** (1636-1711), a French poet who was contemporary with Molière, and wrote many classical imitations which were highly thought of in his own time and later.
- Boito, Arrigo** (1842-1918), an Italian poet and musical composer. He wrote the libretti of *Othello* and *Falstaff* for Verdi, and for his own operas of *Mefistofele* and many others.
- Boldewood, Rolf**, pseudonym of Thomas Alexander Browne (1826-1915), Australian novelist, born in London. Went with his parents to Australia in 1830, becoming a squatter and sheep-farmer in New South Wales. His classic novel *Robbery under Arms* is based on the exploits of some of the notorious Australian bushrangers.
- Boleyn, Anne** (1507-38), queen of Henry VIII and mother of Queen Elizabeth. Originally maid-in-waiting to Catharine of Aragon and her successor when Catharine's marriage was annulled. She failed to produce a male heir and was beheaded on a charge of adultery.
- Bolívar, Simon** (1783-1830), the first President of Venezuela and subsequently Dictator of Peru; commonly called the Washington of South America.
- Bonaventura, St.** (1221-1274), a Franciscan monk of great learning and piety, and a leading Schoolman. He was called "the Seraphic Doctor."
- Bondfield, Rt. Hon. Margaret Grace, C.H.** (1873-1953), Min. of Labour, 1929-31. Represented Northampton, 1923-24. Wallsend, 1926-31. First woman member of a British Cabinet.
- Bone, Sir Muirhead** (1876-1958), Scottish artist, famous for his drawings and etchings of architectural subjects. Excelled in dry-point and drawings of intricate scaffolding.
- Bonheur, Rosa** (1822-1899), a native of Bordeaux, and one of the most noted animal painters of the 19th century. *The Horse Fair* is probably the most popular picture of the kind.
- Boniface, St.** (680-754), a native of Devon, spent most of his life in Germany in Christianising missions, and became the first Archbishop of Mainz. He and a number of followers were massacred in Friesland.
- Booth, Edwin** (1833-1893), an American tragedian of great eminence; son of Junius Brutus Booth, the English tragedian, and brother of John Wilkes Booth, who assassinated President Lincoln. As a Shakespearian actor Booth took high rank and is said to have played Hamlet oftener than any other actor. He visited England several times.
- Booth, "General" William** (1829-1912), while quite a young man became a Methodist local preacher and a travelling evangelist. Founded the Salvation Army in 1878, which under his enthusiastic and eminently practical direction became an organisation of world-wide influence.
- Booth, "General" Wm. Bramwell, C.H.** (1856-1929), son and successor of the above from 1912 until deposed by the Army High Council in 1928.
- Borden, Rt. Hon. Sir Robert (Laird), G.C.M.G., K.C.** (1854-1937), Premier of Canada 1911 to 1926, leader of the Conservative party in the Canadian House of Commons 1901-1920; was the first overseas minister to attend a meeting of the British Cabinet in 1915; had a distinguished career at the Bar.
- Borgia, Cæsar** (1476-1507), the masterful and unscrupulous son of Pope Alexander VI., who paved his way to power by the murder of those who stood in his way, and aided by Louis XII. of France, became ruler of Romagna, the Marches, and Umbria. Pope Julius II. banished him from Rome, and he was imprisoned in Spain, but escaped to find a soldier's death in the Army of Navarre in the invasion of Castile.
- Borodin, Alexander Porfirievich** (1833-87), Russian composer who became Prof. of Chemistry and founded a School of Medicine for Women. One of the most important of the "new" Russian composers of the 19th century, his compositions include Symphonies, Chamber Music, and Piano pieces, also his unfinished opera, *Prince Igor*, later completed by Rimsky-Korsakov, and produced in St. Petersburg in 1890.
- Borotra, Jean** (b. 1898), famous French lawn tennis champion, known as "the bounding Basque." A popular figure at the Wimbledon championships before and after the second world war.
- Borrow, George Henry** (1803-1881), was for many years travelling agent for the British and Foreign Bible Society, and in the course of his wanderings made a special study of gipsy life, and wrote some of the most charming and picturesque books about the Romany tribes we possess. His *Lavengro*, *Romany Rye*, and *Bible in Spain* are classics.



- Bose, Sir Jagadis Chunder, C.S.I., C.I.E., F.R.S.** (1858-1937), eminent Indian scientist. Published many works on plant physiology and designed certain instruments of which the best known is the crescograph, which can magnify movement 100,000 times.
- Boswell, James (1740-1795)**, made himself famous by writing *The Life of Dr. Johnson*, spending some years in close intimacy with the great lexicographer, and producing what is probably the finest biography in the language. His own journals and letters, collected together by Yale University and published in 1949 as *The Boswell Papers*, are among the greatest literary collections ever assembled.
- Botha, General the Rt. Hon. Louis (1862-1919)**, the Boer general who succeeded Joubert in command of the Transvaal forces in the Boer War 1899-1902. On parliamentary government being granted to the Transvaal in 1907 he became the first Prime Minister, and attended the Imperial Conference in England the same year. In 1910 made first Premier of the South African Union. After the outbreak of war with Germany took the field at the head of a Union force and, in addition to putting down a rebel movement engineered by Germany, conquered a large portion of German African Territory. Took a prominent and useful part in the Peace conference of 1919.
- Botticelli, Sandro (c. 1444-1510)**, Italian painter and disciple of Savonarola, the democrat. Produced many notable pictures, and assisted in the decoration of the Sistine Chapel. His illustrations to Dante's *Divine Comedy* are world-famous.
- Bottomley, Horatio (1860-1933)**, politician, journalist, financier, and for many years one of the most notorious characters in England. A brilliant speaker, he was twice M.P. for South Hackney. Altogether 260 petitions in bankruptcy were presented against him, mostly without effect: he was constantly in the law courts, defending himself with skilful audacity against famous K.C.s. Millions of pounds passed through his hands, much of it obtained from small investors, but he died in poverty after serving seven years' penal servitude for fraud.
- Boughton, Rutland (b. 1878)**, English composer. Has written on the history and philosophy of music. Composer of *The Immortal Hour*.
- Boulanger, General George Ernest Jean Marie (1837-1891)**, was for a few years the most popular man in Paris, if not in France. Was made War Minister in 1886, and contrived by a violent attitude towards Germany and a flattery of the mob, to attract much attention. In 1888 he may be said to have dominated French politics, and many expected that he would effect a *coup d'état*, and become dictator of France; but his courage was not equal to his opportunity, and he rapidly fell out of favour and left the country in order to avoid arrest. His career was over, and in 1891 he committed suicide on the grave of a mistress in Brussels.
- Boulton, Sir Adrian C., Kt., M.A., D.Mus., F.R.C.M. (b. 1889)**. Chief conductor London Philharmonic Orchestra, 1950. Conductor of the B.B.C. Symphony Orchestra, 1930-50, and Musical Director B.B.C., 1930-42.
- Bowdler, Thomas (1754-1825)**, a pious English physician, who issued expurgated editions of Shakespeare and Gibbon, eliminating all expressions offensive to good taste. Hence the term "bowdlerise."
- Boyd Orr, John, 1st Baron, F.R.S., M.D., D.Sc. (b. 1880)**, Scientist, farmer and nutritional expert. Prof. of Agriculture, Aberdeen University, 1942-45; Director-General, World Food and Agricultural Organisation, 1945-48, now Chancellor of Glasgow University. Awarded Nobel Peace Prize, 1949.
- Boyle, Hon. Robert, F.R.S. (1627-1691)**, English physicist; invented the air pump, and established Boyle's Law which states that in a given quantity of gas at a given temperature and pressure, pressure is inversely proportional to volume. See p. 760.
- Bradley, General of the Army Omar N. (b. 1893)**, distinguished American soldier who was appointed chairman of the Joint Chiefs of Staff in succession to Gen. Eisenhower in 1949. Commanded 2nd U.S. Army Corps in Tunis and Sicily, the American Assault Forces in Normandy in 1944, and later the 12th U.S. Army Group. Retired 1953.
- Bradman, Sir Donald George (b. 1908)**, Australian cricketer and one of the world's best batsmen. Holder of world's record score of 452 not out for N.S.W. v. Queensland at Sydney, Dec. 1929. Captained Australia in Test matches against England, 1936-48.
- Bragg, Sir Wm. (Henry), O.M., K.B.E., F.R.S., M.A., D.Sc. (1862-1942)**, was a brilliant scientist. Nobel Physics Prize, 1915. Was Director of the Royal Institution of Great Britain; Fulmerian Prof. of Chemistry, Royal Institution, and Director of Davy-Faraday Research Laboratory, 1923-42; President of British Association, 1928. President of the Royal Society, 1936-40.
- Bragg, Sir (William) Lawrence, O.B.E., M.C., F.R.S. (b. 1890)**, succeeded Lord Rutherford as Cavendish Prof. of Experimental Physics, Cambridge Univ., 1938-53. Dir. Royal Institution, 1954-. Shared with his father (Sir Wm. H. Bragg) the 1915 Nobel Prize for research work on X-rays and crystal structures.
- Brahe, Tycho (1546-1601)**, a celebrated Danish astronomer, and fellow-worker of Kepler. With large sums of money put at his disposal by Frederick II, of Denmark, he built an observatory called Uraniborg on the island of Hveen, near Copenhagen, where for over 20 years he carried out a vast programme of accurate and systematic observations of the heavenly bodies and compiled tables of their motions.
- Brahms, Johannes (1833-1897)**, a German musical composer of deserved eminence, and the friend and pupil of Schumann. His compositions are of a varied order, most classical in form, and possess deep intensity of expression and poetic significance. His pianoforte music covers a wide range. He wrote some 300 songs, and among his more serious works the *German Requiem*, the *Triumphlied*, and the *Rhapsodie* are the best known.
- Braille, Louis (1809-52)**, French educationist, who, as teacher of the blind, perfected his system of reading and writing for the blind. As the result of an accident when he was three years old he was himself blind.
- Braithwaite, Dame Lilian, D.B.E. (d. 1948)**, actress who played a variety of parts, ranging from Rosalind and Portia to one of the charming old murderesses in *Arsenic and Old Lace*.
- Bramah, Joseph (1749-1814)**, a Yorkshireman who devoted himself to invention, introduced numerous mechanical improvements, including the hydrostatic press, a liquid-pumping apparatus, a most ingenious series of safety locks, and bank-note printing machines.
- Brampton, Lord, P.C. (1817-1907)**, long known to the public as Sir Henry Hawkins. Was famous as an advocate, and took part in many celebrated cases, including the Tichborne trial. His *Reminiscences*, published in 1904, was one of the books of the year.
- Brandes, Georg (1842-1927)**, the great Danish literary critic, whose full name was Georg Morris Cohen Brandes. His classic work, *Main Currents in Nineteenth Century Literature*, was translated into many languages. From 1912 he was Professor of Aesthetics at Copenhagen University. He was the author of many fine critical works, the most noteworthy of which were his study of Lord Beaconsfield, 1878, and study of Shakespeare, 1895-1897.
- Brangwyn, Sir Frank, R.A., R.P.E. (b. 1867)**; Officer and Cross of the Legion of Honour, France; Commander of the Order of St. Maurice and St. Lazarus, Italy; Member of the Reale Accademia de St. Luca, Rome; etc., etc. The greatest mural artist and etcher of his day, also noted for many lithographs.
- Brennan, Louis, C.B. (1853-1932)**, successful inventor, born in Ireland. Paid £120,000 by the British Government for his gyro-directed torpedo; also the inventor of a mono-rail locomotive on the gyroscope principle.
- Brewster, Sir David, LL.D., F.R.S. (1781-1868)**, a Scottish philosopher of great scientific attainments who edited the *Edinburgh Encyclopedia* in 1808, invented the kaleidoscope in 1816. Was one of the founders of the British Association, and a voluminous writer on science. Made important discoveries respecting the polarisation of light.



- Briand, Aristide** (1862-1932), 11 times Prime Minister of France, 16 times Foreign Minister, thrice Minister of Justice, 4 times Minister of the Interior and twice Minister of Education.
- Bridges, Rt. Hon. Sir Edward, G.C.B., G.C.V.O., M.C.** (b. 1892), son of Robert Bridges. Permanent Secretary to the Treasury and Head of Civil Service since 1945. Secretary to the Cabinet, 1938-46. Fellow of All Souls' College, Oxford, 1954.
- Bridges, Robert, O.M., M.A.** (1844-1930), was Poet Laureate 1913-30. Practised medicine up to 1882, thenceforward devoting himself mainly to literature. He published several volumes of poems and plays, displaying refined fancy and a broad philosophic spirit. His *Testament of Beauty* was published in 1930.
- Bridgewater, Francis Egerton, 3rd (and last) Duke of** (1736-1803). The projector of the famous Bridgewater Canal, which was the beginning of the great English canal system, and yielded his family enormous wealth; it was absorbed in 1887 by the Manchester Ship Canal Company, who paid £1,710,000 for it.
- Bridgewater, Francis Henry Egerton, 8th (and last) Earl of, F.R.S.** (1756-1829), grand-nephew of the last-named, and founder of the famous *Bridgewater Treatises*, written by the most celebrated divines and scientists of the day, and devoted to demonstrating the power, wisdom, and goodness of God, as manifested in the Creation.
- Bridie, James**, (pseudonym of Osborne Henry Mavor) C.B.E., LL.D., M.D. (1888-1951), Scottish author and playwright. Educated at Glasgow Academy and University. The first of his many successful plays was *The Anatomist*, produced in 1931. Others include *Tobias and the Angel*, *Jonah and the Whale*, *Mr. Bolfrey*, *Dr. Angelus*.
- Brieux, Eugene** (1858-1932), French dramatist, whose plays are satires on definite evils of society, and deal with such subjects as divorce, legal hypocrisy, social diseases, etc. Was elected a member of the French Academy in 1909.
- Bright, Sir Charles Tilstone** (1832-88), English telegraph engineer, who after superintending the laying of telegraph lines in many parts of Great Britain organised the Atlantic Telegraph Company (1856), and as Engineer-in-chief supervised the laying of the first Atlantic Cable (1858).
- Bright, Rt. Hon. John** (1811-1889), a famous Radical Quaker statesman and orator, one of the chief promoters of the Reform movement which led to the introduction of Free Trade.
- Britten, Edward Benjamin, C.H.** (b. 1913), composer of a variety of music, including *Spring Symphony*, *Let's make an Opera*, *The Rape of Lucrezia*, *Peter Grimes*, *Albert Herring*, *Billy Budd*, and *Gloriana*, composed to mark the occasion of the Coronation.
- Broca, Paul** (1824-80), French anthropologist, surgeon and pathologist. From 1867 he was Professor of Pathology, Paris. He discovered the seat of speech in what is known as convolution of Broca. He was the founder of modern anthropology and is regarded as the originator of the science of craniology.
- Brock, Sir Thomas, K.C.B., R.A.** (1847-1922), pupil of Foley, achieved a high reputation as a sculptor. The Queen Victoria Memorial in front of Buckingham Palace is his work.
- Brogan, Denis William, M.A.** (b. 1900), Prof. of Political Science at Cambridge. An authority on France, America, and Britain, and his works include *The Development of Modern France*, *Politics and Law in the United States*, and *The English People*.
- Broglie**, French noble family of Piedmontese origin who settled in France in the 17th cent. Victor Maurice, comte de Broglie (1871-1745) was marshal of France and fought in the wars of Louis XIV. Louis Victor, prince de Broglie (b. 1892) and Maurice, duc de Broglie (b. 1875) the eminent French physicists are his grandsons.
- Brontë, Charlotte** (1816-1855), one of the most gifted novelists of the 19th century. Her *Jane Eyre*, published in 1847, attracted universal notice, and her other novels, *Shirley*, *Villette*, and *The Professor*, are all marked by the force of strong genius. Her sisters, Emily (1818-48) and Anne (1820-49), also wrote novels and poems, Emily's *Wuthering Heights* and some of her verse showing exceptional power.
- Brookeborough, Basil Stanlake Brooke, 1st Viscount, C.B.E., M.C.** (b. 1888), Prime Minister of Northern Ireland since 1943. An Ulster Unionist.
- Brooke, Rupert** (1887-1915), a British poet who died during the first world war, whose works, though few, showed great promise and include the poems *Granchester* and *If I Should Die*.
- Brougham, Lord, P.C., F.R.S.** (1778-1868), one of the chief legal luminaries of the 19th century, who made a great name by defending Queen Caroline against George IV., and afterwards rose to political eminence.
- Brown, Sir Arthur Whitten, K.B.E.** (1886-1948), together with Sir John Alcock (d. 1919) in 1919 made the first transatlantic flight, crossing from Newfoundland to Ireland in 16 hr. 12 min.
- Brown, John**, "of Ossawatimie" (1800-1859), the hero of Harper's Ferry, whose action in inciting certain negro slaves to rebel in 1859 struck the note of alarm which resulted in the Civil War. His attempt to take the Arsenal at Harper's Ferry was defeated, and he was hanged, being afterwards regarded as a martyr by the Abolitionists.
- Browne, Charles Farrer (Artemus Ward)** (1834-1867), was one of the most whimsical and entertaining humorists America has produced. In addition to his books he wrote and delivered exceedingly funny lectures, and was making an English tour with them when he was seized with a fatal illness, dying at Southampton.
- Browne, Hablot Knight** (1815-1882), best known as "Phiz," the illustrator of Dickens's novels, from the *Pickwick* period down to *Little Dorrit*.
- Browne, Sir Thomas** (1605-82), author of *Religio Medici*, was a London physician and antiquary.
- Browning, Elizabeth Barrett** (1806-1861), an English poetess of eminence who, between 1830 and 1860, wrote many poems showing great intellectual grasp and imaginative fervour. Some of her works, such as *The Cry of the Children*, *Lady Geraldine's Courtship*, *The Rime of the Ancient Mariner*, and *Bertha in the Lane*, are sure of immortality, and her *Aurora Leigh*, a novel in poetic form, is, in portions, on a high level of poetic execution. She was married to Robert Browning in 1846, and afterwards lived mostly in Italy.
- Browning, Robert** (1812-1889), one of the two greatest poets of the later Victorian era. His earlier poems and dramas, though marked by singular insight and power, were far from popular, mainly because of a somewhat obscure and involved style from which he only occasionally freed himself. His *Strafford*, and *The Blot on the 'Scutcheon* were both produced by Macready, and attained some measure of stage success; but Browning was essentially a poet to be read, rather than acted. Some of his dramatic characterisations are of striking power. From about 1864 he published many works and knew at last what it was to be an appreciated poet. His *Men and Women*, *Dramatis Personae*, and *The Ring and The Book*, contained some of the finest poetry of modern times.
- Bruce, Robert** (1274-1329), took part with Sir William Wallace (q.v.) in the revolt against Edward I., later leading the popular cause. Achieved one victory after another, until at Bannockburn he overthrew the English army and ultimately secured Scottish independence. He reigned twenty-two years as King Robert I.
- Bruce of Melbourne, Viscount, P.C., C.H.** (b. 1883), Prime Minister of Australia, 1923-29, was Resident Australian Minister in London, 1932-33. High Commissioner for Australia, 1933-45. Chairman International Emergency Food Council, 1946; chairman World Food Council, 1947.
- Brummell, George Bryan** (1778-1840), "Beau Brummell," the fashion leader in English Society when George IV. was Prince of Wales; was a *bon vivant* and gamester whose excesses involved him in imprisonment and ultimate imbecility.
- Brunel, Isambard Kingdom** (1806-1859), a prominent engineer who constructed the more difficult portions of the Great Western Railways, and many other important works. He also achieved eminence as a designer of steamships.
- Brunel, Sir Mark Isambard** (1769-1849), father of the last-named, and constructor of the Thames tunnel, finished in 1843.
- Brunelleschi, Filippo** (1379-1446), Italian archi-

- tect, born in Florence, pioneer of Renaissance architecture, adapting the ideals of the Roman or classic period to the conditions of his own day. Many examples of his work are to be seen in Florence—in the Pitti Palace, the Churches of San Lorenzo and San Spirito, the great cupola of the cathedral of Santa Maria del Fiore and the beautiful carved crucifix in the Church of Santa Maria Novella.
- Bruno, Giordano** (c. 1548–1600), Italian philosopher and martyr; entered the Dominican Order at Naples in his 15th year. Accused of heresy he fled from his convent and roamed over Europe. In 1592 he returned to Italy and was arrested by the Inquisition. After 7 years in prison was burned at the stake, Feb. 17, 1600. A statue to him was erected in the Campo dei Fiori, 1889.
- Brutus, Marcus Junius** (85–42 B.C.), Roman Governor and one of the founders of Roman civil law.
- Bryant, Arthur Wynne Morgan** (b. 1899), English historian and pageant producer. Among his works are *English Saga*, 1840–1940, a life of *George V.*, *The Story of England*, and several books on the Napoleonic War years and the Restoration period, including a balanced and informative biography of Pepys.
- Bryce, James, 1st Viscount, P.C., O.M., G.C.V.O., F.R.S.** (1838–1922). Statesman and diplomat; entered Parliament as a Liberal. A convinced home-ruler, he became chief secretary for Ireland, 1905–7, and from 1907 to 1912 British Ambassador to the United States. Among his historical writings his works on *The American Commonwealth* and *The Holy Roman Empire* hold high rank.
- Buchanan, George** (1506–82), Scottish humanist who spent most of his life in France lecturing and writing Latin poems, plays, and treatises. Montaigne, Mary Queen of Scots, and James VI of Scotland were his pupils at various times. He was the best Latin scholar of his age, and his most important works are *De jure regni apud Scotos* and *Rerum Scotticarum historia*.
- Buchman, Rev. Frank Nathan David** (b. 1878), an American evangelist, and leader of the movement known as "moral rearmament." Initiated in 1921 the Religious Fellowship known as the Oxford Group Movement.
- Buchner, Eduard** (1860–1917), a noted German chemist and Professor, famous for his discovery of the enzymes within yeast cells and for his researches in connexion with this was awarded the Nobel Prize for Chemistry in 1907. Was a pioneer in the chemistry of fermentation.
- Büchner, Georg** (1813–37), German dramatist whose career was terminated by his early death at the age of twenty-four, but whose limited output (principally *Dantons Tod* and the fragment *Woyzeck*) is marked by extraordinary power and maturity.
- Buck, Pearl Sydenstricker** (b. 1892), the well-known American novelist and Nobel Prize winner for Literature, 1938. Her childhood was spent in China, to which country she returned after receiving her higher education in U.S.A., and from 1924–31 taught at the University of Nanking, where she was a professor. *The Good Earth* (1931) gained for her the Pulitzer Prize.
- Buckle, George Earle** (1854–1935), was educated at Oxford, and made a brilliant start on the editorial staff of *The Times*, becoming editor on the death of Thomas Chenerly in 1884–1912. Wrote Vols. III. to VI. of *The Life of Disraeli*, of which Vols. I. and II. were written by the late W. F. Monypenny.
- Buckle, Henry Thomas** (1821–1862), the author of *The History of Civilisation in England*, one of the most vigorous productions of the 19th century.
- Budge, Sir Ernest Alfred Wallis, Litt.D., D.Litt., F.S.A.** (1857–1934), a distinguished archaeologist who conducted many excavations in Mesopotamia and Egypt. Was Keeper of Egyptian and Assyrian Antiquities at the British Museum, 1893–1924.
- Bufon, George Louis Leclerc, Comte de** (1707–88), French author and naturalist who devoted his life to the study of natural history and whose great work *Histoire Naturelle* in 86 volumes appeared between 1749 and 1789.
- Bulganin, Marshal Nikolai Alexandrovitch** (b. 1895), succeeded Malenkov as Chairman of the Soviet Council of Ministers (Prime Minister) in 1955. Formerly Soviet Defence Minister.
- Bull, John** (1563–1628), was organist to James I. and composed much acceptable music, including, it is supposed, our National Anthem *God save the Queen*.
- Bunche, Dr. Ralph Joynson** (b. 1904), Director of the U.N. Dept. of Trusteeship (1946–48); awarded the Nobel Peace Prize in 1950 for his work as mediator in Palestine. Appointed Professor of Government at Harvard University in 1950. Appointed under-secretary without portfolio to deal with special problems at U.N. Headquarters, 1954.
- Bunsen, Robert Wilhelm** (1811–1899), noted German chemist, discoverer of the metals caesium and rubidium, and inventor of the Bunsen burner, battery, and pump. Made many important observations in spectrum analysis.
- Bunyan, John** (1628–1688), was originally a travelling tinker and fought with the Cromwellians. Joining a Baptist Society in Bedford in 1655, he became imbued with religious enthusiasm and was for some years a popular preacher. After the Restoration he was thrown into prison, and there wrote his *Pilgrim's Progress* and *The Holy War*, the two finest allegorical works in this or any language.
- Burbank, Luther** (1849–1926), the famous American botanist and hybridist, who made numerous successful experiments in the direction of selection and cross-fertilisation, by which methods he produced the Burbank potato, the Burbank plum, and many new varieties of various fruits, flowers and vegetables.
- Burghley, William Cecil, Lord** (1520–1598), Secretary to Lord Protector Somerset, an influential statesman under Edward VI. and Queen Mary, and subsequently Queen Elizabeth's favourite Minister for forty years.
- Burke, Edmund** (1729–1797), the acknowledged philosopher of conservatism; son of a Dublin attorney, went to London in 1756, and made his mark in literature by his famous work on the *Sublime and Beautiful*. Later on was private secretary to the Marquis of Rockingham, then Premier, and entered Parliament, where he quickly made a name. An able and earnest debater, he took part in all the great movements of his time, and in 1795, after his retirement, was awarded a handsome pension from the Civil List.
- Burne-Jones, Sir Edward Coley, Bt.** (1833–1898), an English painter of singular power, who at first modelled himself upon Rossetti, whose influence is more or less visible in most of his works. A sad mysticism dominates his pictures, but the colour scheme, the design and the poetic charm are always evident. His most famous works are *The Days of Creation*, *The Mirror of Venus*, *The Briar Rose*, and *King Cophetua*.
- Burnet, Bishop Gilbert** (1643–1715), wrote a *History of His Own Times*, which deals with many events of which he had personal knowledge, and is a valuable legacy to historical scholars.
- Burnet, Sir John James, R.A.** (1859–1938), was a leading British architect, whose most important work was the King Edward VII Galleries of the British Museum, opened in May 1914. Among his many large buildings in London are Adelaide House, and the extension to Selfridge's.
- Burney, Fanny.** (See D'Arbly, Madame.)
- Burns, Rt. Hon. John** (1858–1943), was a prominent Parliamentary Labour representative. As a working man and a friend of working men, he came into special prominence during the great strike of dockers, 1889. Represented Battersea in Parliament, 1892–1918, and was for a number of years an active member of the L.C.C. Was President of the Local Government Board, 1905–14; in Feb. 1914, became President of the Board of Trade, but resigned the office when war broke out in Aug. 1914.
- Burns, Robert** (1759–1796), Scotland's greatest poet. Startled the world with a little book of poems in 1786 which proclaimed him a true son of the muses. With the £500 that his book yielded him he bought a farm, obtained an appointment with the Excise in 1789, and for the last five years of his life lived at Dumfries. In his career he poured forth song after song of emotional tenderness, and made his name immortal.



**Burton, Sir Richard Francis, K.C.M.G. (1821-1890).** explorer, orientalist, and diplomatist, who became famous after making a pilgrimage to Mecca in 1853 disguised as a Mohammedan. Later he did much exploring in Central Africa, wrote several books and made a remarkable literal translation of the *Arabian Nights* (18 vols.).

**Bustamante, Anastasio (1780-1853),** Mexican general and president.

**Bustamante, Antonio Sánchez de (1865-1951),** Cuban authority on international law.

**Bustamante, Sir William Alexander (b. 1884),** Jamaican labour leader and politician. When Jamaica received its new constitution in 1944 the Labour Party under his leadership gained an overwhelming electoral victory and he became Minister of Communications. Organised Jamaican labour into a single body, the Bustamante Industrial Trade Union.

**Butler, Joseph (1692-1752),** an English divine who occupied an important place among eighteenth-century thinkers. He declined the Archbishopric of Canterbury in 1747, but in 1750 became Bishop of Durham. In 1736 he published his *Analogy of Religion*, the whole of which was a reply to the deistic attacks on revealed religion.

**Butler, Dr. Nicholas Murray (1862-1947),** President of Columbia University, 1902-45. A well-known publicist and internationalist and one of the most honoured and distinguished leaders in the world of education. Shared with Jane Addams (*q.v.*), the noted American sociologist, the Nobel Prize for Peace, 1931.

**Butler, Rt. Hon. Richard Austen, C.H., M.P. (b. 1902),** Chan. of the Exchequer in Mr. Churchill's Government, 1951, Min. of Education, 1941-45, and responsible for the Education Act, 1944. A member of the distinguished Cambridge family and son of the late Sir Montague Butler, formerly Master of Pembroke. Took leading part in the drawing-up of the various political charters setting out Conservative policy.

**Butler, Samuel (1612-1680),** renowned as the author of *Hudibras*, one of the wittiest poems in the language and one of the most quoted. His last years were spent in poverty, and he was buried in the churchyard of St. Paul's, Covent Garden, and given a memorial in Westminster Abbey, "that he who was destitute of all things when alive might not want a monument when dead."

**Butler, Samuel (1835-1902),** author of the satirical novel *Erewhon* and its sequel *Erewhon Revisited*. Other works include *The Fair Haven* (1873), *Life and Habit* (1877), *Evolution Old and New* (1879), in which he attacked Darwinism. *The Way of All Flesh* and his famous *Notebooks* were published posthumously. Butler was a man of great originality and scholarship. He studied painting and exhibited regularly in the Academy and was also a musician.

**Butt, Dame Clara, D.B.E. (1873-1936),** the famous English contralto, made her first professional appearance in London in 1892. Her success was immediate. She was married to Mr. Kennerly Rumford—also an able vocalist—in 1900.

**Buxton, Sir Thomas Fowell, 1st Bart. (1786-1845),** a philanthropist and zealous advocate of the abolition of slavery.

**Buzzard, Sir Farquhar, Bart., K.C.V.O., M.D. (1871-1945),** Physician-in-ordinary to the King, 1932-45. Regius Professor of Medicine, Oxford, 1928-45. Was one of the doctors in attendance on King George V. during his serious illness in 1928.

**Byrd, Rear-Admiral Richard Evelyn (b. 1888),** famous American aviator and Polar explorer. Was in command of the Macmillan Arctic Expedition, 1925; flew over the North Pole, 1926; with three companions flew across the Atlantic, 1927, and in 1929 made the first flight over the South Pole. Discovered Edsel Ford mountains and Marie Byrd Land on his first expedition to the Antarctic, 1928-30. He made a second expedition in 1933-5, a third in 1939 and a fourth—the largest ever—in December 1946.

**Byron, George Gordon, 6th Lord (1788-1824),** was the poet who exercised the greatest influence upon European thought during the early part of the 19th century. Educated at Harrow and Cambridge, he published his *Hours of*

*Idleness* at twenty, a volume which was violently attacked by the *Edinburgh Review*, and provoked the retaliatory *English Bards and Scotch Reviewers*, which caused a great sensation because of its unsparing criticisms of the writers of the day. His *Child Harold's Pilgrimage*, the first two cantos of which were published in 1812, at once placed him in the front rank of poets, and thenceforward to the time of his death he continued to produce poems, most of which were marked by an intense Republican sentiment, yet full of passion and charm and beauty. He made an unhappy marriage in 1815 with the daughter of Sir Ralph Milbanke, from whom he parted after a twelvemonth. He lived abroad for the rest of his life and died at Missolonghi, whither he had proceeded with a view to aiding the Greeks in their battle for national independence.

## C

**Cable, George Washington (1844-1925),** a well-known American author, born in New Orleans, the scene of many of his best works. He excelled in the writing of historical romances, of which the detail was obtained by patient research, and in the re-creation of the spirit of pre-civil War Louisiana. Among his writings were *Ole Creole Days* (1879), *Strange Stories of Louisiana* (1889), and serious sociological studies such as *The Negro Question* (1890).

**Cabot, John (c. 1455-c. 1498),** Genoese explorer who settled in Bristol and sailed westwards under letters-patent from Henry VII of England in 1497. Discovered Newfoundland and Nova Scotia, believing them to be part of Asia, and may have reached the mainland of America before Columbus did. His son:—

**Cabot, Sebastian (c. 1483-1557)** was born in Venice, and in 1509 sailed in search of a north-west passage to Asia. Sailed as far as the entrance of Hudson Bay. Entered Spanish service in 1512, and in 1518 was appointed chief pilot. Spent several years exploring the Plate and Paraná rivers. Re-entered English service in 1548 and organised expedition to seek a north-east passage to open up trade with India, which resulted in trade with Russia. English claim to North America is founded on the voyages of the Cabots.

**Cabral, Pedro Alvarez (c. 1467-c. 1520),** Portuguese navigator, friend of Vasco da Gama, and discoverer of Brazil, which he named "Terra da Santa Cruz."

**Cadbury, George (1839-1922),** was a prominent member of the Society of Friends, a well-known Philanthropist, an ardent Liberal, and head of the firm of Cadbury Bros., Bourville. He took the lead in the Garden City project, and the village of Bourville may be regarded as the first enterprise of the character to be practically completed; it has an endowment of over £200,000.

**Cade, Jack, an adventurous Irishman** who at one time was forced to flee to France, where he took the name of Aylmer, and in 1450 that of Mortimer. In the same year he headed a rebellion, his followers being mostly yeomen and the smaller landed proprietors of Kent and Sussex. After defeating the forces of Henry VI, at Sevenoaks Cade marched on London with 20,000 men. His demand for money alarmed the citizens. He retired with his followers to Southwark, whereupon the Lord Mayor closed London Bridge. The battle for re-entry into the city was unsuccessful, and after negotiations between Archbishop Kemp and Cade the rebels agreed to return home. But Cade himself, refusing to acknowledge defeat, retired to Rochester, and fell fighting at Heathfield, Sussex.

**Cadogan, Rt. Hon. Sir Alexander, O.M., G.C.M.G., K.C.B. (b. 1884),** entered the Diplomatic Service in 1908, and succeeded Lord Vansittart as permanent Under-Secretary of the Foreign Office in 1938. Helped to draft the Charter of the United Nations Organisation, and became Great Britain's first permanent representative on the Security Council. Appointed Chairman of the B.B.C. in 1952.

**Cædmon, the first English Christian poet,** lived in the seventh century and, according to Bede, was first a cowherd and later a monk at Whitby. His poetry was based on the Scriptures.



**Cæsar, Caius Julius** (100-44 B.C.), Roman general. Was appointed successively military tribune, quaestor, ædile in 65, and pontifex maximus in 63. A year later he was prætor, and later formed one of the first triumvirate. He invaded Gaul and Britain, in the Civil War defeated Pompey, and in the Alexandrine war met Cleopatra, and established her firmly on the throne of Egypt. On his return to Rome in 44 the crown was offered to him, a circumstance which caused the aristocratic party to compass his assassination.

**Caine, Sir Thomas Henry Hall, C.H., K.B.E.** (1853-1931), a well-known novelist, who after spending some years as a journalist joined Dante G. Rossetti, with whom he lived until the latter's death. He produced numerous novels, including *The Deemster*, *The Manxman*, *The Christian*, *The Prodigal Son*, *The Woman Thou Gavest Me*, the latter being one of the fiction sensations of 1913.

**Calderon de la Barca, Pedro** (1600-1681), a Spanish dramatist of great eminence whose plays number nearly 200. He was writer of court spectacles for Philip IV.

**Callcott, Sir Augustus Wall, R.A.** (1779-1844). Attained great eminence as a landscape painter.

**Calvé, Madame Emma** (1864-1942). One of Europe's most famous *prime donne*; made her first appearance as Marguerite in Gounod's *Faust* at Brussels in 1882; sang in Mascagni's *Cavalleria Rusticana* at Covent Garden ten years later. Her greatest part was Carmen.

**Calvin, John** (1509-1564), one of the leading Reformers of the 16th century. Was born in Picardy and attained great popularity as a preacher in Paris, but was expelled, and subsequently lived at Geneva, where he continued to preach the new doctrine, giving it that special shape which resulted in the formation of the Calvinist body, distinguished by its greater austerity from that of the Lutherans.

**Camden, William** (1551-1623), an antiquary, historian, and master of Westminster School, whose researches, especially in the field of topography, have been of the greatest value. He became Clarenceux King-at-Arms, and was buried in Westminster Abbey. The Camden Society is named after him.

**Cameron, Sir David Young, R.A.** (1865-1945), was one of the best known of British etchers as well as an excellent landscape-painter. King's Painter and Limner in Scotland, 1933-45.

**Cameron, Richard** (c. 1648-1680), one of the Scottish 17th-century preachers who raised the standard of revolt in defence of the Solemn League and Covenant; he was, after many vicissitudes, slain in combat near Aird's Moss, Ayrshire, in 1680. The members of the Reformed Presbyterian Church were afterwards called Cameronians.

**Cameron, Verney Lovett, C.B.** (1844-1894), a noted African explorer who was the first to cross the African continent from east to west. Explored Lake Tanganyika, and made many valuable geographical discoveries. In 1872 went out to find Livingstone, and in 1878 met a party of natives bearing the dead body to the coast.

**Camillus, Marcus Furius** (446-365 B.C.), was five times Dictator of the Roman Republic, a supporter of the patrician order, and one of the most successful of the Roman generals. He died of the pestilence, 365 B.C.

**Camm, Sir Sydney, C.B.E.** (b. 1893), designer of the Hawker Hurricane Fighter aeroplane.

**Cammaerts, Emile, C.B.E.** (1878-1956) Belgian poet, critic, historian and dramatist. Born in Brussels, he settled in England in 1908, and became Professor of Belgian Studies and Institutions in the University of London. He became widely known during the war of 1914-18 for a series of Belgian poems.

**Camões, Luis Vaz de** (1524-1580), the author of *os Lusíadas*, the great epic poem of Portugal, which sets forth the adventures of the discoverers of India, and celebrates the achievements of the principal personages in Portuguese history.

**Campbell, Sir Malcolm** (1885-1948), the racing driver who held the land-speed record of 301 m.p.h. (1935) and water-speed record 141.7 m.p.h. (1939). His son Donald broke his own world water-speed record on Nov. 6, 1955, averaging 216.2 m.p.h.

**Campbell, Beatrice Stella** (Mrs. Patrick Campbell) (1865-1940), was a celebrated actress. Her first London appearance was in 1890 in *The Hunchback*. She made her film debut in 1930 in *The Dancers*.

**Campbell, Thomas** (1777-1844), the well-known poet who at twenty-two published *The Pleasures of Hope*, a British classic. Many of his lyrics and songs take high rank, notably *Ye Mariners of England*, *Hohenlinden*, *The Battle of the Baltic*, and *The Exile of Erin*. He was granted a Crown pension of £200 a year, and was buried in Westminster Abbey.

**Campbell-Bannerman, Rt. Hon. Sir Henry, G.C.B.** (1836-1908), Prime Minister in the Liberal Ministry from December 1905 until shortly before his death in April 1908. His Government at once faced a General Election and obtained a very large majority. Notable events of his period of office were the Trades Disputes Act, 1906, the Deceased Wife's Sister Act, 1907, and the simmering quarrel between the Liberals and the House of Lords, while the settlement of the South African problem was to a great extent due to his efforts. His Ministry contained a galaxy of talent—Grey, Haldane, Lloyd George, Asquith, Morley, Churchill—and was mainly held together by his personal popularity.

**Camus, Albert** (b. 1913), important French writer, whose works show the influence of existentialism. Born in Oran, he crossed to the mainland during the German occupation and became a journalist on the staff of *Combat*, a newspaper of the resistance. His works include *Les Justes* (play), *L'Étranger* (novel), *La Peste* (novel), *Caligula* (play), *Le Malentendu* (play).

**Canning, Rt. Hon. George** (1770-1827), entered Parliament in 1793 and became a great orator and a devoted adherent of Pitt, under whom he served first as Under-Secretary of State and later as Treasurer to the Navy. He was Secretary for Foreign Affairs under the Duke of Portland, and in 1827 became Prime Minister, but died four months later.

**Cannizzaro, Stanislao** (1826-1910), Italian chemist who rendered great service to scientific education and whose work provided the basis of modern quantitative chemistry. Prof. of chemistry at Alexandria, Geneva, Palermo, and Rome.

**Canova, Antonio** (1757-1822), an Italian sculptor, whose influence was highly marked, and whose works achieved the first eminence.

**Canute the Great** (995-1035), invaded England with a Danish force, and in 1013 succeeded in deposing Ethelred the Unready, and setting up his own father, Sweyn, in Ethelred's stead. Sweyn dying in 1014, Canute claimed the crown, but it took him some years to establish himself firmly.

**Capablanca, José Raoul** (1888-1942), world's chess champion, 1921-27; defeated by Alekhine.

**Capek, Karel, Ph.D.** (1890-1938), an original Czech author and journalist. His *R.U.R.*, *Insect Play* and *Adam the Creator* have been produced in England.

**Capone, Al** (1900-47), notorious U.S. gangster, uncrowned king of Chicago during the prohibition era. Suspected of instigating many murders, but evaded justice until brought to trial on Income Tax charges. Sentenced to eleven years' imprisonment in 1931, but released in 1939.

**Caractacus** was the name by which a Prince of ancient Britain became famed for his resistance to the Romans in the 1st century. He was ultimately captured and taken prisoner to Rome, where the Emperor Claudius was so moved by his dignity of bearing that he pardoned him.

**Carey, William, D.D.** (1761-1834), the first Baptist missionary to proceed to India, and from 1800 to 1830 Professor of Oriental Languages at Port William College, Calcutta. Became famed as an Oriental scholar, and published twenty-four different translations of the Scriptures.

**Carissimi, Giacomo** (1604-74), an Italian composer who is historically important for his development of the sacred cantata and the oratorio. Was maestro at Assisi, and later at Rome. The best collection of his works are in the National Library in Paris, and in the library of Christ Church, Oxford.

**Carlyle, Thomas** (1795-1881), was educated at

Edinburgh University, and, after passing through some years of teaching drudgery, settled in London in 1824 and began the career of a serious man of letters: but, marrying Jane Welsh in 1826, he returned to Scotland and spent the next few years on a farm at Craigenputloch, coming to London again in 1834. His *Sartor Resartus* was published in 1833. In 1837 he gave lectures in London, and in 1839 his *Chartism* appeared. His *French Revolution, Past and Present, Life and Letters of Oliver Cromwell, Latter-Day Pamphlets*, and *Frederick the Great* were works of noble conception.

**Carnegie, Andrew** (1835-1919), b. in Dunfermline, emigrated to America with his father in 1848, and after passing through much menial employment became connected with the Pennsylvania Railroad as Divisional Superintendent at Pittsburgh, and ultimately established the Carnegie iron works, from which he retired in 1901 with a fortune of many millions. His munificent gifts for Free Libraries, educational work, and charitable objects are well known.

**Carnot, General Lazare Nicolas Marguerite** (1753-1823), was a prominent figure in the French Revolution, and author of an important work on fortification.

**Caroline, Queen**, wife of George IV. (1768-1821), was married to her husband in 1795 while he was Prince of Wales. The royal couple lived together only a very short time. When George succeeded to the throne in 1820 the Queen took steps to assert her position, and the King retaliated by having a Bill introduced to dissolve the marriage; the result was the famous trial before the House of Lords, when Lord Brougham distinguished himself by a most eloquent defence of the Queen. The Bill was passed by a narrow majority, but public feeling was too strong on the side of the Queen to admit of its being enforced.

**Carrel, Dr. Alexis** (1873-1944), was the famous American surgeon, who won the Nobel Prize in 1912 for his remarkable achievements in suturing blood vessels and in the transplantation of organs. Member of the Rockefeller Institute for Medical Research 1906-44. A Frenchman by birth.

**Carroll, Lewis.** (See Dodgson, Charles Lutwidge.)

**Carson of Duncarn, Lord, P.C.** (1854-1935), had a highly successful career first at the Irish and then at the English Bar. Solicitor General for Ireland 1892; and for England 1900-6; Attorney General 1915; First Lord of the Admiralty 1917; Lord of Appeal 1921-29. Led a semi-militant organisation against the Home Rule Bill 1912-14.

**Carter, Howard** (1873-1939), the famous Egyptologist and archaeologist who was associated with the 5th Earl of Carnarvon in discovering in 1922 the tomb of Tut-Ankh-Amen in the Valley of Kings, Egypt.

**Cartier, Jacques** (1494-1557), the famous 16th-century navigator, born at St. Malo, whose exploration of Canada, and especially of the gulf and river of St. Lawrence, proved of great geographical importance.

**Cartwright, Edmund, D.D.** (1743-1823), invented the power loom, and also a wool-combing machine. Although these inventions were developed into fortune-making instruments, they benefited their inventor but little, and in 1809 Parliament made him a grant of £10,000. In 1904 a Cartwright Memorial Hall was opened at Bradford, the gift of Lord Masham.

**Caruso, Enrico** (1873-1921), a celebrated tenor, was born in Naples, and made his first operatic appearance in his native city. His success was unbounded. Besides being a great singer he was a man of many activities, and, among other things, was a clever caricaturist.

**Carver, George Washington** (1864-1943), American negro agricultural chemist of world repute.

**Casabianca, Louis de** (c. 1754-1798), captain of the French flagship *L'Orient* at the Battle of the Nile. He and his ten-year-old son died together in the burning ship, refusing to quit the vessel.

**Casals, Pablo** (b. 1876), the famous Spanish violoncellist and conductor, who made his first appearance in Paris and London in 1898. He exiled himself from Spain in 1938 as a protest against dictatorship.

**Cassatt, Mary** (1845-1926), American painter and etcher. Spent most of her life in France, greatly influenced by the Impressionists and enjoyed friendship of Degas and Manet. Motherhood was her favourite subject.

**Cassini**, the name of a French family of Italian origin, distinguished for their services to astronomy and geography, who through four generations (1671-1793) were heads of the Paris Observatory.

**Cassius, Caius Longinus**, a distinguished Roman general who opposed the Dictatorship of Julius Caesar, and took part in his murder. He died in 42 B.C., after being defeated by Mark Antony.

**Castellani, Sir Aldo**, Hon. K.C.M.G. (b. 1877). Italian scientist and foremost living authority on tropical diseases. Discovered the cause of sleeping sickness and other tropical diseases.

**Castlereagh, Viscount, K.G.**, P.C. (1769-1822), British Minister of War and Foreign Secretary during the Napoleonic wars, who incurred much unpopularity because of the disastrous condition of home affairs. Succeeded to the Marquessate of Londonderry in 1821, and ended his life by suicide the following year.

**Cather, Willa Sibert** (1876-1947), American author; writer of beautiful English prose in novels of rare charm. Most of her scenes are laid in the mid-western prairies; *The Song of the Lark*, *My Antonia*, *A Lost Lady*.

**Catherine, St.**, was the name borne by a celebrated virgin of Alexandria, who was put to death in 307 for professing Christianity, being, according to some accounts, tortured on a spiked wheel before execution, though other authorities aver that the intended torture was miraculously prevented. From this we get the term "St. Catherine's wheel." Her festival is on November 25th.

**Catherine of Aragon** (1485-1536), first wife of Henry VIII., was previously the wife of Arthur, Henry's elder brother, who died shortly after the marriage. She was the daughter of Ferdinand and Isabella of Spain, aunt of the Emperor, Charles V., and mother of Mary Tudor. Henry's failure to obtain papal consent to the dissolution of their marriage precipitated the Reformation crisis in England.

**Catherine the Great** (1729-96), Empress Catherine II of Russia. Daughter of a Prussian general, she married in 1745 the future Peter III., a weakling, later deposed and murdered. Intelligent, cultivated, autocratic, she proved herself a capable ruler for a time but was hampered and opposed by the landed interests and, despite plans for reform, her reign was marked by imperialist expansion and extension of serfdom.

**Catherine de' Medici** (1519-1589), wife of Henry II. of France, and a woman of commanding power and influence, especially during her Regency, which continued while her son Charles IX. was in his minority. Her antagonism to the Protestants may have led to the Massacre of St. Bartholomew. In spite of her cruelty, she was an able woman, and showed a great appreciation of art and literature.

**Cato, Marcus Porcius** (234-149 B.C.), a Roman statesman, soldier, and writer, of strict virtue, simplicity and wisdom, who strongly condemned the luxury of his time and carried out his duties as Censor so rigorously that he became known as "Censorious."

**Catroux, Gen. Georges** (b. 1879), French soldier, who saw much service with the Foreign Legion. When Gov.-Gen. of Indo-China declared adherence to the Free French, 1940, and became C.-in-C. Free French in Levant, 1941-43. French Ambassador to U.S.S.R., 1945-46.

**Catullus, Caius Valerius** (87-54 B.C.), an elegant Roman poet, whose lyrics to Lesbia are amongst the finest compositions of the kind in literature.

**Cavell, Edith Louisa** (1865-1915), a British nurse and patriot who assisted wounded British soldiers to escape over the Dutch frontier from Belgium during the Great War. She was shot by the Germans.

**Cavendish, Hon. Henry, F.R.S.** (1731-1810), English chemist and physicist who made researches into the nature of gases. Is chiefly remembered for his discovery of the chemical composition of water. He also discovered hydrogen (1766).

**Cavour, Count Camillo Benso** (1810-1861), a distinguished Italian statesman, who, as Premier



- to Victor Emmanuel, did much for the unification of Italy.
- Caxton, William** (1422-1491), was born in Kent and employed in commerce for a time. While visiting Flanders he obtained an insight into the then new invention of printing, and afterwards set up a printing-press of his own at Westminster.
- Cecil of Chelwood, 1st Viscount, P.C., Q.C., C.H.** (b. 1864), third son of the third Marquess of Salisbury. Took part in the Peace Conference, 1919, and helped to draft the Charter of the League of Nations. Awarded Nobel Prize for Peace, 1937.
- Cecilia, St.**, the patron saint of music. Was a Christian martyr of the 2nd or 3rd century. She is said to have been the first to introduce instrumental with vocal music into Christian worship. Her festival day is November 22nd.
- Cellini, Benvenuto** (1500-71), Italian sculptor and goldsmith of the later Renaissance. Possessed remarkable talent and skill, and produced innumerable works of great accomplishment, decorative and exquisite in detail, most of which have perished. Some examples are to be found in the Vienna Museum, the Louvre, and in the Metropolitan Museum. His famous bronze statue *Perseus with the Head of Medusa* can be seen in the Loggia dei Lanzi, Florence. His fame, however, rests more on his *Autobiography*, which gives a vivid account of the period and of his own craft.
- Celsius, Anders** (1701-44), Swedish physicist and astronomer; prof. of astronomy at the new Uppsala observatory (1740-44) and inventor of the Centigrade or Celsius thermometer with freezing point of water at the zero-degree and boiling point at the 100-degree point.
- Cerdic**, a Saxon who invaded Wessex in the early part of the 6th century, and made himself ruler of that kingdom, becoming ancestor of the English Royal line. He conquered the Isle of Wight in 530.
- Cervantes Saavedra, Miguel de** (1547-1616), famous throughout the world as the author of *Don Quixote*, a wonderful study of feudalism in decay in which is to be found much social science. He had a most adventurous career, taking part in many military expeditions, and not turning to literature until his retirement from the profession of arms. In spite of the great success of his work, he died in poverty and two centuries went by before he was honoured.
- Cézanne, Paul** (1839-1906), a French painter of power and originality, and intimate friend of Emile Zola. The famous portrait known as *La Vieille au Chapelet* was purchased by the National Gallery in 1953.
- Chadwick, Sir James, F.R.S.** (b. 1891), physicist, one of Rutherford's most brilliant collaborators in the field of atomic research. Discovered the neutron in 1932, one of the main steps in the discovery of the fission process which led to the production of the atom bomb. Joint author with Lord Rutherford and C. D. Ellis of *Radiations and Radioactive Substances*, published in 1930. Master of Caius College, Cambridge.
- Chaliapin, Fedor Ivanovich** (1873-1938), a world-famous Russian opera singer, a bass with great dramatic gifts.
- Chamberlain, Rt. Hon. (Arthur) Neville** (1869-1940), son of Joseph Chamberlain by his second wife. Prime Minister, 1937-40. His appeasement policy, which culminated in the Munich Agreement of 1938, has been the subject of much criticism.
- Chamberlain, Rt. Hon. Joseph** (1836-1914), did much active municipal work at Birmingham. In 1876 he entered Parliament, and at first was an enthusiastic Liberal with Republican tendencies, and served in various offices under Mr. Gladstone. When the Home Rule split occurred, he became the most active member of the Liberal-Unionist party. In 1895 he accepted office as Secretary of State for the Colonies under Lord Salisbury, and in that post won a great reputation, notwithstanding the fact that during his term of office he had the Boer War to contend with. In May, 1903, he caused great sensation by suddenly advocating a scheme of fiscal reform, involving a partial return to Protection. This policy was afterwards adopted as one of the leading planks of the Unionist platform.
- Chamberlain, Rt. Hon. Sir (Joseph) Austen, K.G.** (1863-1937), son of Joseph Chamberlain by his first wife. Held ministerial posts in various Conservative administrations. As Foreign Secretary, 1924-29, was prominent at the Locarno conference. Awarded Nobel Peace Prize, 1926.
- Chambers, Sir William, R.A.** (1726-1798), a British architect, who rebuilt Somerset House in 1775. He also laid out Kew Gardens and designed the Pagoda there.
- Champlain, Samuel de** (1567-1635), a French navigator who founded Quebec in 1608, and in the following year discovered the lake known by his name.
- Chantrey, Sir Francis Legatt, R.A.** (1781-1842), a renowned English sculptor who contributed many fine statues to Westminster Abbey and St. Paul's. His famous "Sleeping Children" tomb is in Lichfield Cathedral. He left a considerable fortune to the Royal Academy for the purchase of works of art executed in Gt. Britain. The collection is in the Tate Gallery.
- Chaplin, Charles Spencer** (b. 1889), who gained world-wide fame as a film-star comedian, was born in London and appeared on the variety stage at the age of seven, going to the U.S.A. in 1910. He first appeared on the films in 1913. His most famous films include *The Tramp*, *Shoulder Arms*, *The Kid*, *The Gold Rush*, *The Circus*, *City Lights*, *The Great Dictator*, *Modern Times*, *Monsieur Verdoux*, and *Limelight*. His art is universally appreciated. In 1953 decided not to return to America but to live in Switzerland.
- Chapman, George** (1559-1634), an Elizabethan dramatist, who acquired more fame by his translation of Homer than by his plays. Keats's sonnet on reading Chapman's *Homer* is a splendid tribute to the old dramatist.
- Charcot, Dr. Jean Baptiste Etienne Auguste** (1867-1936), a famous French explorer, who in 1903-05 and 1908-10 commanded expeditions which carried out important work in mapping, sounding, etc., in the South Polar regions. Charcot Island in the Antarctic Ocean, which he discovered in 1905, is named after him.
- Chares (c. 300 B.C.)**, Rhodian sculptor. He was the sculptor of the Colossus of Rhodes, a gigantic bronze statue of the Sun-God, and one of the Seven Wonders of the World. The statue was destroyed after 56 years, in the earthquake of 224 B.C.
- Charlemagne ("Charles the Great")** (742-814), a wise and powerful ruler, general and statesman, who from being King of the Franks became Emperor of the Romans, and governed an empire comprising Gaul, Italy, and large parts of Spain and Germany.
- Charles Edward (Stuart)** (1720-1788), the "Young Pretender" as he came to be called, grandson of James II., and the hero of 1745, lived in exile after Culloden, and his later career was mainly one of dissipation.
- Charles I.** (1600-1649), succeeded his father James I. as King of England in 1625, and from the first was in more or less conflict with Parliament. His monetary demands and unjust taxation led to the violent opposition which resulted in the Civil War. He was beheaded in front of the Banqueting House at Whitehall, Jan. 30, 1649.
- Charles II.** (1630-1685). Was in command of the Royalist forces in the West during the Civil War, and escaped to the Continent after Naseby. Subsequently he became King at the Restoration, and, following upon the sober quietude of the Commonwealth period, formed an acceptable change to the people at large until, by his excesses, of one kind and another, he proved his unkingliness of character. He contrived to keep himself fairly popular, however, despite his extreme selfishness. Granted first Charter to the Royal Society.
- Charles V.** (1500-1558) was the dominating European figure for many years, being Emperor of Germany and King of Spain, at a time when his tactful policy enabled him to guard the interests of both Catholics and Protestants with considerable success.
- Charles XII of Sweden** (1682-1718), a brave but impulsive monarch whose reign was distinguished by the great Nordic War against Denmark, Poland, and Russia. Peter the Great decisively defeated him at Poltava in 1709. In 1718 he invaded Norway and was killed while besieging the fortress of Fredrikshald.



- Chateaubriand, François René, Vicomte de** (1768-1848), had an adventurous and somewhat eccentric political career, but in the midst of it all he contrived to write a number of stories, poems and essays, which give him a prominent place in French literature. His *Atala* and *The Martyrs* are works of genius.
- Chatfield, Admiral of the Fleet Lord, P.C., G.C.B., O.M., K.C.M.G., C.V.O.** (b. 1873). Minister for the Co-ordination of Defence Jan. 1939 to Apr. 1940; First Sea Lord and Chief of Naval Staff, 1933-38; Flag Captain to C-in-C, Grand Fleet, 1917-19; and later commanded the Atlantic and Mediterranean Squadrons.
- Chatham, William Pitt, Earl of** (1708-1778), had a long and distinguished career as a statesman, and was the most eloquent Parliamentarian of his time. In the long conflict with France that preceded the American War of Independence, Chatham showed great resourcefulness and vigour, but his patriotic efforts were of little avail against the obstinacy of the King and his party, and he ultimately retired from contention, only making a last appearance in the House of Lords to urge a greater resistance to the war with the American Colonists, and, after a powerful speech, fell back in an apoplectic fit and died a few weeks later, being buried in Westminster Abbey.
- Chatterton, Thomas** (1752-1770), young English poet of remarkable talent, unappreciated until after his death. Unsuccessfully tried to pass off his writings as newly discovered ancient manuscripts and killed himself at the age of 17.
- Chaucer, Geoffrey** (c. 1340-1400). Achieved immortality by his *Canterbury Tales* giving a most graphic description of the life and characters of his time. He was buried in Westminster Abbey.
- Chekov, Anton** (1860-1904), a Russian dramatist and short-story writer whose work has been translated into English and much appreciated.
- Cherubini, Maria Luigi Carlo** (1760-1842), an Italian composer and one of the most important composers of the early French School, and a noted musical theorist. After producing his first opera in 1780 he went to London where two new operas were produced. His *Iphigenie in Aulide* was produced first at Turin in 1788 and afterwards in the same year in Paris.
- Cherwell, 1st Baron** (Frederick A. Lindemann), P.C., C.H., F.R.S. (b. 1886). Prof. of Experimental Philosophy at Oxford; granted 2 years' leave of absence (1951-53) to become Paymaster General and personal scientific adviser to Sir Winston Churchill, with special responsibility on atomic energy questions. During his term of office the control of atomic energy development was transferred from the Min. of Supply to a non-departmental agency "Atomic Energy Corporation".
- Chesterfield, Earl of, K.G.** (1694-1773), the fourth Earl, and a statesman of note. His fame rests, however, upon his *Letters to his Son*, which for purity of style and grace of expression have seldom been excelled, though the moral they point is not always one that modern ideas would endorse.
- Chesterton, Gilbert Keith** (1874-1936), was one of the most active of our modern writers. Contributed to the *Illustrated London News*, etc., and kept himself in evidence in many literary and journalistic quarters; handled social questions, art, politics, and criticism with dexterity and audacity. Published studies of the lives and works of Robert Browning and Charles Dickens. Completed writing his own autobiography shortly before his death.
- Chevalier, Albert** (1861-1923), English music-hall comedian of great originality; celebrated for his coster sketches and songs.
- Chevalier, Maurice** (b. 1889), French stage and film actor.
- Chiang Kai-shek, Generalissimo** (b. 1887), former President of China and member of the Kuomintang Party. Emerged from the welter of events succeeding the death of Sun Yat Sen in 1925 as the leading man in China, a position he maintained for a quarter of a century of trouble and bloodshed. The successful conclusion of the long and costly Japanese war was followed by civil war with the Communists in North China. In January 1949 withdrew from the office of President following military defeat by the Com-
- munists and the collapse of the Kuomintang régime. Became a Christian of the Methodist confession shortly after his marriage to Soong Mei-ling the sociologist.
- Chippendale, Thomas** (c. 1717-1779), a celebrated designer of furniture whose examples are now highly prized and fetch big prices. He was a native of Worcestershire, but made his name in London, having a shop in St. Martin's Lane.
- Chirico, Giorgio de** (b. 1888), painter associated with surrealism, born in Greece of Italian parents.
- Chopin, Frédéric François** (1810-49), Polish pianist and composer, son of a French father and Polish mother. His music, mostly for piano, shows characteristics of both races, and includes the sequence of twenty-five Preludes, the Mazurkas, Nocturnes, Scherzos, and Impromptus. He frequented Paris intellectual and musical society, played in numerous concerts all over Europe, and died of consumption.
- Chou En-lai, General** (b. 1898), Prime Minister and Foreign Minister, Chinese People's Republic, 1949-. Took important part in Geneva Conference of 1954, where his talents for negotiation helped to bring to an end the 8 years' war in Indo-China and the new China into world diplomacy.
- Christie, Agatha** (b. c. 1898), English detective novelist. Creator of Hercule Poirot, the Belgian detective.
- Chrysostom, St. John** (347-407), a father and saint of the Greek Church who was made Archbishop of Constantinople and was famous for his eloquent preaching and persuasive writing.
- Churchill, Rt. Hon. Lord Randolph** (Henry Spencer), P.C. (1849-1895), was the second son of the seventh Duke of Marlborough. Entered Parliament in 1874, and four years later became prominent on the Conservative side for his scathing attacks on what he called the "Old Gang" of his own Party, and was one of Mr. Gladstone's most severe critics. In 1885 he became Secretary for India, and in the following year was Chancellor of the Exchequer and Leader of the House of Commons, but after a few months of brilliant work resigned on some difference of opinion with his colleagues, and never again held office.
- Churchill, Rt. Hon. Sir Winston** (Leonard Spencer), K.G., O.M., C.H., M.P. (b. 1874), British statesman, soldier, and author, son of the last-named. Prime Min. and Min. of Defence, 1940-45. Leader of the opposition, 1945-51 and Prime Min. from 1951 until his retirement in 1955. M.P. for Woodford since 1945. M.P. for the Epping Division of Essex, 1924-45. Was with the British force during the Indian frontier troubles of 1897-98; served in the Sudan Campaign, and during the Boer War had many dramatic adventures. Became a prominent figure in Parliament, and worked heartily for the Conservatives until Mr. Chamberlain brought out his fiscal proposals, when he declared against them in the most emphatic manner, and eventually joined the Liberal ranks. Under-Secretary for the Colonies, 1905-08; President of the Board of Trade, 1908-10; Home Secretary, 1910-11. First Lord of the Admiralty, 1911-15 and 1939-40. Chancellor of the Duchy of Lancaster, 1915. Minister of Munitions, 1917; Minister of War, 1918-21; Minister of Air, 1919-21. Sec. of State for the Colonies, 1921-22. Chancellor of the Exchequer 1924-29; Lord Rector of Aberdeen University, 1914-18; Lord Rector of Edinburgh University, 1929-32; Chancellor of Bristol University, 1930; Leader of Conservative Party, 1940-55. Lord Warden of the Cinque Ports since 1941. Has exhibited in the Royal Academy, was elected Academician Extraordinary in 1948, and is the author of many famous books. Awarded Nobel Prize for Literature in 1953.
- Chulalongkorn, Phra Paramindr Maha** (1853-1910), great Siamese monarch whose appreciation of foreign institutions inspired him to carry out many reforms in his country.
- Cibber, Colley** (1671-1757), a London actor and dramatist of great repute in his day. *The Careless Husband*, and *Love's Last Shift* are the best of his comedies. Poet Laureate 1730-57.
- Cicero, Marcus Tullius** (106-43 B.C.), a Roman Republican orator and philosopher. His

- younger brother, Quintus Tullius Cicero (102-43 B.C.), was a Roman soldier of some note. Both were slain.
- Cid (El Campeador)** (c. 1035-1099), the name given to the famous Spanish knight, Rodrigo Diaz, Count of Vivar, whose exploits in battle and adventure made him the national hero. He drove the Moors out of Spain before he had completed his twentieth year.
- Cierva, Juan de la** (1895-1936), the Spanish engineer who invented the autogiro.
- Cimabue, Giovanni** (1240-1302), a Florentine painter whose real name was Cenni di Pepo, master of Giotto, and the leader of the movement which led to the formation of what is called the Florentine school. The frescoes attributed to him are of great beauty.
- Cimarosa, Domenico** (1749-1801). One of the earliest Italian composers whose works in his time were as popular as they were numerous. Was composer to the Russian Court from 1789 to 1792. His most popular opera during his lifetime was *Il Matrimonio Segreto*, and it is still to-day the most frequently heard of his works.
- Cinquevalli, Paul** (1859-1918), the famous Polish juggler. He appeared first in England at Covent Garden Theatre in 1885, and for the next 20 years was the cleverest performer of his class. He possessed a most attractive stage personality, and a sense of balance that was truly marvellous.
- Citrine, 1st Baron P.C., K.B.E.** (b. 1887), English trade-union official who rose to a prominent position in the Electrical Trades Union, of which he was Asst. Gen. Sec., 1920-23; Pres. of International Fedn. of Trade Unions, 1928-45; Gen. Sec. of Trade Union Congress, 1926-46. Member of National Coal Board, 1946-47; Chairman British Electricity Authority, 1947.
- Clair, René**, (b. 1898), French film producer, whose early films included *Sous les Toits de Paris* and *A Nous la Liberté*. His films are full of wit and satire.
- Clarendon, Edward Hyde, 1st Earl of** (1609-1674), a statesman of great ability who filled the office of Lord High Chancellor under Charles II., and for a time was in high favour but, refusing to pander to Charles's whims, was dismissed and went to live in retirement. His *History of the Rebellion* is a valuable work, having the advantage of being written by one who was a witness of, and often an important figure in, the events described. His daughter Anne was the wife of the Duke of York, afterwards James II., and it was her daughter who became Queen Anne. Clarendon died in exile at Rouen.
- Clark, Sir Kenneth McKenzie, K.C.B.** (b. 1903), British art critic. Director of the National Gallery, 1934-45. Chairman of the Independent Television Authority, 1954.
- Clark, Wilfred Edward le Gros, M.A., M.D., D.Sc., F.R.C.S., F.R.S.** (b. 1895), anatomist and anthropologist; one of the scientists to expose the forgery of the Piltdown skull.
- Clarke, Gen. Mark W.** (b. 1896), distinguished American soldier who commanded all land forces in Italy, 1943-45; Supreme Allied Commander Far East, 1952-53.
- Clarke, Marcus Andrew Hislop** (1846-81). Australian author, born in London, he emigrated to Australia in 1863, becoming a journalist in 1867. He went to Tasmania, where his historical researches resulted in the publication of his book *For the Term of his Natural Life*, which earned for him a very wide reputation.
- Clarkson, Thomas** (1760-1846), was one of the leaders of the Negro Emancipation movement, to which he devoted the main part of his life.
- Claude Lorrain** (1600-1682), the most famous landscape painter of his century. His real name was Claude Gellée, and he was born at Chamagne in the Vosges, going from France to Rome as a lad and there laying the foundation of his world-wide celebrity. He lived in Rome most of his life.
- Claudius I.** (10 B.C.-A.D. 54), Emperor of Rome, who succeeded his nephew Caligula when he was murdered. He was the grandson of Tiberius Claudius Nero, erected many imposing buildings in Rome, and visited Britain. In his later years he became the tool of favourites, and was poisoned by his wife, Agrippina.
- Clausen, Sir George, R.A., R.W.S.** (1852-1944), an English landscape and genre painter whose work was greatly influenced by the impressionist school. Was for some time Prof. of Painting in Royal Academy.
- Clausewitz, Gen. Carl von** (1780-1831), Germany's greatest military expert. His classic book *Vom Kriege*, which expounds his theories on war, dominated Prussia in the nineteenth century, and is still studied in military schools throughout the world.
- Clemenceau, Georges Eugène** (1841-1929), a prominent French statesman and editor of strong Radical tendencies who supported General Boulanger for a time and then bitterly opposed him. Was still a leading exponent of French Radicalism, though he sacrificed his independent position to become Premier and Minister of the Interior in October, 1906-1909, Prime Minister and Minister for War, France, 1917-20. He was a great orator, and a sturdy defender of Dreyfus.
- Clemens, Samuel Langhorne** ("Mark Twain") (1835-1910). After the Civil War drifted into journalism, making himself popular as a humorist in 1869 by his *Innocents Abroad*, the result of a trip to Europe. His other works include *A Tramp Abroad*, *Tom Sawyer*, *Huckleberry Finn*, and *Pudd'nhead Wilson*.
- Cleopatra** (69-30 B.C.), daughter of Ptolemy XI, the sixth queen of Egypt by that name, a brilliant, ambitious woman of captivating charm. On the death of her father in 51 she became joint sovereign with her younger brother Ptolemy XII, whom she married in accordance with Egyptian custom. She was banished to Syria, but obtaining the help of Caesar, led a revolt and won the kingdom for herself. Cleopatra and Caesar became lovers. In 47 she bore him a son Caesarion (later Ptolemy XIV) and followed him to Rome. After the murder of Caesar she returned to Egypt, where in 41 she was summoned to meet the triumvir Mark Antony. He fell in love with her and became enslaved. She bore him twins Alexander Helios and Cleopatra Selene. He deserted Octavia his wife and broke with Octavian (later Augustus), his brother-in-law, in an attempt to re-establish the power of Egypt. Antony and Cleopatra were, however, defeated at Actium in 31 B.C. and at Alexandria. Antony fell upon his sword, and Cleopatra, unable to influence Octavian, killed herself by allowing an asp to bite her. The drama of her life has been described by Shakespeare in *Antony and Cleopatra* and by Shaw in *Caesar and Cleopatra*.
- Clifford, Rev. John, C.H., D.D.** (1836-1923). An ardent political Nonconformist. Wrote numerous religious works. Twice President of the Baptist Union, also President of the National Council of Free Evangelical Churches.
- Clive, Robert, Lord** (1725-1774), went out to India as a clerk in the service of the East India Company when 17, and during the diplomatic difficulties which arose between England and France attracted the attention of his superiors by some able suggestions for the curbing of the French influence. In the war that followed he was given a command and displayed such remarkable military genius that he virtually became Commander-in-Chief. In the troubles that followed with the native rulers, he was equally resourceful, and succeeded in laying the foundation of the British Empire in India on a secure basis. On his return to England in 1760 he was raised to the peerage. His later years were marked by mental disturbance and ultimately he committed suicide.
- Clovis** (c. 465-511) was the founder of the Merovingian-line of Frankish kings, and a convert to Christianity. He defeated the Burgundians and West Goths, and fixed his court at Paris.
- Clyde, Sir Colin Campbell, Baron, K.C.B.** (1792-1863), a British Field-Marshal who served in the Peninsular and Crimean wars. Made a great reputation as Commander-in-Chief in India during the Mutiny.
- Coates, Albert** (1882-1953), was the principal conductor of the Imperial Opera, Petrograd; a famous conductor at Covent Garden, New York and other musical centres.
- Cobbett, William** (1762-1835), a politician and controversialist, who, through the medium of his *Political Register*, attacked both Radical and Tory in turn. Entered Parliament in 1832.



In 1830 his *Rural Rides* were published in book form.

**Cobbold**, Cameron Fromanteel (b. 1904), Governor of the Bank of England since 1948.

**Cobden**, Richard (1804-1865), the son of a Sussex farmer, who afterwards became a commercial traveller, and during the Corn Law Agitation came into great prominence as an advocate of Free Trade. He devoted himself so completely to this cause, that for some years he entirely neglected his business affairs and in recognition of his services a subscription of £80,000 was raised for him in 1845, and in 1860 a further sum of £40,000. He entered Parliament in 1841, and except for an interval of two years remained a member till his death. In 1860 he negotiated a commercial treaty with France which was of great benefit to the trade of this country. Titles and other honours were offered to him but declined.

**Cochran**, Sir Charles Blake (1872-1951), a prominent English theatrical manager and producer who began as an actor in America. Among his many successes were *Bitter Sweet*, *Cavalcade*, and a number of brilliant revues.

**Cockcroft**, Sir John Douglas, K.C.B., C.B.E., M.A., Ph.D., F.R.S. (b. 1897), Cambridge nuclear physicist; director of the Atomic Energy Research Estab. at Harwell since 1946. Shared with Dr. E. T. S. Walton 1951 Nobel Prize for physics for "pioneer work on the transmutation of atomic nuclei by artificially accelerated atomic particles".

**Cocoteau**, Jean (b. 1891), French writer and artist whose achievements in widely varied forms of art have been prodigious. Elected to the Académie Française in 1955.

**Cody**, Samuel Franklin (1861-1913), British aviator, born in U.S.A., but became a naturalised British subject. He was the first man to fly in Great Britain—making a flight of 27 minutes in October 1908 in the first practical British flying-machine of his own make. Was killed while flying in 1913.

**Cody**, William Frederick (1846-1917), American showman, known as "Buffalo Bill," who in 1883 founded his great Wild West show.

**Cohn**, Ferdinand Julius (1828-1898), the famous German bacteriologist, of which science he was the virtual founder.

**Coke**, Sir Edward (1552-1634), Chief Justice, rival of Bacon, wrote the *Institutes*, etc., to expound the Common Law, which he also championed in the Courts and in Parliament. His extensive legal erudition added many new interpretations to the Common Law system and helped to ensure its survival.

**Colbert**, Jean Baptiste (1619-83), French statesman, who fostered new industries and encouraged commerce, endeavoured to reform the finances, and established the French Navy on a sound basis. A patron of literature, science, and art.

**Cole**, George Douglas Howard, M.A. (b. 1889), the well-known English economist and author. Chichele Professor of Social and Political Theory at Oxford. Has written many books on social and economic problems including *The Intelligent Man's Guide through World Chaos*, 1932, and has also written (with his wife) *The Intelligent Man's Review of Modern Europe* and *A Guide to Modern Politics*, 1934; and, also with his wife, many popular detective stories.

**Coleridge**, 1st Baron (1820-94), Lord Chief Justice of England from 1880 until his death. Was a distinguished scholar, orator and barrister, his most famous case being the Tichborne trial in 1871, when his speech for the defence lasted 23 days.

**Coleridge**, Samuel Taylor (1772-1834), one of the great poets of the early part of the 19th century, whose *Ancient Mariner* and a few other poems stand unsurpassed for poetic beauty and originality.

**Coleridge-Taylor**, Samuel, A.R.C.M. (1875-1912), English composer, son of a negro physician of Sierra Leone and an Englishwoman. He studied at the Royal College of Music in London. Best known for his cantata *Hiawatha*.

**Colet**, John (1467?-1519), humanist and divine, founded St. Paul's School, 1512. As scholar and friend of Erasmus he helped to bring the New Learning to England.

**Colette**, (Sidonie Gabrielle Claudine Colette) (1873-1954), author of a number of highly successful

novels including the famous *Claudine* stories, *Chéri* and *La Fin de Chéri*. Grand Officier de la Légion d'Honneur (1953).

**Collier**, Hon. John (1850-1934), English painter who became highly popular for his "problem" pictures. He is best remembered, however, as a distinguished portraitist.

**Collingwood**, Lord (1750-1810), British admiral whose ship the *Royal Sovereign* led the fleet to battle at Trafalgar and who on Nelson's death assumed the command.

**Collins**, Michael (1890-1922), was General C.-in-C. Irish Free State forces; Minister of Finance, 1921-22; Chairman of Provisional Gov. of Irish Free State, Jan.-August, 1922. Shot in ambush Aug., 1922.

**Collins**, William, R.A. (1788-1847), a noted landscape and figure painter, and father of Wilkie Collins.

**Collins**, William Wilkie (1824-1889), the novelist, was for many years associated with Charles Dickens, and wrote *The Dead Secret*, *The Woman in White*, and *No Name*.

**Colt**, Samuel (1814-1862), of Hartford, Connecticut, invented the revolver and patented it in 1835. It was some time before its utility was recognised, but after being used with great effect in the war with Mexico it was universally adopted.

**Columba**, St. (521-597), the founder of the monastery of Iona, was a native of Ireland. From his lonely island shrine he made frequent missionary journeys to the Highlands of Scotland, where he made many converts and was greatly revered.

**Columbus**, Christopher (c. 1446-1506), the famous Italian navigator, who, prevailing upon Ferdinand and Isabella of Spain to bear the expense of an expedition of discovery, set out on his first voyage in 1492. He first discovered the Bahamas, Cuba, and other West Indian islands, and, on his third voyage, in 1498, landed on the lowlands of South America.

**Colvin**, Sir Sidney (1845-1927), friend of R. L. Stevenson and biographer of Keats. Was Keeper of Prints at the British Museum, 1884-1912. Author of numerous works on art and literature.

**Combe**, Andrew (1797-1847), a celebrated physician, who was the author of several works on phrenology and physiological science, and was appointed physician to Queen Victoria in 1838.

**Combe**, George (1788-1858), elder brother of the above; an eminent philosopher and author, who first introduced phrenology into Britain. Both the brothers Combe were born in Edinburgh.

**Comenius**, Johann Amos (1592-1670), famous Czech educationist. Was the first advocate of the "direct" method of teaching languages, of the use of pictures in education, and of the teaching of science.

**Compton**, Prof. Arthur Holly (b. 1892), American physicist and Professor of Physics at Chicago University since 1923. His work on X-Rays established what is known as the Compton Effect, 1923. Was awarded the Nobel Prize for physics 1927, and has been honoured by the scientific societies of many countries. He directed the world survey of cosmic rays, 1931-33. His brother Karl Taylor Compton (b. 1887) is also a physicist who has taken an important part in radar and atomic bomb research.

**Compton**, Fay (b. 1894), English actress, whose numerous successes include performances in *Peter Pan*, *Romeo and Juliet* and other plays. Has also made successful appearances in films in England and at Hollywood.

**Compton-Burnett**, Ivy, British novelist, whose books deal with family relationships and include *Men and Wives*, *A House and its Head*, *Man Servant and Maid Servant*, *The Present and the Past*.

**Comte**, Auguste (1798-1857), a French philosopher, founder of positivism, and father of social philosophy.

**Condé**, Louis II., de Bourbon, Prince de, "The Great Condé" (1621-1686), was a distinguished military commander. Victor of Rocroi, 1643.

**Confucius** (c. 551-479 B.C.), Chinese philosopher and sage, founder of the great world religion of Confucianism. He was not concerned with the supernatural but appealed to reason and taught love and respect of one's fellows, superiority to ambition, charity, forgiveness, and repentance.



- Congreve, William (1670-1729), was a famous Restoration dramatist, whose comedies of manners reflect the grossness of his age only too closely, but are redeemed by the brilliancy of his wit. He was buried in Westminster Abbey.
- Conrad, Joseph (1857-1924), novelist and master in the merchant service, who wrote some fine sea stories, strong in plot, and full of the true salt flavour. He was a Pole by birth but had for many years resided in England when on land. His first novel of note was *Almayer's Folly*, 1895.
- Conscience, Hendrik (Henri) (1812-83), the famous Flemish novelist who wrote in 1838 his beautiful work *The Lion of Flanders*.
- Constable, John, R.A. (1776-1837), was a native of East Bergholt, Suffolk, and became one of the greatest of English landscape painters. He had long to wait for recognition, but ultimately attained high honour and exerted a strong influence in the development of landscape art.
- Constant, Jean Joseph Benjamin (1845-1902), a famous French painter of Oriental subjects and portrait painter. His "Prisoners in Morocco," "The Harem," and "The Emir's Favourite," are among his more celebrated pictures.
- Constantine the Great (c. 272-337). Emperor of Rome from 306 to his death. Transferred the Capital of the Empire from Rome to Byzantium, thence called Constantinople after his name.
- Constantine I. (1868-1923), King of Greece, 1913-17, and 1920; married Princess Sophia of Prussia, sister of the Kaiser.
- Cook, Captain James (1728-1779), an adventurous navigator, whose *Voyages Round the World* is a classic. He made many discoveries in the name of Great Britain, including the Sandwich (now Hawaiian) Islands. He was murdered at Hawaii by natives.
- Cooper, Sir Astley Paston, Bt., F.R.S. (1768-1841), one of the greatest surgeons of his time, and the author of several important medical textbooks.
- Cooper, James Fenimore (1789-1851), was a very popular American novelist, who from about 1820 to the time of his death produced a succession of stirring stories of adventure, which enjoyed much popularity, among them *The Spy*, *The Last of the Mohicans*, *The Pathfinder*, and *The Deer Slayer*.
- Cope, Sir Arthur Stockdale, K.C.V.O., R.A. (1857-1940), was a well-known portrait painter.
- Copernicus, Nicholas (1473-1543), founder of modern astronomy, was born at Thorn on the Vistula, then under Polish suzerainty. Studied at Cracow and in Italy, lectured on astronomy and mathematics at Rome and in 1512 settled at Frauenburg, where he was canon of the cathedral. He also practised medicine. His beliefs concerning the universe were set forth in his great book *De revolutionibus orbium coelestium*, which was not published until his death for fear of the storm his revolutionary theories would raise. In it he proved that the planets, including the earth, revolve round the sun.
- Coppée, François Edouard Joachim (1842-1908), one of the most popular of modern French writers, who as poet, novelist and dramatist, was equally successful.
- Coquelin, Benoit Constant (1841-1909), eminent French actor ("Coquelin aîné"), and Coquelin, Ernest ("Coquelin cadet"), his youngest brother (1848-1909), were leading lights of the Théâtre Français.
- Corelli, Marie (1864-1924), a novelist whose works had a very extensive circulation and cover a wide field of observation. Since the publication of her first novel, *A Romance of Two Worlds*, in 1886, was constantly before the public. *Barabbas*, *The Sorrows of Satan*, *The Master Christian*, *The Treasure of Heaven*, are characteristic works.
- Corneille, Pierre (1606-1684) the French tragic dramatist, whose *Cid*, *Polyeucte*, *Le Menteur*, and other plays marked a new era in French dramatic production.
- Cornwallis, 1st Marquess (1738-1805), commander of the British forces which surrendered to the Americans, at Yorktown in 1781, thus ending the War of Independence; was twice Governor-General of India.
- Corot, Jean Baptiste (1796-1875), a French landscape painter of great repute.
- Correggio, Antonio Allegri da (1494-1534), the great Italian painter of the Lombard School, whose "Ecce Homo" is in the British National Gallery.
- Cortes (or Cortez), Hernando (1485-1547), a Spanish adventurer who earned great renown by capturing Mexico for Spain, and held that country in subjection for ten years.
- Cortot, Alfred (b. 1877), eminent pianist, born at Nyon, Geneva, and studied at Paris Conservatoire and became chorus director at Bayreuth. Conducted the first complete performance in Paris of Wagner's *Ring*.
- Cosgrave, William Thomas (b. 1880), President of Executive Council, Irish Free State, 1922-32; Finance Min., 1923; Defence Min., 1924; Parl. Chairman Fine Gael, 1933-44.
- Costello, John A., S.C. (b. 1891), Prime Minister of Irish Republic 1948-51 and since 1954. When Attorney General, Irish Free State, 1926-32, helped to draft the Statute of Westminster.
- Cotton, Henry, M.B.E. (b. 1907), England's leading golfer. Open Champion in 1934, 1937, and 1948. Formerly professional at Royal Mid-Surrey Club.
- Coty, René (b. 1882), President of the French Republic, 1954.
- Coulton, George Gordon, Litt.D., LL.D. (1858-1947), scholar and historian of the Middle Ages, whose main claim to fame rests upon *Five Centuries of Religion*, works in which he set forth his interpretation of monastic history in England from the Conquest to the Reformation.
- Courtneidge, Cicely, C.B.E. (b. 1893), English actress, born in Sydney, she made her stage debut in Manchester in 1901. After six years in Australia she appeared in London in 1907 in *Tom Jones*, and thereafter in musical comedy, including *The Arcadians*. Later she appeared in Revue and Music-Hall performances. She married Jack Hulbert, comedian and producer.
- Cousin, Victor (1792-1867), a French philosopher who founded what is called the Eclectic school of Modern Philosophy. His writings cover nearly the whole field of philosophy.
- Cousins, Samuel, R.A. (1801-1887), the greatest mezzotint engraver of his day, whose plates after Reynolds, Millais, Landseer, and Hogarth reach the highest point of this kind of art work.
- Coverdale, Miles (1488-1568), one of the early English Reformers, was born in Yorkshire, and afterwards became a monk of Norwich and later Bishop of Exeter. He collaborated with Tyndale in translating the Bible; the Psalms still used in the Prayer Book are taken from their translation.
- Coward, Noel (b. 1899), a successful English playwright and actor. His works include *Hay Fever*, *Private Lives*, *Blithe Spirit*, the operetta *Bitter Sweet* and the films *In Which We Serve*, *This Happy Breed*, and *Brief Encounter*.
- Cowper, William (1731-1800), an English poet imbued with much piety of sentiment and a remarkable poetic talent. His *Task* is one of the great poems of the 18th century.
- Cox, David (1783-1859), an eminent landscape painter—son of a Birmingham blacksmith—whose pictures are thoroughly English in spirit and treatment.
- Crabbe, Rev. George (1754-1832), a poet of rural life and scenes, noted for his faithful pictures, characterisation and soundness of his sentiments.
- Craig, Edward Gordon (b. 1872), the son of the late Dame Ellen Terry, author of several books on stagecraft. Has produced many plays in England and on the Continent.
- Crane, Walter, R.W.S. (1845-1915), first President of the Arts and Crafts Exhibition Society and holder of the Albert Gold Medal. Painted many notable pictures, and his works on decorative art are of great value.
- Cranmer, Thomas (1489-1556), Archbishop of Canterbury under Henry VIII. and Edward VI.; an ardent promoter of the Reformation. On Mary's accession at first consented to return to the old faith, but when called upon to make public avowal of his recantation, refused, and was burnt at the stake. Translator and author of much of the Book of Common Prayer.
- Crawford, Francis Marion (1854-1909), an American novelist who obtained considerable eminence by his stories of Italian life, including *A Roman Singer*, *Saracinesca*, and *Saint Iharlo*.
- Crerar, Gen. Henry Duncan Graham, C.H., C.B., D.S.O. (b. 1888), Canadian military leader.

- Rose to Lt.-Col. in first world war. Commanded 1st Canadian Army, N.W. Europe, 1944-46.
- Crichton, James** (1560-1582), a Scotoman, who earned considerable renown for his gifts of learning and general accomplishments and was called "The Admirable Crichton." He was assassinated when only twenty-two years of age in Mantua.
- Crichton-Browne, Sir James, M.D., F.R.S., F.R.S.E.** (1840-1938), was a famous specialist in mental disorders and Visitor in Lunacy for the Lord Chancellor's department 1875-1922.
- Cripps, Rt. Hon. Sir (Richard) Stafford, C.H., Q.C.** (1889-1952), British statesman and barrister, younger son of Lord Parmoor and nephew of Beatrice Webb. In charge of post-war Britain's economic affairs. His programme was one of purposeful austerity, but his outstanding ability and masterly exposition of the economic situation won him support from all sides. He showed that liberty and planning can be reconciled in the modern world. Labour M.P. for S.E. Bristol, 1931-50. Gave up a brilliant career at the bar to enter politics. Ambassador to Moscow, 1940-42, and Min. of Aircraft Production, 1942-45. Went on missions to India in 1942 and 1946. Resigned his seat in Parliament and as Chancellor of the Exchequer in 1950 because of broken health; was taken to Switzerland for a cure, but he did not recover.
- Crispi, Francesco** (1819-1901), noted Italian statesman, who aided Garibaldi and was his supporter throughout. Premier 1887-91 and 1893-96. Achieved many reforms for his country.
- Crispin, St.**, a saint of the Roman Church and patron of shoemakers. In the 3rd century he and his brother, natives of Rome, settled in Soissons, France, and there preached Christianity, supporting themselves by shoemaking. Suffered martyrdom in 287, by being thrown into a cauldron of molten lead; commemorated on Oct. 25.
- Croce, Benedetto** (1866-1952), Italian philosopher and critic and one of the great figures of the 20th century. Devoted his long life to studying and writing, and his philosophy is expounded in the four volumes of *Filosofia dello Spirito* (which have been translated into English). He founded and edited *La Critica* in 1903, a review of literature, history, and philosophy. Strongly opposed to fascism, he was described during the war as "the grand old man who kept a torch burning in Naples which even Mussolini did not dare to extinguish."
- Cresus** (died c. 546 B.C.), the last King of Lydia (560-546 B.C.), who reigned fourteen years, and acquired such immense wealth that his name has ever since been proverbial. He was a wise king, whose memory still survives in his wise sayings. Solon was his friend, and it was Solon's name that he uttered thrice while standing before the pyre on which Cyrus had condemned him to be burnt. This touched Cyrus, who spared his life and made him his companion. He succeeded his father Alyattes on the Lydian throne, 560 B.C.
- Crofts, Ernest, R.A.** (1847-1911), was keeper of the Royal Academy, and one of the most noted painters of battle pictures.
- Crome, John** (1769-1821), known as "Old Crome," from being a humble house-painter became eminent as a painter of landscape.
- Cromer, 1st Earl of, P.C., G.C.B., O.M., G.C.M.G., K.C.S.I., C.I.E., F.R.S.** (1841-1917), a diplomatist who won celebrity in the post of British Comptroller-General in Egypt from 1883 to 1907. It was a stupendous task that he had imposed upon him, but he resolutely devoted himself to it, with the result that Egypt was lifted from financial difficulty and internal disorder to a condition of prosperity. In 1908 published *Modern Egypt and Ancient and Modern Imperialism* in 1910.
- Crompton, Samuel** (1753-1827), was a poor cotton worker at Bolton who invented the spinning mule, which greatly increased the power of cotton production. In spite of ceaseless toil, he received little recognition.
- Cromwell, Oliver** (1590-1658), Lord Protector of England from 1653 to his death. At one time contemplated emigrating to America, but, entering Parliament and becoming enthusiastic in the popular cause, obtained recognition as one of the Parliamentary leaders, and ultimately, on the outbreak of the Civil War, became General of the Roundheads. How he gained battle after battle, and after the execution of Charles I. was installed at the head of the Commonwealth, is familiar history.
- Cromwell, Richard** (1626-1712), son of the foregoing, and his successor in the Protectorate.
- Cromwell, Thomas** (1485-1540), originally a protégé of Wolsey, rose to high office under Henry VIII and began the suppression of the monasteries. Executed after the failure of the Anne of Cleves marriage, which was part of his policy of alliance with the Protestant princes of Germany.
- Crookes, Professor Sir William, O.M., F.R.S.** (1832-1919). President of the Royal Society, Nov., 1913 to 1916. An eminent British scientist, whose discoveries in chemistry and electricity have been of the greatest importance. Was a past-president of the British Association, and the author of many books on chemical subjects. The discoverer of thallium and inventor of the radiometer.
- Cruikshank, George** (1792-1878), a celebrated book illustrator who was for a time associated with Charles Dickens, and later on illustrated numerous works of other novelists of his day, showing great humour and power of character-delineation.
- Cummings, Bruce Frederick** (1889-1917), English zoologist and man of letters. Won fame with his *Journal of a Disappointed Man*.
- Cunard, Sir Samuel, Bt.** (1787-1865), shipowner and co-founder of the British and N. American Royal Mail Steam Packet Co. which later became the Cunard Line and as a result of a merger in 1934, the Cunard-White Star Line. Owners of the two largest liners afloat—the *Queen Elizabeth* and the *Queen Mary*.
- Cunningham of Hyndhope, Admiral of the Fleet, Viscount, K.T., G.C.B., O.M., D.S.O.** (b. 1883), won the D.S.O. and two bars in the first world war. C.-in-C. Mediterranean, 1939-42. Allied Naval C.-in-C. North African campaign. First Sea Lord, 1943-46.
- Cunningham, General Sir Alan Gordon, G.C.M.G., K.C.B., D.S.O., M.C.** (b. 1887), brother of Viscount Cunningham. Directed Abyssinian campaign and commanded 8th Army, 1941. From 1945 served as the last British High Commissioner in Palestine.
- Cunningham, Admiral of the Fleet, Sir John Henry Dacres, G.C.B., M.V.O.** (b. 1885), C.-in-C. Mediterranean, 1943-46. First Sea Lord 1946-48.
- Cunninghame-Graham, Robert Bontine, J.P.** (1852-1936), was a well-known author who wrote numerous works on Spanish-American life.
- Curie, Prof. Pierre** (1859-1906) and **Madame Marie** (1867-1934) are names that have become famous as the discoverers of radium. M. Curie was a Frenchman, Mme. Curie a Pole; they were both indefatigable scientific investigators. Shared the Nobel Prize for Physics 1903, while their daughter, Mme. Irene Joliot-Curie, shared with her husband, M. Joliot, the 1935 Nobel Prize for Chemistry, awarded for their researches in radio-activity.
- Curtis, Dame Myra, D.B.E., M.A.** (b. 1886), Principal of Newnham College, Cambridge, 1942-54. Civil Servant, 1915-41. Chairman of the Royal Commission on Children Deprived of a Normal Home Life, which produced the Curtis Report. Many of its recommendations are embodied in the Children Act, 1948.
- Curzon of Kedleston, Marquess, K.G., P.C., G.C.S.I., G.C.I.E.** (1859-1925), statesman and administrator. As a young man gained distinction as traveller and author. From 1899 to 1905 was a vigorous and outstanding Viceroy of India. Foreign Secretary, 1919-24, when he played a dominant part in the reconstruction of the Middle East and was prominent at many conferences after the first world war.
- Cuthbert, St.** (635-687), a famous monk who became prior of Melrose, and afterwards of Lindisfarne. For a time he lived in seclusion on one of the Farne Islands, but from 684 was Bishop of Hexham.
- Cuvier, Georges Leopold, Baron** (1769-1832), a French naturalist who founded a system of



classification in zoology, and originated the science of comparative anatomy.

**Cuyp, Albert** (1620-1691), a famous Dutch landscape painter, several of whose works are in our National Gallery.

**Cyprian, St.**, was an eminent ecclesiastic of the 3rd century, who wrote several notable treatises on matters of Christian doctrine. He was beheaded in 258, at an advanced age, and the present English calendar commemorates him on Sept. 26.

**Cyrus the Great** (c. 600-529 B.C.), founded the Persian monarchy in the 5th century B.C. and greatly distinguished himself by his conquests of Media, Assyria, Babylon, parts of India, Arabia and Asia Minor, and was eventually slain in battle, it is believed, with the Mes-sages on the river Jaxartes.

**D**

**Daguerre, Louis Jacques Mandé** (1789-1851), a French artist, who acquired fame as the inventor of the earliest photographic process, and then devoted himself to scene-painting and became part proprietor of the Diorama in Paris.

**Daimler, Gottlieb** (1834-1890), German inventor with N. A. Otto of Cologne of the Otto gas engine, and in his later years eminent as the inventor of the motor-car that is named after him.

**Daladier, Edouard**, (b. 1884), French politician, Premier of France April 1938 to March 1940, previously from Jan.-Oct. 1933 and for a few days in Jan. 1934.

**Dale, Sir Henry Hallett, O.M., G.B.E., F.R.S., M.D., D.Sc., LL.D., F.R.C.P.** (b. 1875). President, British Association, 1947, and of the Royal Society, 1940-45. Adviser to the B.B.C. on scientific programmes, 1950. Awarded Nobel Prize for Medicine, 1936.

**Dalhousie, 1st Marquess of, P.C., K.T.** (1812-1860). The tenth Earl and first Marquess of Dalhousie was one of the most famous of India's Governors-General. He controlled the affairs of India during a period of great difficulty, and annexed the Punjab after the second Sikh War; later on also annexing Nagpur, Jhambli, Pegu and other States. He left India in 1856, and the following year the Mutiny broke out.

**Dalton, John** (1766-1844), famous chemist and mathematician, renowned for his work on the constitution of matter. In 1810 published his *New System of Chemical Philosophy*, in which the atomic theory was first propounded.

**Damien, Father (Joseph de Veuster)** (1840-1889), a Belgian missionary who, going out to Honolulu in 1864, and witnessing the terrible sufferings of the lepers confined on the Island of Molokai, obtained permission to take spiritual charge of the Government settlement, and remained there working nobly for this wretched community, until in 1889 he himself was stricken with leprosy and died.

**Damocles, the flatterer and favourite of Dionysius of Syracuse.** The legend related by Cicero concerning him is that one day after expressing envy of Dionysius, he was invited to a banquet, where he found himself sitting beneath a naked sword suspended by a single hair. Hence the familiar simile "the sword of Damocles." The incident is referred to as of the first half of the 4th century B.C.

**Damrosch, Walter Johannes** (1862-1950), American musician, active in the musical development of the United States. Conductor of the New York Symphony Society, 1885-1927, and composer of three operas and of incidental music to Greek plays.

**Dane, Clemence, C.B.E.** (Winifred Ashton), author of *Regiment of Women*, *A Bill of Divorcement*, and *Will Shakespeare*, amongst many successful novels and plays.

**D'Annunzio, Gabriele** (1863-1938), Prince of Monte Nevoso, 1924, the Italian poet, dramatist and novelist, and one of the more remarkable literary men in Europe. Served European War 1915-18 (wounded). In Sept. 1919 he led an unofficial raid on Fiume and seized the port and town. When the Treaty of Rapallo was signed in 1920, D'Annunzio refused to recognise the Treaty, and declared war against Italy. Fiume

was attacked and D'Annunzio, after a short resistance, surrendered.

**Dante Alighieri** (1265-1321), the greatest of Italian poets, was born in Florence in a period of political upheaval. Wrote some of his finest work after he was driven from his native city in 1301. Though he met her but once or twice, he conceived an abiding love for Beatrice Portinari whom he first met in 1274. His *Divina Commedia* is the greatest poem of the Middle Ages and has been translated into all languages.

**Danton, Georges Jacques** (1759-1794), a famous member of the National Convention at the period of the first French Revolution. Was made President of the Committee of Public Safety, but Robespierre attacked and supplanted him. Danton was consigned to the guillotine shortly afterwards.

**D'Arblay, Madame** (1752-1840), better known as Frances (Fanny) Burney, daughter of Charles Burney, made a great sensation while quite young and unmarried by her novel *Evelina*, which opened the doors of Society to her and gained her the friendship of Dr. Johnson.

**Darius** was the name borne by three Persian kings. The first reigned from 521 to 485 B.C., and was defeated by the Greeks at Marathon. The second was a natural son of Artaxerxes Longimanus, and having obtained the crown by the murder of his brother, reigned from 424 to 405 B.C. The third Darius was the last of the Persian kings, reigning only from 336 to 331 B.C. when Alexander the Great invaded his kingdom and defeated him in two great battles. Soon after he was assassinated.

**Darling, Grace Horsley** (1815-1842). By the performance of her heroic deed in putting off in a small boat from the lighthouse on one of the Farne Islands, of which her father was keeper, to the rescue of the shipwrecked crew of the *Forfarshire*, whose lives she saved, she made herself an enduring name. She was only 23 years of age at the time, and died four years later of consumption.

**Darnley, Earl of** (1545-1567), was married to Mary Queen of Scots—as her second husband—in 1565. Two years later, after Mary had entered into an intrigue with Bothwell, he was murdered.

**Darrow, Clarence Seward** (1857-1938), famous American lawyer. He practised in Chicago for more than 50 years, and was the foremost criminal advocate in America for more than half that period. Appeared as counsel for the defence in a number of important cases of world-wide interest, among them the Debs Strike Case (1895), the Steuenburg Murder (1907), Macnamara Case, at Los Angeles (1911) and last but not least the Dayton Monkey Trial (1925) or Evolution Trial.

**Darwin, Charles Robert, F.R.S.** (1809-1882), the distinguished scientist, whose *Origin of Species* first clearly formulated and elaborated the theory of evolution. His first work (1837) described a five years' cruise in the *Beagle*, which the Government had sent out for scientific purposes. His *Origin of Species* appeared in 1859, and, though defended and supported by the scientific thought of the time generally, was much attacked by theologians. In 1871 Darwin issued his *Descent of Man*, a still further elaboration of the evolution theory. His other principal works were *The Expression of Emotion in Man and Animals* (1872), *Insectivorous Plants* (1875), *Different Forms of Flowers* (1877), and *Worms* (1881). He was buried in Westminster Abbey.

**Daudet, Alphonse** (1840-1897), the celebrated French humorist and novelist, all of whose works have been translated into English.

**Davenant, Sir William** (1606-1668), a dramatist and poet of much note in his time, who filled the office of Poet Laureate in succession to Ben Jonson. He was buried in Westminster Abbey.

**David I.** (1084-1153) was King of Scotland and uncle of Matilda, daughter of Henry I.; he took up arms against Stephen on his repudiation of Matilda's claims to the English crown.

**David II.** (1324-1371), King of Scotland from 1330 to 1370. He was the son of Robert Bruce, and in conflict with the English Army at Neville's Cross, in 1346, was defeated and made prisoner by Queen Philippa.



- David, Sir (Tannatt William) Edgeworth, K.B.E., C.M.G., D.S.O., F.R.S. (1858-1934)**, an Australian geologist of the first rank, who was Professor of Geology at Sydney University 1891-1924. Spent much of his time in exploration, and accompanied as geologist Shackleton's Antarctic Expedition, 1907-9, leading the party that ascended Mt. Erebus, and discovering with Sir Douglas Mawson the South Magnetic Pole.
- David, Jacques-Louis (1748-1825)**, a celebrated French painter of classic subjects, who put his art at the service of the New Republic.
- David, St.**, patron saint of Wales, whose festival falls on March 1st, lived in the 6th century in Wales, and founded various monasteries.
- Davidson, Randall Thomas Davidson, 1st and only Baron, P.C., G.C.V.O. (1848-1930)**, Archbishop of Canterbury, 1903-1928. Dean of Windsor, 1883-1891; Bishop of Rochester, 1891-1895; and Bishop of Winchester, 1895-1903. Was for a long period Domestic Chaplain and Clerk of the Closet to Queen Victoria, and married in 1878 the daughter of Archbishop Tait.
- Davies, Rt. Hon. Clement, Q.C., M.P., (b. 1884)**, lawyer and politician. Called to the Bar, 1909, took silk, 1926. Leader of the Liberal Party, and has represented Montgomery since 1929.
- Davies, Sir (Henry) Walford, K.C.V.O., O.B.E., Mus.D., D.Mus. (1869-1941)**, Master of the King's Music, 1934-41; Director of Music and Chairman of the National Council of Music, University of Wales, 1919-41, and Gresham Prof. of Music, 1924-41.
- Davies, William Henry (1871-1940)**, was a Welsh poet who spent his early life as a tramp and odd-job man. For six years he wandered about America, where he lost a foot "train-jumping," and for eight years followed a similar life in England, tramping, peddling and stopping in common lodging-houses. His poems reveal an intimate knowledge of and love for Nature. An account of his life is given in his *Autobiography of a Super Tramp*.
- Da Vinci. See Leonardo.**
- Davis, Jefferson, (1808-1889)**, an American statesman, who on the breaking out of the Civil War, was made President of the Confederate States. After the war he was a prisoner in the hands of the Federals, put on his trial for treason, and subjected to much indignity, but was ultimately discharged and wrote (1881) *The Rise and Fall of the Confederate Government*.
- Davis, John (c. 1550-1605)**, one of the great Elizabethan explorers and discoverer of Davis's Strait, the channel between the Atlantic and Arctic Oceans on the west of Greenland. Invented the backstaff, or Davis's quadrant.
- Davitt, Michael (1846-1906)**, after a hard-working and precarious bringing up this ardent Irish Nationalist attracted much notice by the bitter speeches he made on behalf of the Fenian Brotherhood, and in 1870 was sentenced to fifteen years penal servitude for treason-felony, but was released on ticket of leave in 1877. Was one of the founders of the Irish Land League 1879. In 1881 was sent back to penal servitude, but released again in the following year. Was elected to Parliament while a prisoner at Portland but disqualified. Succeeded in entering Parliament in 1892, and resigned in 1899.
- Davy, Sir Humphry, Bt., F.R.S. (1778-1829)**, the inventor of the safety-lamp. Was an eminent chemist whose researches and discoveries were of great scientific importance. Was the first to employ the electric current in chemical decomposition and discovered that nitrous oxide was perfectly respirable.
- Dawber, Sir (Edward) Guy, R.A. (1861-1938)**, English architect. As Chairman of the Council for the Preservation of Rural England, he did much to bring about the restoration of buildings throughout the country.
- Dawson, (George) Geoffrey (1874-1944)**, editor of *The Times*, 1912-19, and 1923-41; educated at Eton and Oxford; was private secretary to Lord Milner in S. Africa, 1901-5, editor of the *Johannesburg Star*, 1905-10.
- Dawson, Peter (b. 1882)**, British singer, born in Adelaide, South Australia, and the possessor of a magnificent baritone voice.
- Deakin, Rt. Hon. Arthur, C.B.E., J.P. (1890-**
- 1955)*, Trade Union leader; succeeded Ernest Bevin as general secretary of the Transport and General Workers' Union in 1949 and like him was a master negotiator.
- Debussy, Claude Achille (1862-1918)**, composer and founder of the French Impressionist School in music. Among his works are *Suite bergamasque*, containing the popular  *Clair de lune*, *L'après-midi d'un Faune*, inspired by the poem of Mallarmé, and *La Mer*. He also wrote an opera *Pelléas et Mélisande* based on Maeterlinck's drama. Biography by Edward Lockspeiser (1937).
- De Falla, Manuel (1876-1946)**, a noted Spanish composer, best known in England for his enchanting ballet, *The Three-Cornered Hat*, which was one of Diaghilev's greatest successes after the first world war.
- Defoe, Daniel (1660-1731)**, the son of a London butcher. He became a political writer and novelist, obtaining world-wide fame by his *Robinson Crusoe*, written when he was nearly sixty years of age. This was followed by several other novels, all of great merit.
- De Forest, Lee (b. 1873)**, American inventor who was the first to use alternating-current transmission, improved the thermionic valve detector and amplifier, which revolutionised wireless and by which modern wireless and sound films (Talkies) were made possible. He designed the first high-power station for the United States Navy and has been granted over 300 patents.
- De Gasperi, Alcide (1881-1954)**, Italian catholic politician. Founded the Christian Democrat Party and worked for European federation. Died on eve of breakdown of Brussels Conference on E.D.C. Prime Min. 1945-53.
- De Gaulle, Gen. Charles A. J. M. (b. 1890)**, was Colonel commanding a tank brigade of the French Army in 1939, with advanced ideas on mechanised warfare. On the collapse of France in 1940 he refused to surrender, but raised and led the Free French fighting forces, with headquarters in England and the Cross of Lorraine as their badge. Since the new constitution which set up the Fourth Republic he has refused to ally himself with any of the existing political parties. The "Rally of the French People" which he founded in 1947 in opposition to the left wing ceased to take part in Parliamentary life in 1953.
- De Havilland, Sir Geoffrey, C.B.E., F.R.Ae.A. (b. 1882)**, a pioneer of civil and military aviation. Began flying in 1908 and was the founder of the Stag Lane Aerodrome at Hendon and the designer of the famous Moth machines. Contributed in great measure to the advance of civil aviation since the first world war. Awarded the Guggenheim Medal in 1952. His son was killed in 1946 while testing a plane in preparation for breaking world speed record.
- Delacroix, Ferdinand Victor Eugène (1798-1863)**, French painter of great imaginative and dramatic force, of the romantic school.
- De la Mare, Walter John, O.M., C.H., (b. 1873)**, an imaginative writer whose most popular works are *Henry Brocken*, *Memoirs of a Midget*, and *The Connoisseur*.
- Delane, John Thadeus (1817-1879)**, the famous editor of *The Times*, who, though he did not write himself, made his paper the greatest journal in the world. He occupied the editorial chair from 1841 to 1877.
- Delaroche, Paul (Hippolyte) (1797-1856)**, an eminent French historical painter.
- Delibes, Clément Philibert Léo (1836-1891)**, a French composer of much graceful and refined music, including two or three operas, numerous operettas, and some exquisite ballet music.
- Delius, Frederick, C.H. (1862-1934)**, one of the few really great English composers since Purcell. Born of German parents at Bradford he early showed a taste for music and became a proficient violinist. Put to a commercial career by his father, he found the life intolerable, and at the age of 20 he went to Florida, where he worked for two years as a planter. Devoting his leisure to music, he became largely self-taught, and on his return home entered the Leipzig Conservatoire. He then settled in France at Grez-sur-Loing, but his later years were much troubled by a partial blindness. He published his first work in 1892 and began

- slowly to produce a succession of compositions, the full beauties of which were not generally realised until recent years by the musical public. Partly owing to the indefatigable work of Sir Thomas Beecham he gradually won popularity in England.
- Democritus** (c. 460-357 B.C.), the Greek philosopher to whom the conception of the atomic theory is attributed. His cheerful disposition led to his being styled "the laughing philosopher," and the tradition tells that he put out his eyes in order to prevent being distracted in his speculations.
- De Morgan, William Frend** (1839-1917), son of Augustus de Morgan (1806-71), was engaged in artistic pursuits until 1906, when he surprised the novel-reading world by a remarkably clever story of humour, character, and observation entitled *Joseph Vance*. His later novels include *Alice-for-Short* (1907), *Somehow Good* (1908), and *When Ghost Meets Ghost* (1914).
- Demosthenes** (385-322 B.C.), the famous Greek orator, statesman and warrior who, by his *Philippics*, roused the Athenians to resist the growing power of Philip of Macedon. Sixty-one of his orations were preserved, and are regarded as perhaps the finest examples of their kind.
- De Quincey, Thomas** (1785-1859), an eminent essayist and critic, the friend of Coleridge, Wordsworth, and Southey. His *Confessions of an Opium-eater* is a British classic.
- Derby, Edward Stanley, K.G., P.C., G.C.M.G.** 14th Earl of (1799-1869), was an eminent statesman who served as Prime Minister in the Governments of 1852, 1858, and 1866.
- Derby, Edward George Villiers Stanley, 17th Earl of, K.G., P.C., G.C.B., G.C.V.O., T.D.** (1865-1948), came into special prominence in 1915 as Director-General of Recruiting. Chairman of the Air Committee, 1916. Under-Sec. for War and War Sec., 1916-18 and again 1922-24. Ambassador in Paris, 1918-20.
- De Reszke, Jean** (1853-1925) and **De Reszke, Edouard** (1856-1917), Polish operatic singers, the first a tenor, the second a baritone, who achieved fame and immense fortunes by their singing.
- Derwentwater, 3rd Earl of** (1689-1716), the leader of the English Jacobite movement for placing the Pretender on the English throne. The rising took place in 1715, but was completely crushed by the Battle of Preston, and Derwentwater was beheaded.
- Desborough, Lord, K.G., G.C.V.O.** (1855-1944), Chairman of Thames Conservancy Board, 1905-37; Capt. of the Yeoman of the Guard, 1924-29; in his younger days was a noted athlete and swimmer; swam twice across Niagara.
- Descartes, René** (1596-1650), the famous French philosopher, mathematician, and author. Unconvinced by scholastic tradition and theological dogma, he sought to get back to primary truth, to the very definition of knowledge or the reason why anything can be said to be true. The basis of his Cartesian philosophy is summed up in his own words *cogito, ergo sum* (I am thinking so I exist).
- Desmoulins, Lucie Simplicie Camille Benoit** (1760-1794), was one of the fiercest of the French Revolutionary leaders, and from the destruction of the Bastille to the early days of the Terror was unflinching in his onslaughts upon the aristocrats and the priesthood. He fell under the displeasure of Robespierre, however, and was sent to the guillotine along with Danton.
- De Valera, Eamon, LL.D.** (b. New York, 1882), leader of the Fianna Fail party of the Rep. of Ireland; Prime Minister 1951-54; 1933-48 and Minister for External Affairs 1932-48. Pres. of Executive Council of Irish Free State, 1932-38; Chancellor of National University of Ireland since 1921; Pres. of Sinn Féin, 1917-26 when Fianna Fail was founded; Delegate to Assembly and Council of League of Nations, 1932, and President thereof 1932 and 1938.
- De Valois, Dame Ninette, D.B.E. (b. 1898)**, Irish-born ballet dancer and choreographer. Between world wars had many triumphs as a dancer with the British National Opera company and with the Diaghilev Russian ballet. Director of the Sadlers Wells School of Ballet since its foundation in 1931.
- Devonshire, 8th Duke of, K.G., P.C., G.C.V.O.** (1833-1908). Entered Parliament in 1857, as the Marquis of Hartington and speedily made a name as a Liberal politician, holding various offices. Separated from Mr. Gladstone on the Home Rule question, and in 1895 entered Lord Salisbury's third Ministry until Mr. Chamberlain's Declaration of Fiscal Policy in 1903, when he declared himself a Free Trader.
- Dewar, Professor Sir James, F.R.S.** (1842-1923), a prominent chemist, and a native of Kincardine. In 1877 was appointed Fullerton Professor of Chemistry at the Royal Institution, and in 1888, jointly with Sir Frederick Abel, invented cordite. He attracted great notice by his experiments with gases, and in 1891 succeeded in obtaining liquid oxygen. Introduced thermos flasks into science and industry.
- Dewey, Admiral George** (1837-1917), was a comparatively unknown American naval commander until his opportunity came in 1898 during the Spanish-American War, when he captured and destroyed a Spanish fleet in Manila Bay.
- Dewey, Prof. John** (1859-1952), the eminent American philosopher, psychologist and educationist, who, after holding professorships at the Universities of Minnesota, Michigan, and Chicago, where he was also Director of the School of Education until 1904, was Prof. of Philosophy at Columbia University, New York, 1904-32. A follower of William James (q.v.), he became well known in America as an adherent of pragmatism.
- De Witt, Jan** (1625-72), Dutch republican statesman, who carried on war with England and later negotiated the Triple Alliance, but was overthrown by the Orange Party and murdered.
- Diaghilev, Sergei Pavlovich** (1872-1929), Russian ballet impresario and founder of the Russian ballet, who selected the best dancers, musicians, and artists in his productions. Among those associated with him were Anna Pavlova, Vaslav Nijinsky, Tamara Karsavina, Leonide Massine, Michel Fokine, the choreographer, L. N. Bakst, the painter, and Igor Stravinsky, the composer.
- Dick, Sir William Reid, K.C.V.O., R.A., F.R.B.S.** (b. 1879), a notable sculptor; his statue of David Livingstone was unveiled in Africa in 1934, and in 1943 his statue of Franklin Roosevelt in Grosvenor Square was unveiled by Mrs. Roosevelt. The memorial statue of King George V. at Westminster is also his work. H.M.'s Sculptor-in-Ordinary for Scotland since Aug. 1938. Pres. of Royal Socy. of British Sculptors, 1933-38.
- Dickens, Charles (John Huffam)** (1812-1870), the most popular novelist of the 19th century, who from very humble beginnings worked himself up to the highest position in the world of letters. His literary output was enormous. From the time of the publication of the *Pickwick Papers* down to his death in 1870, covering a period of 33 years, he produced novel after novel, all possessing the original Dickensian characteristics, yet each wonderfully different from the rest and his popularity continues undiminished. He did so much for the cultivation of the true sentiment of Christmas that, whenever that season comes round, his name is recalled with honour and homage. As a public reader of his own works Dickens evinced a marvellous dramatic gift. He was buried in Westminster Abbey.
- Dickinson, Goldsworthy Lowes** (1863-1932), English scholar, author and philosopher. Well known as an interpreter and upholder of the Greek view of life, which is the subject of many of his books.
- Dicksee, Sir Francis Bernard, R.A.** (1853-1923), well known as the painter of numerous pictures, including "Harmony," "Romeo and Juliet," and "The Funeral of a Viking."
- Diderot, Denis** (1713-1784), the famous French philosopher and editor of the *Dictionnaire Encyclopedique*, which occupied him thirty years.
- Diemen, Anthony van** (1593-1645), Dutch Admiral who was Governor-General of the East Indian Colonies, 1636-45. He extended Dutch influence and trade throughout the Far East, promoted explorations to Australia, 1636-42, and on one of such explorations, Abel Tasman discovered New Zealand and named the island which we now know as Tasmania, Van Dieman's Land.



- Diesel, Rudolf** (1858-1913), German engineer, inventor of an internal-combustion engine which he patented in 1893. The modern so-called Diesel engine represents the improvements achieved by many men and has evolved mainly from the invention of Herbert Akroyd-Stuart, patented in 1890.
- Dimitrov, Georgi** (1882-1949), Bulgarian Communist politician and Prime Minister 1946-49. Engaged in Communist activities since 1909, and lived mainly in the U.S.S.R. In 1933 was charged by the Nazis with complicity in the Reichstag fire, but so brilliant was his defence that the Court was forced to acquit him.
- Diocletian** (A.D. 245-313), Roman Emperor from 284 to 305. Inaugurated the system of partnership Emperors, dividing the Empire into four sections, administered by himself in the East, Maximianus in Italy and Africa, Constantius in Britain, Gaul, etc., and Galerius in Illyricum. Abdicated in 305. Was a ruthless persecutor of the Christians.
- Diogenes** (412-322 B.C.), the celebrated Greek cynic philosopher who is said to have lived in a tub, wearing the coarsest clothing and living on the plainest food. Many of his sayings have been preserved.
- Dionysius**. Two of the tyrants of Syracuse bore this name. The first was a great soldier and statesman as well as a poet and philosopher, and lived from c. 430-367 B.C. The second Dionysius was his son and successor, but was of such a cruel disposition that he was driven from the throne and died in obscurity in 343.
- Disney, Walter Elias** ("Walt") (b. 1901). American cartoonist; creator of Mickey Mouse, Silly Symphonies, Donald Duck Cartoons, and Pinocchio shown on the screen.
- Disraeli, Benjamin**. (See Beaconsfield.)
- D'Israeli, Isaac** (1766-1848), the father of Benjamin Disraeli. Was an interesting worker in a special literary field, and produced some exceedingly interesting volumes dealing with authors and their writings. His best-known work is his *Curiosities of Literature*.
- Dixon, Harold Bailey** (1852-1930), Professor of Chemistry at Manchester University, 1887-1922, whose work on gaseous explosions opened a new era in combustion research.
- Dobson, Frank**, C.B.E., A.R.A., A.R.B.S. (b. 1888), a leading English sculptor. President of the London Group, 1923-27.
- Dobson, Henry Austin**, LL.D. (1840-1921), was in the Civil Service from 1860 to 1901, and was the author of several volumes of Society verse and prose works, dealing chiefly with the 18th century.
- Dodd, Francis**, R.A., R.W.S. (1874-1949), painter, engraver and draughtsman. He was one of the official artists during the War of 1914-18, and executed a valuable series of portraits of British Admirals and Generals on active service. Appointed one of the official artists for the second world war, 1939-45.
- Dodgson, Charles Lutwidge** (1832-1898), a writer and Mathematical Lecturer at Christ Church, Oxford, who, under the pseudonym of Lewis Carroll, achieved lasting fame by his *Alice's Adventures in Wonderland*, one of the most delightful books for children ever written.
- Dolci, Carlo** (1616-1686), the famous Florentine painter, examples of whose Madonnas and Saints are to be found in most National collections.
- Dominic, St.** (1170-1221), founder of the Order of Dominicans, or Black Friars, who devoted much energy to the conversion of the Albigenses, but meeting with small success, instituted a policy of persecution after the manner of the later Inquisition.
- Domitian** (Titus Flavius Domitianus Augustus) (52-96), a Roman emperor who, after many cruel and tyrannical acts, aroused the enmity of the people and was finally assassinated.
- Donatello** (Donato di Niccolò di Berto Bardi) (1386-1466), the famous Italian sculptor, whose works are to be seen chiefly at Florence, though several examples are at South Kensington.
- Donizetti, Gaetano** (1798-1848), the Italian composer to whom we owe the operas of *Lucia di Lammermoor*, *La Fille du Régiment*, *La Favorita*, *Don Pasquale*, and others.
- Donne, John** (1573-1631), an English poet and divine. As a preacher he was celebrated in his lifetime but few of his poems were printed and
- it was not until the 20th century that he was universally recognised as one of the most original of English poets. His writings include *Songs and Sonnets*, *Satires*, *Elegies*, *Problems and Paradoxes*, and the *Holy Sonnets*. He took orders in 1615 and was made dean of St. Paul's in 1621. Sir Edmund Gosse's *Life and Letters* appeared in 1899 and Sir Herbert Grierson's monumental edition of Donne's poetry in 1912.
- Donoghue, Stephen** ("Steve") (1884-1945), in his day a famous jockey. Rode the Derby Race winner six times, and established a new record by winning this classic event in three successive years, 1921-22-23.
- Doolittle, Lt.-Gen. James H.** (b. 1896), American airman. Made first non-stop flight across American continent, 1922. Won Schneider Cup race, 1925. Led first bomber attack on Tokio, 1942. Commanded U.S. Air Forces in North Africa, 1942, and Britain, 1944-45.
- Doré, Gustave** (1833-1883), the well-known French artist, famous for his colossal scriptural paintings and his powerful illustrations to the works of Dante, Milton, and Tennyson.
- Dostoevsky, Feodor Mikhailovitch** (1821-1881), one of Russia's greatest novelists. Author of *Crime and Punishment*, *Brothers Karamazov*, *The Idiot*, *The Possessed*, etc. Dostoevsky's novels are quite exceptional for their deep psychological insight, vision and marvellous tragic and analytic power, and have had a profound influence on modern European writers.
- Doughty, Charles Montagu**, M.A. (1843-1926), English writer and explorer. His most important travels were in Arabia. He is the author of the unique classic *Arabia Deserta*, written in a striking prose style, based on that of the Elizabethan period.
- Douglas, Marshal of the R.A.F. Lord, G.C.B., M.C., D.F.C.** (b. 1893), commanded Fighter Command, 1940-42, R.A.F. Middle East, 1943-44, and Coastal Command, 1944-45. C-in-C. and Military Governor of British Zone of Germany, 1946-47. A Labour peer.
- Douglas, Norman** (1868-1952), novelist and writer of witty and elegant prose. A Scot, born in Austria, he made his home on the Mediterranean and was buried on Capri. Travel books include *Siren Land* (1910), *Fountains in the Sand* (1912), *Old Calabria* (1915), *Alone* (1921), *Together* (1923); his highly entertaining novel *South Wind* was published in 1917.
- Doulton, Sir Henry** (1820-1897), famous potter and the inventor of Doulton ware.
- Dowden, Edward**, M.A., LL.D., D.O.L., Litt.D. (1843-1913). Well known for his critical and other writings, mainly dealing with the lives and works of the poets. Was Professor of Literature at Trinity College, Dublin, for 37 years.
- Dowding, Air Chief Marshal Lord, G.C.B., G.C.V.O., C.M.G.** (b. 1882), Chief of Fighter Command in Battle of Britain, 1940.
- Doyle, Sir Arthur Conan**, M.D. (1859-1930), masterly writer of detective stories and of historical romances such as the *White Company* and *Rodney Stone*. Creator of Sherlock Holmes, the archetype of detectives, who shared a flat in Baker Street with his friend and chronicler, Dr. Watson, and conducted a long series of investigations. The immensely popular stories mostly appeared in the *Strand Magazine* and include such terrifying adventures as the *Hound of the Baskervilles* and the *Speckled Band*. In later life Doyle was notable as a spiritualist.
- Doyle, Richard** (1824-1883), an artist of much humour and fancy, who was exceedingly popular while on the staff of *Punch* from 1841 to 1850. The familiar cover of *Punch* is his work.
- D'Oyly Carte, Richard** (1844-1901), English theatrical manager, associated with the production of the Gilbert and Sullivan comic operas. The D'Oyly Carte Opera Companies played Gilbert and Sullivan all over the world.
- Drake, Sir Francis** (c. 1540-1596), the great admiral of Queen Elizabeth's time, who made many adventurous voyages, bent partly on discovery and partly on plunder. He was a leading figure—under Lord Howard—in the attack on and destruction of the Spanish Armada in 1588.
- Draper, John William** (1811-82), American chemist, born in Liverpool, he emigrated to

- America in 1831, and in 1841 was one of the founders of the Medical School of New York University. As a chemist he acquired a great reputation, and was the first to take a successful photograph of the human face, 1839, and also to take a photograph of the moon.
- Dreiser, Theodore** (1871-1945), an American author whose novels of American life are written in vigorous native prose.
- Dreyfus, Lt.-Col. Alfred** (1859-1935), a French officer, condemned by a military secret tribunal on a charge of divulging secrets in 1894 to a foreign power, and condemned to imprisonment for life on Devil's Island in French Guiana. At a sensational new trial in 1899 he was again found guilty, and sentenced to a mitigated term of incarceration for ten years; but strenuous efforts on his behalf secured a pardon later. In 1906 he was entirely exonerated and reinstated in the army, with the rank of Major, and made a Chevalier of the Legion of Honour.
- Drinkwater, John** (1882-1937), was a well-known dramatist and poet. His plays *Abraham Lincoln* and *Oliver Cromwell* have had great praise and success.
- Driver, Samuel Rolles** (1846-1914) a distinguished Hebrew and Old Testament Scholar who was Regius Prof. of Hebrew at Oxford, 1883-1914. He was one of the greatest Hebrew scholars of his day, and was one of the higher critics of the Old Testament.
- Drummond, William** (1855-1849), a Scottish poet—laid of Hawthornden—whose works dealt largely with political matters, but revealed considerable poetic power. Ben Jonson walked from London to Scotland to pay him his respects.
- Drury, (Edward) Alfred (Briscoe), R.A.** (1857-1944). English sculptor who was responsible for many public monuments, including the colossal statues of Queen Victoria at Bradford and Portsmouth (1903), the decorations for the exterior of the War Office (1905) and of the Victoria and Albert Museum (1909).
- Dryden, John** (1631-1700), one of the most vigorous and prolific of English poets and writers, and a popular dramatist. He excelled in satire, and drew some powerful pictures of the statesmen of his day. His translation of Virgil ranks with Pope's translation of the *Iliad*. He was buried in Westminster Abbey. Originally a Parliamentarian he went over to the Royalists and was laureate and historiographer-royal, 1670-88.
- Du Barry, Marie Jeanne Bécu, Comtesse** (1746-1793), the favourite of Louis XV., who exercised great influence over the King, but after his death, and the breaking out of the Revolution, took refuge in England for a time. Being tempted to return to Paris in 1793, she was arrested and guillotined.
- Du Chailu, Paul Belloni** (1835-1903), a noted African traveller who was chief of General Gordon's staff in 1874, and wrote many valuable books of travels, his studies of the gorilla being especially interesting.
- Dufferin and Ava, 1st Marquess of, P.C., K.P., G.C.B., G.C.S.I., G.C.M.G., G.C.I.E., F.R.S.** (1826-1902), was a diplomatist of great experience, a writer of brilliance, and filled many high offices with distinction and success, including those of Governor-General of Canada and Viceroy of India.
- Duke-Elder, Sir William Stewart, K.C.V.O., M.A., D.Sc., M.D.** (b. 1898), Scottish ophthalmic surgeon at several London Hospitals and Surgeon-Oculist to H.M. Queen Elizabeth.
- Dulles, John Foster** (b. 1889), U.S. Secretary of State in the Republican Administration, 1953.
- Dumas, Alexandre** (1802-1870), the famous French novelist and dramatist, who published more volumes than any man of his time, the greater part of them of high merit. In the field of historical romance he showed wonderful power and resource, and his thrilling story *Monte Cristo* is one of the great novels of the nineteenth century. He also wrote *The Three Musketeers*.
- Dumas, Alexandre, Fils** (1824-1895), son of the last-named, and attained almost equal fame with his father, both as novelist and dramatist. *La Dame aux Camélias* is his most famous novel.
- Du Maurier, Daphne** (b. 1907), author of many best-sellers, including *Rebecca*, *Jamaica Inn*, etc., grand-daughter of George Du Maurier, daughter of Sir Gerald Du Maurier, the actor, and wife of Lt.-Gen. Sir Frederick Browning.
- Du Maurier, George Louis Palmella Busson** (1834-1896), one of the best known of the *Punch* artists during a long period and author of the novels of *Peter Ibbelton*, *Trilby*, and *The Martian*.
- Dundee, John Graham of Claverhouse, 1st Viscount** (1648-89), known as "Bonnie Dundee," royalist leader employed in the suppression of the Covenanters, taking part in the defeat at Drumclog and the victory of Bothwell Brig under the Duke of Monmouth in 1679. Defeated Mackay in the pass of Killiecrankie but was killed in the moment of victory.
- Duns Scotus, Johannes** (1266-1308), a famous scholastic who was born at Maxton, in the county of Roxburgh; joined the Franciscan Order at Dumfries in 1281, and ordained priest at Lincoln in 1291. Student and teacher at Oxford and Paris and died at Cologne. He was the great doctrinal opponent of Thomas Aquinas and has been surnamed *doctor subtilis*.
- Dunsany, 18th Baron** (b. 1878), Irish dramatist and author. He has written a number of colourful, whimsical and deeply imaginative novels, as well as short stories, and many plays, by which he has become well-known.
- Dunstan, St. (c. 924-c. 988)**, the famous Abbot of Glastonbury and Archbishop of Canterbury, who lived through the reign of five kings, and exercised great political influence.
- Dupleix, Joseph François** (1697-1763), was governor of the French East Indian possessions at the time when Clive was guiding the fortunes of the East India Company, and after Clive's victory at Plassey Dupleix's day was over. He returned to France, and fell into disgrace and poverty.
- Dürer, Albrecht** (1471-1528), the great German painter and engraver, and friend of Luther. Many of his engravings are in the British Museum. Of Nuremberg birth, he may be regarded as the founder of the German school and the inventor of etching.
- Durham, John George Lambton, Earl of** (1792-1840), served as Governor-General of Canada after the disturbances of 1837, and in 1839 presented the famous *Durham Report* to Parliament. This laid down the principle of colonial self-government and marks a turning-point in the affairs of the Empire.
- Duse, Elenora** (1861-1924), an Italian tragedienne of world-wide reputation.
- Duval, Claude** (1643-1670), a notorious highwayman who, coming to England from Normandy in the Duchess of Richmond's service, took to "the road," and for a few years successfully evaded capture. He was hanged at Tyburn.
- Duveen, 1st and only Baron, of Millbank** (1869-1939), was head of a firm of noted art dealers, and a generous benefactor of British Art.
- Dvořák, Antonín** (1841-1904), the eminent Czech composer. Combined with a striking originality, his compositions show fine musical qualities. Made himself popular in this country by his *Stabat Mater* in 1883.
- Dyson, Sir Frank (Watson), K.B.E., F.R.S.** (1868-1939), Astronomer Royal (1910-33). Was previously (1905-10) Astronomer Royal for Scotland. Was the author of a number of works on astronomy, and widely celebrated for his interesting public lectures.
- Dyson, Sir George, K.C.V.O., M.A., Mus.D., LL.D., F.R.C.M.** (b. 1883), Director of the Royal College of Music 1938-53. Author of *The New Music*, in which he analyses the technique of modern schools of composition. Composed a symphony, a violin concerto, and several choral works, such as *The Canterbury Pilgrims* and *Nebuchadnezzar*.

## E

- Eastlake, Sir Charles Lock, P.R.A.** (1793-1865), an eminent English painter whose works were mostly of a religious character. Pres. of R.A. 1850.
- Eastman, George** (1854-1932), American inventor who invented the roll photographic film and the famous Kodak camera. He amassed a vast fortune and his philanthropies were estimated at over £60 million. After a long illness he committed suicide.
- Ebert, Friedrich** (1871-1925), Leader of the



- German Social Democratic Party from 1916; Chancellor of Germany from Nov. 9, 1918, and the first President of the German Republic from 1919 until his death.
- Eck, Johann von** (1486-1543), one of the most vigorous opponents of the Reformation in Germany.
- Eddington, Prof. Sir Arthur Stanley, O.M., F.R.S.** (1882-1944), Plumian Professor of Astronomy, Cambridge, 1913; Director of the Cambridge Observatory, 1914-44. Author of *The Nature of the Physical World* (1928) and many scientific works.
- Eddy, Mrs. Mary Baker** (1821-1910), founder of the religion (theology and practice) which she named Christian Science, and of the Church of Christ, Scientist. Author of the Christian Science textbook, *Science and Health with Key to the Scriptures*, published in 1875.
- Ede, Rt. Hon. James Chuter, C.H., M.P.** (b. 1882), Home Secretary in two Labour Governments, 1945-51. Parliamentary Secretary to the Ministry of Education, 1940-45.
- Eden, Rt. Hon. Sir (Robert) Anthony, K.G., M.C., M.P.** (b. 1897), Prime Minister since 1955. Dep. Prime Min. and For. Sec. in the Churchill Administration, 1951-55. Entered Parliament in 1923 for Warwick and Leamington and has held various offices dealing with foreign affairs before becoming Foreign Sec. in 1935 on the resignation of Sir Samuel Hoare. He resigned in 1938 on a difference of policy with Mr. Neville Chamberlain about relations with Italy, but rejoined the Government on the outbreak of war. Became successively Sec. for the Dominions, Sec. for War and Foreign Sec., 1940-45.
- Edgar** (944-975), King of England from 959 to 975, was a monarch of enlightened ideas, who under the influence of Dunstan was able to carry out many useful reforms.
- Edgar Atheling** (c. 1060-c. 1130), as grandson of Edmund Ironside, was the lawful heir of Edward the Confessor, but in the confusion of the Norman invasion he was unable to maintain his claim.
- Edgeworth, Maria** (1767-1849), Irish novelist, whose stories included *Castle Rackrent*, *The Absentee*, and *Belinda*.
- Edinburgh, H.R.H. Philip, Duke of, K.G., P.C., K.T., G.B.E.** (b. 1921), consort of H.M. Queen Elizabeth II. Relinquished his title of Prince Philip of Greece and Denmark on his naturalisation in 1947, taking the name of Mountbatten. He is the great grandson of Queen Victoria, grandson of Admiral Prince Louis of Battenburg, and nephew of Earl Mountbatten of Burma. Educated in England and Germany and at the Royal Naval College. Served in the Royal Navy throughout the war. Pres. of the National Playing Fields Association; Pres. of the British Association, 1951-52. Chancellor of Edinburgh University, 1953.
- Edison, Thomas Alva** (1847-1931), an American inventor, who after an adventurous boyhood became a telegraph operator and interested in electrical problems. Established himself in New York in 1869, and invented an improved printing telegraph. In 1867 set up an elaborate laboratory and factory at Menlo Park, New Jersey, from which place he sent out many clever and some startling inventions, including a system of duplex telegraphy, afterwards improved into quadruplex and sextuplex transmission, the phonograph, and a method of preparing carbon filaments for the electric lamp; patented over 1300 inventions.
- Edmund II. (Ironside)** (980-1016), the son of Ethelred, after years of contention with the Danes, made a compact with Canute to divide England between them, but dying shortly afterwards the kingdom was settled on Canute.
- Edward the Confessor** (c. 1004-1066), the Anglo-Saxon king who immediately preceded—save for the brief reign of Harold of less than a year—the Norman Conquest, and founded Westminster Abbey, where a smaller church, then dilapidated, had previously for a period had a precarious existence. He was a religious-minded mystic, and was canonised in 1161, and given the shrine in the Abbey of his origination, which yet remains fairly intact, despite the ravages of time and disturbing hands.
- Edward the Elder** was the son of Alfred, and succeeded him as King of the West Saxons in 901.
- He was successful in overcoming the Danes, and became overlord of the Northern counties.
- Edward the Martyr** (963-979) became king in succession to Edgar, but, although supported by Dunstan, was not able to prevail against his stepmother Elfrida, who had him murdered.
- Edward I.** (1239-1307) was king of England from 1272 to 1307. Took part in the Crusades, completed the conquest of Wales, overcame Scottish opposition—executing Wallace and receiving the submission of Bruce, and promulgated many wise laws. He was nicknamed "Longshanks."
- Edward II.** (1284-1327), the son of Edward I., succeeded his father when the latter died at Burghover-Sands in 1307. Suffered defeat at the hands of the Scotch at Bannockburn, and on account of his arbitrary disposition, cruelty and lavish concessions to favourites, was deposed in 1327, and afterwards murdered at Berkeley Castle.
- Edward III.** (1312-1377) was one of the ablest of English monarchs who, although much taken up with long and bitter wars with France and Scotland, did much for the commercial interests of the nation, and was the means of introducing large numbers of Flemings into the country, who laid the foundation of the English textile manufactures. He married Philippa of Hainault, and was the father of Edward the Black Prince.
- Edward IV.** (1442-1483) attempted unsuccessfully to regain the lost English possessions in France, and resorted to many despotic expedients for obtaining supplies but it stands to his credit that he entered into trading treaties with the commercial merchants of the Continent which were of benefit to his people.
- Edward V.** (1470-1483)—son of Edward IV. and Elizabeth Woodville—was the unfortunate king who was put to death in the Tower of London, and succeeded by Richard III., his unscrupulous uncle, who had made himself "Protector" and assumed the Crown a little more than two months after the death of Edward IV., publishing the demise of the young King and his brother the Duke of York as having occurred in prison. The bones of the murdered boys were many years afterwards taken to Westminster Abbey for final burial.
- Edward VI.** (1537-1553), succeeded his father, Henry VIII., when in his tenth year and died in his sixteenth year. The Reformation under the Regency of Somerset first, and then of Northumberland, made considerable progress during his brief reign. He was induced during his last illness to name Lady Jane Grey his successor, with results disastrous to that unfortunate personage and many others concerned.
- Edward VII.** (1841-1910). Was married to Princess Alexandra of Denmark in 1863. Visited India in 1875, and from that time onward was constantly in the public eye, taking part in all kinds of functions. Succeeded to the throne on the death of Queen Victoria, Jan. 22, 1901. The Coronation, which had been planned for June 26, 1902, had to be postponed in consequence of the King's sudden illness, but eventually took place on August 9 in the same year. His Majesty was a powerful factor in the preservation of the peace of Europe, his friendly intercourse with the heads of the French, German, and other nations earning for him the title of "Edward the Peacemaker."
- Edward VIII.** (b. 1894), succeeded to the throne on the death of his father, George V., Jan., 20, 1936; Prince of Wales 1911-36. Abdicated in favour of his brother H.R.H. the Duke of York Dec. 10, 1936, and was created Duke of Windsor. Governor of the Bahamas 1940-45.
- Edwin**, (855-633), King of Northumbria, killed in battle at Hatfield Chase, Yorkshire, in 633. He was baptised into the Christian faith at York in 627, and built a church there. He was canonised later.
- Egbert** was a descendant of Cerdic, king of the West Saxons, and reigned from 802 to 839 in Wessex; in his later years became the first king of all England. In 835 he had to drive the Northmen away from Cornwall.
- Ehrlich, Paul** (1854-1914), a noted German scientist who was Director of the Royal Institute for Experimental Therapeutics at Frankfurt-on-Maine, which he made famous by his

experimental laboratory work in connection with cancer. His prolonged experimental researches brought him world-wide renown, his greatest triumphs being the discovery of salvarsan and neo-salvarsan. He was one of the founders of serum therapy, and did important work on diphtheria and anti-toxin.

**Eiffel, Alexandre Gustave** (1832-1923), French engineer, one of the first to employ compressed-air caissons in bridge building. Among his notable works are the great Eiffel Tower, Paris (1887-89) and the Panama Canal Locks.

**Einstein, Albert** (1879-1955), one of the greatest men of science of all time, whose chief claim to fame rests upon his theories of relativity. He was born in Ulm of Jewish parents and lived for many years in Switzerland. Awarded the Nobel Prize in 1922 for his work in quantum theory. In 1933 he was driven by the Nazis to seek asylum in America and became a professor at the Institute for Advanced Study at Princeton, 1933-45. His works include *Relativity* (1920), *Zur Einheitlichen Feldtheorie* (1929), *About Zionism* (1930), *The Evolution of Physics* (1938), *The Meaning of Relativity* (1950), *Out of My Later Years* (1950).

**Eisenhower, Dwight David, G.C.B., O.M.** (b. 1890). Pres. of the United States, 1953. Supreme Commander Atlantic Forces in Europe 1950-52. U.S. Chief of Staff, 1945-48. C-in-C. Allied Forces in European theatre of operations, 1943-45, and of Allied Forces in N. Africa, 1942-43. Pres. of Columbia Univ. 1948-50. Retired from the army in June 1952.

**Eisenstein, Sergei Mikhailovich** (1898-1948), Russian film director, whose silent film classic *The Battleship Potemkin* brought him world-wide fame. He also produced *Alexander Nevsky* and *Ivan the Terrible*.

**Eleanor, Queen of Edward I.** (d. 1290), was a woman of great piety and devotion. After her death the king had memorial crosses erected at the twelve places where her body rested on its way from Grantham to Westminster.

**Elgar, Sir Edward, Bart., O.M., G.C.V.O.** (1857-1934), English composer and Master of the King's Music, 1924-34. Starting as a violinist and a teacher, he composed many choral-orchestral works for various festivals and sprang to fame with the *Enigma Variations*, musical portraits of his friends. Other compositions include two symphonies, the oratorios *The Kingdom*, *The Apostles* and *The Dream of Gerontius*, and the tone-poem of *Falstaff*.

**Elgin, Thomas Bruce, 7th Earl of, P.C.** (1766-1841), a British diplomatist who brought to England from Athens the famous "Elgin marbles," now in the British Museum.

**Eliot, George** (1819-1880), the pen name of Marian Evans, who produced some of the most memorable novels of the 19th century, including *Adam Bede*, *The Mill on the Floss*, *Silas Marner*, *Middlemarch* and *Daniel Deronda*.

**Eliot, Thomas Stearns, O.M.** (b. 1888), one of the foremost lyric poets of the 20th century. Born in U.S.A. he became a naturalised British citizen in 1927. The poet of disillusionment, as he has been called, he made his name with his poem *The Waste Land* (1922), which was followed by *Poems* (1909-33), and by *Ash Wednesday* (1930). Author of *Murder in the Cathedral*, portraying the murder of Thomas à Becket, *The Cocktail Party*, and *The Confidential Clerk*. Awarded Nobel Prize for Literature 1948.

**Elizabeth (b. 1900)**, Queen Consort of George VI., daughter of the 14th Earl of Strathmore. Before her marriage in 1923 she was Lady Elizabeth Angela Marguerite Bowes-Lyon.

**Elizabeth I.** (1533-1603) came to the throne in 1558 at the age of twenty-five, and reigned forty-five years. Was a fervid Protestant, a sincere lover of her country, a masterful and enlightened ruler—fickle as far as her favourites were concerned—and added distinction to a distinguished period. The defeat of the Spanish Armada, the execution of Mary Stuart, the naval supremacy of England, the extension of her colonies, and the glory of a great new literature of which Shakespeare was the brightest ornament are features associated with her reign.

**Elizabeth II.** (Elizabeth Alexandra Mary of Windsor) (b. 1926), ascended the throne in February 1952 at the age of twenty-five on the

death of her father George VI. Her Consort, The Duke of Edinburgh (b. 1921), is the son of Prince Andrew of Greece and a descendant of the Danish royal family. They have two children, Prince Charles (b. 1948), the Heir-Apparent, and Princess Anne (b. 1950).

**Ellis, (Henry) Havelock** (1859-1939), literary and scientific writer and an authority on sex.

**Elwes, Gervase Henry** (1866-1921), a famous English tenor who excelled in his interpretation of the works of Vaughan Williams and Elgar.

**Emerson, Ralph Waldo** (1803-1882), the American essayist and philosopher. His *Conduct of Life*, *Representative Men*, and *Essays*, are among the most brilliant literary productions of America.

**Emin Pasha**, the name adopted by Eduard Schnitzer (1840-92), a German explorer associated with Gen. Charles Gordon in the pacification of the Sudan. He joined Gordon's forces as a medical officer and showing marked administrative ability was made governor of the Equatorial Province in 1878. He was menaced by the Mahdi and rescued by Stanley in 1889. While engaged in exploration for Germany in the region of Lake Tanganyika he was murdered by Arabs.

**Emmet, Robert** (1778-1803), the enthusiastic youth who led the rebellion in Ireland in 1803 and was tried and executed in the same year for high treason. He is one of Ireland's patriot heroes.

**Engels, Friedrich** (1820-1895), Socialist writer and lifelong friend of Karl Marx with whom he collaborated in producing the Communist Manifesto of 1848.

**Epictetus of Hierapolis**, the Stoic philosopher, who lived in the 1st century, and was a moral teacher of great repute and influence.

**Epicurus** (342-270 B.C.), the founder of the Epicurean philosophy, which taught that virtue should be followed because it leads to happiness.

**Epstein, Sir Jacob, K.B.E.** (b. 1880), sculptor, born in New York of Russian-Polish parents. His work includes *Rima*, the Hudson memorial in Hyde Park; *Day and Night* on the building of the Underground Headquarters at St. James' Park; *Genesis*, exhibited in 1931; *Lazarus*, which has a fine setting in New College, Oxford; and the *Madonna and Child* group for the restored 18th cent. buildings in Cavendish Square.

**Erasmus Desiderius** (1466-1536), the great Dutch philosopher and scholar, of whom it was said that he "laid the egg which Luther hatched."

**Ericsson, John** (1803-1889), a distinguished Swedish engineer who entered into competition with George Stephenson in the first famous trial of locomotives. Later he settled in the United States and devoted himself with much success to marine engineering.

**Ervine, St. John Greer** (b. 1883), author, dramatist and critic, noted as an able controversialist on all subjects pertaining to the theatre.

**Essex, Robert Devereux, 2nd Earl of** (1567-1601), became Queen Elizabeth's favourite after the death of Leicester, but, offending the Queen by certain acts in Ireland, was committed to prison. Later on, being liberated, he was implicated in a rebellious movement, for which he suffered death on Tower Hill.

**Ethelbert, King of Kent** at the close of the 6th century and commencement of the 7th. Famous for having accepted Christianity on the entreaty of St. Augustine. Published the first code of written laws in English. Canonised later.

**Ethelred II., King of England** from 979 to 1016; received the surname of "the Unready," because of his slowness to take action against the Danes, with whom he was more or less in conflict during the whole period of his reign.

**Ethelwulf** was the Anglo-Saxon sovereign who succeeded his father Egbert in 837. Died in 857, and was buried at Winchester.

**Etty, William** (1787-1849), a famous English R.A., who contributed to the Royal Academy some of its most admired pictures between 1820 and 1849.

**Eucken, Rudolf Christoph** (1846-1926), a famous German philosopher and theologian.

**Euclid**, the famous Greek mathematician, who lived in the 3rd century B.C., and whose *Elements of Geometry* remained a standard textbook until the present century.

**Eugenie, ex-Empress of the French** (1826-1920), was the daughter of Count Montijo of Granada, and on the mother's side of Scottish descent.



She married Napoleon III. in 1853. and for many years kept a brilliant court. After Sedan the Empress escaped to England, where she was subsequently joined by Louis Napoleon. They resided at Chislehurst for a time, and there her husband died.

**Euler, Leonard** (1707-1783), Swiss mathematician, regarded as the founder of pure mathematics. He was a prolific writer on mathematics.

**Euripides** (480-406 B.C.) was the greatest of Greek tragic poets. He wrote seventy-five plays, eighteen of which have been preserved, the most famous being *Alceste*, *Medea*, *Iphigenia*, and *Orestes*.

**Eusebius** (264-340), an ecclesiastical historian of rare industry, whose works are still held in great esteem. His *Chronicon* is a history of the world down to his own time, while his *Ecclesiastical History* traces the chief events of the Christian Church.

**Evans, Sir Arthur, D.Litt., LL.D., M.A., Ph.D., F.R.S.** (1851-1941), was a distinguished excavator and archaeologist. Pres. of British Assn. 1916-19.

**Evans, Dame Edith Mary, D.B.E.** (b. 1888), the versatile and brilliant English actress who early displayed a complete mastery of dramatic technique and a delicious sense of artificial comedy which found full expression in the part of Mistress Millamant in *The Way of the World*. She appeared in *The Dark is Light Enough* in 1954.

**Evatt, Rt. Hon. Herbert Vere, M.A., LL.D.**, (b. 1894), Australian lawyer and politician who was Minister for External Affairs 1941-49. Served as a member of the British War Cabinet in 1942, was a delegate to the San Francisco conference, and has been active in the United Nations Organisation. Leader of the Labour Party in succession to the late Mr. Chifley.

**Evelyn, John** (1620-1706), was one of the founders of the Royal Society and wrote several scientific works, but is best remembered for his *Diary* which covers the period 1640-1706.

**Ewing, Sir (James) Alfred, K.C.B., F.R.S.** (1855-1936), Principal and Vice-Chancellor of Edinburgh University 1916-29; Pres. of British Association 1932; Pres. of The Royal Society of Edinburgh 1924-29.

**Eyck, Hubert van** (c. 1366-1428), and **Eyck, Jan van** (c. 1386-1440), two of the greatest masters of the early Flemish School of Painters.

## F

**Fabius Maximus (Cunctator)** (d. 203 B.C.), the Roman Consul and Dictator, saved Rome from conquest by Hannibal by deliberate and well-planned strategic evasion of battle. The term "Fabian Policy" is derived from Fabian's tactics.

**Fabre, Jean Henri Casimir** (1823-1915), French naturalist whose lifelong interest was the study of the habits of insects and whose observations were delightfully recorded in his *Souvenirs entomologiques*, a work of many volumes.

**Faet, Thomas, R.A.** (1826-1900), one of the most successful of Victorian painters, won a great reputation for his Scottish subjects.

**Fahrenheit, Gabriel Daniel** (1686-1736), German physicist, born in Danzig, improved construction of thermometers, notably in using quicksilver for alcohol. Devised the scale with freezing-point at 32° boiling-point at 212°.

**Fairbairn, Sir William, 1st Bt., F.R.S.** (1789-1874), mechanical engineer and inventor. By the first utilisation of iron in shipbuilding, became eminent and wealthy.

**Fairfax, Thomas, 3rd Lord** (1612-1671) a prominent leader of the Parliamentary army during the Civil War, who greatly distinguished himself at Marston Moor and Naseby.

**Faraday, Michael, F.R.S.** (1791-1867), great experimental physicist, founder of the science of electro-magnetism. He was the son of a blacksmith and at the age of 12 worked for a book-binder, to whom he was later apprenticed. Became laboratory assistant to Sir Humphry Davy at the Royal Institution in 1813, and in 1827 succeeded him, becoming professor of chemistry in 1833. He was one of the world's most brilliant experimenters and set himself the problem of finding the connections between the forces of light, heat, electricity, and magnetism.

The epoch-making discoveries he made form the basis of the modern electrical industry. He lectured superbly well and inaugurated the Christmas lectures for juvenile audiences at the Royal Institution.

**Farman, Henri** (b. 1874), French aviator, one of the pioneers of aviation and a famous designer and builder of aeroplanes.

**Farouk I** (b. 1920), King of Egypt, 1936-52. Forced to abdicate as a result of a military coup d'état in July 1952.

**Farrar, Very Rev. Frederic William, D.D., F.R.S.** (1831-1903), Dean of Canterbury 1895-1903, a divine and author, some of whose writing attained a large circulation and exercised a considerable influence. His most popular publications were *The Life of Christ*, *The Life and Works of St. Paul*, and *Early Days of Christianity*. Author of the schoolboy story *Eric*.

**Fawcett, Rt. Hon. Henry** (1833-84), was totally blinded in a shooting accident in 1858, but rose to Professor of Political Economy at Cambridge after the publication of his *Manual of Political Economy* in 1863. In 1865 he entered Parliament as a Liberal and in 1880 became Postmaster-General. Introduced the parcel-post, postal orders, and the 6d. telegram.

**Fawcett, Dame Millicent Garrett, G.B.E.** (1847-1929), widow of the above; educational reformer and leader of the movement for women's suffrage; a very able writer on political economy and one of the founders of Newnham College, Cambridge.

**Fawkes, Guy** (1570-1606), a Yorkshire Catholic, who with Catesby and other conspirators planned the Gunpowder Plot. Although warned of the discovery of the plot, Fawkes persisted and was captured in the cellar of the Parliament House and hanged. (See Gunpowder Plot, General Information section.)

**Fenelon, François de Salignac de la Mothe** (1651-1715), Archbishop of Cambrai and a writer of distinction. His *Telemachus* is a French classic. **Ferdinand V. of Aragon** (1452-1516), who married Isabella of Castile, and with her reigned over Spain during a period of great events. He saw the Moors expelled from Spain, equipped Columbus for the discoveries which led to Spain's vast colonial possessions, and instituted the Inquisition.

**Ferguson, James, F.R.S.** (1710-1776), a Banffshire man of great ability and inventiveness, who, from being a shepherd-boy, educated himself in astronomy, mathematics, and portrait painting, so that he was able to support his parents, and became eminent as a scientific lecturer. He was made a Fellow of the Royal Society.

**Fermi, Enrico** (1901-54), Italian nuclear physicist whose research contributed to the harnessing of atomic energy and the development of the atomic bomb. Prof. of Physics at Rome, Columbia Univ., New York, and Univ. of Chicago. He postulated the existence of the neutrino (See Gen. Inf.) and discovered the element Neptunium (Atomic No. 93). Awarded the 1938 Nobel Prize in Physics.

**Feuchtwanger, Dr. Lion** (b. 1884), noted German-Jewish author; has written plays, poems and novels, being especially famous for his historical novels, such as *Jew Süss* and other well-known writings in which he gives a complete history of the period in which his characters live. *'Tis Polly to be Wise*, an historical essay about Jean-Jacques Rousseau, was published in 1954.

**Fichte, Johann Gottlieb** (1762-1814); was Professor of Philosophy, first at Jena and then at Erlangen, and later Rector of the University of Berlin. His works had great influence upon the thought of his time and prepared the way for the later Hegelian dialectic.

**Fielding, Henry** (1707-1754), a celebrated English novelist, author of *Tom Jones*, *Joseph Andrews*, and *Amelia*, as well as many plays.

**Fields, Gracie, C.B.E.** (b. 1898), an inimitable Lancashire comedienne, and a great popular favourite with the British public. Made her first London appearance in 1915. Equally successful as a film as well as a stage actress, she gained the affections of her music hall audiences through her abundant vitality, her Lancashire humour and her remarkably flexible voice.

**Fildes, Sir Luke, K.C.V.O., R.A.** (1844-1927), first attracted notice as a black-and-white artist,

- and illustrated Dickens' *Edwin Drood*. Exhibited at the Royal Academy in 1872, and at successive exhibitions was represented by many important works.
- Finck, Herman** (1872-1939), British conductor and composer. Was Musical Director of the Palace Theatre, 1900-21, and of Drury Lane, 1922-31. As the composer of more than fifty light operas and revues as well as hundreds of songs he achieved great popularity.
- Finsen, Prof. Niels Ryberg** (1860-1904), a Danish medical scientist whose light cure for lupus obtained the approval of Queen Alexandra and the aid of many philanthropists. He established an institute for his system at Copenhagen. Inventor of the Finsen ultra-violet lamp. Awarded Nobel Prize for Medicine, 1903. Founder of the science of Phototherapy.
- Firdousi, nom de plume of Abdul Kasim Mansur** (c. 930-1020), Persian poet whose great epic *Shah-nama*, or *Book of Kings*, relates the history of Persia in 60,000 verses.
- Fisher, Most Rev. Geoffrey Francis, P.C., G.C.V.O., M.A., Hon. D.D.** (b. 1887). Archbishop of Canterbury since 1945, the 99th holder of the office; Bishop of London, 1939-45; Bishop of Chester, 1932-39; Headmaster Repton School, 1914-32.
- Fisher, Rt. Hon. Herbert Albert Laurens, O.M., F.R.S.** (1865-1940), President of the Board of Education, 1916-22. His comprehensive *History of Europe* shows a vast range of knowledge and a great ability to generalise.
- FitzGerald, Edward** (1809-1883), English poet who gained world-wide fame by his translation of *The Rubaiyat of Omar Khayyam* (1859).
- Fitzroy, Vice-Admiral Robert, F.R.S.** (1805-1865). Attained celebrity as a meteorologist, and in 1854 was made superintendent of the Meteorological Department, and was the introducer of the system of storm warnings which were the beginning of weather forecasts.
- Flammarion, Camille** (1842-1925), French astronomer, famous for his observations on double stars, star-drift and popular lectures and books on astronomy. Founded the Astronomical Society of France in 1887. His best-known work is *L'Astronomie Populaire*.
- Flamsteed, John, F.R.S.** (1646-1719), was the first English Astronomer Royal, and a close friend of Sir Isaac Newton, whom he aided in many of his experiments.
- Flaubert, Gustave** (1821-80), one of the greatest of French novelists and creator of *Madame Bovary* which took six years to write. His extraordinary perfection of style was attained only through incessant labour. He hated anything lax and was only satisfied when he had exactly expressed his meaning. Other works were *Salambo*, *La Tentation de Saint-Antoine* and his drama *Le Candidat*.
- Flaxman, John, R.A.** (1755-1826), a great English sculptor who was born at York, and at 20 was employed as modeller by Josiah Wedgwood. In 1787 he went to Rome, where he stayed 7 years. In 1800 he was elected R.A. and in 1810 became professor of sculpture to the Royal Academy.
- Flecker, James Elroy** (1884-1915), English poet who early showed signs of becoming one of the most notable poets of his generation, and lived to see his works recognised by the best critics of his time. His works include *Golden Journey to Samarkand*, *Hassan* (staged in London, 1923) and *Don Juan*, as well as many lyrics.
- Fleming, Sir Alexander, F.R.S.** (1881-1955), as a bacteriologist he made many original contributions, including the discovery of the antibacterial enzyme lysozyme in 1922 and penicillin in 1928. Full recognition of his discovery came only during the war, when Sir Howard Florey separated the drug now used for treatment from the original penicillin. Awarded Nobel Prize for Medicine jointly with Sir H. Florey and Dr. E. B. Chain, 1945. Retired as director of the Wright-Fleming Institute of Microbiology at St. Mary's Hospital, London, in 1954.
- Fleming, Sir (John) Ambrose, F.R.S.** (1849-1945), was the inventor of the thermionic valve which revolutionised wireless telegraphy and also made wireless telephony possible. Prof. of Electrical Engineering in University College, London, 1885-1926.
- Fletcher, John** (1579-1625), the famous collaborator with Beaumont in numerous plays which were popular in their day and take high position in the dramatic literature of the country.
- Floure, Prof. Herbert John, D.Sc., F.R.S.** (b. 1877), a distinguished anthropologist who was Prof. of Geography at Manchester University 1930-44, and Prof. of Geography and Anthropology, University College of Wales, 1904-30.
- Flinders, Matthew** (1774-1814), an explorer and navigator, who made important discoveries in and around Australia. He sailed through Bass Strait, so called in honour of his surgeon.
- Foch, Marshal Ferdinand, O.M.** (1851-1929), Generalissimo commanding the Allied Forces in France from March 1917 until after the Armistice was signed, Nov. 11, 1918. Under his direction the great German offensive was checked and turned at the Marne in July 1918. He followed up this success with a series of rapid attacks culminating in the German surrender, Nov. 11, 1918, when he imposed the conditions of the Armistice.
- Fokine, Michel** (1880-1944), was the famous Russian dancer and Master of the original Russian Ballet, to whom the modern renaissance of ballet may be largely attributed. A dominating figure in the world of ballet who became choreographer to Diaghilev's company.
- Fokker, Anthony Herman Gerard** (1890-1939), was a famous Dutch airman and aeronautical engineer, and designer and builder of the well-known Fokker military and commercial aeroplanes.
- Fonteyn, Dame Margot (Mme. Roberto de Arias), D.B.E.** (b. 1919), Prima ballerina of the Sadlers Wells ballet and acclaimed as the foremost English dancer of to-day.
- Forbes, (Joan) Rosita, F.R.G.S.** (b. 1893), the well-known traveller and authoress. She has travelled and explored in Abyssinia, and crossed the Libyan desert in native costume in 1920.
- Forbes-Robertson, Sir Johnston** (1853-1937), actor-manager, trained as an artist, but studied under Phelps, and went on the stage, and became a leading player with the Bancroft and Hare companies, and then successfully entered upon management.
- Ford, Henry** (1863-1947), founder of Ford Motor Co., 1903, of which he was President until 1919, when he was succeeded by his son, Edsel B. Ford (1893-1943). Henry Ford became the world's leading industrialist and its second richest man. Was the pioneer of the cheap motor-car, of which, since 1920, more than a million have been produced annually.
- Forester, Cecil Scott** (b. 1899), British author. His many novels include the *Captain Hornblower* series.
- Forster, Edward Morgan, C.H., LL.D.** (b. 1879), novelist. Author of *A Passage to India*, *A Room with a View*, and *Abinger Harvest*.
- Fortescue, Hon. Sir John William, K.C.V.O.** (1859-1933), who wrote the history of the British Army, in 13 vols.
- Fortuny y Carbo, Mariano** (1830-1874), Spanish painter celebrated for *Choosing a Model*, *The Snake Charmer*, and *Moors playing with the Vulture*.
- Foscari, Francesco** (c. 1372-1457), Doge of Venice from 1423 to 1457. A great historical character, who governed Venice with a firm hand and increased her renown.
- Fosdick, Rev. Harry Emerson** (b. 1878), the noted American preacher. Was a Baptist Minister 1904-15, since when he has been Professor of Theology, Union Theological Seminary, New York, and Pastor, Riverside, formerly Park Avenue, Baptist Church, New York, 1926-46. One of the best known preachers in the U.S.A.
- Fourier, Francois Charles Marie** (1772-1837), the famous French socialist, who propounded a system of associated enterprise for giving everyone ample means on a system of communal industry. He made some attempts to carry out his Utopian ideas, but they did not succeed. He is best known by his *Traité de l'Association Domestique Agricole*.
- Fowler, Sir John, Bart., K.C.M.G.** (1817-1898), an eminent civil engineer, son of a Sheffield land surveyor. With Sir Benjamin Baker he was the engineer of the Forth Bridge and of the Metropolitan Railway.
- Fox, Rt. Hon. Charles James** (1749-1806) was the second son of the first Lord Holland.



- Entered Parliament at nineteen, and became a Lord of the Admiralty in 1770. His opposition to the Royal Marriage Bill drew down upon him the displeasure of George III. Through the whole of Pitt's Premiership he was that statesman's most formidable opponent. He favoured American Independence; opposed the war with France; was one of the impeachers of Warren Hastings; denounced the Slave Trade and advocated Parliamentary Reform. After the death of Pitt in 1806 he was made Foreign Secretary, but died a few months later, and was buried in Westminster Abbey.
- Fox, George (1824-1891)**, was the founder of the Society of Friends.
- Foxe, John (1516-1587)**, the English martyrologist, whose *Acts and Monuments (Book of Martyrs)* is one of the best-known books in the language. Born at Boston in Lincolnshire, he became a clergyman of the Anglican Church and died in London.
- Frampton, Sir George James, R.A., F.S.A. (1860-1928)**, an eminent sculptor. Was the sculptor of the well-known Peter Pan statue in Kensington Gardens, and the Edith Cavell Memorial in St. Martin's Place, London.
- France, Anatole (Jacques Thibault) (1844-1924)**, one of France's notable writers of fiction, showing a great mastery of character portrayal and satire. Most of his works are translated into English.
- Francis I. (1494-1547)**, was King of France from 1515 to his death. He was involved in many wars and was taken prisoner by Charles V. of Germany at the Battle of Pavia. After friendly relations had been established between Francis and Henry VIII., the two met on the "Field of the Cloth of Gold."
- Francis of Assisi, St. (1182-1226)**, founded the Franciscan Order of Monks and devoted himself to a holy life. He is a saint of the Roman Church, having been canonised by Pope Gregory IX., and is commemorated on October 4th.
- Francis, Sir Philip, K.B. (1740-1818)**, an English statesman, the reputed author of the famous *Letters of Junius*.
- Frank, César Auguste (1822-90)**, composer. Born at Liege in Belgium; studied at the Conservatory, Paris. His music is romantic, mystical, and personal in idiom. Wrote some of the most beautiful of organ music and his *Symphonic Variations for Piano and Orchestra*, *Sonata for Violin*, and the *Symphony in D* rank him, with his younger contemporary Debussy, among the greatest of nineteenth-century musicians.
- Franco, General Francisco (b. 1892)**, Spanish soldier and Dictator who served with the Spanish Forces in the Moroccan campaign of 1920-23 and was later Head of the Military Academy at Saragossa. Chief of the General Staff 1935-36. Was Commander-in-Chief of the Nationalist Forces during the Spanish Civil War, 1936-39. President of Spain since Aug. 1939.
- Franklin, Benjamin, F.R.S. (1706-1790)**, the famous American statesman and philosopher, who after serving an apprenticeship as a printer attracted public attention by publishing his *Poor Richard's Almanac*. He then began a series of scientific experiments, inventing amongst other things the lightning conductor. He was for ten years a member of the General Assembly; then lived in Britain as agent for his State for eighteen years; returning to America he took part in framing the Constitution of the United States.
- Franklin, Rear-Admiral Sir John, F.R.S. (1786-1847)**, the famous Arctic explorer, whose final expedition in command of the *Erebus* and *Terror* ended disastrously, all the members of the expedition perishing. Many attempts were made to discover Franklin, but without obtaining anything save very fragmentary knowledge concerning his fate. He was born at Spilsby.
- Fraser of the North Cape, Admiral of the Fleet, Lord, G.C.B., K.B.E. (b. 1888)**, commanded Home Fleet, Eastern Fleet, and British Pacific Fleet successively, 1943-46. First Sea Lord, 1948-51.
- Fraser, Lieut.-Col. Sir (William Jocelyn) Ian, C.H., C.B.E., M.P. (b. 1897)**. Blinded when on active service as a young regular Army officer. Has since devoted himself to the welfare of the blind and of ex-servicemen generally. Chairman of St. Dunstan's since 1921. President of the British Legion, 1947. A Governor of the B.B.C., 1937-39 and 1941-46. Conservative M.P.
- Frazer, Sir James George, O.M., LL.D., F.R.S. (1854-1941)**, was an eminent British anthropologist; author of *The Golden Bough* and numerous other works on his subject.
- Frederick I. (c. 1123-90)**, Holy Roman emperor from 1152. Nicknamed Barbarossa. A commanding personality, he won for the empire prestige unknown since Otto the Great. Though failing to subjugate his Italian territories, for his armies suffered from the Italian climate, he dominated his German subjects, expelled the semi-independent Duke of Saxony, Henry the Lion, from his duchy, encouraged the German cities, and was a national hero. Though not an ascetic, he was remarkable for an impeccable private life, distinguished himself on the second Crusade, and was drowned in Asia Minor on his way to the third.
- Frederick II (1194-1250)**, Holy Roman Emperor, an enlightened ruler whose court in Sicily was a centre of culture and learning, attracting Jewish, Mohammedan, and Christian scholars. Forced by illness to return from crusade in 1227, he was excommunicated by Pope Gregory IX.; still excommunicated, he again set sail for Palestine and by skilful diplomacy gained possession of Jerusalem, Bethlehem, and Nazareth. Frederick was a philosopher and man of science and delighted in exploding superstition. He founded the university of Naples, was a patron of the medical school at Salerno, wrote a treatise on falconry, and gave Sicily a code of laws.
- Frederick II (1712-1786)**, usually called Frederick the Great, was King of Prussia from 1740 to the time of his death, and by his masterful government and military successes greatly increased the power of his country. He was a scholarly potentate, and his published works extend to thirty volumes.
- French, Field-Marshal Sir John. (See Ypres, 1st Earl.)**
- Freud, Sigmund, M.D. (1856-1939)**, was Professor of Neurology, Vienna University, 1902-38. An eminent psychoanalyst; author of many books on his subject. Left Austria after the *Anschluss* to take up permanent residence in England. Was elected a foreign member of the Royal Society in 1936.
- Freyberg, Bernard Cyril, Lieut.-Gen. Lord, V.C., G.C.M.G., K.C.B., K.B.E., D.S.O., (b. 1889)**. Gov.-Gen. of New Zealand, 1946-52. Served with distinction in both world wars. Commanded Allied troops on Crete, 1941. Won third bar to D.S.O. in Italy, 1945.
- Friese-Greene, William (1855-1921)**, inventor of the cinematograph. His pioneer work in commercial photography brought him no profit, and for many years he lived in poverty.
- Frobisher, Sir Martin (1535-1594)**, was the earliest of British navigators to attempt to find the North-West passage from the Atlantic to the Pacific through the Arctic seas, and his name is commemorated in Frobisher's Strait, to the south of Baffin Land. For his services in connection with the defeat of the Spanish Armada he was knighted.
- Froebel, Friedrich Wilhelm August (1782-1852)**, was the founder of the Kindergarten system of education, the object of which is "to give children employment in harmony with their nature, to strengthen their bodies, to exercise their senses and lead them up to the original ground of all life, to the idea of unity with themselves."
- Froissart, Jean (1337-1410)**, a celebrated French writer who visited England and Scotland, and was the author of the famous *Chronicles*, which tell us so much of the achievements of the barons of old.
- Frost, Robert (b. 1874)**, best loved of American poets. "Stopping by Woods on a Snowy Evening"; "Birches"; "The Death of the Hired Man"; "After Apple-Picking". Awarded Pulitzer Prize for poetry in 1924, 1931, 1937, and 1943.
- Froude, James Anthony (1818-1894)**, the celebrated historian and biographer of Carlyle.
- Fry, Captain Charles Burgess, R.N.R., M.A., F.R.G.S. (b. 1872)**, known as "the Commander"; outstanding athlete and sportsman, who captained Oxford at cricket, association foot-

ball, and athletics, and reached international status in all three sports. Hon. director of the Nautical School Training Ship *Mercury*, where he has shown great interest in the training of boys for the sea.

**Fry, Elizabeth** (1780-1845), a Norwich lady who devoted much of her life to the promotion of prison reform, and achieved considerable reputation as a preacher. She belonged to the Society of Friends.

**Fry, Christopher** (b. 1907), English poet and dramatist of Quaker family. Author of *The Lady's Not for Burning*, *Venus Observed*, and *The Darkness is Light Enough*.

**Fry, Roger** (1866-1934), English art critic and painter. Introduced the work of Cézanne and the post-impressionists into England. His most important book is *Vision and Design*. Biography by Virginia Woolf (1940).

**Fuller, Thomas** (1608-1661), the author of *Worthies of England* and *A Church History of Britain*, two well-known and valuable works.

**Fulton, Robert** (1765-1815), an inventive American engineer who distinguished himself by experiments in the application of steam to navigation, and finally in 1807, launched the *Clermont* on the Hudson.

**Furniss, Harry** (1854-1925), British caricaturist, was born in Wexford and came to London as a young man. He was a famous cartoonist and served on the staff of *Punch* from 1878-94. Illustrated the works of Dickens and Thackeray.

**Furse, Dame Katharine**, G.B.E., R.R.C. (1875-1952), pioneer of women's services, daughter of John Addington Symonds, C.-in-C. V.A.D.S. 1914-17; Director W.E.N.S., 1917-19; Dir. World Bureau Girl Guides and Girl Scouts, 1928-38.

**Furtwängler, Wilhelm** (1886-1954), famous German conductor, and popular in Great Britain for his visits with the Berlin Philharmonic Orchestra, of which he succeeded Herr Nikisch as conductor. This celebrated conductor of the Berlin State Opera Concerts won international fame, and had a triumphant success in London on each of his visits.

**G**

**Gade, Niels Wilhelm** (1817-90), Danish composer and a pioneer of the Danish school of music. First became known through his overture *Echoes of Ossian*, 1841, which brought him to the notice of the King, who sent him to study at Leipzig. There he met Mendelssohn, whom he succeeded as conductor of the Gewandhaus concerts. In 1848 he returned to Copenhagen and with J. P. E. Hartmann founded the musical conservatorium.

**Gainsborough, Thomas, R.A.** (1727-1788), English landscape and portrait painter, whose works are remarkable for their grace and refinement. His *Duchess of Devonshire* was stolen when exhibited in 1876 and recovered in America some years later.

**Gaitskell, Rt. Hon. Hugh Todd Naylor, C.B.E., M.P.** (b. 1906), elected leader of the Parliamentary Labour Party when Earl Attlee retired in 1955. Has had distinguished career as economist, Civil Servant, and Chan. of Exchequer, 1950-51. M.P. for South Leeds since 1945.

**Galen, Claudius** (130-200), a famous physician who was skilled in anatomy and physiology and became medical adviser to Marcus Aurelius. Many of his treatises still survive.

**Galileo Galilei** (1564-1642), the great Italian astronomer and founder of dynamics. First discovered the importance of acceleration and established the law of falling bodies. He was also one of the first to construct a telescope with which he made many important discoveries. He was condemned by the Inquisition which put an end to science in Italy for many centuries.

**Gall, Franz Josef** (1758-1828), the German physician who founded the study of phrenology.

**Galsworthy, John, O.M.** (1867-1933), an English novelist and dramatist of force and originality who wrote a great series of novels dealing with the history of an upper middle class family. Awarded Nobel Prize for Literature in 1932.

**Galton, Sir Francis, F.R.S.** (1822-1911), an eminent scientist and traveller, whose studies in hereditary transmission have been of great service, and whose expositions in regard to the mark-

ings of finger-tips resulted in the adoption of what is known as finger-print identification in police cases. Originated the study of eugenics, and one of the first to apply mathematics to biological problems. He was a cousin of Darwin.

**Galvani, Luigi** (1737-1798), a distinguished Italian scientist, whose experiments during a course of lectures on anatomy at Bologna discovered the principle of animal electricity: hence the term Galvanism.

**Gama, Vasco da** (c. 1460-1524), the adventurous Portuguese navigator who discovered the sea route to India in 1498 by doubling the Cape of Good Hope.

**Gandhi, Mohandas Karamchand** (1869-1948), great Indian patriot, social reformer, and moral teacher. Believed in the doctrine of non-violence. In the tense situation following the granting of independence to India, he strove to promote the co-operation of all Indians but was assassinated on his way to an evening prayer meeting.

**Garbo, Greta** (b. 1905), Swedish film actress. The most arresting and poetical actress on the screen of her day.

**Garcia, Manuel** (1805-1906), a Spanish musician and singing-master, brother of Mmes. Malibran and Viardot, and tutor of many celebrities from Jenny Lind downwards. He published books on singing, and invented the laryngoscope.

**Gardiner, Samuel Rawson** (1829-1902), an English historian, whose works deal mainly with the period from the accession of James I. to the end of the Commonwealth. Many of his books remain the standard authorities on their subjects.

**Garibaldi, Giuseppe** (1807-1882), the famous Italian soldier and patriot. In 1834 he was condemned to death for being concerned in a plot to seize a Government vessel, but escaped to South America, and for some years was engaged in various conflicts for liberty in that hotbed of revolution. Returning to Italy in 1848, he joined the Roman Republican movement, but was ultimately compelled to fly for his life, and emigrated to New York. In 1854 he returned to Italy, and on the outbreak of war in 1859 had a command given to him, and scored several victories against the Austrians. The next year found him at the head of a great volunteer army, intent upon liberating Italy. This tremendous task he successfully carried through, earning the admiration of the world for his generalship and patriotism.

**Garrick, David** (1717-1779), the leading tragic actor of his time and a highly successful manager. Was buried in Westminster Abbey.

**Garrison, William Lloyd** (1805-1879), an eminent anti-slavery leader of America.

**Garvin, James Louis, C.H.** (1868-1947), editor of the *Observer*, 1908-42, and of the *Encyclopaedia Britannica* (14th ed.), 1926-29.

**Gaskell, Mrs. Elizabeth Cleghorn** (1810-1865), an English novelist of acknowledged power, whose *Mary Barton*, *Ruth*, *Cranford* and other stories dealing largely with Lancashire life achieved great popularity. Her *Life of Charlotte Brontë* was also a remarkable book.

**Gautier, Theophile** (1811-1872) was an eminent French critic and novelist who at one time filled the position of secretary to Balzac. His romance, *Mademoiselle de Maupin*, caused a great sensation. He was also a poet of considerable power.

**Gay, John** (1685-1732), the English poet who penned *The Beggar's Opera* and the well-known collection of poetic fables. He was a writer of great wit and fancy, and much patronised by Society.

**Gay-Lussac, Joseph Louis** (1778-1850), a French chemist, whose experiments in connection with gases and vapours were of much scientific importance.

**Ged, William** (1690-1749), was one of the inventors of the process of stereotyping. He was a goldsmith and a native of Edinburgh.

**Geikie, Sir Archibald, O.M., K.C.B., F.R.S.** (1835-1924), one of the most noted geologists of our time. President of the Royal Society 1908-13.

**Geikie, Prof. James, F.R.S.** (1839-1915), brother of the foregoing, and his successor in the Chair of Geology at Edinburgh University in 1882. His work on *The Great Ice Age* is a notable one.



**Genseric** (c. 395-477), Vandal King of Spain in 419, after being driven into Africa by the Visigoths, subdued the Roman provinces of North Africa, and afterwards crossed to Italy and sacked and pillaged Rome, doing irreparable damage to public monuments and sculptures. Hence the term "vandalism."

**Geoffrey of Anjou, Duke of Brittany** (1113-51), founder of the Angevin dynasty of England, was son-in-law of Henry I. and father of Henry II., the first Angevin or Plantagenet king.

**Geoffrey of Monmouth** (1100-1154), was the author of the famous Old English chronicle which bears his name. He was born at Monmouth, and became Bishop of St. Asaph in 1152. His *Chronicon* is a compilation from older authors, and is notable for having contained the stories of King Arthur, King Lear, and Cymbeline.

**George I.** (1660-1727) was King of Great Britain from 1714 to his death, ascending the throne as direct descendant of James I. His reign saw many memorable events, including the Jacobite Rebellion, the South Sea Bubble, and the beginning of Walpole's great ministry.

**George II.** (1683-1760), son of the last-named, was King of Great Britain from 1727 to 1760. His reign covered a prosperous period in spite of wars and rebellions, and saw the Empire extended in India and North America, but the King was personally a man of limited power and achievement.

**George III.** (1738-1820), was the grandson of George II., and reigned from 1760 to 1820. He was a popular monarch for the most part, possessing all the domestic virtues and of simple tastes. The war with America lasted from 1775 to 1782, when the American States gained their independence, and from 1793 to 1815 the war with France was kept up with but little interruption. On the other hand, the Empire in India was strengthened and enlarged, and the power of Great Britain on land and sea was splendidly shown.

**George IV.** (1762-1830) reigned from 1820 to his death, but filled the position of Prince Regent for some years previously. The King's personal character, in spite of the fact that he was called "The First Gentleman in Europe," showed such a want of dignity, and such an abandonment to licentiousness and frivolity, that he became very unpopular with the people.

**George V.** (1865-1936), was the second son of Edward VII. and Queen Alexandra. Entered the Navy as a cadet in 1877 and became second in the line of succession to the throne on the death of the Duke of Clarence in 1892. Married to Princess Mary of Teck in 1893. Succeeded to the throne May 6th, 1910, and celebrated his Silver Jubilee in 1935. Maintained the royal tradition of strenuous public engagements combined with unfailing attention to business of State. His Christmas Day broadcasts are remembered with affection by millions throughout the Commonwealth.

**George VI.** (1895-1952), (Albert Frederick Arthur George of Windsor), second son of George V., was called to the throne in December 1936 on the abdication of his elder brother, Edward VIII. His reign was marked by the ordeal of war, by world revolution and social change and at the same time by a remarkable degree of constitutional harmony which his fine example and personal qualities did much to achieve.

**George, Henry** (1839-1897), American political economist whose "single tax" on land values as a means of solving economic problems is expounded in his *Progress and Poverty*, pub. 1879.

**George, Saint**, the tutelary saint of England, adopted by Edward III. He is believed to have been a native of Cappadocia and a vigorous champion of Christianity in the days of Diocletian, and to have suffered martyrdom at Nicomedia 303 A.D. The dragon which he is said to have slain symbolises the powers of evil over which he triumphed.

**German, Sir Edward** (1862-1936), English composer, whose work has the fluency of his master Sir Arthur Sullivan and the melody and charm of English dances and lyrics.

**Gesner, Konrad von** (1516-1565), a scholarly Swiss naturalist, and father of the science of zoology.

**Ghiberti, Lorenzo** (1378-1455), Florentine sculptor whose bronze doors, beautifying the baptistery

in Florence, were described by Michaelangelo as fit for the gates of paradise.

**Gibbon, Edward** (1737-1794), celebrated historian of the *Decline and Fall of the Roman Empire*.

**Gibbons, Grinling** (1648-1720), the celebrated wood-carver and sculptor, was born at Rotterdam and was brought to the notice of Charles II. by Evelyn, the diarist. The choir stalls of St. Paul's and the carving in the Wren library at Trinity College, Cambridge, are his work.

**Gibbons, Orlando** (1583-1625), a noted English composer of Church music who was organist of the Chapel Royal.

**Gibson, Charles Dana** (1867-1944), the famous American black-and-white artist and book illustrator, creator of "the Gibson girl."

**Gide, André Paul Guillaume** (1869-1951) French man of letters, a novelist, dramatist and a poet. His works are characterised by acute psychological analysis and an absolute mastery of style. Awarded the Nobel Prize for Literature in 1947.

**Gielgud, Sir (Arthur) John** (b. 1904), English actor, member of the Terry family. Began by walking on at the Old Vic, and, later, became a Shakespearean actor, making a marked success as Hamlet, Richard III., and Prospero.

**Gigli, Beniamino** (b. 1890), the great Italian operatic tenor of the Metropolitan Opera House, New York. The possessor of a voice of great natural beauty, and one of the finest exponents of the music of Puccini and Verdi.

**Gilbert, Sir Alfred, M.V.O., R.A.,** (1854-1934), sculptor and designer of gold and silver objects. Among his best-known sculptures are *Perseus Arming*, *Icarus*, *Eros* in Piccadilly Circus, the Shaftesbury Memorial and the Duke of Clarence Memorial at Windsor.

**Gilbert, Sir Humphrey** (1539-1583), was knighted by Queen Elizabeth for his bravery in Ireland, and later on made voyages of discovery, and added Newfoundland to the British possessions. He was drowned off the Azores, his memorable last words being, "We are as near to heaven by sea as on land."

**Gilbert, Sir John, R.A.,** (1817-1897) one of the most prolific artists of his time. His illustrations to Staunton's edition of Shakespeare are remarkable for their picturesqueness and dramatic power.

**Gilbert, William** (1543-1603), physician to Queen Elizabeth I, has been called the father of electric and magnetic science. Published his great book on the magnet in 1600.

**Gilbert, Sir William Schwenck** (1836-1911), English humorist and playwright, is best remembered for the "Bab Ballads" and for the famous Savoy series of operas in which he collaborated with Sir Arthur Sullivan. Among the operas were *H.M.S. Pinafore*, *Patience*, *Iolanthe*, *The Mikado*, *The Gondoliers*, and *The Yeomen of the Guard*. The Gilbertian humour of plot and paradox, the kindly satire and the delightful metres combine with Sullivan's music to make the operas unforgettable and ever popular.

**Gill, Arthur Eric Rowton, A.R.A.** (1882-1940), English sculptor and engraver. His first piece of sculpture, *Madonna and Child*, was produced in 1910 and in 1913 he received the commission to carve the Stations of the Cross for Westminster Cathedral. In 1922-23 he carved the relief, *Christ Driving the Money-changers from the Temple*, which is placed at the entrance of Leeds University as a War Memorial. Executed the carvings on Broadcasting House, London; also worked as a designer for printing; the Gill Sans type and the George VI stamps were his designs.

**Gillray, James** (1757-1815), the eminent caricaturist of the time of George III., who produced upwards of a thousand political cartoons.

**Giotto di Bondone** (1266-1337), Italian painter, sculptor, and architect, whose beautiful tower at Florence and his many works of art in various churches there, as well as the churches themselves, form splendid monuments to his memory.

**Gissing, George Robert** (1857-1903), English author whose novels deal with poverty and the sociological problems of his day. *New Grub Street*, *The Unclassed*, *Charles Dickens*, *A Critical Study*, *The Private Papers of Henry Ryecroft* are among his best-known works.

**Giulio Romano or Giulio Pippi** (c. 1492-1546) was

- a pupil of Raphael, and himself a distinguished painter and architect.
- Gladstone, Rt. Hon. William Ewart** (1809-98), the great Liberal statesman of the latter part of the nineteenth century, popularly known as the Grand Old Man. Entered Parliament in 1832 as a Tory, held various offices under Peel, and joined the Aberdeen coalition in 1852. From that time he served several terms as Chancellor of the Exchequer and was Liberal Prime Minister, 1868-74, 1880-85, 1886, and 1892-94. His financial policy was able, accurate, lucidly exposed, and very successful. His first ministry were active, their legislative achievements including the Disestablishment of the Church of Ireland, the Education Act of 1870, the Ballot Act of 1872, and the Irish Land Act, but in 1873 they were aptly described by Gladstone's great rival, Disraeli, as "exhausted volcanoes." His second ministry, returned to power after the astonishing Midlothian campaign, witnessed the defeat by the Boers at Majuba, the bombardment of Alexandria, and the disaster of General Gordon at Khartoum. His last two ministries were marked by the adoption of the policy of Home Rule for Ireland, which he was unable to carry. Gladstone was a good classical scholar and an earnest high churchman, who in 1838 published the *State in its Relations with the Church*, a work of considerable interest.
- Glendower, Owen** (1359-1415), a famous Welsh chieftain who proved a formidable opponent to Henry IV., and gathered around him a great following of Welshmen, whom he led with much bravery, though finally defeated in 1405.
- Gluck, Christoph Willibald** (1714-1787), one of the most eminent composers of opera of the 18th century. *Orfeo* and *Iphigénie* are his best-known works.
- Goddard, Lord, P.C., Q.C.** (b. 1877), Lord Chief Justice of England since 1946.
- Godfrey of Bouillon** (c. 1061-1100) was the leader of the First Crusade, and after the conquest of Jerusalem, exchanged the title of King for that of "Protector of the Holy Sepulchre." He liberated the Holy Land, and was buried on Mount Calvary.
- Godiva, Lady** (1040-1080) was the pious and beautiful wife of Leofric, Earl of Chester and Lord of Coventry. Having appealed to her lord to remit certain impositions from the inhabitants, he promised to grant her request if she would ride naked through the town. This she did, having first passed the word to have blinds and shutters drawn at the appointed hour, and so obtained the people's ransom.
- Godwin, Earl of the West Saxons** (990-1053), was one of the most influential noblemen of his time, and gave his daughter in marriage to Edward the Confessor, against whom he was afterwards in rebellion. Godwin's son, Harold, claimed the throne after Edward's death, but was killed at Hastings.
- Godwin, William** (1756-1836), English Radical philosopher, author of *Political Justice* and a novel, *Caleb Williams*. Married Mary Wollstonecraft (1759-97), author of *A Vindication of the Rights of Women*, in which she pleaded for the equality of the sexes, particularly in education. Their daughter, Mary Wollstonecraft Godwin (1797-1851), married the poet, Shelley, and was the author of *Frankenstein*.
- Goethe, Johann Wolfgang von** (1749-1832), German poet of great gifts and versatility, one of the great world figures to whom we owe our cultural heritage. Born at Frankfurt on Main of a cultivated and well-to-do family, he was able to integrate all the powers with which nature had endowed him in one harmonious personality. Before he went to Weimar at the age of 25 he had written *Götz von Berlichingen* and *Werthers Leiden* and many beautiful lyrics. He settled at Weimar in 1775, received a Ministerial appointment and actively interested himself in the welfare of the state. *Faust*, the great dramatic poem which accompanied him from early manhood to the end, epitomises his whole life and was his crowning achievement. Not only was he a great poet, but scientist and philosopher besides.
- Gogol, Nikolai Vasilievich** (1809-52), one of the greatest of Russian novelists whose stories of provincial life are in the same setting as his masterpiece, *Dead Souls* (1842), of which an English translation appeared in 1906. Was also a playwright, his most successful play being *The Government Inspector* (1836), a satire on provincial bureaucracy.
- Goldsmith, Oliver** (1728-1774), the celebrated author of *The Vicar of Wakefield*, *The Deserted Village*, and *She Stoops to Conquer*. The son of a poor Irish curate, he found his way to London in 1756, subsequently devoting himself entirely to literature, being befriended by Dr. Johnson and held in great esteem by Reynolds, Burke and other eminent men of the time. He was buried in the churchyard of the Temple.
- Goodyear, Charles** (1800-1860), an American, discoverer of the art of vulcanising rubber, by which the utility of the material was greatly extended.
- Goossens, Sir Eugene** (b. 1893), a well-known English composer and operatic conductor. Has been associated with many famous orchestras in both England and America. His compositions include chamber music, orchestral pieces, songs, as well as the operas, *Judith* and *Don Juan*.
- Gordon, Adam Lindsay** (1833-1870), an Australian poet who wrote many stirring ballads and poems, his *Bush Ballads* and *Galloping Rhymes* being a great success. As a settler, however, he failed, and, after numerous unfortunate experiments, committed suicide.
- Gordon, Major-General Charles George, C.B.** (1833-1885), a distinguished soldier, administrator, and earnest Christian, who had a most adventurous, useful, and self-sacrificing career. He saw active service in the Crimea, China, and India, and in 1873 was made Governor of the Equatorial provinces of Egypt. In 1877 he went out to the Sudan for the Egyptian Government, and in 1884 again proceeded thither on behalf of the English Government to deal once more with the difficulties which had arisen consequent on the Mahdi's Rebellion. While defending Khartoum he was murdered by the Mahdi's forces on the palace staircase.
- Gordon, Lord George** (1751-1793), was tried for treason as the instigator of the Anti-Popery riots of 1780, but acquitted on the ground that he had no treasonable intention. Some years later he was committed to Newgate for libelling Marie Antoinette and died there of fever.
- Gorky, Maxim (Alexi Maximovitch Pleshkov)** (1868-1936), Russian novelist and writer whose works are remarkable for their realistic power. Was in turn shoemaker's apprentice, gardener, watchman, scullion on a packet boat and baker's apprentice. In 1892 his first story was published, and he found his vocation. Many of his works have been translated into English.
- Gosse, Sir Edmund, C.B., LL.D., Litt.D.** (1849-1928), a distinguished poet and critic who wrote lives of Gray, Congreve and Dr. Donne, and his *History of 16th Century Literature* and *History of Modern English Literature* show great critical power and appreciation. Was librarian to the House of Lords 1904-14, and wrote a book on French literary men and a life of Sir Thomas Browne. In 1907 he published *Father and Son*, being recollections of his father, the late Philip Gosse, and of his own early career. His *Collected Essays* (5 vols.) were issued in 1913. In 1917 edited *Posthumous Poems of Swinburne*.
- Gould, Sir Francis Carruthers** (1844-1925). Perhaps the cleverest political caricaturist of his day, and did also considerable journalistic work as assistant editor of the *Westminster Gazette*.
- Gould, Jay** (1836-1892), a well-known American financier and railway magnate, who acquired an enormous fortune and considerable notoriety in Wall Street speculations.
- Gounod, Charles François** (1818-1893), the eminent French composer, who won a position of the first rank by his *Faust* produced in 1859, one of the most successful operas of the 19th century. Other famous operas of his are *Roméo et Juliette* and *Le Médecin malgré lui*. He also composed much sacred music of an intensely spiritual character, including his oratorio, *The Redemption*.
- Gower, John** (1325-1408), an English poet of the time of Chaucer, who wrote many elegant ballads and devotional poems. His *Confessio Amantis* was his outstanding work.
- Goya y Lucientes, Francisco Jose** (1746-1828), a



- famous Spanish painter and etcher, and one of the greatest of Spanish artists, and renowned for his wonderful series of etchings and satirical drawings. There are four Goya paintings in the National Gallery. One of his fine portraits is that of the Duchess of Alva. In addition to portraits and genre he painted frescoes in the Cathedral at Saragossa. As versatile as he was facile, he also occupies a high position among etchers.
- Grace, Dr. William Gilbert** (1848-1915), renowned and almost legendary cricketer, who by his character and skill dominated English cricket for over forty years, and was probably the best-known man in England. Altogether in first-class cricket he scored 54,896 runs, including 126 centuries, and took 2876 wickets. Scored 1000 runs in May 1895; and three times made over 300 runs in an innings.
- Graham, John, of Claverhouse, Viscount Dundee** (1643-1689). Renowned for his sturdy adherence to the Stuarts, and headed a rebellion in Scotland against William and Mary, but was killed at the Battle of Killiecrankie.
- Grahame, Kenneth** (1859-1932), as a writer of books for children he ranked almost with Lewis Carroll. He is famous for *The Golden Age*, *Dream Days*, and *Wind in the Willows*, all of which achieved great popularity.
- Grahame-White, Claude** (b. 1879), aviator and engineer. Was the first Englishman to gain an aviator's certificate, 1909; won the Gordon Bennett Cup with the then record speed of 604 miles per hour in 1910, founded the first British Flying School and published many works on aircraft from both the historical and technical aspects.
- Grainger, Percy Aldridge** (b. 1882), U.S.A. citizen, born in Australia, pianist and composer. A brilliant player and an authority on folk song, the influence of which is apparent in all his compositions.
- Grant, General Ulysses Simpson** (1822-1885), the most distinguished American general of the Civil War. Was President of the United States from 1869 to 1876.
- Granville-Barker, Harley, D.Litt., LL.D., F.R.S.I.** (1877-1946), distinguished English dramatist, producer, and actor. Introduced plays of Ibsen and Shaw to British public. His own plays reflect influence of Shaw, and are particularly notable for their realistic dialogue.
- Grattan, Henry** (1746-1820), an Irish orator and statesman who, first in the Irish Parliament and afterwards in the Imperial Parliament, did memorable work for the cause of his country.
- Gray, Thomas** (1716-1771), the English poet, whose *Elegy written in a Country Churchyard* is one of the most beautiful in the language. His other poems were not numerous but included a fine *Ode on a Distant Prospect of Eton College* and a notable *Ode to Adversity*.
- Greeley, Horace** (1811-1872), founder of the *New York Tribune* and a political writer of great power and influence. Was an unsuccessful candidate for the United States Presidency in 1872.
- Green, John Richard** (1837-1883), an eminent English historian. Published a *Short History of the English People* in 1874.
- Greenaway, Kate** (1846-1901), a gifted book illustrator and water-colour artist, whose drawings of children were full of charm and delicacy and gained her great popularity and the warm approval of no less a critic than Ruskin.
- Greene, Graham** (b. 1904), author of the novels *Brighton Rock*, *The Power and the Glory*, *The Heart of the Matter* and a play *The Living Room*.
- Greenwood, Rt. Hon. Arthur, C.H.** (1880-1954), Lord Privy Seal, 1945-47; Minister without Portfolio, 1947. M.P. for Nelson and Colne, 1922-31 and for Wakefield, 1932-54. Prominent in educational and labour work.
- Gregory, St.** (257-336), was founder of the Armenian Church, and spent his last years in a cave at the foot of Mount Sebul.
- Gregory the Great, St.** (c. 540-604), Pope 590-604. The last great Latin Father and the forerunner of scholasticism. The real founder of the temporal power and the political influence of the papacy, he also maintained the spiritual claims of Rome, enforcing discipline, encouraging monasticism, defining doctrine, and adding to the music, liturgy, and canons of the Church. Thus he exerted enormous influence on the life and thought of the Middle Ages.
- Gregory VII** (c. 1020-85), Pope from 1073. Originally called Hildebrand. Battled for papal omnipotence within the Church, stamping on simony and the marriage of priests. His victory in the conflict of empire and papacy came when the emperor, Henry IV, did penance for three days in the snow at Canossa, but had the unfortunate result of leading to further internal dissensions in Germany and to papal absorption with power politics rather than to Gregory's aim of an ideal theocracy embracing all States.
- Gregory XIII** (1502-85), Pope, 1572-85; introduced the Gregorian calendar.
- Grenfell, Sir Wilfred Thomason, K.C.M.G., M.D.** (1865-1940), was Supt. of the International Grenfell Assn. 1911-40; Lord Rector of St. Andrews University, 1929-31. For 40 years worked among the deep-sea fisherman of Labrador, where he built hospitals, nursing stations and fitted out hospital ships. Author of several books on his work in Labrador.
- Grenville, Sir Richard** (1541-1591), the Elizabethan sea-captain, who with his one ship engaged a fleet of Spanish war-vessels off Flores, in 1591, was captured and shortly after died on the Spanish flagship *San Pablo*, an exploit celebrated in Tennyson's noble ballad, *The Revenge*.
- Gresham, Sir Thomas** (1519-1579), was the wealthiest London merchant and financier of his time. He built the first Royal Exchange and founded Gresham College. The son of Sir Richard Gresham (Lord Mayor of London), he succeeded his father as King's Agent at Antwerp, and proved an astute money-finder for the Court in four successive reigns, ending as Queen Elizabeth's "Royal Merchant."
- Greuze, Jean Baptiste** (1725-1805), French painter, whose works, especially his studies of girls, display much delicacy and beauty of handling.
- Grey, Charles, 2nd Earl, K.G.** (1764-1845), a great English Whig statesman under whose Premiership were passed the Reform Bill of 1832, the Bill abolishing slavery throughout the British Empire (1833), and the Poor Law Amendment Act, 1834.
- Grey, Lady Jane** (1537-1554), was the daughter of the Duke of Suffolk and great-granddaughter of Henry VII. On the death of Edward VI, she was proclaimed Queen, but only reigned for ten days, Queen Mary ousting her and maintaining the Tudor succession. Six months later Lady Jane and her husband, Lord Guildford Dudley, were executed.
- Grey of Fallodon, 1st and only Viscount, K.G., P.C.** (1862-1933). Under-Secretary for Foreign Affairs, 1892. Foreign Secy., 1905-16. He won high approval for his handling of the Balkan difficulties of 1912-13, and all through the difficult strain which preceded Germany's rush into war acquitted himself with force and dignity. Leader of Liberal Party in House of Lords until Aug. 1924. Chancellor of Oxford Univ., 1928-33.
- Grieg, Edvard Hagerup** (1843-1907), a Norwegian musical composer, who presented the characteristics of his country's music with strong accentuation in numerous compositions of great melodic beauty.
- Griffin, His Eminence Cardinal Bernard William** (b. 1899), Roman Catholic Archbishop of Westminster since 1943.
- Griffith, Arthur** (1872-1922), was the first President of the Irish Free State 1921; founder and first editor of *Sinn Féin* 1906-15, and founder of the *Sinn Féin* movement.
- Griffith, David Wark** (1880-1948), pioneer American film producer. Noted especially for his remarkable films *Broken Blossoms* and *The Birth of a Nation*. Invented much of the technique of the modern cinema, such as the close-up, the flash-back, and the fade-out, and developed many famous stars, including Mary Pickford, L. Barrymore, and D. Fairbanks, Sr.
- Grimm, the brothers Jakob Ludwig Karl** (1785-1863) and **Wilhelm Karl** (1786-1859), German philologists and folk-loreists who wrote the world-famous *Fairy Tales*. They planned a gigantic etymological dictionary of the German language, which is being completed by German scholars.
- Grimthorpe, 1st Baron, LL.D.** (1816-1905), was long known as Sir Edmund Beckett, Bt., K.C.

- Was a great authority on horology, and, with Professor Sir George Airy (q.v.), designed "Big Ben." He restored St. Albans Cathedral at his own cost.
- Gromyko, Andrei A.** (b. 1908). Russian diplomat and Deputy Foreign Minister. Ambassador to Britain, 1952-3, and to the U.S.A., 1943-46. Representative of the Soviet Union on the U.N. Security Council, 1946-49.
- Gronchi, Giovanni** (b. 1888), succeeded Signor Einaudi as President of the Italian Republic in 1955 and is a member of the left-wing of the Christian Democrat Party.
- Grossmith, George** (1847-1912), the well-known actor and entertainer. His father, George Grossmith the elder, was also a popular entertainer and lecturer, his brother, Weedon Grossmith, was an actor and artist of considerable attainments, and his son, George Grossmith (1874-1935), was a successful comedian, and the first to introduce revue and also cabaret entertainment into England.
- Grote, George** (1794-1871), English historian famous for his *History of Greece*, 1846-56, an epoch-making and standard work.
- Grofius, Huig van Groot** (1583-1645), Dutch jurist, the founder of international law. He was condemned to life imprisonment for supporting religious toleration but made a daring escape and found refuge in Paris, where he wrote his masterpiece *De Jure Belli et Pacis*.
- Grouchy, Marshal Emmanuel, Marquis de** (1766-1847), a famous Napoleonic general who, at Hohenlinden, Wagram, and in the Moscow retreat rendered signal service. After Waterloo he led the defeated army back to Paris.
- Grove, Sir George** (1820-1900) was a distinguished engineer and bridge and lighthouse builder, but better known as an enthusiastic lover of music, the study and performance of which in England he did much to promote. His *Dictionary of Music and Musicians* is the leading work of its kind.
- Grunther, Gen. Alfred M.** (b. 1899), succeeded Gen. Ridgway as Supreme Allied Commander Europe, 1953-.
- Guedalla, Phillip, M.A.** (1889-1944), was an English historian and essayist. Author of *The Partition of Europe* (1914), *The Second Empire* (1922), *Palmerston* (1926), *The Missing Muse* (1929), *The Duke* (1931), and other works.
- Guido Reni** (1575-1642) was one of the eminent Italian painters of the Bolognese school. His *Michael Vanquishing Satan*, *Magdalene*, and *The Massacre of the Innocents* are among the world's great pictures.
- Guitry, Sacha** (b. 1885), French dramatist and actor-manager, who has also appeared in films.
- Gustavus Adolphus, King of Sweden** (1594-1632), the "Lion of the North," after a lengthy campaign in Poland, entered the Thirty Years' War in support of Swedish interests and Protestant distress, won the Battle of Breitenfeld in 1631, and was killed in action the next year. Succeeded by his daughter, Christina, and his policy carried on by his minister, Oxenstierna.
- Guy, Thomas** (1644-1724), founder of Guy's Hospital, was a dealer in Bibles, speculator and money-lender, who after making a large fortune, bequeathed £300,000 for the erection and endowment of the famous hospital.
- Gwynne, Nell** (1650-1687), was originally, it is said, an orange girl of provincial birth, and afterwards a sprightly London dancer and actress, who became mistress to Charles II. Her eldest son was made Duke of St. Albans.
- H**
- Haakon VII., K.G., G.C.B., G.C.V.O.** (b. 1872), became King of Norway, Nov. 1905. 2nd son of Frederick VIII., King of Denmark. As Prince Charles he married Maud, youngest daughter of King Edward VII. Lived in England during German occupation of Norway.
- Hadfield, Sir Robert Abbott, Bt., F.R.S.** (1858-1940), English metallurgist whose discovery of manganese steel in 1882 brought him recognition from every steel producing country. Inventor also of silicon steel and many other special alloy steels and metallurgical improvements.
- Hadrian** (76-138) was Emperor of Rome in succession to his uncle Trajan, and one of the greatest of Roman rulers. He visited Britain, and in A.D. 121 built the wall between Newcastle and Carlisle for protection of his dominions against the Picts and Scots.
- Haeckel, Professor Ernst Heinrich** (1834-1919), an eminent German scientist and philosopher, and Professor of Zoology at Jena University. An earnest supporter of the Evolution theory, his writings became popular throughout Europe.
- Haifi, pseudonym of Shams ad-Din Mohammed** (1320-1389), great Persian lyrical poet. His principal work is the *Divan*, a collection of short sonnets called *ghazals*. The sobriquet *Haifi*, meaning one who remembers, is applied to any one who has learned the Koran by heart.
- Haggard, Sir Henry Rider, K.B.E.** (1856-1925), novelist who after one or two failures made a brilliant success with *King Solomon's Mines* in 1886, followed by *She, Jess*, and others.
- Hahnemann, Samuel Christian Friedrich** (1755-1843), the German physician who founded the system of homeopathy.
- Haig, Field-Marshal, 1st Earl of Bismersyde, K.T., G.C.B., O.M., G.C.V.O., K.C.I.E.** (1861-1928), C-in-C. of the British Expeditionary Forces in France and Flanders, 1915-19. His name is associated with the sale of poppies in aid of the British Legion.
- Haile Selassie I., G.C.B., G.C.M.G., G.C.V.O.** (b. 1891), Emperor of Ethiopia, April 1930 to May 1936, and since May 1941.
- Hakluyt, Richard** (1553-1616), the first of English naval historians. By his *Divers Voyages touching the Discovery of America, and Principal Navigations, Voyages, and Discoveries of the English Nation*, did much to help forward the colonising spirit.
- Haldane, Prof. John Burdon Sanderson, F.R.S.** (b. 1892), one of the ablest and most brilliant of present-day biologists; Prof. of Genetics, University College, London University, 1933-36. Prof. of Biometry, University College, London since 1937.
- Haldane, Viscount, P.C., K.T., O.M., F.R.S.** (1856-1928), sat for Haddingtonshire, 1885-1911. In 1901 was Vice-President of the Liberal Imperialist League, and at the close of 1905 was made War Minister and organised the Territorial Force. Lord Chancellor, 1912-15, and again in first Labour Government, 1924.
- Halévy, Ludovic** (1834-1903), a brilliant French writer who supplied Offenbach with libretti for some of his most famous comic operas; among them *La Belle Héloïse*, *La Grande Duchesse*, and *Barbe Bleue*. In conjunction with Meilhac he wrote several notable plays, of which *Frou-frou* was perhaps the most successful.
- Halifax, Charles Montague, Earl of** (1661-1715), seventeenth century financier who was responsible for the National Debt, the window tax, the revaluation of the currency, and the foundation of the Bank of England.
- Halifax, Edward F. L. Wood, Baron Irwin and 1st Earl of, K.G., P.C., O.M., G.C.S.I., G.C.I.E., T.D.** (b. 1881), has filled many difficult positions with distinction and success and was especially notable as Viceroy of India, 1926-31, Foreign Secretary, 1938-40, and British Ambassador in Washington, 1940-45. Has written a life of John Keble and been prominent in the life of the Church of England. Chancellor of Oxford University since 1933.
- Halifax, George Savile, Marquess of** (1633-95), author of *Advice to a Daughter and Character of a Trimmer*, was a gifted and independent politician, pamphleteer, and orator.
- Hallam, Henry** (1777-1859), a graceful and scholarly historian who contributed several important works. His *View of the State of Europe during the Middle Ages*, *Constitutional History of England*, and *Introduction to the Literature of Europe* are distinguished for their clearness of style and correctness of judgment.
- Hallé, Sir Charles** (1819-1895), a distinguished pianist and conductor who was born in Westphalia. Went to Paris to study music in 1836, and in 1848 settled in London, where he soon became known as a piano-player of the first rank. He organised an orchestra of high-class talent, and for many years conducted it in London and the provinces. He married Madam Norman Neruda (d. 1911), the celebrated violinist in 1888, and was knighted the same year.



**Halley, Edmund, F.R.S. (1656-1742)**, English Astronomer Royal from 1720 to his death and ranked next to Newton among the scientific Englishmen of his time. Made first magnetic survey of the oceans from the naval vessel *Paramour*, 1698-1700. Discovered what is known as Halley's comet.

**Hals, Franz (1584-1666)**, a famous painter of the Dutch School, who is represented in the leading galleries of Europe. The Wallace Collection has his world-famous picture, the *Laughing Cavalier*.

**Hamilton, Alexander (1757-1804)**, American statesman and economist, opponent of Thomas Jefferson, served as Secretary of the Treasury in Washington's cabinet from 1789-95. Though a monarchist by predilection, he urged the adoption of the Constitution, and in conjunction with Madison and Jay wrote the *Federalist*. Report on *Manufactures* proved a mine of arguments for future protectionists. Founded the Bank of New York. Killed in a duel with a political rival.

**Hamilton, Emma Lyon, Lady (1761-1815)**, was a woman of humble birth and great personal beauty who attained prominent notice by her association with Sir William Hamilton, British Ambassador at Naples, who married her, and afterwards with Lord Nelson, who conceived an infatuation for her.

**Hammarskjöld, Dag Hjalmar Agne Carl, D.Phil., Dr.Econ. (b. 1905)**, succeeded Mr. Trygve Lie in 1953 as Sec.-Gen. of the United Nations.

**Hammond, John Lawrence Le Breton (1872-1949)**, English journalist and historian whose works on social and industrial history, written mainly in collaboration with his wife, Barbara Hammond, include *The Village Labourer*, 1911; *The Town Labourer*, 1917; *The Skilled Labourer*, 1919; *The Rise of Modern Industry*, 1925; and *The Age of the Chartists*, 1930.

**Hamden, John (1594-1648)**, the English patriot who opposed Charles I.'s "Ship Money" tax, and by his resistance and eloquent advocacy of the wish of the people helped the Parliamentary cause.

**Hamsun, Knut**, pen-name of Knut Pedersen (1859-1952), Norwegian author and farmer, who in his youth struggled for existence, visited America twice and earned his living by casual labour. His works include *Sult (Hunger)*, which made him famous, and *Markens Grode (Growth of the Soil)*, which gained him the Nobel Prize in 1917. He preached an anti-materialist romantic gospel and was in sympathy with Nazi ideals.

**Handel, George Frederick (1685-1759)**, a German musical composer of great eminence, who passed most of his life in England, composing operas and musical compositions of many kinds, and ultimately achieving world-wide fame by his great series of oratorios, including *Esther*, *Deborah*, *Saul*, *Israel in Egypt*, *The Messiah*, *Samson*, and *Judas Maccabaeus*. Undoubtedly the greatest oratorio writer the world has produced. Was buried in Westminster Abbey.

**Hankey, 1st Baron, P.C., G.C.B., G.C.M.G., G.C.V.O., F.R.S. (b. 1877)**, Secretary to the Committee of Imperial Defence, 1912-28, to the War Cabinet, 1916-17, and to the Cabinet, 1919-33. Successfully organised the Cabinet Secretariat to cope with the problems raised by war and coalition, and proved it so valuable that it was maintained in times of peace. Was secretary at many conferences between the wars, including the Peace Conference, 1919, and five imperial conferences.

**Hannibal (247-183 B.C.)**, the renowned Carthaginian general, who led an army against Rome, and achieved many notable victories over superior numbers. Was defeated by Scipio at the Battle of Zama, and afterwards suffered exile, and poisoned himself.

**Harcourt, Rt. Hon. Sir William Vernon, F.R.S. (1827-1904)**, barrister, author, Liberal statesman. An enthusiastic supporter of Mr. Gladstone.

**Hardicanute (1019-1042)**, son of Canute the Great, was King of England from 1040 to 1042, and imposed the tax called Danegelt. He was the last Danish sovereign of this country.

**Hardie, James Keir (1856-1915)**, a Socialist politician and Labour representative who acted as editor of the *Miner* and the *Labour Leader* from 1887 to 1904. During his early life he worked in a Scottish coal pit, but in 1882 became

a journalist, and entered Parliament as member for West Ham (South) in 1892-95, being the first Socialist to be elected to the House of Commons. First Chairman of the Parliamentary Labour Party, 1906-8, M.P. for Merthyr Tydvil from 1900 till his death.

**Hardinge of Penshurst, 1st Baron, K.G., P.C., G.C.B., G.C.S.I., G.C.M.G., G.C.I.E., G.C.V.O., I.S.O.**, formerly Sir Charles Hardinge (1858-1944), filled many important diplomatic appointments between 1880 and 1906—at Constantinople, Berlin, Washington, and Petrograd. Permanent Under-Secretary of State for Foreign Affairs, 1906-10 and 1916-20. From 1910-16 was Viceroy of India. Ambassador in Paris, 1920-22.

**Hardwicke, Sir Cedric Webster (b. 1893)**, English actor who made his debut in *The Monk and the Woman* in 1912. Has acted in many Shaw and Shakespearian plays, and is also a distinguished film actor.

**Hardy, Thomas, O.M. (1840-1928)**, was educated as an architect and practised for some time, but became known as a promising novelist in 1871 with his story *Desperate Remedies*. In 1874 his *Far from the Madding Crowd* was published, which at once made him a name. Following that, at short intervals, came a long series of powerful novels from his pen. Perhaps the most notable of his stories are *The Trumpet Major*, *The Mayor of Casterbridge*, *Tess of the D'Urbervilles*, and *Jude the Obscure*. In 1908 he completed a dramatic poem entitled *The Dynasts*, whose central figure is Napoleon.

**Hargreaves, James (1720-1778)**, was a poor Lancashire-born mechanic who invented the spinning jenny, one of the revolutionising labour-saving contrivances of the latter half of the 18th century. It met with much opposition, however, and kept him poor, though the community afterwards reaped the advantage in a greatly improved industry.

**Harkness, Edward Stephen, B.A., M.A., LL.D. (1874-1940)**, was a banker and one of America's greatest philanthropists. Donor of the Pilgrim's Prize of £2,000,000 to Great Britain; founded in 1930 the Pilgrim Trust in appreciation of Great Britain's acceptance of financial burdens in the Great War of 1914-18.

**Harley, Robert, 1st Earl of Oxford, K.G., P.C. (1661-1724)**, a distinguished Tory statesman—originally, however, a Whig—of the Queen Anne period, who fell into disgrace after that Sovereign's death in consequence of being suspected of intriguing with the Stuarts. He served at different times as Speaker of the House of Commons, Chancellor of the Exchequer, and Lord Treasurer. "The Harleian Collection" in the British Museum is a reminder of his cultured literary tastes.

**Harold II. (1022-1066)**, the last of the Saxon Sovereigns of England, and the son of Earl Godwin, was crowned King in succession to Edward the Confessor in 1066. The coming of William the Conqueror, with his great army, soon, however, put an end to the hopes of Harold and his followers; and the Battle of Hastings terminated at once his life and Saxon sway in this country.

**Haroun-Al-Raschid (763-809)**, the famous Caliph of Bagdad, familiar to all by the references to him in the *Arabian Nights*—a wise and powerful ruler.

**Harriman, William Averell (b. 1891)**, adviser to Pres. Truman on defence and foreign policy and special representative in Europe of U.S. Government in connection first with the Marshall Plan and later with the Mutual Security Agency, 1948-52.

**Harris, Marshal of the R.A.F. Sir Arthur Travers, Bt., G.C.B., O.B.E., A.F.C. (b. 1892)**, head of Bomber Command, 1942-45.

**Harris, Joel Chandler (1848-1908)**, American journalist and author, famous as the creator of "Uncle Remus." The negro humour of his stories brought him world-wide popularity among adults and children alike. His Brer Rabbit in the Uncle Remus negro folk-tales was the forerunner of Mickey Mouse, impudently victorious in every contest against fearful adversaries.

**Harrison, Frederic (1831-1923)**, as leader of the English Philoivists, filled a prominent part in philosophical discussions during the last quarter

- of the 19th century. In 1907 he published *The Creed of a Layman* and *The Philosophy of Common Sense*, and in 1908 *Realities and Ideals*.
- Harrison, John** (1698-1776), the inventor of the chronometer, for which he received the Government grant of £20,000, was a mechanic of great ingenuity, who effected many important improvements in clocks, watches, and other instruments. In 1715 he made an 8-day clock with wooden wheels, which is still working in the Science Museum, South Kensington.
- Harte, Francis Bret** (1839-1902), the American poet and author, who leapt into popularity in the late 'sixties by his clever sketches and stories of Californian mining life.
- Harty, Sir (Herbert) Hamilton, Mus. Doc.** (1880-1941), was a well-known British composer and conductor. Conductor of Hallé Orchestra 1920-33; Musical Adviser and Conductor-in-Chief of London Symphony Orchestra 1932-41.
- Harvey, William** (1578-1657), an English doctor and scientist who rose to great eminence both as an anatomist and physiologist, and became Physician Extraordinary to James I. He immortalised himself by discovering the circulation of the blood in 1616.
- Hastings, Sir Patrick, Q.C.** (1880-1952), lawyer, politician, and playwright. Attorney-General in first Labour Government, 1924. Author of *The Blind Goddess*.
- Hastings, Warren** (1732-1818), at the age of seventeen went out to Bengal and took a position as writer in the East India Company's service. Subsequently volunteered under Clive, and a year or two later became a Member of the Council at Calcutta. Manifesting great ability, he was advanced from post to post, and in 1773 became the first Governor-General of India. After twelve years of Governor Generalship he returned to England, and was impeached on charges of excessive cruelty and corruption. The trial lasted seven years, and cost Hastings £76,000. He was ultimately acquitted, and the East India Company settled an annuity of £4,000 upon him, and he lived to see his plans for the security of British rule in the Orient publicly applauded.
- Hauptmann, Gerhart** (1862-1946), one of the leading dramatic poets of Europe. Born in Silesia, he devoted himself first to agriculture, then to art, and subsequently to the drama, and lived in Rome, Berlin, Switzerland, and the United States. Produced many plays, including *The Weavers*. Winner of the Nobel Prize for Literature, 1912.
- Havelock, Major-Gen. Sir Henry, K.C.B.** (1795-1857), one of the heroes of the Indian Mutiny, who led the troops to the relief of Cawnpore and Lucknow.
- Hawke, Edward, 1st Baron, K.C.B.** (1705-1781), one of the great admirals of the 18th century. He won a brilliant victory over the French fleet at Quiberon in 1759 in a tremendous storm.
- Hawkins, Sir Anthony Hope** (1863-1933), a popular novelist and playwright. Amongst his best-known works were *The Prisoner of Zenda*, *The Dolly Dialogues*, and *Rupert of Hentzau*.
- Hawkins, Sir John** (1532-1595), a brilliant naval officer of the Elizabethan period, who did much sea fighting in many climes, and served as vice-admiral in the expedition against the Spanish Armada, for which he was knighted.
- Hawthorne, Nathaniel** (1804-1864), one of the most distinguished novelists that America has produced. *The Scarlet Letter* and *The Blithedale Romance* are his greatest novels.
- Haydn, Franz Joseph** (1732-1809), an Austrian musical composer whose oratorio *The Creation* ranks with the *Messiah* of Handel. It was composed in his 64th year, and two years later still he composed *The Seasons*, perhaps the most characteristic of all his works. He was for thirty years chapel-master to Prince Esterhazy, and wrote 125 orchestral symphonies.
- Hazlitt, William** (1778-1830), one of the most admired of our essayists and critics. His *Characters of Shakespeare's Plays* and his published lectures on the poets and dramatists, besides his *Table Talks*, are still widely read. His son William (1811-1893) was also of literary tastes, though he became Senior Registrar in the Bankruptcy Court; and the son of the latter, William Carew Hazlitt (1834-1913), though originally a civil engineer, entered largely into journalism and authorship, and acquired celebrity as a bibliographer and numismatist, writing and editing many books.
- Healy, Timothy Michael, K.C.** (1855-1931), Governor-General, Irish Free State, Dec. 1922-28, a prominent Irish M.P. from 1880, who sat successively for Wexford, Monaghan, Londonderry, Longford, Louth and Cork. Was a prominent Land Leaguer, and was imprisoned for a fiery speech in 1882.
- Hearst, William Randolph** (1863-1951), American newspaper proprietor who began by editing the *San Francisco Examiner* in 1887, and was until 1938 head of the largest newspaper firm in the world.
- Hedin, Dr. Sven Anders, Hon. K.C.I.E.** (1865-1952), a Swedish traveller who made discoveries in Central Asia, and wrote extensively thereon.
- Hegel, Georg Wilhelm Friedrich** (1770-1831), a famous German philosopher and professor who taught that truth or reality has three aspects revealing itself in dialectical development (Thesis, Antithesis, Synthesis) and identified reality with rationalism. He wrote many important works, among which are *The Phenomenology of the Spirit*, *The Science of Logic*, *Philosophy of Right*.
- Heidenstam, Carl Gustaf Werner von** (1859-1940), Swedish author and one of the most brilliant and outstanding figures in Swedish literature. Received Nobel Prize for Literature, 1916.
- Heifetz, Jascha** (b. 1901), Russian-born violinist who became a naturalised American. Studied with Auer in St. Petersburg. Was the first musician to win a reputation in England by gramophone records before his first personal appearance there. Is skilled in technique and a fine interpretative artist.
- Heine, Heinrich** (c. 1797-1856), the German lyric poet, who lived for the best part of his life in Paris, and produced from time to time poems of profound beauty and subtlety of thought. Cynical, satirical, and often bitter, many of his writings excited great conflict of opinion, and showed intense emotional power.
- Helmholtz, Hermann Ludwig Ferdinand von** (1821-94), the great German physicist and physiologist, immortalised by the Young-Helmholtz theory of the nature of light. He also did important work in the fields of conservation of energy, hydro-dynamics, electro-dynamics, meteorological physics and optics.
- Helmont, Jan Baptista van** (1577-1644), Belgian chemist who devoted himself to the study of gases. His chief work is *Ortus medicinarum* (1648).
- Héloise** (c. 1101-64), niece of Canon Fulbert of Notre Dame. Famed for her romantic attachment to Abelard. (See Abelard.)
- Helpmann, Robert Murray** (b. 1909), Australian-born actor, ballet dancer, and choreographer. Became premier danseur, Sadler's Wells Ballet, 1933, and has appeared in several films, including *Henry V* and *The Red Shoes*.
- Hemingway, Ernest** (b. 1898), American novelist and author of the three celebrated novels, *A Farewell to Arms*, *Death in the Afternoon*, and *For Whom the Bell Tolls*. Nobel Prize 1954.
- Hempel, Frieda** (b. 1885), German singer. Made her début in Opera in 1905 at Berlin Opera House, to which she was attached as leading Coloratura soprano. American and British critics have acclaimed her as the greatest exponent of soprano rôles in Mozart and the Italian operas. Has given numerous Jenny Lind concerts.
- Heuderson, Rt. Hon. Arthur**, (1863-1935), President of World Disarmament Conference, 1932-35; Leader of the Labour Party, 1931-32; Foreign Secretary, 1929-31; Home Secretary, 1924. Awarded the 1934 Nobel Peace Prize.
- Henley, William Ernest** (1849-1903), English poet and journalist, a close friend of R. L. Stevenson. Was Editor of the *Scots Observer* in 1889, and later the *National Observer*, in which he first published the *Barrack-Room Ballads* of Kipling, with whose work his own has much in common.
- Henrietta Maria** (1609-1669), the daughter of Henry IV. of France and wife of Charles I.
- Henry I.** (1068-1135), youngest son of William the Conqueror, came to the throne in 1100 during the absence of his elder brother Robert on



Crusade, and later had to fight and imprison the latter. He was an able administrator and a strong ruler to whom, with his grandson Henry II, we owe in a great measure the establishment of the Common Law system and many permanent administrative reforms.

**Henry II.** (1133-1189) was King of England from 1154 to 1189. He had serious conflicts with the Church, which were not rendered less acute by the assassination of Thomas à Becket. The story of *Fair Rosamond* is connected with this monarch.

**Henry III.** (1207-1272), King of England from 1216 to 1272. Was at war with his barons for the greater part of his reign, and incurred much unpopularity by his reckless living and patronage of foreign favourites.

**Henry IV.** (1367-1413), reigned from 1399 to 1413. The son of John o' Gaunt, he succeeded his father in the Duchy of Lancaster in 1399, and later captured and imprisoned Richard II., who was deposed by Parliament and the crown given to Bolingbroke as the grandson of Edward III. Henry IV. thus became the first of England's Lancastrian Kings.

**Henry IV. of France** (Henry of Navarre) (1553-1610), prior to becoming king was the leader of the French Huguenots, and although going over to the Catholics on being crowned, remained in sympathy with the Protestants and protected them by the famous Edict of Nantes. Ravalliac, a religious fanatic, assassinated Henry.

**Henry V.** (1387-1422), reigned from 1413 to 1422, and distinguished himself in the wars with France, the Battle of Agincourt being his greatest triumph. Is said to have been wild and dissolute in his youth, but made an able, energetic and undoubtedly courageous king.

**Henry VI.** (1421-1471), King of England from 1422 to 1461. Succeeding to the throne under a protectorship as a baby nine months old, he had a troubled reign, including a long war with France and loss of French possessions, the Jack Cade Insurrection, and the beginning of the Wars of the Roses, which led to his deposition and the enthronement of Edward IV. by the triumphant Yorkists. Was imprisoned in the Tower, and there found dead one day in 1471. Founder of Eton and of King's College, Cambridge.

**Henry VII.** (1457-1509), the first of the Tudor line, reigned from 1485 to 1509, succeeding Richard III., after defeating and killing him on Bosworth Field. Was very avaricious, yet able, and accumulated vast treasure. He built the Gothic Lady Chapel of Westminster Abbey, and is there buried.

**Henry VIII.** (1491-1547), reigned from 1509 to 1547. A luxury-loving monarch of great diplomatic gifts, and unscrupulous to a degree when his own personal desires were concerned. His quarrels with the Church resulted in the acceptance of the Reformation. His half-dozen matrimonial exploits, his deposition of Wolsey and his suppression of the monasteries are familiar incidents of history. Less known is the foundation of the modern navy with the establishment of the Navy Office in 1540.

**Henry "the Navigator"** (1395-1460), a Portuguese Prince, son of John I. He discovered Madeira and the Azores, and was the chief instrument of the national impetus for navigation.

**Henschel, Sir George,** Mus.D. (1850-1934), English baritone singer, composer and conductor; born in Breslau, he became a naturalised Englishman in 1890. Founder and part conductor of London Symphony Concerts, 1886.

**Henson, Rt. Rev. Herbert Hensley** (1863-1947), Bishop of Durham, 1920-38; Bishop of Hereford, 1917-20; Dean of Durham, 1912-17. A distinguished Churchman, noted for his broad Church ideas and as an exponent of literal theology and advocate of close co-operation with Nonconformists. A formidable controversialist, and was one of the leading advocates of the reformed Prayer Book.

**Hepplewhite, George** (d. 1786). One of the four great English 18th-century cabinet-makers. He was a contemporary of Chippendale, Robert Adam and Sheraton. His name is identified with the style of furniture which followed the Chippendale period.

**Heraclitus** (c. 535-475 B.C.), a Greek philosopher, chiefly famous for his doctrine that everything

is in a state of flux. He regarded fire as the primordial element.

**Herbert, Sir Alan Patrick** (b. 1890), the well-known English author and humorist and writer of comic operas. M.P. for Oxford Univ. 1935-50. As a private member created a personal triumph by introducing and securing the passage of a Bill amending the Divorce Law, July 1937.

**Herbert, George** (1593-1633), the most purely devotional of English poets.

**Hereward the Wake**, the last of the Saxon nobles to hold out against the Normans. Taking refuge in the Fen country, he long defied the Conqueror's forces, but was at last betrayed into the enemy's hands by monks. William afterwards honoured him with a place at Court.

**Herod the Great** (c. 73-4 B.C.), the tyrannical king of Judæa who secured the title from Marc Antony in 37 B.C. This was the Herod who was ruling when Christ was born and who ordered the massacre of the Innocents.

**Herodotus** (c. 485-425 B.C.), the great Greek historian, called by Cicero the father of history. He has also been called the father of anthropology.

**Herrick, Robert** (1591-1674), an English lyric poet, unrivalled in his own field. Author of *Gather ye Rose Buds, Cherry Ripe, Oberon's Feast*, etc.

**Herriot, Edouard** (b. 1872), President of French National Assembly, 1947-54. A much-travelled scholar, Mayor of Lyons for more than a generation, three times Prime Minister, and the recognised spokesman of the Left-Centre party, so long dominant in French politics.

**Herschel, Sir John Frederick William, Bt., F.R.S.** (1792-1871), a celebrated astronomer who did much to extend the power of the telescope.

**Herschel, Sir William, F.R.S.** (1738-1822), great astronomer, father of the last-named, discovered the planet Uranus. His sister, Caroline Lucretia (1750-1848), won attention for her *Index to Flamsteed's Observations of the Fixed Stars and Errata*.

**Hertz, Heinrich** (1857-1894), German physicist who demonstrated the similarity between electric-magnetic light and heat waves, and worked at electric discharges in gases.

**Hertz, the Very Rev. Joseph Herman, C.H.** (1872-1946). Chief Rabbi of the British Empire, 1913-46. Was Rabbi at Johannesburg from 1898 to 1911, and from 1911 to 1913 Rabbi in New York.

**Hertzog, General the Hon. James Barry Munnik** (1866-1942), South African nationalist leader. Prime Minister, 1924-39; Minister of External Affairs, 1929-39.

**Herzl, Theodor** (1860-1904), founded modern political Zionism.

**Hesiod** (flourished c. 735 B.C.), ancient Greek nature poet, author of the poems *Work and Days*, which tells of life in the country, and *Theogony*.

**Hess, Dame Myra, D.B.E.** (b. 1890), English pianist. Made her debut in 1907, and won an immediate success, showing herself to be an interpretative artist of high rank. She excels in the earlier classics, Scarlatti, Bach and Mozart, but is equally admired in her presentation of the romantic composers and her first performances of contemporary pianoforte works.

**Hewart, 1st Viscount, P.C.** (1870-1943), Lord Chief Justice of England, 1922-40.

**Heyworth, Geoffrey, 1st Baron** (b. 1894), British industrialist; Chairman of Unilever Ltd. since 1942. He has served on many industrial, scientific, and educational committees and is Chairman, Court of Governors, Administrative Staff College.

**Hicks, Sir (Edward) Seymour** (1871-1949), a popular London light comedian and dramatic author who married Miss Ellaline Terriss, and played in association with her in many charming productions.

**Hill, Octavia** (1838-1912), a noted pioneer English social reformer who took a practical interest in the housing conditions of the poor, and a pioneer in slum clearance in London. Helped to institute the Charity Organisation Society, and was one of the first women to sit on a Royal Commission.

**Hill, Sir Rowland, K.C.B., F.R.S.** (1795-1879), the first propounder of the idea of the penny postal system, and secretary to the Postmaster-General from 1846 to 1854, after which he was Chief Secretary to the Post Office until 1864. Buried in Westminster Abbey.

**Hindenburg, Field-Marshal Paul von** (1847-1934),

- Was President of the German Reich, 1925-34. He played an important part in the War of 1914-18 and was Chief of the General Staff, 1916-18.
- Hippocrates** (460-357 B.C.) the Father of Medicine. Was a native of Thessaly, and practised and taught in Athens.
- Hirohito**, Emperor of Japan (b. 1901), acceded to the throne Dec. 1926.
- Hitler, Adolf** (1889-1945). Dictator of Germany, 1933-45. Born in Austria, son of Customs official. Worked in Vienna as artisan; already held anti-semitic and anti-marxist views. Came to Munich in 1912; enlisted in Bavarian Infantry at outbreak of first world war. At the end of the war conditions in Germany favoured the growth of a fascist movement and under his personal leadership the National Socialist (Nazi) Party climbed to power. Appointed Reich Chancellor, 1933. On death of Hindenburg in 1934 became Führer. Commander-in-Chief Wehrmacht, 1935. Under the Hitler regime working class movements were ruthlessly destroyed; all opponents—communists, socialists, Jews—were persecuted and murdered. By terrorism and propaganda the German state was welded into a powerful machine for aggression. There followed the occupation of the Rhineland in 1936, the annexation of Austria and Czechoslovakia in 1938 and 1939, the invasion of Poland and declaration of war by Great Britain and France in Sept. 1939, the invasion of Soviet Russia in 1941. Final defeat came in 1945 and on April 30 Hitler is presumed to have committed suicide in the Chancellery as the Russians closed in on Berlin.
- Hobbes, Thomas** (1588-1679), English philosopher who published his most famous work, *Leviathan*, in 1651. He favoured strong Government and therefore supported the supremacy of the State even in religion, but his arguments aroused great antagonism even among the Royalists. He was a child of his age in his enthusiasm for scientific enquiry, and his works provoked fresh thought on many sides.
- Hobbs, Sir John Berry** ("Jack") (b. 1882), first played for Surrey 1905; retired from first-class cricket Feb. 1935. Scored 61,221 runs including 197 centuries.
- Hobhouse, Leonard Trelawney** (1864-1929), English sociologist, who, after a brilliant career at Oxford, joined the staff of the *Manchester Guardian* in 1897, and became in 1908 editor of the *Sociological Review*. His book *The Theory of Knowledge* established his reputation in 1896, and was sustained by *Mind and Evolution*, 1901, and *Morals in Evolution*, 1906. His greatest work was *Development and Purpose*, 1913.
- Ho Chi-minh** (b. 1892), leader of the Viet-minh or "League of Independence," the revolutionary nationalist party of Indo-China. Successfully led the struggle for Viet Nam independence during and after the Second World War.
- Hocking, Silas Kitter** (1856-1935) was a popular novelist, formerly in the Nonconformist ministry; author of countless fascinating stories.
- Hoffman, Paul G.** (b. 1891), from 1948-50 head of the Economic Co-operation Administration set up by the U.S. Government to administer grants under the European Recovery Programme.
- Hogarth, William** (1697-1764), the celebrated engraver and painter who satirised the follies of his time in a series of engravings instinct with character, humour and power. His *Harlot's Progress*, of six engravings, was published in 1734, and gained him immediate fame. In 1735 he produced his equally celebrated *Rake's Progress*, a series of eight engravings. These were followed by numerous others, including *Marriage à la Mode*, *Industry and Idleness*, and *The March to Finchley*.
- Hogben, Prof. Lancelot, D.Sc., F.R.S.** (b. 1895), a noted English scientist who became Regius Professor of Natural History, University of Aberdeen in 1937, after being Prof. of Social Biology in the University of London, 1930-37. Author of *Mathematics for the Million* and *Science for the Citizen*.
- Hogg, James** (1770-1835), a Scottish poet of force and originality.
- Hogg, Quintin** (1845-1903), was an educationist and philanthropist who, purchasing the old Polytechnic Institution in 1882, turned it into a popular college, providing efficient instruction in every department of education at moderate rates.
- Hokusai, Katsushika** (1760-1849), Japanese artist of the Ukiyo-e (popular school), whose work is highly original and of singular beauty and delicacy. He excelled in landscapes.
- Holbein, The Elder** (c. 1460-1524), a famous German painter, father of Hans Holbein.
- Holbein, Hans—The Younger** (1497-1543), was born at Augsburg, and settled in London in 1530, where he won the favour of Henry VIII. for whom he painted many portraits, and produced the famous *Dance of Death*.
- Holden, Charles, F.R.I.B.A.** (b. 1875), English architect, well known as the designer of modern public buildings, including the British Medical Association buildings in the Strand, and was made sole architect for the New London University Buildings on the Bloomsbury site, 1931.
- Holden, Sir Isaac, Bt.** (1807-1897), an inventor and manufacturer who achieved fame and fortune in connection with wool-combing inventions. He was in Parliament from 1865 almost to the time of his death, and was made a baronet in 1892.
- Hölderlin, Johann Christian Friedrich** (1770-1843), friend of Hegel and contemporary of, though unappreciated by, Goethe and Schiller, he is now considered among the very greatest of German poets. His mind became unbending in his middle years and was finally overcome by schizophrenia.
- Holland, Rt. Hon. S. G., C.H.** (b. 1893), New Zealand Conservative leader; Prime Minister since 1949.
- Holmes, Oliver Wendell** (1809-1894), an American doctor and author of great humour and geniality. His *Autocrat of the Breakfast Table*, *The Professor at the Breakfast Table* and *The Poet at the Breakfast Table* are works of infinite humour and quaintness. He was also the author of three novels.
- Holst, Gustav Theodore** (1874-1934), a British composer of Swedish descent whose compositions include *The Planets* suite, *The Hymn of Jesus*, an opera *The Perfect Fool*, and a choral symphony. Professor of Music and Music Master at St. Paul's Girls' School, London, 1905-34. Director of Music at University College, Reading, 1919-23.
- Holyoake, George Jacob** (1817-1906), an eminent secularist lecturer and author, who was identified with many popular movements, especially Co-operation, of which he was the historian.
- Homer** (c. 850 B.C.), the most famous of all epic poets. Is supposed to have been a Greek who lived probably at Chios or Smyrna, and has generally been regarded as the author of the *Iliad* and the *Odyssey*, though tradition rather than ascertained fact connects his name with those great poems.
- Hood, Samuel, 1st Viscount Hood of Whitley, G.C.B.** (1724-1816), a successful British admiral, who in 1793 was in command of the Mediterranean fleet, and showed great capacity in that post, taking and occupying Toulon, and capturing Corsica among other exploits.
- Hood, Thomas** (1799-1845), an English poet, who, as a prolific writer of serious as well as humorous poems, stands in his own line unique. Of his serious verse, *The Song of the Shirt*, *The Dream of Eugene Aram* and *The Bridge of Sighs* may be cited as the best examples, while his comic poems, notably those of the punning order, are unequalled.
- Hooker, Richard** (1554-1600), was Master of the Temple from 1585-91, and afterwards Rector of Boscombe. Is famed for his great book on *Ecclesiastical Polity*, and because of his exquisite choice of words, was known as "Judicious Hooker."
- Hoover, Herbert Clark** (b. 1874), U.S. President 1929-33; Director of Relief Administration in Europe in the period immediately following the War. Author of the "Hoover" Plan for postponing payment of German Reparations 1931.
- Hopkins, Sir Frederick Gowland, O.M., F.R.S.** (1861-1947), an eminent English bio-chemist, noted for his important work on proteins and vitamins. In 1929 was awarded the Nobel Prize in Medicine for his discovery of Vitamin D. Pres. of the Royal Society 1931-36, and of the British Association, 1933.
- Hopkins, Harry** (1890-1946). Franklin Roosevelt's personal assistant. Particularly assisted the President at the important war-time foreign



- conferences, as his personal representative abroad, in working out the New Deal, and in the administration of Lend-Lease.
- Hopkinson, John, D.Sc., F.R.S. (1849-98)**, English engineer and physicist. Senior Wrangler and Fellow at Cambridge. Studied engineering in his father's works, and set up as a consultative engineer. Specialised in electrical work, and by developing the theory of alternating current and of the magnetic current in dynamos he paved the way to the common use of electricity in daily life. Was Professor of Electrical Engineering at King's College, London, 1890-98.
- Hoppner, John, R.A. (1758-1810)**, English portrait painter. Was born in Whitechapel of German parents, and studied at the Academy Schools, winning great distinction. Painted portraits of many members of the Royal Family.
- Horace**, or more properly **Flaccus Quintus Horatius (65-8 B.C.)**, the famous Roman satirist and poet, who was the friend of Virgil, and attained immortal fame by his *Satires*, *Epodes*, and *Odes*.
- Horner, Arthur (b. 1894)**, general secretary of the National Union of Mineworkers since 1946 and a leading British Communist.
- Horniman, Annie Elizabeth Fredericks, C.H. (1860-1937)**, English theatre manager and founder of the repertory system in England. Opened the Gaiety Theatre, Manchester, for repertory work, in 1908. Was a daughter of F. J. Horniman, the traveller and collector, who founded the Horniman Museum in Forest Hill and presented it to the L.C.C. in 1901.
- Horsbrugh, Rt. Hon. Florence, G.B.E., Min. of Education in Conservative Ministry, 1951-54.**
- Houdini, Harry (1873-1926)**, the famous American entertainer, who was a locksmith, but went on the variety stage as an expert in escaping from handcuffs, locked chambers, etc. A keen student of psychic manifestations, and in his day was one of the world's greatest illusionists.
- Housman, Laurence (b. 1865)** English author, artist and playwright. His brother **Alfred Edward (1859-1936)** was also a poet of distinction and a classical scholar, and was the author of *A Shropshire Lad*.
- Howard, John (1726-1790)**, earned celebrity for his philanthropic efforts on behalf of prison reform, the pursuit of which eventually exposed him to a fatal fever attack in Russia.
- Howard of Effingham, Lord (1536-1624)**, commander of the fleet which defeated the Spanish Armada, 1588, and took part in the capture of Cadiz, 1596.
- Howe, Elias (1819-1867)**, an ingenious American who was the inventor of the first sewing machine, by which he made a great fortune.
- Howe, Julia Ward (1819-1910)**, American philanthropist and poetess, famous as the authoress of the *Battle Hymn of the Republic* (1861), a leader of the American Suffragette movement, and the first woman to be elected to the American Academy of Arts and Letters.
- Howe, Richard, 1st (and last) Earl (of first creation), K.G. (1726-1799)**, the British admiral who in 1758 destroyed Cherbourg and in 1794 won the famous victory over the French off Brest.
- Howells, William Dean (1837-1920)**, American novelist and author.
- Hubble, Edwin Powell, B.Sc., Ph.D. (1889-1953)**, U.S. astronomer at Mount Wilson Observatory from 1919 until his death. Noted for his work on extragalactic nebulae. With the aid of the 200-in. telescope at Mount Palomar he made important discoveries.
- Hudson, Henry (c. 1550-1611)**, was a famous English navigator who discovered the Hudson River, Hudson Strait and Bay, and his two books describing his voyages are of the greatest interest.
- Hudson, William Henry (1841-1922)**, English author and naturalist, who spent his early years in South America, memories of which influenced much of his work. His books include *The Purple Land* (1885), *Green Mansions* (1904), *Afoot in England* (1909) and *British Birds* (1895). The Hyde Park Bird Sanctuary (opened in 1925) was established in his memory, and contains the famous figure of *Rima* by Epstein.
- Huggins, Sir William, O.M., K.C.B., F.R.S. (1824-1910)**, British astronomer who pioneered in spectroscopic photography. Collaborated with his wife, **Margaret Lindsay Murray (1848-1915)**, who was also an able astronomer.
- Hughes, Charles Evans (1862-1943)**, American jurist and statesman. Governor of New York State, 1907-8 and 1909-10. Chief Justice of the United States from 1930 after being a Judge of the Permanent Court of International Justice from 1926-28. Judge of the Supreme Court, 1910-16, when he was the Republican candidate for the Presidency, being narrowly defeated by President Wilson. A leading figure at the Washington Disarmament Conference, 1921.
- Hughes, Thomas (1822-1896)**, educated at Rugby and at Oxford; practised at the Bar, and became a County Court Judge in 1882. His best-known work is *Tom Brown's Schooldays*.
- Hughes, Rt. Hon. William Morris, C.H., Q.C. (1864-1952)**, Australian elder statesman, a Welshman by birth, was Prime Minister from 1915 to 1923; represented his country at Versailles, and held many other Cabinet posts.
- Hugo, Victor Marie (1802-1885)**, the great poet, dramatist and novelist who headed the Romantic movement in France in the early part of the 19th century and made himself a name of the first eminence by his various writings. His dramas of *Hernani*, *Lucrece Borgia*, *Ruy Blas*, and *Le Roi s'amuse* were in every sense great triumphs. Among his novels, *Notre Dame* belongs to his early period, and *Les Misérables*, *Les Travailleurs de la mer*, and *L'Homme qui rit*, belong to his later life, written while he was living in exile.
- Hull, Cordell (1871-1955)**, U.S. Sec. of State, 1933-44. Awarded the Nobel Peace Prize, 1945.
- Humboldt, Baron Friedrich Heinrich Alexander von (1769-1859)**, the great German traveller and naturalist; his books describing his travels and scientific discoveries—especially in geology and natural history—are most attractive.
- Hume, David (1711-1776)**, the celebrated historian and philosopher whose *History of England* is a fascinating and comprehensive study, and long held the chief place in English historical literature. Hume's philosophical writings were no less famous and widened the sphere of philosophical thought.
- Hunt, Brig. Sir (Henry Cecil) John, Kt., C.B.E., D.S.O. (b. 1910)**, soldier and mountaineer; leader of the 1953 British Mount Everest Expedition. E. P. Hillary and the Sherpa Tenzing, who formed the second assault party, reached the summit (29,002 ft.) on May 29, 1953. The story of the climb is told in his book *The Ascent of Everest*. See also "Everest Expeditions," Gen. Inf.
- Hunt, (James Henry) Leigh (1784-1859)**, an English poet, politician and essayist. In 1813 he was fined £500, and sentenced to two years' imprisonment for libelling the Prince Regent, and while in prison wrote his poem, *The Story of Rimini*, and other works. In later life he was a constant contributor to literature, and from 1847 enjoyed a pension of £200 a year from the Civil List.
- Hunt, Wm. Holman, O.M. (1827-1910)**, one of the three founders of the Pre-Raphaelite movement, and an artist who achieved distinction by several remarkable paintings, the chief of which is, perhaps, *The Light of the World*, an allegorical work.
- Hunter, the brothers William, F.R.S. (1718-83) and John, F.R.S. (1728-93)**, were both famous Scottish physicians. William had remarkable success as a lecturer and obstetrician. His valuable anatomical collection was bequeathed to the Univ. of Glasgow. John showed real genius for anatomy, became one of the greatest surgeons of his day and made many discoveries. His surgical museum forms part of the Museum of the Royal College of Surgeons.
- Huss, or Hus, John (1369-1415)**, the Bohemian religious reformer, was strongly influenced by Wyclif and himself urged reform both of abuses in the church and of doctrine. Sentenced to death or recantation he suffered martyrdom on July 6, 1415. His death caused a civil war which lasted for many years.
- Hutton, James, M.D. (1726-97)**, an Edinburgh doctor whose geological researches established the fundamental principles of modern geology. Before his time geology did not exist as a science, all was speculation. He drew his evidence from the rocks themselves, and his *Theory of the Earth* is one of the great classics of science.
- Huxley, Aldous (Leonard) (b. 1894)**, noted modern writer, grandson of T. H. Huxley and brother of

Julian; author of *Crome Yellow*, *Jesting Pilate*, *Brave New World*, *Point Counter Point*, *Ends and Means*, *Grey Eminence*, *The Perennial Philosophy*, etc.

**Huxley**, Prof. Julian Sorrell, M.A., F.R.S. (b. 1887), biologist and writer; grandson of T. H. Huxley, son of late Leonard Huxley; Director-General of the United Nations Educational, Scientific and Cultural Organisation 1946-48. Secy. of Zoological Soc. of London 1935-42.

**Huxley**, Prof. the Rt. Hon. Thomas Henry, F.R.S. (1825-1895) an eminent scientist and author of numerous works covering a great range of research. After the publication of Darwin's *Origin of Species*, Huxley became an ardent evolutionist. His biological work, *Man's Place in Nature*, and his numerous essays were marked by great vigour and clearness of thought, and gave him a leading position. He held numerous important appointments, was President of the Royal Society in 1883, and belonged to many learned societies.

**Hyde**, Dr. Douglas (1860-1949), the distinguished Irish scholar, historian, poet and folk-lorist. President of Eire, 1938-45.

**Hypatia**, who lived in the 4th century, was daughter of Theon of Alexandria, and attained great eminence by her lectures on philosophy. She excited the enmity of the monks, who raised an agitation against her, and she was put to death.

**Hyndman**, Henry Mayers (1842-1921), the founder of the Social Democratic Federation, 1881, and of the newspaper *Justice*; an active propagandist and worker in the socialist cause in many lands and friend of Mazzini and Garibaldi. In 1911 published his *Record of an Adventurous Life*.

## I

**Ibanez**, Vicente Blasco. (See Blasco-Ibanez, Vicente.)

**Ibrahim Pasha** (1789-1848), an able Egyptian statesman, general, and Viceroy, who, adopted by Mohammed Ali as his son, contributed largely to the success of Egyptian policy during the quarter of a century or more of his influence. His conquest of Syria was a notable feat of generalship. He died a few months after being appointed Viceroy.

**Ibsen**, Henrik Johan (1828-1906), the Norwegian playwright and poet, moralist, and humanist, whose plays, though arousing considerable opposition at the time, are acknowledged as the work of one of the world's greatest dramatists. A master of technique, charging every detail with significance, fusing the comic with the tragic, Ibsen revolutionised the European theatre. His chief works are *Ghosts*, *The Master Builder*, *The Wild Duck*, *A Doll's House*, *Hedda Gabler* and the poetic drama *Peer Gynt*.

**Inge**, Very Rev. William Ralph, K.C.V.O., D.D. (1860-1954), English divine; Dean of St. Paul's, 1911-34; Assistant Master at Eton, 1884-88; Lady Margaret Prof. Camb., 1907-11. Earned the sobriquet "the gloomy Dean" for his incisive and somewhat pessimistic comments on contemporary affairs. His books include a number on mysticism.

**Ingersoll**, Robert Green (1833-99), American lawyer, writer, and lecturer, became known by reason of his lectures directed principally against Christianity.

**Ingres**, Jean Auguste Dominique (1780-1867), a great French historical painter who was elected to the Institute in 1824, and at his death was a Senator of France.

**Innocent III.** (1160-1216), Pope from 1198, successfully asserted the power of the papacy over such secular princes as the emperor, Philip II. of France, and John of England. He promoted the 4th Crusade, initiated the crusade against the Albigensian heretics, and held the 4th Lateran Council. His pontificate marks the zenith of the medieval papacy.

**İnönü**, General İsmet (b. 1884), President of Turkey 1938-50. Was Minister for Foreign Affairs and Prime Minister in 1923; Prime Minister 1924-27 and 1927-37.

**Ireland**, John, Hon. D.Mus. (b. 1879), English composer, best known for his setting of Masefield's *Sea Fever*, his chamber music, his 'cello and pianoforte sonata, and especially sonata for pianoforte and violin.

**Irving**, Sir Henry (1838-1905), a great English actor. His first appearance in London was made in 1866, and his first distinct success was his Digby Grant in *Two Roses*. From 1871 he was connected with the Lyceum Theatre, first with Mr. Bateman, and from 1878 under his own management. His record at this theatre covered a brilliant series of productions, *The Bells* was the first triumph, then followed *Charles I.* and *Eugene Aram*, and later a number of Shakespearian impersonations, in some of which, notably Shylock and Hamlet, Irving was really great. Among the original productions credited to him may be mentioned Tennyson's *Queen Mary* and *Becket*, *Ravenswood*, *Olivia*, *King Arthur*, and *Robespierre*.

**Irving**, Washington (1783-1859), a writer of charming stories and miscellaneous works which won wide and well-deserved favour on both sides of the Atlantic. Among his biographical books may be mentioned *Lives of Goldsmith*, *Columbus*, *Mohammed* and *Washington*.

**Isaacs**, Rt. Hon. Sir Isaac Alfred, G.C.B., G.C.M.G. (1855-1948), Gov.-Gen. of Australia, 1931-36, being the first native-born Australian to occupy that position; Chief Justice of the High Court of Australia, 1930-31; a Judge of the High Court of Australia, 1906-30.

**Isabella of Castile** (1451-1504), reigned jointly with Ferdinand V., her husband. During their thirty years' sway Spain was united as a single monarchy, and achieved the height of its greatness, the discovery of America, the conquest of Granada, and the expulsion of the Moors from Spain being among the events of her reign.

**Ismail Pasha** (1830-95), grandson of Mohammed Ali, was a man of modern ideas and great public spirit, whose policy rendered Egypt practically independent of Turkey, the Sultan confirming him in the position and title of Khedive in 1873. It was his adoption of the idea of the Suez Canal that enabled that work to be successfully carried out. By reckless extravagance he involved himself in difficulties, entailing the sale of his Suez Canal shares to England, the establishment of the dual control of England and France, and his own abdication in 1879, when his son Tewfik succeeded.

**Ismay**, 1st. Baron, Gen. Hastings Lionel, P.C., G.C.B., C.H., D.S.O. (b. 1887), distinguished soldier who played important part in higher direction of the last war. Chief of Staff to Lord Mountbatten when Viceroy of India. Resigned as Sec. of State for Commonwealth Relations in 1952 to become Sec. Gen. of NATO.

**Israels**, Joseph (1824-1911), outstanding Dutch genre painter of the 19th century.

**Ito**, Hirobumi, Prince (1841-1909), one of the most enlightened statesmen of Japan. The unparalleled social metamorphosis which Japan underwent in the latter half of the nineteenth century owed much to his guidance and influence. Was four times Premier.

**Ivan the Great** (1440-1505), succeeded in bringing the scattered provinces of Muscovy under one supreme governmental control, and put an end to Tartar rule.

**Ivan the Terrible** (1530-84), crowned as first Czar of Russia in 1547, was a strong and autocratic ruler. He furthered internal consolidation and Russian eastward expansion and entered into trading relations with Queen Elizabeth.

**Iveagh**, 1st Earl of (Edward Cecil Guinness), K.P., G.C.V.O., F.R.S. (1847-1927), a member of the well-known Guinness family of Dublin brewers. Celebrated the visit of Edward VII. to Ireland in 1903 by giving £50,000 to Irish hospitals. Chancellor Dublin University, 1908. Left Ken Wood House collection of works of art to the nation.

**Ives**, Frederic Eugene (1856-1937), American inventor, who in 1878 invented a half-tone photo-engraving process from which he evolved in 1886 the process now generally employed. He also invented the three-colour process of colour printing, which revolutionised the art-printing industry.

## J

**Jacks**, Lawrence Pearsall (1860-1955). Principal of Manchester College, Oxford, 1915-31, and Professor of Philosophy in that College, 1903-31. Entered ministry in 1887 as assistant to the Rev. Stopford Brooke. Editor of the *Hibbert*



- Journal*, 1902-47, and author of several books of religious studies.
- Jackson, Andrew** (1767-1845), and American general who was twice President of the United States.
- Jackson, Thomas Jonathan** (1824-1863), popularly known as "Stonewall Jackson," was the most brilliant general on the Southern side in the American Civil War. Was accidentally killed at the Battle of Chancellorsville. The term "Stonewall" refers to his dogged resistance at the first Battle of Bull Run.
- Jacobs, William Wymark** (1863-1943), was a novelist of quaint and peculiar humour, whose stories and sketches of East End riverside life are inimitable.
- Jacquard, Joseph Marie** (1752-1834), a French mechanic whose Jacquard loom provided a new and effective method of weaving designs in textile fabrics, and was an invention of the very first rank.
- Jagellons, Lithuanian-Polish dynasty, ruled in Poland 1386-1572.**
- James I. of England** (1566-1625) was the son of Mary Stuart. He succeeded to the English throne in 1603 on the death of Elizabeth. Numerous plots were formed against him, including the Gunpowder Plot of 1605. He persecuted the Puritans, granted many monopolies, and saw the Authorised Version of the Bible published. Described by Henri IV of France as "the wisest fool in Christendom."
- James II. (1633-1701)**, as Duke of York, was Lord High Admiral in the Second and Third Dutch Wars, during which New Amsterdam fell to England and was renamed New York. As a Roman Catholic he resigned his office after the Test Act of 1673, was nearly excluded from the Succession, and, when he came to the throne in 1685, aroused and united strong opposition by his attempts to obtain better conditions for his co-religionists. The unsuccessful Monmouth Rebellion, the Bloody Assize, the Declarations of Indulgence, and the Seven Bishops' Trial marked a reign which ended in the flight of the king and the Revolution Settlement of 1689.
- James, Henry, O.M.** (1843-1916), an Anglo-American novelist and younger brother of William James. Produced a number of notable stories, remarkable for their intellectual subtlety and careful characterisations. For the last thirty years of his life he resided mostly in London. His best-known novels are *The American*, *Daisy Miller*, *The Bostonian*, *The Portrait of a Lady* and *What Maisie Saw*. In 1906 he revisited his native land, and wrote *The American Scene* (1907). Later he published *Finer Grain*. Was a great admirer of R. L. Stevenson. Became a British subject 1915.
- James, William** (1842-1910), the great American psychologist and philosopher, brother of Henry James, the novelist. He became Prof. of Philosophy at Harvard University, 1882, and was the founder of the philosophical system known as pragmatism. His first important work, *Principles of Psychology*, 1890, stamped him as one of the most lucid, penetrating and engaging writers of his day, and established him as the foremost protagonist of the physical school in psychology. *Pragmatism*, a new name for some old ways of thinking, appeared in 1907, and established him as a speculative philosopher of a high order.
- Jameson, Rt. Hon. Sir Leander Starr, Bt., M.D.** (1853-1917), the South African statesman, was a close friend of Cecil Rhodes. After serving for several years as administrator of Rhodesia, in December 1895 he led the ill-starred raid into the Transvaal in support of the dissatisfied Uitlanders. He was taken prisoner, handed over to the British and sentenced to fifteen months' imprisonment. After the South African War he served as Prime Minister of Cape Colony from 1904 to 1908.
- Jean, Sir James Hopwood, O.M., F.R.S.** (1877-1946), a brilliant mathematician and astronomer who was a lecturer in mathematics at Cambridge and Princeton and secretary of the Royal Society 1919-29. Author of *The Universe Around Us*, *The Mysterious Universe*, etc.
- Jefferies, Richard** (1848-1887), an English naturalist, who, between 1873 and the time of his death, wrote some of the most beautiful descriptions of natural scenery and the customs and habits of the rural world that we possess. His *Gamekeeper at Home* and *The Life of the Fields* are books of great power and sympathy.
- Jefferson, President Thomas** (1743-1826), took part in the American Revolution, and drew up the Declaration of Independence. Twice U.S. Pres.
- Jeffreys, George, 1st Baron of Wem** (1648-1689), won for himself unenviable notoriety by his harsh and cruel judgments, when he held what is known as the "Bloody Assize." He was made Lord Chancellor, but after the fall of James II. was sent to the Tower and there died.
- Jellicoe, Adml. of the Fleet, Earl, G.C.B., O.M., G.C.V.O.** (1859-1935), Commander-in-Chief of British Fleet, August 1914 to Nov. 1916; and First Sea Lord, Nov. 1916 to Dec. 1917. Gov.-Gen. of New Zealand, 1920-24.
- Jenghiz Khan** (1162-1227), the famous Mongol ruler who twice conquered China, and forced the Turks within European confines.
- Jenner, Edward, M.D., F.R.S.** (1749-1823), an English physician who became celebrated by his discovery of the vaccination system of alleviating smallpox, which has been of such incalculable benefit to mankind. Parliament made him grants amounting to £30,000 which left him still out of pocket.
- Jerome, Jerome Klapka** (1859-1927), a clever journalist and writer, who made his first success with his humorous book, *Three Men in a Boat*. He founded *The Idler*.
- Jerome, St.** (340-420), a noted theologian of the 5th century, whose Latin translation of the Scriptures (*The Vulgate*) made him famous. He died at Bethlehem.
- Jerrold, Douglas William** (1803-1857), dramatist and humorist, who enjoyed a long career of success by his contributions to *Punch* (including *Mrs. Caudle's Curtain Lectures*); his novels, of which *St. Giles* and *St. James* was his best; and his plays, of which *Black-Eyed Susan* was the most popular.
- Jesus Christ** (c. 4 B.C.—A.D. 30 or 33) the founder of Christianity and the greatest figure of human history. The main source of information on His life and work is the New Testament. Jesus was born at Bethlehem in Judea, and was the first-born of His mother Mary. According to Matthew, He was miraculously conceived and Joseph was His foster-father. The family home was at Nazareth in Galilee. Jesus lived at a critical period in Jewish history. He began His three-year mission when He was about thirty. His teaching is summarised in the Sermon on the Mount.
- Jinnah, Mohammed Ali** (1879-1948), Indian statesman. The emergence of a separate Moslem state of Pakistan when the British left India was mainly due to his efforts. He was for many years the active President of the Moslem League, and in 1947 became the first Gov.-Gen. of Pakistan. He was a barrister by profession.
- Joachim, Dr. Joseph** (1831-1907), a German violinist and composer, who has been considered the greatest solo violinist and the greatest quartet leader in living memory. Retained his place of popular favourite in England until his death.
- Joad, Cyril Edwin Mitchinson, M.A., D.Litt.** (1891-1953), Head of Dept. of Philosophy and Psychology, Birkbeck College, University of London, since 1930. Wrote many important and interesting books, pamphlets and articles dealing with numerous controversial questions of social and political life.
- Joan of Arc, St.** (1412-1431), the girl whose heroism inspired the French to drive the English out of Orleans, and enabled Charles to be proclaimed King at Rheims. She was burned as a heretic at Rouen. Canonised at St. Peter's, Rome, 1920.
- Joffre, Marshal Joseph Jacques Césaire, G.C.B., Hon. O.M.** (1852-1931), Commander-in-Chief of the French Armies 1911-17. His handling of his troops during the war was eminently successful. Entered the Army in 1870, and commanded a battery during the siege of Paris.
- John, St., the Baptist** (executed A.D. 28), the forerunner of Christ.
- John, St., the Evangelist**, the son of Zebedee, retired to Patmos after the Crucifixion, but returned from exile to Ephesus later, and there died at a great age, probably circa A.D. 90.

- John**, surnamed "Lackland" (1167-1216), King of England from 1199 to his death at Newark after deposition by the Barons in 1216. One of the most detested of English monarchs, but whose reign stands out large in history because of his having granted, under compulsion, the Magna Carta, England's great bulwark of liberty.
- John of Gaunt** (1340-1399), Duke of Lancaster, son of Edward III. and father of Henry IV., was one of the most powerful English nobles, and was more or less concerned in the leading events of his time. In Wat Tyler's rebellion he had his palace in the Savoy destroyed and was long held in popular hatred.
- John, Augustus Edwin**, O.M., R.A. (b. 1878), outstanding British painter, especially notable for his portraits. Among others, he has painted Lloyd George, Bernard Shaw, and T. E. Lawrence. His works in the Tate Gallery include *The Smiling Woman* and *Galway*.
- Johnson, Amy**, C.B.E. (1904-1941), was the first woman aviator to fly solo from England to Australia, when she made a record flight to India (6 days to Karachi). Lost her life when flying as a pilot of the Air Transport Auxiliary over the Thames Estuary.
- Johnson, Very Rev. Hewlett**, M.A., B.Sc., D.D. (b. 1874), Dean of Canterbury since 1931. Pubs. *The Socialist Sixth of the World*, *Soviet Strength*, *Soviet Success*.
- Johnson, Dr. Samuel** (1709-1784), the great lexicographer and writer, who for a number of years was the most prominent literary man in England. His *Dictionary* was published in 1755, before which he had attained eminence by several works including the *Vanity of Human Wishes*. His *Rasselas* appeared in 1759, and for two years he published *The Idler*, a collection of essays after the style of the *Spectator*. His *Lives of the Poets* appeared in 1781. He was greatly honoured during his life, enjoyed a pension of £300 a year from 1762, at his death was buried in Westminster Abbey, and had the best biography in the language written upon him by James Boswell.
- Johnston, Sir Harry** (Hamilton), G.C.M.G., K.C.B. (1858-1927), was a daring and successful explorer, who led scientific expeditions into the interior of Africa. Helped to crush the Arab slave trade in East Africa and to establish a large British Protectorate north of Lake Tanganyika. Published many valuable works of travel and observation and also a *History of the British Empire in Africa*.
- Jókai, Maurus** (1825-1904), a distinguished Hungarian novelist, many of whose works have been translated into English, among them *A Modern Midas* and *Black Diamonds*.
- Joliot, Jean Frédéric** (b. 1900), French physicist, Chairman of the Permanent Committee of the World Peace Congress and Nobel prizewinner. Was dismissed in 1950 by the French Government from his post as High Commissioner of Atomic Energy because of his communist views. His wife, Mme. Irène Joliot-Curie, also a distinguished scientist, is the daughter of Mme. Curie.
- Jones, Ernest Charles** (1819-69), one of the best-known leaders of the Chartist movement, in 1848 was sentenced to two years' imprisonment for his revolutionary speeches. He was also a political writer and the author of several poems.
- Jones, Sir Harold Spencer**, K.B.E., F.R.S. (b. 1890) Astronomer Royal, 1933-56; from 1923 to 1933 held the post of H.M. Astronomer at the Cape of Good Hope. He is president of the British Horological Institute.
- Jones, Inigo** (1573-1652), a noted architect who became known as "the English Palladio," and built, among other famous structures, the Banqueting Hall at Whitehall and the gateway of St. Mary's at Oxford. He was a Royalist, and suffered severely in the Civil War.
- Jones, John Paul** (1747-1792), was a Scotsman, who early in life took to the sea, and during the American War of Independence commanded various ships on behalf of the Colonists, and was most daring in his onslaughts upon British vessels. He died in Paris.
- Jonson, Ben** (1573-1637), a friend of Shakespeare and one of the great poets and dramatists of his age. Was Poet Laureate from 1619. His best plays are *Every Man in his Humour* and *The Alchemist*. Buried in Westminster Abbey.
- Josephine, Empress** (1763-1814), was the wife of Napoleon I. until he divorced her in 1809 and married Marie Louise. Josephine had previously been married to Vicomte Alexandre Beauharnais, by whom she had two children.
- Josephus, Flavius** (A.D. 38-c. 100), Jewish historian whose *History of the Jewish War* and *Antiquities of the Jews* contained much valuable historical evidence bearing upon Biblical history.
- Joule, James Prescott**, F.R.S. (1818-1889), one of the greatest of English physicists, famous for his researches on electro-magnetism and for his determination of the mechanical equivalent of heat.
- Jowett, Benjamin** (1817-93), English scholar remembered as the greatest Master of Balliol College, winning a great reputation for his sympathy and erudition. His outstanding works include translations of the *Dialogues of Plato* and *History of Thucydides*. His Mastership raised Balliol to a proud pre-eminence among the Colleges.
- Jowitt, William Allen**, Earl, P.C., (b. 1885) Lord High Chancellor, 1945-51; Minister for National Insurance, 1944-45. Minister without Portfolio, 1942-44, M.P. for Preston, 1929-31, and for Ashton-under-Lyne, 1939-45. Solicitor-Gen., 1940-42; Paymaster-General, 1942.
- Joyce, James** (1882-1941), an Irish author who exercised a very great influence on the younger school of novelists, critics and poets, especially by his autobiographical *Portrait of the Artist as a Young Man* and his *Ulysses*.
- Juin, Alphonse**, Marshal of France (b. 1888), C.-in-C. of French troops in N. Africa, 1942; Res.-Gen. in Morocco, 1947; C.-in-C. Allied Forces, Central Europe (NATO), 1951.
- Julian the Apostate** (Flavius Claudius Julianus) (331-363) was Roman Emperor for the last two years of his life, during which period he was an avowed pagan, though previously he had professedly been a Christian. He was slain by an arrow during an expedition against Persia.
- Juliana**, Queen of the Netherlands (b. 1909), only daughter of Princess Wilhelmina (b. 1880), whom she succeeded as Queen in 1948. In 1937 married Prince Bernhard of Lippe-Biesterfeld and has four daughters.
- Julius Cæsar**. (See Cæsar, Caius Julius.)
- Jung, Carl Gustav** (b. 1875), Swiss psychiatrist founder of the Zür School, and a former pupil of Freud (q.v.) until 1911, when he formulated a system of analytical psychology.
- Junot, Andoche**, Duc d'Abrantes (1771-1813), was one of Napoleon's great generals and was brilliantly successful until defeated by Wellington at Vimiera.
- Jusserand, Jean Adrien Antoine Jules** (1855-1932), French author and diplomat, Ambassador to U.S.A., 1902-25. Was a well-known authority on English literature. His works include *The English Theatre from the Conquest to Shakespeare* (1878), *The English Novel* (1886), *The Literary History of the English up to the Renaissance* (1894), and other literary and critical essays.
- Justinian I.** (Flavius Anicius Justinianus) (483-565) was the Roman Emperor of the East whose fame rests chiefly on his laws. His *Corpus Juris Civilis* remained the accepted text-book of Roman Law to the end of the 9th century, and is still the most important of all monuments of jurisprudence. He reigned from 527 to 565.
- Juvenal** (Decimus Junius Juvenalis) (60-140), the famous Roman poet and rhetorician of the age of Trajan. His sixteen celebrated *Satires* are the finest in classical literature.

## K

- Kafka, Franz** (1883-1924), Jewish writer, born in Prague, whose introspective work, the bulk of which was not published till after his early death from tuberculosis, has been widely acclaimed and discussed and has had a notable influence on later schools, including the Surrealists.
- Kālidāsa** (c. A.D. 400), the most illustrious figure in classic Sanskrit literature and one of the greatest Oriental poets. No facts are known about his life and date, but certain evidence places him in the 5th cent. Seven of his works survive: two lyrics, *Ritū-samhara* (The Seasons), and *Megha-dūta* (Cloud Messenger); two epics, *Raghu-vamśa* (Dynasty of Raghu) and *Kumāra-sambhava* (Birth of the War-God); and three dramas, *Sakuntalā*, *Mālavikāgnimitra*, and *Vikramorvaśīya*.



- Kant, Immanuel** (1724-1804) German scientist and philosopher, whose *Critique of Pure Reason*, published in 1781, was the subject of fierce discussion, and involved him in trouble with the Prussian Government as to his religious belief. His speculations and the transcendental theories he worked out revealed a marvellous capacity of mind, and his works were of immense influence in shaping the philosophical thought of the 18th and 19th centuries.
- Kaufmann, Angelica, R.A.** (1741-1807), the famous Anglo-Swiss painter, who was one of the foundation members of the Royal Academy, and the first woman R.A.
- Kaulbach, Wilhelm von** (1805-1874), an eminent German painter who illustrated books by Goethe and Schiller.
- Kean, Charles John** (1811-1868), an English actor-manager, son of the tragedian, Edmund Kean. Charles Kean married Ellen Tree, and in the 'fifties played with her in a remarkable series of spectacular revivals at the Princess's Theatre in London.
- Kean, Edmund** (1787-1833), one of the greatest tragic actors in the history of the British stage.
- Keats, John** (1795-1821), the great English poet who, though dying at the early age of twenty-five, produced a number of poems which in richness of imagination and beauty of thought are not excelled by anything in the language. His *Odes*, his two poems, *Isabella* and *The Eve of St. Agnes*, are exquisite in form and expression.
- Keble, John** (1792-1866), an English clergyman and poet, whose *Christian Year* is one of the most notable works of its class.
- Keene, Charles** (1823-1891), one of the most talented of the *Punch* artists.
- Keith, Sir Arthur, F.R.S.** (1866-1955), an eminent anthropologist. Pres. of British Association, 1927. Author of *The Antiquity of Man*, *Religion of a Darwinist*, *A New Theory of Evolution*.
- Keller, Helen Adams** (b. 1880), American writer, who, as the result of illness, became blind and a deaf-mute at the age of 19 months, but was taught to read, write and speak and was graduated with honours at Radcliffe College, Mass. She has written several books.
- Kellogg, Frank Billings, LL.D.** (1856-1937), was a Judge of the Permanent Court of International Justice, The Hague, 1930-35. American Ambassador to the Court of St. James, 1923-25. Secretary of State, U.S.A., 1925-29; chiefly remembered as the originator of the Kellogg Pact. Awarded Nobel Peace prize, 1929.
- Kelly, Sir Gerald Festus, P.R.A.** (b. 1879), a successful English portrait-painter whose State portraits of King George VI and Queen Elizabeth were exhibited at the R.A. in 1945. President of the Royal Academy, 1949-54.
- Kelvin, William Thomson, Lord, P.C., O.M., G.C.V.O., F.R.S.** (1824-1907), the famous scientist and inventor, introduced the dynamical theory of heat. Shortly afterwards he interested himself in submarine telegraphy, and invented numerous important improvements, also doing splendid work in the direction of electrical invention; he covered a vast field and earned a world-wide reputation.
- Kemble, Frances Anne ("Fanny")** (1809-1893), was a noted actress in the early part of the 19th century. She was the daughter of Charles Kemble (1775-1854), who was also a celebrated actor, associated in many appearances with his brother, John Philip Kemble, and their talented sister, Mrs. Siddons (*q.v.*).
- Kemble, John Philip** (1757-1823) was a famous tragedian, and for many years manager of Drury Lane Theatre in London. He was brother to Mrs. Siddons (*q.v.*), who first played with—and overshadowed—him in 1783.
- Kempenfelt, Admiral Richard** (1718-1782), an English naval officer who saw distinguished service, and sank with his ship the *Royal George* off Spithead, through a shifting of the guns when refitting which caused the vessel to capsize. Some six hundred of the ship's company perished with their admiral.
- Kempis, Thomas a** (1380-1471), name by which the German mystic and writer Thomas Hammerken was known, was a monk of the St. Augustine order, whose life was mainly spent at a monastery near Zwolle. He was the author of *The Imitation of Christ*, a work which has been translated into all languages, and forms a devotional course which is highly valued.
- Kent, William** (1684-1748), a leading figure in British art, 1725 until middle of eighteenth century—architecture, landscape gardening, interior decoration, furniture, and painting. Strong Italianate influence. Surviving works: The Great Hall at Holkham, Norfolk, and lay-out at Rousham, Oxfordshire.
- Kepler, Johann** (1571-1630), renowned German astronomer, assistant to Tycho Brahe (1546-1601), whose measurements he used in working out his laws of planetary motion, which are: 1. The planets describe elliptic orbits, of which the sun is one focus. 2. The line joining a planet to the sun sweeps out equal areas in equal times. 3. The square of the period of revolution of a planet is proportional to the cube of its average distance from the sun. The explanation of these laws was given by Newton.
- Kesselring, Albert** (b. 1885), German general. Commanded the Luftwaffe during the invasion of Poland in 1939 and of the Low Countries in 1940. C-in-C. in Italy from 1943 until he took over from Rundstedt on the Western Front in March 1945.
- Keyes, Admiral of the Fleet, Lord, G.C.B., K.C.V.O., C.M.G., D.S.O.** (1872-1945). Commodore of the submarine service during war of 1914-18, and commanded operations against Zeebrugge in 1918. Deputy Chief of Naval Staff, 1921-25; Com.-in-Chief Mediterranean Station, 1925-28. Director of Combined Operations, 1940-41.
- Keynes, John Maynard, 1st Baron, C.B., M.A., F.B.A.** (1883-1946), British economist of international reputation. Bursar and Fellow of King's College, Cambridge. Editor of *Economic Journal*, 1911-46. Principal British Treasury representative at the Versailles peace conference; resigned in protest against plans for reparations, and published his views in *The Economic Consequences of the Peace* (1919). From 1919 onwards engaged in controversial writing on monetary theory. Against the return to the gold standard in 1925. *Treatise on Money* (1930) and *The General Theory of Employment, Interest and Money* (1936) profoundly influenced economic thought and government policy all over the world. Led the British delegation to Bretton Woods (*see* "Gen. Inf.") and negotiated the American loan agreement of 1945 (*see* "Gen. Inf."). Married Lydia Lopokova, formerly of the Russian Imperial Ballet, in 1925.
- Khrushchev, Nikita S.** (b. 1894), First Secretary of the Soviet Communist Party since 1955, a position formerly held by Stalin.
- Kidd, Captain William** (c. 1645-1701), was a famous pirate who, taking advantage of an appointment to the captaincy of a British ship, engaged in numerous piratical expeditions under cover of the English flag. He was hanged at Execution Dock in London after a sensational trial at the Old Bailey.
- King, Rt. Hon. (William Lyon) Mackenzie, O.M., C.M.G.** (1874-1950), Prime Minister of Canada, 1921-25, 1926-30 and 1935-48.
- Kingsley, Charles** (1819-1875), an English clergyman and novelist, who gained much popularity by his numerous novels including *Hypatia*, *Westward Ho!* and *Hereward the Wake*.
- Kipling, Rudyard** (1865-1936), poet, novelist, and miscellaneous writer. Made himself celebrated while yet a youth by some exceedingly clever and characteristic sketches of Indian life written for the most part while performing journalistic duties in India. He subsequently settled in London and produced a remarkable succession of stories, sketches, ballads, and poems, all marked by intense vigour. In 1907 was awarded the Nobel prize.
- Kirchhoff, Gustav Robert** (1824-87), German physicist, improved Wheatstone's Bridge, and proved that electricity in a wire flows as fast as light in free space. He put spectrum analysis on a firm basis, and published, among other scientific works, *Researches on the Solar Spectrum*.
- Kitchener, of Khartoum, Field Marshal Earl, K.G., K.P., G.C.B., O.M.** (1850-1916), was a brilliant soldier. By his victory at Omdurman in 1898 he crushed the Sudanese dervishes and avenged General Gordon. In the early stages of the South African War he assisted Lord

- Roberts and took over command himself in 1900. Was C-in-C., India, 1902-9. On the outbreak of war with Germany (Aug. 1914) was made Secretary for War, and his splendid work in building up the army won universal admiration. Drowned June 5, 1916, by the torpedoing of the *Hampshire* while on his way to Russia.
- Klee, Paul** (1879-1940), Swiss artist, studied at Munich, Paris and Rome and later became Professor at Düsseldorf Academy. He lived in a restless, experimental period. His paintings are small-scale, delicate dream-world fantasies, full of poetical content.
- Kneller, Sir Godfrey, Bt.** (1646-1723), the most celebrated portrait painter of his day in England, who enjoyed the patronage in succession of Charles II., James II., William III., Anne, and George I. He painted the portraits of the members of the Kit-Cat Club, and was buried in Westminster Abbey.
- Knight, Dame Laura, D.B.E., R.A., R.W.S., R.E.**, a prominent British painter. Pres. of Socy. of Women Artists, 1931. Her husband, Harold Knight, R.A. (b. 1874), is a distinguished portrait-painter.
- Knox, John** (1505-1572), the famous divine and Reformer, who stirred Scotland to mighty religious impulses in the reign of Mary Queen of Scots.
- Knox, Edmund George Valpy** ("Evoc") (b. 1881), editor of *Punch*, 1932-48.
- Knox, Rt. Rev. Mgr. Ronald Arbuthnot** (b. 1888), Catholic Chaplain at the University of Oxford 1926-39, is also a well-known author. His works include detective stories, among which are *The Viaduct Murder* and *Footsteps at the Lock*.
- Knutsford, 2nd Viscount** (1855-1931), was Chairman of the London Hospital for over 30 years.
- Koch, Robert** (1843-1910), the most noted bacteriologist of the time, whose discoveries in connection with the bacillus of tuberculosis have greatly benefited mankind. He also closely studied the causes of Asiatic cholera and of bubonic plague.
- Koniev, Marshal of Soviet Union, Ivan Stapanovich** (b. 1898), one of Russia's outstanding military leaders in the second world war. C-in-C. Soviet Army, 1946.
- Korda, Sir Alexander** (1893-1956), Hungarian-born British film producer. His productions included *The Private Life of Henry VIII*, *Catherine the Great*, *The Scarlet Pimpernel*, *Things to Come*, and *The Four Feathers*.
- Kosciusko, Tadeusz Andrzej Bonawentura** (1746-1817), a Polish general and patriot who achieved great distinction in 1794 by his gallant leading of the Polish revolutionary forces against Russia. From 1776 to 1783 took part in the American War of Independence.
- Kossuth, Louis** (1802-1894), a Hungarian patriot and leader, who in the struggle for his country's freedom in 1849 was for a time successful, but ultimately had to acknowledge defeat, and fled first to Turkey and afterwards to England, where he lived for some years.
- Kotlewela, Col. the Rt. Hon. Sir John Lionel, C.H., K.B.E.**, Prime Minister of Ceylon since 1953.
- Kreisler, Fritz** (b. 1875), the world-famous violinist, was born in Vienna, and as a child showed remarkable musical gifts. Made a successful tour of the U.S.A. when only 14. His first London appearance was in 1901. Has rendered great service by his arrangements of music for the violin.
- Kropotkin, Peter Alexievich, Prince** (1842-1921), anarchist, geographer and explorer, who, after a distinguished career in Russia, his native country, was imprisoned for favouring the political action of a working men's association, but escaped to England. He wrote many important books on socialistic and geographical subjects. Returned to Russia in 1917.
- Krüger, Stephanus Johannes Paulus** (1825-1904), the Boer leader, was one of the outstanding figures of South Africa in the last half of the nineteenth century. As a small boy he accompanied his family on the Great Trek. He was active in Transvaal politics for many years, and served as President from 1883 to 1900. His attitude towards the Uitlanders (English and other non-Boer white inhabitants of the Transvaal) produced much of the tension which led to the South African War. During the war he made unsuccessful attempts to secure help for the Boers from various European powers.
- Krupp, Alfred** (1812-1887), the famous German engineer, founded the great gun factories at Essen, which were the largest in the world. By his introduction of the Bessemer plan of casting steel and the steam hammer into Germany, he brought about an important development in heavy breech-loading guns, and built up factories which employed at the time of his death 20,000 workmen.
- Kubelik, Jan** (1880-1940), Czech violinist—son of a gardener at Michle, near Prague—who at the age of twelve played in public, and was one of the most renowned instrumentalists of his day. His son Rafael (b. 1914), a conductor of international repute, became musical director of the Royal Opera House, Covent Garden, in 1955.
- Kublai Khan** (1216-1294), a famous Mogul emperor and grandson of Jenghiz Khan. He greatly extended the Mogul empire by conquest, and lived in unparalleled splendour.

## L

- Lablache, Luigi** (1794-1858), a famous bass singer and actor, especially popular in London. He held the position of singing tutor to Queen Victoria.
- La Fayette, Marie Joseph Paul Roch Yves Gilbert du Motier, Marquis de** (1757-1834), French soldier and humanitarian politician who fought on the side of the Colonists in the American War of Independence and on returning to France became C-in-C. of the National Guard of Paris. By signing the demand that the king summon the States-General he became the first leader of the French Revolution, but stood out against its later excesses. In 1830 he was instrumental in setting Louis Philippe on the French throne.
- La Fontaine, Jean de** (1621-1695), the celebrated French poet and fabulist. His fables have been translated into all languages, and are unique.
- Lagerlöf, Selma, Ph.D.** (1858-1940), the famous Swedish novelist who was awarded in 1909 the Nobel Prize for literature. In 1914 was elected the first woman member of the Swedish Academy.
- Lagrange, Joseph Louis, Comte** (1736-1813), a noted French astronomer and mathematician.
- Lalande, Joseph Jerome Lefrançois de** (1732-1807), a famous French astronomer and director of the Paris Observatory. He founded the Lalande yearly prize for the best astronomical work or observation and wrote a well-known treatise on astronomy.
- Lamarck, Jean Baptiste Pierre Antoine de Monnet, Chevalier de** (1744-1829), the prominent French zoologist who occupied important scientific posts in Paris. A precursor of Darwin, his name rests mainly on his theory of the evolution of animals, known as Lamarckism. His chief work was the *Histoire Naturelle des Animaux sans Vertèbres*.
- Lamb, Charles** (1775-1834), one of the most delightful of our essayists. His *Essays of Elia* are characterised by great felicity of expression, much genial humour and an ardent love both of rural life and London life. He was a clerk in the office of the East India Company for thirty-five years. In some of his writings he was assisted by his sister, Mary Lamb, to whom he was greatly devoted.
- Lamb, Sir Horace, F.R.S.** (1849-1934), a British scientist, was the leading authority on hydrodynamics, and did valuable research work on wave motions and electricity.
- Lambert, Constant** (1905-51), English composer, conductor and critic; musical director of the Sadler's Wells Ballet. His *Rio Grande* for chorus, piano, and orchestra, shows jazz influence in its syncopation, use of percussion instruments, and boisterousness.
- Lamond, Frederic** (1868-1948), Scottish pianist and composer. A pupil of Liszt, and a great player of Beethoven's music. Was a professor at the Scottish National Academy of Music.
- Landon, Walter Savage** (1775-1864), a writer and poet of strong genius. He wrote a fine poetic tragedy *Count Julian* in 1812, and in later life published several other volumes of poems. The work by which he is best known, however, is his *Imaginary Conversations*.
- Landseer, Sir Edwin Henry, R.A.** (1802-1878), the most celebrated English animal painter of his time. He designed the lions for the base of the Nelson Monument in Trafalgar Square.
- Lane, Edward William** (1801-1876), an English



- writer to whom we owe the most popular translation of the *Arabian Nights*. He was also the author of a number of books dealing with ancient Egyptian and Arabic subjects, and was one of the most prominent Orientalists of the 19th century.
- Lang, Andrew** (1844-1912), Scottish scholar and writer of great versatility, his numerous works including poetry, fiction, history, fairy tales, folk-lore, and translations from the classics.
- Lang of Lambeth, Most Rev. Cosmo Gordon Lang**, 1st Baron, P.C., G.C.V.O., D.D. (1864-1945), Archbishop of Canterbury, 1928-42, and previously of York, 1908-28, and Bishop of Stepney, 1901-08.
- Langland, William** (c. 1330-1400), author of the alliterative poem *The Vision of Piers the Plowman*.
- Langley, Samuel Pierpont** (1834-1906), American physicist, astronomer and civil engineer, who became assistant at Harvard Observatory in 1865. In 1867 he became Director of the Allegheny Observatory, and in 1887 Secretary of the Smithsonian Institution. Invented the bolometer for recording variations in heat radiation and built a power-driven model aeroplane which made several successful flights in 1896.
- Langton, Stephen** (1151-1228), was Archbishop of Canterbury from 1213, and one of the chief instruments in forcing the Magna Carta from John.
- Lankester, Professor Sir (Edwin) Ray, K.C.B., M.D., F.R.S.** (1847-1929), natural historian and biologist. He founded in 1884 the Marine Biological Association, and was Director of the Natural History Departments of the British Museum; President of the British Association, 1906.
- Lansbury, Rt. Hon. George**, (1859-1940). First Commr. of Works, 1929-31. Chairman of Parliamentary Labour Party, 1931-35, and Leader of the Labour Party, 1932-35. M.P. Bow and Bromley, 1910-12, and 1922-40.
- Lao-Tzu**, one of the ancient philosophers of China, who flourished about 600 B.C. The classic upon which his fame rests, *Tao-té-ching*, was written many years later. See Taoism, Gen. Inf.
- Laplace, Pierre Simon, Marquis de** (1749-1827), French mathematician and astronomer whose researches on the motions of the solar system and the theory of probability earned him the title of "the Newton of France."
- La Rochefoucauld, François, Duc de** (1613-1680), a renowned French statesman and writer of the Louis XIV. period. His *Reflections and Moral Maxims* is a classic.
- Lasker, Emanuel, Ph.D.** (1868-1941), world's chess champion, 1894-1921—defeated by Capablanca (q.v.).
- Lassalle, Ferdinand** (1825-64), German socialist. Between 1862 and 1864 he conducted an extensive campaign by oratory and pamphleteering with the object of improving the social and political status of the poor. He himself was wealthy, and lived on a lavish scale, but his sympathy with the poor was genuine, and his campaign was quickly successful. He was founder of the German Socialist movement, and as such exerted deep influence throughout Europe. His life story forms the basis of George Meredith's novel *The Tragic Comedians*.
- Laszlo de Lombos, Philip Alexius, M.V.O.** (1869-1937), the most fashionable portrait painter of modern times. President of Royal Society of British Artists, 1930.
- Latimer, Hugh** (circa 1485-1555), the English Reformer who became Bishop of Worcester under Henry VIII., but when Mary came to the throne was condemned as a heretic and burned at the stake.
- Laud, William** (1573-1645), an eminent ecclesiastic, who, after filling three minor bishoprics, was made Archbishop of Canterbury in 1633. He did much to direct the policy of Charles I. and when trouble followed, he was impeached by the Long Parliament and committed to the Tower. Was tried for treason and beheaded.
- Lauder, Sir Harry (MacLennan)** (1870-1950), famous singer of Scottish songs and ballads. Composed own songs and wrote own music. Knighted 1919 for services in raising money for war purposes.
- Loughton, Charles** (b. 1899), English actor. Has acted in such plays as *On the Spot*, *Mr. Pickwick* and *Alibi*, and later took up film work, appearing in *The Sign of the Cross*, *The Private Life of Henry VIII.*, etc.
- Laurier, Rt. Hon. Sir Wilfrid, G.C.M.G., K.C.** (1841-1919), Premier of Canada from 1896 to 1911, and the first French-Canadian to hold that position. An ardent Liberal Imperialist.
- Laval, Pierre** (1883-1945), French politician, won notoriety over the Hoare-Laval pact in 1935. During the German occupation he was the arch French collaborator, and was afterwards tried for treason and shot.
- Lavery, Sir John, R.A.** (1856-1941), was an eminent portrait painter and of classical subject pictures. Pres. of the Royal Society of Portrait Painters, 1932-41.
- Lavoisier, Antoine Laurent** (1743-1794), often called the "father of chemistry," was born in Paris, and was the first to establish the fact that combustion is a form of chemical action.
- Law, Rt. Hon. Andrew Bonar** (1858-1923), Conservative statesman. He became leader of the Opposition in 1911, joined the Coalition in 1915, and served as Prime Minister from 1922 until shortly before his death in 1923.
- Lawrence, David Herbert** (1885-1930), one of the most powerful and original of modern novelists, and as a poet ranked among the best this century has produced. Author of *The White Peacock*, *Sons and Lovers*, *The Plumed Serpent*, etc.
- Lawrence, Sir Thomas, P.R.A.** (1769-1830), one of the fashionable portrait painters of his day.
- Lawrence, Col. Thomas Edward** (1838-1935), known as "Lawrence of Arabia," British soldier, archaeologist and explorer. Organised and led the Arabs against the Turks in the war of 1914-18. Author of *The Seven Pillars of Wisdom* (1926), of which an abbreviated edition, *Revolt in the Desert*, was published in 1927.
- Lawther, Sir William** (b. 1889), President of the National Union of Mineworkers 1940-54.
- Leacock, Stephen Butler** (1869-1944), Head of Dept. of Economics, McGill University, Montreal, 1908-36; but best known throughout the world as a humorous writer.
- Lecky, Rt. Hon. William Edward Hartpole, O.M.** (1838-1903), an eminent historian. His best-known works are *The History of England in the Eighteenth Century* and *The History of European Morals*.
- Leclerc (de Hautecloque), General Jacques Philippe**, Marshal of France (1902-1947), French soldier of considerable personal popularity. Was Governor of the Cameroons in 1940, declared for the Free French and later led a Free French force from Lake Chad across the Sahara desert to join the Allied Forces in North Africa. Liberated Paris in 1944; commanded French troops in Indo China, 1946. Killed in air crash in Algeria.
- Le Corbusier**, pseudonym of Charles-Edouard Jeanneret (b. 1887), Swiss-born French architect and town-planner whose works and theories with their emphasis on organic planning have profoundly influenced contemporary architecture. Famous for his *ville radieuse* conception of a city and architect of *L'Unité d'Habitation* at Marseilles and of Chandigarh, the new capital of East Punjab. Inventor of the Modulor, a simple system of dimensions related to each other harmonically, which forms the basis of all his work.
- Lee of Fareham, Viscount, P.C., G.C.B., G.C.S.I., G.B.E.** (1868-1947), First Lord of the Admiralty 1921-22. Minister of Agriculture, 1919-21. Presented Chequers Court to the nation as a residence for British Premiers, 1917.
- Lee, Robert Edward** (1807-70), was one of the ablest Confederate generals in the American Civil War, and C-in-C. when the final surrender was made at Appomattox in 1865.
- Lee, Sir Sidney** (1859-1926), the great authority on Shakespeare, and joint editor with Sir Leslie Stephen of the *Dictionary of National Biography*, exercising undivided control over the completion of that monumental work during the last ten years of its publication.
- Leech, John** (1817-1864), perhaps the most popular of all the *Punch* artists, whose sketches and cartoons were the life and soul of the paper for many years.
- Lehar, Franz** (1870-1948), Hungarian composer, chiefly of light operas of the "Viennese" type. His works abound in charming melody, and are competently orchestrated. Besides his famous *The Merry Widow*, which was first produced in 1905, he wrote *Gipsy Love*, *The*

- Count of Luxembourg, Eva, Frasnquita, Paganini, Frederika, The Land of Smiles and Giuditia.*
- Leibnitz, Gottfried Wilhelm, Freiherr von** (1646-1716), German writer and philosopher and one of the world's supreme intellects. Propounded a new system of philosophy, in which he maintained that the ultimate elements of the universe are individual centres of force or monads. Invented the infinitesimal calculus which he published in 1684, independently of Newton whose previous work on the same subject was published in 1687.
- Leicester, Robert Dudley, Earl of** (1581-88), son of John, Duke of Northumberland (*q.v.*), was a favourite of Queen Elizabeth. He commanded the English troops in the Netherlands, 1585-87, and in England before the Armada. Married to Amy Robsart (*q.v.*).
- Leighton, Lord, P.R.A.** (1830-96), a successful English painter and sculptor who chiefly adhered to classical subjects and was renowned for his extreme delicacy of finish and splendour of colour. Among his more famous paintings are *Venus Disrobing, Clytemnestra*, and *The Garden of the Hesperides*.
- Lely, Sir Peter** (1618-80), the famous painter to whom we owe so many of the portraits of the beauties of the Court of Charles II. He was born at Soest and his proper name was Van der Faes.
- Lenin, Vladimir Ilyich Ulyanov** (1870-1924), an active worker for the Russian Revolution from 1893-1917 both "underground" in Russia and abroad. It was in this period that the revolutionary Social-Democratic party was formed. An uncompromising revolutionary group, known as the Bolsheviks, developed within this party and Lenin was its leading spirit. In April 1917 Lenin returned to Russia. In the 1917 November Revolution the Provisional Government was overthrown by the Bolsheviks and Lenin became President of the new Government, the Council of People's Commissars—the Sovnarkom. From 1917 to his death in 1924 Lenin remained the active head of the Russian Soviet Government.
- Leonardo da Vinci** (1452-1519), one of the greatest all-round geniuses the world has known, painter, sculptor, architect, scientist, engineer and musician. Famed as the painter of *The Last Supper, Mona Lisa*, and other great works.
- Leonidas** was king of Sparta at the time of the invasion of Greece by Xerxes, 480 B.C., and led the defence of the Pass of Thermopylae, where he fell.
- Lermontov, Mikhail Yurevich** (1814-41), great Russian poet and novelist, exiled to the Caucasus for the passionate, revolutionary poem addressed to Czar Nicholas I, written on the death of Pushkin. He has often been called the poet of the Caucasus, for the stern, mountainous country of his youth and exile had a great influence on his poetry. His novel *A Hero of our Time* was written while he was at St. Petersburg in 1839. Lost his life in a duel.
- Le Sage, Alain René** (1668-1747), author of the famous stories *Gil Blas* and *Le Diable Boiteux*, also a dramatist of note.
- Leslie, Charles Robert, R.A.** (1794-1859), an eminent British painter; produced many notable pictures, including *The Play-Scene from Hamlet, Sancho Panza and the Duchess*, etc.
- Lesseps, Vicomte Ferdinand de** (1805-84), an engineer of large ideas who, while Vice-Consul at Alexandria, conceived the plan of the Suez Canal, which work was completed in 1869. He afterwards projected the original Panama Canal, which failed.
- Lessing, Gotthold Ephraim** (1729-81), a noted German critic and dramatic poet, whose most celebrated work was his *Laocoon*.
- Leverhulme of the Western Isles, 1st Viscount** (1851-1925). Chairman and founder of the soapmaking firm of Lever Brothers, Port Sunlight, which later, by purchase and amalgamation, increased in size and importance to become Unilever Ltd. He was for many years prominent as a business pioneer and man of affairs and one of the most practical exponents of the industrial partnership movement. Presented Lancaster House to the nation, the home of the London Museum.
- Leverhulme, 2nd Viscount, of the Western Isles** (1888-1949). Educated at Eton and Trinity Coll., Cambridge (M.A.). Son of 1st Viscount and Governor of Lever Brothers & Unilever. Apart from his own activities in the world of business, he took great interest in public life, in education and the arts, and in furthering international relations. Wrote the standard biography of his father, *Viscount Leverhulme, by his Son* (1927).
- Leverrier, Urbain Jean Joseph** (1811-77), the French astronomer, co-discoverer with John Couch Adams of the planet Neptune.
- Lewis, Cecil Day, C.B.E., M.A.** (b. 1904), poet and critic. Prof. of Poetry, Oxford Univ., 1951-6. Besides various poetical works has published translations of *The Georgics* and *The Aeneid* of Virgil; also detective novels under pseudonym of Nicholas Blake.
- Lewis, Clive Staples, M.A., F.R.S.L.** (b. 1898), author of various books of popular theology, such as *The Screwtape Letters* and *The Great Divorce*, and of the medieval study *Allegory of Love*.
- Lewis, Sinclair** (1885-1951), an American author who secured his first great success in 1920 with his novel of provincial American life, *Main Street*. *Babbitt*, published two years later, ruthlessly satirised the 100 per cent. disciple of American *Big Business*, and added a new term, "Babbittism," to the American language. Awarded the Nobel Prize for literature, 1931.
- Liaquat Ali Khan, The Hon., M.A.** (1895-1951). Prime Minister of Pakistan and Minister of Defence, 1947-51. Educated in England, took law degree at Oxford and called to the Bar. Closely associated with Mr. Jinnah, he took leading part in the negotiations for the partitioning of India in two dominions. Assassinated at Rawalpindi, Oct., 1951. His widow the Begum Liaquat Ali Khan became Pakistan's first woman Ambassador to the Netherlands at The Hague in 1954.
- Lidgett, Rev. Dr. John Scott, C.H., M.A., D.D.** (1854-1953), founder of the Bermondsey Settlement (1891); joint editor of the *Contemporary Review*; leader of Progressive Party on L.C.C., 1918-28; a former President of the National Free Church Council.
- Lie, Trygve** (b. 1896), Sec.-Gen. of the United Nations 1946-52. Formerly a leading Norwegian politician and Foreign Minister, 1941-46.
- Liebermann, Max** (1847-1935), German impressionist painter. Among his finest pictures are *The Flax Spinner, The Woman with Goats*, and *The Net-Menders*.
- Li Hung Chang** (1823-1901), an enlightened Chinese statesman and general, who by sheer ability rose from a humble position to be Chief Minister, and exercised almost supreme control for a number of years.
- Lilburne, John** (1614-57), an English political agitator and pamphleteer, who became the leader of the Levellers, the democratic party in the English Revolution.
- Linacre, Thomas** (c. 1460-1524), humanist scholar and physician, founder of the College of Physicians. Published translations of Galen's works.
- Lincoln, Abraham** (1809-65), was a native of Kentucky; in early life he became a lawyer, and was returned to Congress in 1846 from Springfield, Illinois, and in 1861 was elected 16th President of the United States, when he delivered his famous anti-slavery pronouncement, which led to the Civil War of 1861-65. In 1864 he was re-elected, and in the following year was assassinated by John Wilkes Booth.
- Lind, Jenny** (1820-87), a famous prima donna, "the Swedish nightingale" as she was called, who made a great sensation by her wonderful voice for some seasons in Europe, London and in America, from 1837 onward.
- Lindsey of Birker, Alexander Dunlop, 1st Baron, C.B.E.** (1879-1952), Master of Balliol College, Oxford, 1924-49. Professor of Moral Philosophy, Glasgow University, 1922-24. Vice-Chancellor, Oxford University, 1935-38. Author of many books on religion and philosophy.
- Linklater, Eric, C.B.E., M.A., LL.D.** (b. 1899), Scottish novelist and playwright, whose works include the novels, *Juan in America* and *Private Angelo*, and the play, *Crisis in Heaven*.
- Linnaeus, Carl von Linne** (1707-78), a tireless Swedish doctor and scientist who became one of the most distinguished of naturalists, and the founder of modern botany. His *Systema*



- Nature* was published in 1735, and other monumental works followed. First to expound the true principles for defining genera and species.
- Lippi, Fra Filippo** (1406-69), one of the great artists of the Italian quattrocento, whose frescoes can be seen in Prato Cathedral. His son **Filippino** (1457-1504) was equally gifted and executed many great works, including frescoes in the Carmine, Florence, and the altar-piece *Virgin and Saints* in the Uffizi Gallery.
- Lippmann, Gabriel** (1845-1921), French physicist, whose more important work was in the field of colour photography. His numerous inventions include the capillary-electrometer, which bears his name, and many other delicate instruments. Awarded the Nobel Prize for Physics, 1908.
- Lippmann, Walter** (b. 1889), American journalist, whose column in the *New York Herald Tribune* has a wide influence.
- Lipton, Sir Thomas Johnstone, Bt., K.C.V.O.** (1850-1931), after an adventurous early career in America, started shopkeeping in his native Glasgow, and in course of a few years became the largest shopkeeper in the world. Was renowned for his charities, and his attempts to win the America's Yachting Cup.
- Lister, Lord, P.C., O.M., F.R.S.** (1827-1912), achieved renown for his discovery of the antiseptic treatment which has accomplished so much on behalf of surgery. Pres. of Royal Socy. 1895-1900; and of British Assn. 1896.
- Liszt, Franz** (1811-86), Hungarian pianist and composer, whose brilliant playing astonished and delighted Europe and rather overshadowed his importance as a composer. He originated the symphonic poem. His daughter Cosima married Wagner.
- Litvinov, Maxim Maximovich** (1876-1952), Russian diplomat and statesman; Soviet Diplomatic Agent to Great Britain, 1917, Commissar for Foreign Affairs, 1929-39; Soviet Ambassador to United States, 1941-43.
- Livingstone, Dr. David** (1813-73), the great Scottish explorer and missionary, whose discoveries in Africa included the course of the Zambesi, the Victoria Falls, and Lake Nyasa. He opened up Central Africa to the influences of Christianity, and stirred the public conscience to the horrors of the Slave Trade. In 1871 considerable apprehension was felt in regard to his fate, but he was discovered by H. M. Stanley at Ujiji near Lake Tanganyika.
- Lloyd, Rt. Hon. John Selwyn Brooke, Q.C., C.B.E., M.P.** (b. 1904), For. Sec. 1955-; Min. of Defence, 1955; Min. of State at Foreign Office, 1951-55.
- Lloyd, Marie** (1870-1922), English music-hall artist and genius of Cockney comedy.
- Lloyd George of Dwyvor, Earl, O.M.** (1863-1945), Chairman of the Liberal Party, 1924-31. Prime Minister, Dec. 1916-22, M.P. for Caernarvon 1890-1944. In 1905 was made President of the Board of Trade. Chancellor of the Exchequer, from 1908 to 1915. Introduced the National Insurance Bill in 1911. In financing the war up to June, 1915, he showed great capacity. On the formation of the Coalition Government he became Minister of Munitions, and, on the death of Lord Kitchener, Secretary for War. As a War Premier he displayed activity, resourcefulness, and driving power, which proved a tremendous influence in bringing about the defeat of Germany; and at the Peace Conference, in conjunction with Clemenceau and President Wilson, he was a master spirit. His daughter Lady Megan Lloyd George who was Liberal M.P. for Anglesey from 1929 to 1951 joined the Labour Party in 1955.
- Locke, John** (1632-1704), one of the great English liberal philosophers and founder of empiricism, the doctrine that all knowledge is derived from experience. His chief work in theoretical philosophy, *Essay Concerning Human Understanding*, was written just before the revolution of 1688 and published in 1690. Other writings include: *Letters on Toleration*, *Treatises on Government*, and *Education*.
- Lockspeiser, Sir Ben, K.C.B., F.R.S.** (b. 1892) Secretary to the Department of Scientific and Industrial Research, previously Chief Scientist, Min. of Supply. Designed the balloon barrage and organised Britain's Air Defences.
- Lodge, Sir Oliver Joseph, D.Sc. F.R.S.** (1851-1940), Principal of Birmingham University 1900-19. A great scientist who was interested in psychical research, and one of the first to demonstrate the possibility of wireless communication. Was Prof. of Physics in University College, Liverpool, 1881-1900. President, British Association, 1913-14. Author of *Faith and Science*, etc.
- Lombroso, Cesare, M.D.** (1836-1909), famous Italian criminologist; in 1889 published his monumental work *L'uomo delinquente*, in which he put forward the theory that there was a definite criminal type which could be distinguished from the normal type, both anatomically and psychologically. He did much by his writings to hasten prison reform.
- Lomonosov, Mikhail Vasilyevich** (1711-65), Russian poet, philosopher, and scientist, closely associated with the foundation of Moscow University in the reign of the Empress Elizabeth.
- London, John Griffith ("Jack")** (1876-1916), an American novelist who led an adventurous life on fishing and sealing vessels and in the Klondyke goldfields and as a war correspondent in Japan, Korea and Manchuria, 1904, and Mexico, 1914. He also tramped throughout U.S.A. and Canada. Wrote many popular novels and stirring books of adventure.
- Longfellow, Henry Wadsworth** (1807-82), an American poet who produced a number of volumes of poetry of great purity of thought and beauty of language. Author of *Hiawatha*.
- Lonsdale, Dame Kathleen, D.B.E., F.R.S.** (b. 1903), Professor of Chemistry and head of the Dept. of Crystallography, Univ. College, Univ. of London. Her publications include *Structure Factor Tables*, *X-Rays and Crystals*, *International Tables for X-Ray Crystallography*, Vol. I, and *Removing the Causes of War*.
- Lonsdale, 5th Earl of, K.G., G.C.V.O.** (1857-1944), was a well-known sportsman whose special interests were horse-racing, hunting and boxing, the Lonsdale belts having been founded by him.
- Lope de Vega Carpio, Félix** (1562-1635), founder of the Spanish drama, and one of the great figures of Spanish literature. He was one of the most prolific of writers, his dramatic productions alone numbering 1500 plays, of which some 450 survive.
- Loti, Pierre** (1850-1923), pseudonym of the famous French novelist Louis Marie Julien Vland, whose works are noted for their excellent prose and a charm peculiarly his own, expressing an emotional sympathy with primitive nature. His most famous books are *The Iceland Fishermen* and *Madame Chrysanthemum*.
- Louis IX.** (1214-70), St. Louis, king of France, crusader, and peace-maker, fulfilled the medieval ideal of the knightly king. Memoirs by the Sire de Joinville.
- Louis XIV.** (1638-1715) reigned over France from 1643 to his death. He was responsible for corrupting Charles II., for the persecution of the Huguenots, the repeal of the edict of Nantes, and for the war of the Spanish Succession. He was a sensual, luxury-loving king, but encouraged arts and literature.
- Louis XV.** (1710-74), called the Well-Beloved. Was the most licentious of his race, and an inveterate hater of England.
- Louis XVI.** (1754-93), was the apathetic and unfortunate French king who married Marie Antoinette, allowed his country to be swayed by first one statesman and then another, until at last he saw himself divested of every shred of power by the Revolutionists. How he and his Queen were subsequently imprisoned and sent to the guillotine all students of French history know.
- Louis, Joe** (b. 1914), world's heavyweight boxing champion. Established a record by successfully defending his title twenty-four times in the years 1937-48. Retired from the ring in 1949.
- Low, Archibald Montgomery, D.Sc.** (b. 1888), a distinguished British scientist who has many inventions to his credit connected with wireless, television, coal and petrol engines, anti-aircraft and anti-tank rocket apparatus.
- Low, David Alexander Cecil** (b. 1891), the well-known cartoonist, creator of Colonel Blimp. Joined the *Manchester Guardian* in 1953, having previously been on the staffs of the *Daily Herald* and *Evening Standard*.
- Lowell, James Russell** (1819-91), an American writer and poet of singular power and humour.

- Loyola, St. Ignatius** (1491-1556), was the founder of the order of Jesuits.
- Lucretius** (Titus Lucretius Carus) (99-55 B.C.), great Roman poet of antiquity, whose life-work was the poem *On Nature* (*De rerum natura*) in six books, the first two of which set out the atomic theory of matter as understood by Epicurus.
- Ludendorff, General Erich von** (1865-1937), was Chief of Staff, and shared with Hindenburg the military leadership of Germany during the Great War. Was largely responsible for the victory of Tannenberg and the overwhelming successes of 1915.
- Ludwig, Dr. Emil** (1881-1948), author of many historical works, including biographies of Goethe, Beethoven, Bismarck, Napoleon, and Lincoln. The Nazis publicly burned his books. Lived for several years in the U.S.A. and died at Ascona in Switzerland.
- Lugard, Frederick, Lord** (1858-1945), British colonial administrator, a man of abounding energy, initiative, tact and firmness, and possessing considerable military abilities. Helped to build up the British dominions in tropical Africa (Nyasaland, Uganda, Nigeria) and to establish the principles of British African administration, notably the system of "indirect rule" through native rulers. In 1922 published the *Dual Mandate in Tropical Africa*, which set out the thesis that Europe is in Africa for the reciprocal benefit of her own industrial classes and the native races.
- Luther, Martin** (1483-1546), the great German Reformer. Was ordained a priest in 1507. Became Professor of Theology at the University of Wittenberg and until 1517 was an orthodox Roman Catholic. His first idea of revolt occurred when he saw indulgences being sold, a practice which he openly condemned. For this he was excommunicated, and summoned before the Diet at Worms, where he made a memorable defence. He then separated himself from the Roman Catholics, and began to preach the Reformed Religion, his doctrine being formulated in the confession of Augsburg. He lived to see the principles of the Reformation widely established.
- Lutyens, Sir Edwin Landseer, O.M., K.C.I.E., R.A.** (1869-1944), was a famous architect; designer of the Cenotaph; New Delhi; new British Embassy, Washington; Roman Catholic Cathedral Liverpool, etc. One of the principal architects for the Imperial War Graves Commission. Pres. of the Royal Academy, 1938-43.
- Lycurgus**, the Spartan legislator, who flourished about 344 B.C., and drew up a series of laws which endured for 700 years.
- Lyell, Sir Charles, Bt., F.R.S.** (1797-1875), distinguished geologist and author of *Principles of Geology*. He was a supporter of the Darwinian theory.
- Lysenko, Trofim** (b. 1898), Russian biologist, who developed a successful process of scientific farming (vernalisation). His concept of genetics, that environmental experiences can change heredity, though discredited in scientific circles outside the U.S.S.R., was accepted there as an official dogma until 1953. Resigned as Pres. of the All-Union Academy of Agricultural Sciences, 1956. Pubs. include *Heredity and its Variability* (1943) and *Agrobiologia* (1948).
- Lytton, Edward George Earle Bulwer, 1st Baron, P.C., G.C.M.G.** (1803-73), a prolific novelist and dramatist, whose romantic stories made him famous, and included *Pelham*, *The Last Days of Pompeii*, and *The Caxtons*.
- Lytton, Sir Henry Alfred** (1867-1936), was a noted British actor who scored many successes, chiefly playing Gilbert and Sullivan roles.

## M

- Macadam, John Loudon** (1756-1836) was a Scottish engineer who invented the process of road-repairing which bears his name. This made a great improvement in road travel.
- MacArthur, General Douglas, Hon. G.C.B., D.S.C., D.C.M.** (b. 1880), American soldier famous for his gallant defence of the Philippines against the Japanese in 1941-42, after which he was Com.-in-Chief of Allied Forces, South-West Pacific area. Supreme Commander for Allied Powers in Japan from 1945, and for U.N. forces

- in Korea campaign, 1950-51. Relieved of his commands in the Far East by President Truman in April 1951.
- Macaulay, Rose** (b. c. 1895), an English authoress and literary critic. Among her literary successes are *Potterism*, *Dangerous Ages*, *Told by an Idiot*, *Orphan Island* and other novels noted for their keen satirical wit and devastating exposure of the follies of her time.
- Macaulay, Thomas Babington, Lord** (1800-59), the most brilliant historian of the Victorian era. His fame was assured by his *Essays and Lays of Ancient Rome*, and his *History* did more than confirm it. He was a son of Zachary Macaulay (1768-1838), the anti-slavery agitator, and sat in Parliament as member for Calne for some years, also serving for five years as a member of the Supreme Council of Calcutta. On his home-coming, he again entered Parliament as member for Edinburgh, and gained a new celebrity by his speeches. He at different times filled the offices of Paymaster-General and Secretary for War. Both Lord Macaulay and his father lie buried in Westminster Abbey.
- Macbeth**, according to Holinshed's *Chronicle*, was the usurping Scottish king who succeeded Duncan, whom he murdered. Macbeth was slain by Duncan's son Malcolm in 1056, after a reign of seventeen years. His history forms the subject of Shakespeare's celebrated tragedy.
- MacCarthy, Sir Desmond, F.R.S.L., Hon. D.Litt., Hon. LL.D.** (1877-1952), journalist and critic who became dramatic critic to *The Speaker*, 1904, and *The New Statesman*, 1913, where he soon made a reputation both for the substance and style of his writings. He edited *The New Quarterly*, 1907-10 and later *Life and Letters*. Latterly was literary critic to *The Sunday Times*.
- McCarthy, Justin** (1830-1912), Irish politician, novelist, and historian, from 1879 to 1896 was a prominent member of the Irish Party in Parliament, succeeding Mr. Parnell in 1890 in the leadership of the party.
- McCormack, (Count) John** (1884-1945), was the world famous Irish tenor who became a naturalised American citizen in 1919; received a Papal peerage as Count from Pius XI in 1928.
- Macdonald, Flora** (1722-90), attracted much romantic interest by her bravery in conducting Prince "Charlie" to the Isle of Skye, when he was pursued. She afterwards married and settled in America, but ended her days in Skye.
- Macdonald, Rt. Hon. James Ramsay** (1866-1937), Prime Minister in the first two Labour Governments, 1924, 1929-31, and in a Coalition Government dominated by Conservatives, 1931-35. His son, Malcolm (b. 1901), has been Dominions Secretary, High Commissioner in Canada, Gov.-Gen. of Malaya, Comm.-Gen. for S.E. Asia, and since 1955 High Comm. in Delhi.
- McDougall, William, F.R.S.** (1871-1938), British psychologist. Professor of Psychology at Harvard University 1920-27, and Duke University, North Carolina 1927-38. Wrote *Body and Mind*, 1911, *The Group Mind*, 1920, *Outline of Psychology*, 1923.
- Machiavelli, Niccolo** (1469-1527), a Florentine diplomatist and historian, whose book, *Il Principe*, has maintained its celebrity as a masterly exposition of the method of governing by artifice.
- Mackail, Prof. John William, O.M.** (1859-1945), British classical scholar, Prof. of Poetry at Oxford, 1906-11, and translator of the *Odyssey*. Father of Denis Mackail (b. 1892), novelist and short-story writer, and of Angela Thirkell (b. 1890), also a novelist.
- McKell, Sir William John, G.C.M.G., K.C.** (b. 1891), Gov.-Gen. of Australia 1947-1952, Previously engaged in Australian politics.
- Mackenzie, Sir (Edward Montague) Compton, O.B.E.** (b. 1883), one of the foremost of present-day British novelists; literary critic to the *Daily Mail*, 1931-35; Rector of Glasgow Univ., 1931-34.
- McMillan, Margaret, C.H., C.B.E.** (d. 1931), Scots-woman, born in America, who with her sister Rachel was a pioneer of child welfare work. Founder of open-air nursery schools. The Rachel McMillan nursery school at Deptford is a memorial to her work.
- McNaughton, Gen. Hon. Andrew George Latta, C.H., D.S.O.** (b. 1887), Canadian soldier, politician, electrical engineer, and representative on the U.N. Atomic Energy Commission.



- Macready, William Charles** (1793-1873), was the outstanding tragic actor of his time and was extremely successful in Shakespearian and other rôles.
- Maeterlinck, Count Maurice** (1882-1949), the distinguished Belgian poet and critical writer. His principal works are *La Princesse Maleine*, *Pelleas et Melisande*, *La Sagesse et la Destinée*, *The Blue Bird* and *The Burgomaster of Stilemonde*.
- Magellan, Ferdinand** (c. 1480-1521), a famous Portuguese navigator, and commander of the first expedition (1519) to sail round the world.
- Maintenon, Françoise d'Aubigné, Marquise de** (1635-1719), after being the wife of the poet Scarron, drifted into Court circles, and so fascinated Louis XIV, that he ultimately married her. At his death she retired to a convent.
- Malenkov, Georgiy Maximilianovich** (b. 1901), Chairman of the Council of Ministers (Prime Minister) of the Soviet Union from the death of M. Stalin in 1953 to 1955.
- Malibran, Marie Félicité** (1808-36), was one of the most famous operatic singers of her time.
- Malik, Yakov Alexandrovich** (b. 1906), Soviet diplomatist who has been Deputy Min. of Foreign Affairs, Permanent Rep. of U.S.S.R. to U.N., 1948-52, and since 1953 Soviet Ambassador to Great Britain.
- Malory, Sir Thomas** (c. 1430-70), compiled the *Morte d'Arthur*, which was printed by Caxton in 1485, and relates the story of King Arthur and the Knights of the Round Table.
- Malthus, Thomas Robert, F.R.S.** (1766-1834), an English clergyman and political economist who in his essay on *The Principle of Population* proposed to limit the increase of population by discouraging marriage and otherwise.
- Malvern, 1st Viscount, Godfrey Martin Huggins, C.H., K.C.M.G., F.R.C.S.**, Prime Min. of S. Rhodesia, 1933-53 and of the Fed. of Rhodesia and Nyasaland since its formation in 1953.
- Manet, Edouard** (1832-83), French Impressionist painter, who knew the melodic values of colour and harmony and the use of grey tones. His pictures *Olympia* and *Lola de Valence* have been acclaimed masterpieces.
- Mann, Thomas** (1875-1955), German writer who won immediate world recognition at the age of 25 with his novel *Buddenbrooks*. His liberal humanistic outlook had developed sufficiently by 1930 for him unerringly to expose the nature of National Socialism. Having become almost the most hated target of Nazi propaganda, he left Germany in 1933, living first in Switzerland, and then accepting Czechoslovakian and subsequently United States nationality. He spent the war years in the States, but left when the changed political climate made itself felt to return to Switzerland. Awarded the Nobel Prize for Literature in 1929; E. and W. Germany combined to honour him with the Goethe Prize in 1948. His best-known works, apart from many volumes of essays, stories, and shorter novels, are *The Magic Mountain* (1924), the *Joseph tetralogy* (1935-43), and *Dr. Faustus* (1947).
- Mann, Tom** (1856-1941), was a prominent British Labour leader for more than 50 years.
- Manning, Henry Edward, Cardinal** (1808-92), Cardinal Archbishop of Westminster 1875-92, was a prominent Anglican Churchman up to 1851, when he joined the Church of Rome.
- Mansfield, Katherine** (1890-1923), well-known short-story writer. Wife of John Middleton Murry, the author and literary critic. *Bliss* (1920), *The Garden Party* (1922), and *The Dove's Nest* (1923), contain most of her stories.
- Manson, Sir Patrick, G.C.M.G., M.D., F.R.S.** (1844-1922), an eminent physician who specialised in parasitology and became physician and medical adviser to the Colonial Office. He was the first to formulate the hypothesis that the malarial parasite was transmitted by the mosquito. The joint work of Sir Patrick Manson and Sir Ronald Ross rendered habitable vast areas of the earth hitherto closed.
- Manuzio, Aldo Pio** (1450?-1515), Italian printer, founder of the Aldine press in Venice, which for just over a century issued books famed for their beautiful type and bindings.
- Manzoni, Alessandro Francesco Tomaso Antonio** (1785-1873), Italian writer, whose romantic novel *I Promessi Sposi* ("The Betrothed") is generally regarded as the most important work in Italian literature after "The Divine Comedy."
- Mao Tse-Tung** (b. 1893), Chairman of the Chinese Communist Party since 1936 and first chairman of the Central Government of the People's Republic of China, formally established at Peking in October 1949, following the military defeat of the Nationalist forces.
- Marat, Jean Paul** (1743-93), one of the leading actors in the French Reign of Terror. Killed by Charlotte Corday.
- Marconi, Marchese Guglielmo, Hon. G.C.V.O.** (1874-1937), was an ingenious Italian electrician who was educated at Leghorn and Bologna. Coming to England, he studied with Sir William Preece and in 1896 brought forward an apparatus by which he succeeded in sending wireless messages. In 1902 succeeded in transmitting trans-oceanic messages. Established a public wireless telegraph service across the Atlantic in 1907. Awarded Nobel Prize for Physics, 1909.
- Marco Polo.** (See Polo, Marco.)
- Marcus Aurelius Antoninus** (121-180), the greatest of Roman emperors and a disciple of the stoics.
- Maria Theresa** (1717-80), a woman of remarkable strength of character and ability, succeeded her father Charles VI., as Austrian Empress. She was an enlightened ruler and has been called a "benevolent despot."
- Marie Antoinette Josephe Jeanne** (1755-93) was daughter of the Empress Maria Theresa and the Emperor Francis I. of Austria, and became wife of Louis XVI. of France. She entered with spirit into the gaiety of French Court life, and drew down upon herself much popular hatred in consequence. In the terrible events which followed the outbreak of the Revolution she was one of the chief sufferers, but bore her fate with dignity and resignation, and met her death on the scaffold with unflinching courage.
- Marie Louise** (1791-1847), daughter of Francis I. of Austria, became wife of Napoleon in 1810, and bore him a son. (See Napoleon II.)
- Marius, Caius** (b.c. 155-86), was one of the most distinguished Roman generals, a tribune of the people, praetor, and six times Consul. He was Proprietor of Spain in 114 B.C.
- Mark Antony.** (See Antonius, Marcus.)
- Marlborough, John Churchill, 1st Duke of** (1650-1722), brilliant soldier, the victor of Blenheim, Ramilies, Oudenarde, and Malplaquet. Married to Queen Anne's favourite, Sarah Jennings.
- Marlowe, Christopher** (1564-93), one of the greatest of the Elizabethan dramatists. His principal plays are *Dr. Faustus*, *Tamburlaine the Great*, *Edward II.*, and *The Jew of Malta*. He was killed in a tavern brawl at Deptford.
- Marryat, Captain Frederick** (1792-1848), an exceedingly popular writer of sea stories. Author of *Peter Simple*, *The King's Own*, *Jacob Faithful*, and *The Children of the New Forest*.
- Marshall, General George Catlett** (b. 1880), outstanding American soldier and statesman. Sec. of Defence, 1950-51; Chief of Staff of U.S. Army, 1939-45. After serving as special envoy to China 1945-47, was Sec. of State until his resignation in January 1949. Initiated the American offer of aid to Europe, which led to the European Recovery Programme. Awarded Nobel Peace Prize, 1953.
- Martial (Marcus Valerius Martialis)** (A.D. c. 40-A.D. c. 104) was born at Bilbilis in Spain, but spent the greater part of his life in Rome, where he acquired much fame as a poet and epigrammatist.
- Marvell, Andrew** (1620-78), English poet, satirist and diplomatist, friend of Milton, who was best known for his many prose satires and lampoons.
- Marx, Heinrich Karl** (1818-83), German philosopher and socialist and lifelong partner and friend of Engels with whom he collaborated in writing many important works on socialism and in developing his theories of dialectical materialism. After being expelled from the continent he settled in London where he wrote his monumental work *Das Kapital*. Communism is based on the teachings of Marx.
- Mary I.** (1516-58), daughter of Henry VIII. and Catherine of Aragon. Was Queen of England from 1553 to her death. She was a strenuous Roman Catholic, and entirely reversed the religious order of things during her brief reign, persecuting, imprisoning, and burning at the stake many of the Protestant reformers, nearly

- three hundred persons being put to death as heretics. She married Philip of Spain in 1554.
- Mary II** (1662-94), daughter of James II. Came to the English throne in 1689, having been married to her cousin, William of Orange, eleven years previously. After assenting to the "Declaration of Rights," they reigned jointly until her demise.
- Mary, H.M. Queen, K.G., K.T., G.C.V.O.** (1867-1953), Queen Consort of George V.
- Mary, Queen of Scots** (1542-87), was a daughter of James V, of Scotland, and was married to the Dauphin of France at sixteen years of age, and lived at the French Court. On the death of her husband in 1560 she returned to Scotland, and for a time was the acknowledged Queen of the Scots. In 1565 she married Lord Darnley, and thenceforward from one cause and another her entanglements increased. Jealous of Rizzio, the Queen's Italian secretary, Darnley had him murdered in Holyrood Palace, in the presence of the Queen and twelve months later Darnley himself was murdered by Bothwell, who married Mary three months afterwards. The Scottish nobles, angered by these various acts, rebelled against Mary, and she was made prisoner and confined in Loch Leven Castle, compelled to abandon Bothwell and to sign an Act of Abdication in favour of her son. Escaping to England, she sought the protection of Elizabeth, but that monarch refused to give her her freedom, and imprisoned her for the next nineteen years in various castles, and ultimately had her beheaded on a charge of conspiracy. She was buried in Peterborough Cathedral but after her son James I. of England ascended the throne her remains were removed to Westminster Abbey.
- Masaryk, Jan Garrigue** (1886-1948), son of Thomas Masaryk. Served as Czech Minister in London, 1925-38 and as Foreign Secretary, 1940-48. His sudden and tragic death removed a cultured and lovable citizen of the world.
- Masaryk, Thomas Garrigue** (1850-1937), Czech philosopher, statesman and founder and first President of Czechoslovakia, 1918-35.
- Mascagni, Pietro** (1863-1945), the Italian composer, who attained sudden celebrity by his *Cavalleria Rusticana* in 1890, and afterwards produced a number of operas of a more ambitious character, but perhaps not up to the level of his first effort.
- Masefield, John Edward, O.M.** (b. 1878), Poet Laureate since 1930. A prolific writer of notable poems as well as numerous plays.
- Maskelyne, John Nevil** (1839-1917), famous illusionist who exposed the mysteries of the Davenport spiritualistic quacks.
- Mason, Alfred Edward Woodley** (1865-1948), an English novelist, author of many popular stories of adventure including *The Four Feathers* and *Fire Over England*.
- Massenet, Jules Emile Frédéric** (1842-1912), French composer. Operas *Salome*, *Manon*, *Le Cid*, *Thaïs*.
- Massine, Leonide** (b. 1896), a famous Russian dancer who was for some years Ballet Master at the Roxy Theatre, New York. Among his more famous ballets are *The Good Humoured Ladies*, *Boutique Fantasque*, *Pas d'Acier*, *Les Matelots*, *Le Beau Danube* and *Les Présages*.
- Massingham, Harold John** (1888-1952), English author and journalist who wrote on a wide range of subjects and was an authority on bird life and ethnology. He was a noted writer on natural history and also contributed essays to most of the leading periodicals.
- Masters, Edgar Lee** (1869-1950), American poet who occupies a permanent place in American literature by the publication in 1915 of his *Silver Spoon Anthology*, a hundred poems relating the real character as opposed to the eulogistic inscriptions on their tombstones of the dead in a typical American township.
- Matisse, Henri** (1869-1954), French painter, and one of the leading representatives of the modern school of painting in France, becoming the foremost member of a group that were known as *les Fauves*. His work is remarkable for its use of pure and brilliant colour and its reliance on colour variations to express form and relief.
- Matsys or Metzys, Quintin** (1466-1530), a distinguished Flemish painter, who was originally a blacksmith. He excelled in Scriptural subjects,
- Maugham, (William) Somerset, C.H.** (b. 1874), British dramatist and novelist. Born in Paris, he qualified as a doctor, but soon abandoned medicine for literature, achieving a great success with his first novel in 1897, *Liza of Lambeth*, a study of slum life. His medical training gave him a deep insight into human nature, and in his numerous later stories he was a clever and cynical depicter of character. As a dramatist he was equally successful, his immensely popular plays being, for the most part, cynical exposures of modern conventions.
- Maupassant, Henri Rene Albert Guy de** (1850-93), the famous French author and writer of short stories, was a friend of Flaubert, Zola and Daudet. He was the greatest of all European short-story writers, standing alone in grace, wit and epigram.
- Mauriac, François** (b. 1885), French novelist whose works are regarded as among the chief literary productions of to-day. In addition to a long series of novels he has written many critical works and essays. Leader-writer for *Figaro*; Nobel Prizewinner, 1952.
- Maurice, Rev. Frederick Denison** (1805-72), a leader of religious thought and social reform, his *Theological Essays* being characterised by ideas then regarded as very advanced.
- Mauvois, André, K.B.E.** (b. 1885), one of the most brilliant and successful of modern French writers. Has written many charming essays and biographies of Shelley, Disraeli, Byron, Voltaire, etc.
- Mawson, Sir Douglas, O.B.E., D.Sc., F.R.S.** (b. 1882), leader of the Australian Antarctic expedition of 1911-14 and of the British-Australian and New Zealand Antarctic expedition 1929-31; previously a member of the Shackleton expedition. His party endured terrible sufferings in 1912; all died except himself. In 1913 he established a scientific station on the Macquarie Islands.
- Maxim, Sir Hiram Stevens** (1840-1916), the inventor of the famous automatic quick-firing gun.
- Maxton, James** (1885-1946), was a prominent Socialist politician; M.P. for the Bridgeton Divn. of Glasgow, 1922-46. Chairman of I.L.P. 1926-31 and 1934-39.
- Maxwell, James Clerk** (1831-79), Scottish physicist who wrote his first scientific paper at the age of 15. Was Professor of Natural Philosophy at Aberdeen, 1856, and for eight years held the same post at King's College, London, 1860-68. In 1871 he became the first holder of the new Professorship of Experimental Physics at Cambridge University. His best-known work is his treatise on electricity and magnetism, published in 1873. He made the discovery that founded the electro-magnetic theory of light, and to his electrical researches the advent of wireless is due.
- Mazarin, Jules** (1602-61) an Italian Cardinal who became chief Minister of State under Louis XIV., and was for a number of years the practical ruler of France. He succeeded Richelieu.
- Mazeppa-Koledinsky, Ivan Stepanovich** (1644-1709), the hero of Byron's poem, was a real personage, and a Pole, and was tied naked on the back of a wild horse, and so sent out across the Russian desert, for an intrigue with a noble's wife. He was liberated by Cossacks and afterwards attained an honourable position.
- Mazzini, Giuseppe** (1805-72), an Italian patriot, who, in his endeavours to secure the independence of Italy, incurred the disfavour of the authorities, and was compelled to leave the country. He started a newspaper called *Young Italy* at Marseilles, and in 1837 came to London, and kept up his attacks upon existing governments. In 1848 he was back in Rome, and was elected dictator of the Roman Republic. He was not allowed to hold this position long, however, for the French occupied Rome and Mazzini was driven to England again. The unification of Italy was accomplished in other ways than those advocated by Mazzini, but he lived to see Victor Emmanuel King of United Italy.
- Mehul, Etienne Nicolas** (1763-1817), French composer, known principally for his operas, which carried on the tradition laid down by Gluck. In all he composed over 40 operas, besides numerous vocal works.
- Melissomier, Jean Louis Ernest** (1815-91), an eminent French painter.



**Melba, Dame Nellie, G.B.E.** (1865-1931), the celebrated *prima donna* was born in Melbourne—her father was the late David Mitchell of Melbourne, and her mother of Spanish descent—and made her *début* in 1887 at Brussels.

**Melbourne, 2nd Viscount** (1779-1848) Queen Victoria's first premier, holding office over six years, and identified with many important Liberal measures.

**Mendel, Gregor Johann** (1822-84), Austrian botanist. After joining the Augustinian order, he moved to the monastery at Brün where he afterwards became Abbot and taught natural history in the school there. His main interest, however, was the study of inheritance, and his elaborate observations of the common garden pea resulted in the famous law of heredity which to-day bears his name. His hypothesis was published in 1866 but no attention was given to it until 1900.

**Mendeleev, Dmitry Ivanovich** (1834-1907), Russian chemist who made important contributions to physical chemistry and general chemical theory. First to discover the critical temperatures and formulated the Periodic Law of atomic weights. Element 101 is named after him.

**Mendelssohn-Bartholdy, Felix** (1809-47), the celebrated German composer, whose works are of delicate spirituality, full of melodic beauty, and in the highest sense artistic. He was the grandson of Moses Mendelssohn, the philosopher, whose writings gained for him the title of "the Socrates of the Jews," and who died in Berlin in 1786. The younger Mendelssohn was Director of Concerts in Leipzig for a time, lived in Italy several years, and was a frequent visitor to England. His two oratorios, *St. Paul* and *Elijah*, are magnificent compositions.

**Mendès-France, Pierre, LL.D.** (b. 1907), French statesman. His skilful diplomacy and energy helped to solve the many problems that faced his country when he took office as Prime Minister in June 1954. His government was overthrown in Feb. 1955.

**Menuhin, Yehudi** (b. 1916), violin virtuoso, one of the greatest musical prodigies of the 20th century. Born in New York of Jewish parentage; made his first London appearance in the San Francisco Orchestra, 1929.

**Menzies, Rt. Hon. Robert Gordon, C.H., Q.C.** (b. 1894), Australian Liberal leader; Prime Minister, 1939-41 and since 1949.

**Mercator, Gerhardus** (1612-94), the Flemish geographer who invented a celestial and a terrestrial globe, by which he introduced his famous projection, in which meridians and parallels of latitude cross each other at right angles, both being indicated by straight lines. This greatly simplified navigation.

**Meredith, George, O.M.** (1828-1909), novelist and poet, "the Grand old Man of English letters." His works are rich in imagery, poetry, wit, and characterisation, and as a delineator of womanhood he is unsurpassed. Among his great novels are *Ordeal of Richard Feverel*, *Evan Harrington*, *Rhoda Fleming*, *The Egoist*, *Diana of the Crossways*, and *The Amazing Marriage*.

**Mesmer, Friedrich Anton** (1738-1815), was a German doctor who founded the system of mesmerism or animal magnetism.

**Mestrovic, Ivan** (b. 1883), a Dalmatian sculptor, recognised as one of the leading European sculptors of the present time. The Tate Gallery and the Victoria and Albert Museum have examples of his work.

**Metchnikov, Ilya** (1845-1916), an eminent Russian biologist; Nobel Prize for Medicine, 1908.

**Meyerbeer, Giacomo** (1794-1864), was born in Germany, but spent most of his life in Paris, where he produced all his great operas, which include *Robert le Diable*, *Les Huguenots*, *Le Prophète*, and several others.

**Meynell, Alice** (1849-1922), English poet and essayist, wife of Wilfred Meynell (1852-1948), editor of the Catholic paper *Merry England*.

**Michelangelo** (Michelagnoli Buonarroti) (1475-1564), the renowned Italian painter, sculptor, architect and poet, whose genius was such a power in beautifying the churches of Rome and Florence. Was the last and in some respects the greatest of the Italian sculptors; while his large paintings, particularly *The Last Judgment*, in the Sistine Chapel, are no less famous.

**Michelot, Jules** (1798-1874), a noted French historian and author.

**Michelson, Albert Abraham** (1852-1931), American physicist, born in Poland. Designer of an interferometer for estimating the diameters of stars. Collaborated with E. W. Morley in the *Michelson-Morley* experiment to measure the velocity of the earth through the "ether" which led to the conclusion that the ether is non-existent and had great value for Einstein's theory of relativity. Was the first American scientist to win the Nobel prize for Physics, 1907, in which year he was also awarded the Copley Medal.

**Mickiewicz, Adam** (1798-1855), greatest Polish poet and revolutionary. Chief works *The Ancestors*, *Pan Tadeusz*.

**Milford Haven, Admiral of the Fleet Prince Louis Alexander Mountbatten, 1st Marquess of, P.C., G.C.B., G.C.V.O., K.C.M.G.** (1854-1921), up to July, 1917, known as Prince Louis of Battenberg, son of Prince Alexander of Hesse, and married to his cousin, Princess Victoria, daughter of Princess Alice of England and the Grand Duke of Hesse. Father of Earl Mountbatten and grandfather of H.R.H. The Duke of Edinburgh. Had a successful career in the British Navy, which he entered in 1868.

**Mill, John Stuart** (1806-73), achieved high reputation by his numerous works on philosophical questions and wrote, amongst other books, *Principles of Political Economy*, *Essay on Liberty*, and *Utilitarianism*.

**Millais, Sir John Everett, Bt., P.R.A.** (1829-96), was at one time the most prominent of the English Pre-Raphaelites, but soon cast himself free from their mannerisms, and began the production of a long series of famous pictures. Among his numerous works we have room to mention only *The Eve of St. Agnes*, *Autumn Leaves*, *The Order of Release*, *Effie Deans*, *Chill October*, and *Bubbles* (see the Frontispiece).

**Millet, Jean François** (1814-75), one of the greatest of French painters of pastoral subjects; his celebrated work *The Angelus* is universally known by its numerous reproductions.

**Millikan, Robert Andrews** (b. 1898), American physicist who is world famous for his researches on electrons, and for discovering the cosmic rays. Professor of Physics at Chicago University 1910-21, and Director of the Norman Bridge Laboratory of Physics at Pasadena, California 1921-45. Awarded Nobel Prize for Physics, 1923.

**Milne, Alan Alexander** (b. 1882), English humorist, poet, and playwright. Has written much delightful verse and stories for children.

**Milner, Alfred, Viscount** (1854-1925), imperial statesman, who served in South Africa from 1897 to 1905 and had great influence on the history of that country. Was Secretary for War in 1918 and for the Colonies, 1919-21.

**Miltiades** (d. 489 B.C.), one of the leaders of the Athenian army against the Persians at Marathon.

**Milton, John** (1608-74), England's chief epic poet, whose *Paradise Lost* is the greatest poem of the kind in the language. The best known of his other poems are probably the *Ode on the Morning of Christ's Nativity*, *L'Allegro*, *Il Penseroso*, *Lycidas*, and the sonnet *On his Blindness*. In 1652 he became totally blind, and at his death was buried in St. Giles's Church, Cripplegate, London, a monument being erected to his memory in Westminster Abbey.

**Minot, George Richards, M.D.** (1885-1950), an eminent American doctor who became Prof. of Medicine at Harvard in 1928, and famous for his researches in the pathology of the blood, and for his discovery of the curative properties of liver in pernicious anaemia. Shared the Nobel Prize for Medicine, 1934.

**Mirabeau, Gabriel, Comte de** (1749-91), one of the prominent figures of the French Revolution, and a famous orator.

**Mistral, Frédéric** (1830-1914), French poet who spent his whole life in Provence and wrote many works of great lyrical beauty; founded the *Félibrige* society (*s.v.* Gen. Inf.); completed *Lou Tresor dóu Félibrige* in 1886, a Provençal dictionary and encyclopædia of Provence. Awarded Nobel Prize for literature in 1904.

**Mithridates** (circa 132-63 B.C.), was King of Pontus

from 120-63 B.C., and showed great capacity as a commander, conquering a great part of Asia Minor and Greece.

**Moffat, James** (1870-1944), Scottish divine who translated the Bible into modern English.

**Mohammed** (570-632), the founder of Islam, the religion of the Moslems, fled from Mecca to Medina in 622, from which date the Mohammedan era opens. By his constant preaching and proclaiming of the one and only Deity Allah he gathered round him a small and loyal, hard-fighting band of followers and was able to return to Mecca eight years later, an acknowledged conqueror. The Sacred Book of Islam, the *Koran*—though presented by him as an original revelation from the Angel Gabriel—may in the main be traced to Biblical and Rabbinical sources.

**Moiseiwitsch, Benno, C.B.E.** (b. 1890), Russian-born, naturalised British pianist, especially well known for his rendering of the works of the Romantics.

**Molière** (Jean Baptiste Poquelin) (1622-73), the greatest of French comic dramatists, who, from being a poor strolling player, became the leading dramatist of his time. His greatest comedies were *Le Tartuffe*, *Le Misanthrope*, *Le Malade Imaginaire* and *Le Médecin malgré lui*.

**Molotov, Vyacheslav Mikhailovich** (Skryabin) (b. 1890), Russian diplomat. Organised student groups and worked on *Pravda* and was a member of the Petrograd Soviet Executive in 1917. His influence gradually increased, until in 1939 he succeeded Litvinov as Commissar for foreign affairs, a position he held until 1949. Member of the former Politburo and since 1953 Foreign Minister; chief representative of the Soviet Union at numerous post-war conferences.

**Moltke, Field-Marshal Count Helmuth von** (1800-91), was responsible for the Prussian strategy in the Danish, Austrian, and Franco-Prussian wars, in all of which he was outstandingly successful.

**Mond, Ludwig, Ph.D., F.R.S.** (1839-1909), German chemist who in 1867 settled in England as an alkali manufacturer and in partnership with John Brunner successfully manufactured soda by the Solvay process. Founded the Davy-Faraday laboratory.

**Monet, Claude** (1840-1926), the most representative of the French Impressionists. Exhibited in 1874 his landscape *Impression, Soleil levant*, from which the word *Impressionism* was derived. Loved painting water and atmospheric effects.

**Monier-Williams, Sir Monier, K.C.I.E., LL.D.**, Ph.D. (1819-99), a great Sanskrit scholar who laboured with distinction in bringing westward the wisdom of the Orient.

**Monk, George, 1st Duke of Albemarle** (1608-69), served with distinction as general and admiral, particularly in the Anglo-Dutch wars, and in 1660 effected the Restoration of Charles II.

**Monroe, James** (1758-1831), Fifth President of the U.S. Was appointed Governor of Virginia in 1799, and in 1803 went to France and carried through the purchase of Louisiana. Best known as the author of the Monroe Doctrine, which he outlined in his Presidential message of 1823.

**Montaigne, Michel de** (1533-92), a French essayist of world-wide celebrity, who may be regarded as the inventor of the essay form, and had a great influence on English writers.

**Montcalm, General Louis Joseph, Marquis de** (1712-59), commander of the French Army against the British in Canada in the final struggle for possession. Defeated by Wolfe in 1759 and mortally wounded.

**Montesquieu, Charles Louis de Secondat, Baron de La Brede et de** (1689-1755), French philosopher and author. His works include *Les Lettres Persanes*, a witty satire on contemporary life, and his great work *L'Esprit des Loix*, setting out his ideas on politics and law. Showed a genius for generalisation and gave to history a philosophy. Greatly admired England and her constitution, which he misunderstood, and his influence on the authors of the American constitution consequently led to the impractical separation of the executive (the President) from the law-making power (Congress).

**Montessori, Maria** (1869-1952), M.D., D.Litt., a brilliant educationist. The "Montessori" method she invented for infant education has had wide recognition. (See also Gen. Inf.)

**Monteverdi, Claudio** (1567-1643), an Italian com-

poser of importance by reason of his pioneer work in the operatic form. His most important dramatic work was *Orfeo* (1608).

**Montezuma II.** (1486-1520) was Emperor of Mexico when Cortes invaded that country, and the last Aztec ruler of Mexico.

**Montfort, Simon de, Earl of Leicester** (1206-65) was a powerful baron, with liberal views, and a hatred of kingly tyranny. It was his bold action that forced Henry III., his brother-in-law, to grant the first English Parliament. He met his death at the Battle of Evesham.

**Montgolfier, Joseph Michel** (1740-1810) and **Jacques Etienne** (1745-1799), two French brothers who, during the last twenty years of the 18th century, demonstrated the practicability of a balloon inflated by heated air, making many ascents, and may be said to be the fathers of modern aeronautics.

**Montgomery, Field-Marshal Viscount, K.G., G.C.B., D.S.O.** (b. 1887), rose to military fame as Commander of the 8th Army in the North African and Italian campaigns, 1942-44. C-in-C. British Forces in France and Germany, 1944-46; C.I.G.S., 1946-48. Permanent Military Chairman of the Western Union Defence Committee, 1948-51; Deputy Supreme Commander, NATO, 1951.

**Montrose, James Graham, Marquess of** (1612-50), brave and inspiring Scottish general who raised the Highland clansmen for Charles I. and again for Charles II. His lyric poetry included *My dear and only love*.

**Moody, Dwight Lyman** (1837-99), the American revivalist preacher, associated for many years in mission work on both sides of the Atlantic with Ira D. Sankey, the "American Singing Pilgrim."

**Moore, George** (1852-1933), a well-known Irish novelist; author of *Confessions of a Young Man*, *Esther Waters*, *Evelyn Innes*, etc. Among his later masterpieces were *The Brook Kerith* (1916) and *Heloise and Abelard* (1921).

**Moore, Henry, C.H.** (b. 1898), English sculptor, examples of whose work are to be seen in the Tate Gallery, the V. and A. Museum, and St. Matthew's Church, Northampton.

**Moore, Sir John** (1761-1809), British general, who trained the infantry for the Spanish Peninsular campaigns and conducted a brilliant retreat to Corunna, where he was mortally wounded after defeating the French under Soult.

**Moore, Thomas** (1779-1852), Ireland's greatest poet, the author of *Irish Melodies*, *Lalla Rookh*, *The Epicurean*, and many other works. He enjoyed immense popularity both in England and Ireland. Was the friend and biographer of Lord Byron.

**More, Sir Thomas** (1478-1535), succeeded Wolsey as Lord Chancellor under Henry VIII., but fell into disgrace by refusing to take the oath of Supremacy, and was ultimately executed. His *Utopia* is one of the world's most noted books. Canonised 1935.

**Morgan, Sir Henry** (c. 1635-88), Welsh buccaneer of great skill and daring, who operated in the Caribbean against the Spaniards, capturing and plundering Panama in 1671. Knighted by Charles II and made Deputy-governor of Jamaica.

**Morgan, John Pierpont** (1837-1913), one of the great financiers of his time who built the family fortunes into a vast industrial empire.

**Morland, George** (1763-1804), a painter of English rural life.

**Morley, John, Viscount, O.M.** (1838-1923), Liberal statesman and author, served as Secretary for Ireland in 1886 and 1892-95, and for India, 1905-10. Biographer of Gladstone, Voltaire, Rousseau, Burke, Walpole, Cromwell, and Cobden.

**Morris, William** (1834-96), poet and craftsman. His hatred of 19th-cent. ugliness, his belief in human equality, and in freedom and happiness for all, conspired to make him a socialist, and he accomplished much for the improvement of domestic decoration. He was a popular lecturer, founded the Socialist League and the Kilmecott Press.

**Morrison, Rt. Hon. Herbert Stanley, C.H., M.P.** (b. 1888), entered Parliament as Labour M.P. for South Hackney in 1923. Leader of the L.C.C. 1933-40. Joined the Coalition Government in 1940 and was member of the war cabinet. Dep. Prime Min. and Leader of the House of



- Commons in the Labour administration, 1945-51. His book *Government and Parliament* (1954) is an authority on the British constitution.
- Morse, Samuel Finley Breese** (1791-1872), an American artist and designer, who became the inventor of the Morse system of electric telegraphs, and of the Morse code of signals.
- Mountbatten of Burma, Admiral Earl, P.C., K.G., G.C.B., G.C.V.O., D.S.O.** (b. 1900), naval officer and statesman. At the beginning of the second world war he was a captain in command of a destroyer flotilla, served with distinction at sea until 1942 when he was made Chief of Combined Operations. In 1945 he was appointed Allied Supreme Commander, South-East Asia Command. As last Viceroy of India he carried through the transfer of power into Indian hands in 1947 and was the first Governor-General of the new Dominion of India. Resuming his naval career in 1948 he has served successively as Flag Officer Commanding the 1st Cruiser Squadron, Mediterranean, Fourth Sea Lord, C-in-C. Mediterranean, C-in-C. Allied Forces, Mediterranean, and First Sea Lord and Chief of Naval Staff, 1955.
- Mountevans, Admiral Lord, K.C.B., D.S.O.** (b. 1881), "Evans of the Broke," British sailor and explorer. Author of *South with Scott*.
- Moussorgsky, Modeste Petrovitch** (1835-81), Russian composer whose chief work, the opera *Boris Godounov*, was first performed in 1874, and first heard in England, in a revised version by his life-long friend Rimsky-Korsakov, in 1913.
- Mozart, Wolfgang Amadeus** (1756-91). The composer who bears this immortal name is universally acknowledged as the world's greatest musical genius. He was born at Salzburg, began his musical career at the age of four, toured the European courts as an infant prodigy, left the service of the Archbishop of Salzburg in his twenty-sixth year to live in Vienna, where his friendship with Haydn began and where his greatest music was written. Mozart's genius lies in the effortless outpouring of all forms of music, in the ever-flowing melodies, in the consistent beauty and symmetry of his compositions, and in the exactness of his method. Among the loveliest and grandest works in instrumental music are his three great symphonies in E flat, in G minor, and in C (called the "Jupiter"), all written in six weeks in 1788. Three of the greatest operas in musical history are his *Marriage of Figaro* (1786), *Don Giovanni* (1787), and *The Magic Flute* (1791). His last composition, written under the shadow of death, was the *Requiem Mass*, a work of tragic beauty. He died in direst poverty in his thirty-sixth year.
- Müller, Ferdinand von, Baron** (1825-96), German botanist and explorer. Director of the Botanical Gardens at Melbourne, 1857-73. Introduced the eucalyptus into the south of Europe and other regions, and took leading part in promoting Australian exploration.
- Munkacsy, Michael von** (1844-1900), a celebrated Hungarian painter of historical subjects.
- Munnings, Sir Alfred James, K.C.V.O., P.R.A.** (b. 1878), a distinguished British painter whose country scenes and pictures of horses have gained him world-wide fame. Pres. of the Royal Academy from March 1944 to Dec. 1949.
- Murdoch, William** (1754-1839), a distinguished engineer and inventor. He was one of the first to introduce gas lighting.
- Murillo, Bartolome Esteban** (1617-82), one of the greatest Spanish painters. His chief works are altar-pieces and religious subjects.
- Murray, Prof. (George) Gilbert (Aime), O.M., M.A., D.Litt., LL.D.** (b. 1866), scholar and humanist historian of Greek literature and translator of Euripides, Regius Professor of Greek, Oxford University, 1908-36, Chairman of the League of Nations Union, 1923-38.
- Mussolini, Benito** (1883-1945), Fascist dictator of Italy from October 1922 until July 1943. From 1935 an aggressive foreign policy in Abyssinia, Spain, etc., was at first successful, and in June 1940, he entered the second world war on the side of Germany. The defeat of Italian arms in North Africa and the invasion of Sicily caused the collapse of his Government, but he was rescued from imprisonment by parachutists. Executed two years later by partisans.
- Nansen, Fridtjof, G.C.V.O., D.Sc., F.R.G.S.** (1861-1930), the Norwegian explorer who, after two or three expeditions across Greenland, in 1893 started out on his famous North Polar expedition when he reached the highest latitude until then attained—86° 14'—a feat since eclipsed by the Duke of the Abruzzi and by Peary, as well as by airship or aeroplane. He published a fascinating narrative of his exploration under the title of *Farthest North*. Active in Russian famine relief, 1921. Awarded Nobel Prize for Peace, 1922.
- Napier, John** (1550-1617), mathematician, who made important contribution to the advance of astronomy and other branches of science by his invention of logarithms (published 1614).
- Napoleon I. (Bonaparte)** (1769-1821) was born at Ajaccio in Corsica. Sent to France to receive a military education and was a captain at the age of twenty. In 1794 served in Italy with such distinction that he won a generalship, and next year was appointed Commander-in-Chief. A series of most brilliant successes followed. He defeated the Austrian forces in 1797, conducted an expedition to Syria and Egypt in 1798, returned in 1799 to find himself the most popular man in France, and in November of that year he proclaimed himself First Consul. In 1800 he was again in Italy and once more victorious. In 1804 he was made Emperor, and the following year was in the field against England, Russia, and Austria, achieving a splendid series of victories at Austerlitz and elsewhere, and practically became Dictator of Europe, distributing kingships amongst his brothers in the most profuse manner, Joseph becoming King of Naples, Louis King of Holland, and Jerome King of Westphalia. His invasion of Russia was disastrous, the Peninsular War went against him, and in 1814 the Allies entered Paris and forced him to abdicate. He was sent to Elba, but made his escape in the following year, gathered his old army about him and went forth to meet the English and Prussian armies. He was finally completely defeated at Waterloo on the 18th June, 1815, and exiled to St. Helena, where he died six years later. His remains were removed to Paris in 1840, and rest in a magnificent tomb.
- Napoleon II.** (1811-32) was the son of Napoleon I. and Maria Louisa. Was born in Paris and proclaimed King of Rome, but died of consumption when only twenty-one, being known at the time of his demise as the Duke of Reichstadt.
- Napoleon III.** (1808-73) was the son of Louis Bonaparte, King of Holland, and of Hortense, daughter of the Empress Josephine. After unsuccessful attempts to secure the French throne and years of imprisonment he took advantage of the revolution of 1848 to return to France and, following the famous *coup d'état* of December 2, 1851, emerged as master of France and was proclaimed Emperor the following year. Married Eugenie de Montijo in 1853. Dictatorial and discredited at home, unsuccessful in his foreign adventures, his surrender at Sedan in the Franco-Prussian war of 1870 brought ruin to the Second Empire, and France once again became a republic. Louis Napoleon took refuge in England and died at Chislehurst in Kent.
- Nash, John** (1752-1835), architect. Planned Regent Street, laid out Regent's Park, enlarged Buckingham Palace, and designed Marble Arch and the Brighton Pavilion.
- Nash, Paul** (1889-1946), distinguished English painter and designer. Official war artist in both world wars. Best known pictures *The Menin Road* of 1918 and *Totes Meer* of 1941.
- Nasmyth, James** (1808-90), the inventor of the steam-hammer, which became indispensable in all large iron and engineering works.
- Nasser, Lt.-Col. Gamal Abdul** (b. 1917), Egyptian Premier under whose leadership the Egyptian revolution is taking shape.
- Naguib, General Mohammed** (b. 1900), Egyptian army officer, whose military *coup* in 1952 brought the abdication of King Farouk. Deposed as President of Egypt in 1954.
- Nehru, Pandit Jawaharlal** (b. 1889), Indian statesman and one of the world's great leaders; Prime Min. and Min. of Foreign Affairs since

1947. Educated at Harrow and Cambridge where he studied science and law. A leading member of the Congress Party for many years, during which he was frequently imprisoned for his political activities. Played distinguished part in the final negotiations for the independence of India. As a believer in non-violence and non-interference with other countries, has had notable success as a peacemaker in Korea and Indo-China.
- Nelson, Horatio, Viscount, K.C.B.** (1758-1805), the great English naval commander; son of a Norfolk clergyman. Went to sea at twelve years of age, and was post-captain at twenty-one. In 1793 he was captain of the *Agamemnon* and proved his capacity and daring against the French. He lost his right eye at the siege of Calvi in 1794, and his right arm at the siege of Santa Cruz in 1797. In 1798 he achieved a great victory over the French in Aboukir Bay, in recognition of which he was created a Baron and granted a pension of £2,000 a year. He was victorious at Copenhagen in 1801, after which he was promoted to the rank of Viscount. In 1805 occurred the Battle of Trafalgar, in which the French fleet was destroyed and Nelson was killed. He was buried in St. Paul's Cathedral.
- Nenni, Pietro** (b. 1883), Italian politician and Secretary-General of the Italian Socialist Party since 1944. Minister of Foreign Affairs, 1946-47.
- Nernst, Walther Hermann** (1864-1941), German scientist who established the third law of thermodynamics. Nobel Prizeman, 1920.
- Nero, Claudius Caesar** (A.D. 37-68), the notorious Roman Emperor, whose reign of fourteen years was rendered infamous by his cruelty and licentiousness.
- Newall, Marshal of the R.A.F. Lord, G.C.B., O.M.** (b. 1886), Chief of the Air Staff, 1937-40. Gov.-Gen. of New Zealand, 1941-46.
- Newbolt, Sir Henry John, C.H., M.A., D.Litt.** (1862-1938), Professor of Poetry (1911-21), and Member of Academic Committee of the Royal Society of Literature, author of some of the best sea poems of recent times and especially successful in his poems on the War. Official Naval Historian, 1923.
- Newcomen, Thomas** (1663-1729), was one of the first to put a steam-engine into practical operation, and in 1705 patented his invention, which was the pumping-engine used in Cornish mines until the adoption of Watt's engine.
- Newman, Ernest** (b. 1863), English music critic and author who has been music critic to the *Manchester Guardian*, *Birmingham Post*, and since 1919 to the *Sunday Times*. He has written many books including studies of Elgar, Beethoven, Richard Strauss, Gluck, Liszt, and a 4-vol. life of Wagner; he has also translated many of the Wagner libretti and certain standard books on music.
- Newman, John Henry, Cardinal** (1801-90). Educated at Oxford, he was incumbent of St. Mary's there from 1828 to 1843, taking an active part in the religious discussions of the time, gradually showing a tendency to adopt Roman Catholic views, and ultimately allying himself with the Romanists, resigning his living and settling at Edgbaston, Birmingham, as the head of a community of the Order of St. Philip Neri. Here he remained for the rest of his career, devoting himself to an almost monastic life, but from time to time employing his pen in the production of religious works, displaying great controversial power, beauty of thought, and charm of style. In his *Apologia pro Vita Sua* he described the development of his religious thought. The beautiful hymn *Lead, kindly Light*, and the *Dream of Gerontius* were written by him.
- Newton, Sir Isaac, F.R.S.** (1642-1727), generally acknowledged as the world's greatest man of science. Achieved immortal fame for his work on the nature of white light, the calculus and gravitation. Greatest published work, the *Principia*, was produced in 1687, revolutionising the scientific thought of his time. Was Member of Parliament for Cambridge in 1688, Master of the Mint in 1699, and President of the Royal Society from 1703 till his death. Honoured with knighthood in 1705.
- Ney, Marshal Michel** (1769-1815), was one of Napoleon's most noteworthy generals.
- Nicholas II., Ex-Czar of Russia** (1868-1918), son of the Emperor Alexander III. Came to the throne in 1894, and had a reign full of trouble, being unable to handle the difficulties by which he was beset. He avowed full harmony with the British and French in the war which opened in 1914, but the acts of the Empress and Court belied these pretensions, and a Revolution resulted in March, 1917, which overthrew the Romanoffs. Nicholas was detained a prisoner together with the Czarina and his children: all were probably shot on July 16, 1918.
- Nicholas, St., Bishop of Myra and patron saint of Russia**, flourished in the 4th century, and is popularly associated with Christmas under the corrupted name of Santa Claus.
- Nicholson, Sir William** (1872-1949), English painter, well known for his portraits, engravings and woodcuts as well as for his illustrations in the *Almanack of Twelve Sports* (with Kipling) and *London Types* (with Henley). His son, Ben Nicholson (b. 1894), also an artist, is noted for his abstract paintings.
- Nicolson, Hon. Sir Harold, K.C.V.O., C.M.G.** (b. 1886), author and critic, is a contributor to *The Observer* and has written many books, including *The Congress of Vienna* (1946) and *King George V: His Life and Reign* (1952). Served in the Diplomatic Service, 1909-29, attending the 1919 Peace Conference; was National Labour M.P., 1935-45, and joined the Labour Party in 1947. Married to the Hon. Victoria Sackville-West (b. 1892), the novelist and poet.
- Niemöller, Martin** (b. 1892), German religious leader. A pastor in the Evangelical (Protestant) Church. Actively opposed the Nazification of the German Church and was incarcerated in a concentration camp throughout the second world war.
- Nietzsche, Friedrich Wilhelm** (1844-1900), German philosopher, in his younger years greatly influenced by the work of Wagner and Schopenhauer. His "superman" philosophy is eloquently expressed in his many writings, i.e., *Thus spake Zarathustra*, *Beyond Good and Evil*, *The Will to Power*.
- Nightingale, Florence, O.M.** (1820-1910), English nurse and pioneer of hospital reform whose genius for administration was shown during the Crimean War, when she organised in face of considerable official opposition a nursing service to relieve the sufferings of the British soldiers who called her "The Lady with the Lamp." Her system was adopted and developed in all parts of the world, and she was honoured with a testimonial of £50,000, which she applied to the founding of the Nightingale Training School for Nurses, attached to St. Thomas's Hospital, London.
- Nijinsky, Vaslav** (1892-1950), Russian dancer, who was one of the famous company of dancers, which included Pavlova, Karsavina and Fokine, brought by Diaghilev to Paris and London just before the War of 1914-18, and was in some respects the most remarkable of them all. His sensational dancing in such Ballets as *Les Sylphides*, *Spectre de la Rose* and *Après-Midi d'un Faune* won him the supreme place among male dancers.
- Nikisch, Arthur** (1855-1922), famous Hungarian conductor, who appeared as a prodigy pianist at the age of eight, became chief conductor at the Leipzig Opera, 1879, conducted the Symphony Orchestra at Boston, 1889-93, afterwards paying visits to all the important cities of Europe, where he was acclaimed for his brilliance. So extraordinary was his influence over the players that he was accused of mesmerising them.
- Nimitz, Admiral of the Fleet Chester William** (b. 1885), commanded the American fleet in the Pacific, 1941-45, together with army and marine forces. Chief of Naval Operations, 1945-47.
- Nobel, Dr. Alfred Bernhard** (1833-96), the inventor of dynamite, was a Swedish engineer and chemist who amassed a large fortune from the manufacture of explosives, a great portion of which at his death in 1896 he set apart as a fund for annual prizes to such persons as during each year shall have contributed most materially to the benefit of mankind. There are five of these prizes, and they are given in the following departments: physics, chemistry, physiology or medicine, literature, and peace.



**Norrie, Lieut.-Gen. Sir (Charles) Willoughby (Moke), K.C.M.G., C.B., D.S.O., M.C.** (b. 1893). Gov.-Gen. of New Zealand, 1952; Governor South Australia, 1944-52. Professional cavalry officer.

**Northcliffe, 1st Viscount (1865-1922)**, was one of the most prominent men in modern journalism. Started *Answers* in 1883 with his brother, Cecil Harmsworth. In 1894 the Harmsworths purchased the *Evening News*, and in 1896 they started the *Daily Mail*. In 1917 was special British representative in the United States.

**Northumberland, John Dudley, Duke of (1502-53)**, an expert intriguer who dominated the Government of Edward VI. from 1549 onwards and attempted to maintain his influence when the king died by proclaiming as Queen his daughter-in-law, Lady Jane Grey, but failed and was executed.

**Nostradamus or Michel de Notre Dame (1503-66)**, French astrologer who acquired great distinction by his labours during the plague. Publ. in 1555 *Centuries*, a book of rhymed prophecies, the fulfilment of some of which greatly added to his reputation. *Centuries* was condemned by the papal court of 1781.

**Novalis, the pseudonym of Baron Friedrich von Hardenberg (1772-1801)**, a Saxon poet and novelist. A pioneer of the Romantic Movement.

**Novello, Ivor (1893-1951)**, Welsh actor, songwriter, and composer of musical comedies including *The Dancing Years* and *Perchance to Dream*. His song *Keep the Home Fires Burning* was extremely popular during the first world war.

**Noyes, Alfred, C.B.E., LL.D., Litt.D.** (b. 1880), English poet, whose first book of verse, *The Loom of Years*, was published in 1902. Visiting Prof. of English Literature at Princeton Univ., 1914-23.

**Nuffield, Viscount, G.B.E.** (b. 1877), industrialist and philanthropist and until he retired in 1952 Chairman of Morris Motors, Ltd. Established the Nuffield Foundation, endowing it with £10 million, and provided large sums for the advancement of medicine in the University of Oxford.

**Numa Pompilius** was, according to tradition, the second King of Rome and the founder of Roman Ceremonial Law.

**O**

**Oaksey, Geoffrey Lawrence, 1st Baron, P.C., Q.C., D.S.O.** (b. 1880), presided over the International Military Tribunal which tried the major war criminals at Nuremberg, 1945-46. A Lord of Appeal in Ordinary since 1947.

**Oates, Captain Lawrence Edward Grace (1880-1912)**, a British explorer who, having seen active service in the South African War, joined Capt. Scott's Antarctic Expedition in 1910. He was one of the sledge party who accompanied Scott in his final dash for the South Pole. On returning, the party became stormbound, and on March 17, 1912, Oates crippled by frost-bite, went out in the blizzard to die rather than be a burden to his starving comrades. Described in Scott's diary as a very gallant gentleman.

**Oates, Titus (1649-1705)**, a notorious informer against Roman Catholics in the reign of Charles II.

**O'Casey, Sean (b. 1883)**, Irish dramatist of remarkable powers whose plays include *Junio and the Paycock*, *The Silver Tassie*, *Red Roses for Me*, and *Oak Leaves and Lavender*.

**O'Connell, Daniel (1775-1847)**, the Irish "Liberator," as he was called, was a famous orator and politician and a highly successful barrister. In Parliament he advocated the cause of Ireland with courage and audacity.

**O'Connor, Feargus (1796-1855)**, was an Irish lawyer who became the most influential figure in the Chartist movement.

**O'Connor, Rt. Hon. Thomas Power (1848-1929)**, sat in Parliament from 1880 until 1929, being for many years father of the house, and was one of the most successful journalists and editors of his time. He founded several publications including the *Star* and originated the "Book of the Week" idea.

**Oersted, Hans Christian (1777-1851)**, the Danish philosopher and scientist, whose discoveries in

electrical research did much to help forward the invention of the electric telegraph.

**Offa** was King of Mercia from circa 757 to 796, and had a war-like career; he built an embankment from the Dee to the Wye, 100 miles long, which was called Offa's Dyke. He imposed "Peter's Pence" as a gift to the Pope for absolution.

**Offenbach, Jacques (1819-80)**, French composer, born of a Jewish family at Cologne. Was the composer of many light operas, including the posthumous *Les Contes d'Hoffmann (Tales of Hoffmann)*, the most popular of all his works.

**Ohm, Georg Simon (1787-1854)**, was the discoverer of the law of the theory of the voltaic current which is known as Ohm's Law. He was a native of Bavaria, and gained much fame as a physicist and mathematician.

**O'Kelly, Sean T. (b. 1882)**, Pres. of Republic of Ireland since 1945.

**Olivier, Sir Laurence Kerr (b. 1907)**, British actor and producer, has appeared with great success in many Shakespearian and other roles. Played in the films of *Wuthering Heights*, *Rebecca*, *Pride and Prejudice*, *49th Parallel*, *Henry V.*, and *Hamlet*. His wife is Vivien Leigh, stage and film actress.

**Oman, Sir Charles (William Chadwick), K.B.E.** (1860-1946), English historian who was Chichele Professor of Modern History at Oxford, 1905-46 and M.P. for the University from 1919 to 1935. His works include a popular *History of Greece*, *A Short History of England*, which is a familiar school book, and a *History of the Art of War in the Middle Ages*.

**Omar I. (581-644)** was second Caliph of the Mohammedans, and the first to be designated the Commander of the Faithful. He conquered Syria, Mesopotamia, Persia, Egypt, and Palestine, reigned from 634-644, and died at the hands of a slave.

**Omar Khayyám (d. c. 1123)** flourished in the 11th and 12th centuries. Was the great Persian poet whose *Rubaiyat* was made known to English readers by Edward FitzGerald in 1859.

**O'Neill, Eugene Gladstone (1888-1953)**, an American playwright who, after spending his adventurous youth in such activities as sailing, gold-prospecting, and journalism, first won success in 1914 with the one-act play, *Thirst*. His later plays include *Beyond the Horizon*, *Anna Christie*, *Strange Interlude*, and *Mourning Becomes Electra*. His daughter Oona is the wife of Charles Chaplin.

**Opie, John, R.A. (1761-1807)**, a celebrated English painter whose historical pictures were highly valued in his day.

**Orchardson, Sir William Quiller (1835-1910)**, was an eminent R.A. whose subject pictures and portraits gained him a high reputation. Among his best-known works were *Napoleon I. on board H.M.S. Bellerophon* and *Ophelia*.

**Orpen, Sir William, K.B.E., R.A.** (1878-1981), an eminent British portrait-painter; many of his celebrated war pictures were presented to the nation.

**Osler, Sir William, Bt., M.D., F.R.S.** (1849-1919), British physician, born in Canada, was an authority on diseases of the blood and spleen, and wrote on nearly every branch of medicine, his works including *Principles and Practice of Medicine*, and the *Evolution of Modern Medicine*.

**Oswald, St., King of Northumbria** from 625 to 642, established Christianity amongst his subjects.

**"Ouida" (Mlle. Marie Louise de la Ramée) (1839-1908)**, an English novelist, born at Bury St. Edmunds of French extraction, whose works have been highly popular.

**Otto, Nikolaus August (1832-91)**, German engineer and inventor of the four-stroke cycle that bears his name.

**Otto the Great, (912-973)**, son of Henry the Fowler, crowned King of the Germans in 936 and Emperor in 962. Overawed the papacy, checked the barbarian invasions, founded the East Mark (Austria), and considerably consolidated Germany.

**Ovid (43 B.C.-A.D. 18)**, the famous Latin poet (Publius Ovidius Naso) whose *Metamorphoses* and *Art of Love* are among the best-known examples of Roman literature of the lighter kind.

**Owen, Sir Richard, K.C.B., F.R.S.** (1804-92), was reckoned by many the greatest palaeontologist since Cuvier.

**Owen, Robert (1771-1858)**, socialist and philan-

thropist, devoted his life and fortune to the carrying out of his theories, and established socialistic colonies in Lanarkshire, Hampshire and America.

## P

**Pachmann, Vladimir de** (1848-1923), Russian pianist, an unrivalled interpreter of the works of Chopin.

**Paderewski, Ignace Jan** (1860-1941), himself no mean composer, by his superb technique and masterly interpretation achieved unrivalled fame as a pianist. For half a century he longed and worked for the freedom of his native Poland, and in 1919 he became her first Prime Minister. He later resumed his musical career and died in exile during the second world war.

**Paganini, Niccolò** (1782-1840), a famous violinist and one of the most expert performers on that instrument who ever lived.

**Paine, Thomas** (1737-1809), English revolutionary author, lived, wrote and held a number of positions in America from 1774 to 1787. Wrote his famous *Rights of Man* as a reply to Burke's *Reflections on the Revolution in France*. It had an enormous circulation, but the Government prosecuted him for alleged sedition, and he fled to France. In 1793 he published the *Age of Reason*.

**Palestrina, Giovanni** (1525-94), a distinguished Italian musical composer, chiefly of Church music.

**Palgrave, Sir Francis** (1788-1861), a much-esteemed historian, who wrote *The Rise and Progress of the English Commonwealth*, *A History of Normandy*, and *A History of the Anglo-Saxons*. He was knighted in 1832. His son, Francis Turner Palgrave (1824-97), was a poet of devotional instincts, who was Professor of Poetry at Oxford, and edited the much-esteemed *Golden Treasury*. Another son, William Gifford Palgrave (1828-88), was a traveller, diplomatist, and prose writer of considerable ability.

**Palissy, Bernard** (circa 1510-89), a distinguished French potter, who after years of struggle and self-denial discovered the art of producing white enamel, after which he became famous and set up a porcelain factory in Paris, which was patronised by Royalty.

**Palladio, Andrea** (1518-80), the great Italian architect, who introduced the style of architecture known as Palladian.

**Palmer, John** (1742-1818), originator of the mail-coach postal service in 1784.

**Palmerston, Henry John Temple, 3rd Viscount** (1784-1865), English statesman, was long dominant in European affairs because of his vigorous and popular policy. He spent many years of his life in office, serving as Tory Secretary for War from 1808 till 1823, as Foreign Secretary in all the Whig cabinets between 1830 and 1851, and as Prime Minister in 1855 and from 1859 until his death. He had a lofty conception of the strength and duties of England and was the irreconcilable foe of oppression and injustice.

**Pancras, St.**, the patron saint of children, was the son of a Roman noble, was baptised in Rome in the reign of Diocletian, where he was put to death at the age of fourteen for refusing to renounce Christianity.

**Pandit, Vijaya Lakshmi** (b. 1900), Indian High Commissioner in London, 1954- . India's first Ambassador to the Soviet Union (1947-49) and to the United States (1949-51), the first woman to be elected Pres. of the United Nations General Assembly (1954) and to be head of a diplomatic mission in London. Sister of Jawaharlal Nehru.

**Panizzi, Sir Anthony, K.C.B.** (1797-1879), an Italian political exile, who in 1831 was appointed to the Assistant Librarianship and Keepership of the Printed Books of the British Museum. In 1856 he became Principal Librarian, retiring in 1866. The great Reading Room was constructed from his designs.

**Pankhurst, Emmeline** (1858-1928) was a prominent and indefatigable worker for women's suffrage, together with her daughters Dame Christabel and Sylvia.

**Papin, Denis** (1647-1714), a French mathematician and scientist who settled in England. He invented the condensing pump, and was the

first to use a safety valve. His discoveries in connection with steam-power entitle him to be reckoned amongst the first to put that power to any practical test.

**Paracelsus, or Philippus Aureolus Theophrastus Bombastus von Hohenheim** (1493-1541), was a famous Swiss mystic and alchemist. He made numerous important discoveries, being the first to employ laudanum and antimony in pharmacy.

**Park, Mungo** (1771-1806), a famous British traveller who in 1799 published an account of his *Travels in the Interior of Africa*, a work which caused a considerable sensation and was highly popular.

**Parker, Rev. Joseph** (1830-1902), a popular Non-conformist preacher and author who built the City Temple, and ministered there up to the time of his death.

**Parnell, Charles Stewart** (1846-91), the Irish politician, as leader of the Nationalist Party made it more powerful than it had ever been and successfully enlisted the support of Gladstone for the policy of Home Rule. Accused by *The Times* of complicity in the crimes of the Land League on the basis of letters forged by Richard Pigott, he was completely vindicated by a Royal Commission and awarded heavy damages. Was dropped from the leadership of his party following the O'Shea divorce proceedings and died soon afterwards.

**Parry, Rear-Admiral Sir William Edward** (1790-1855), an Arctic explorer and naval commander of great distinction, who undertook several expeditions to the Polar regions and made numerous important discoveries.

**Parsons, Hon. Sir Charles Algernon, O.M., K.C.B., F.R.S.** (1854-1931), was head of the electrical and engineering works of C. A. Parsons and Co., and of the Parsons Marine Steam Turbine Co., Ltd., Newcastle-on-Tyne, and inventor of the steam turbine which has effected a remarkable improvement in the propulsion of war and mercantile vessels.

**Partridge, Sir Bernard** (1861-1945), began life as a stained glass designer, afterwards worked at book illustrations, and for a time was on the stage. Joined *Punch* staff 1891, and for many years was its principal cartoonist.

**Pascal, Blaise** (1623-62), a noted French philosopher whose *Provincial Letters* exhibit remarkable wit and genius. A distinguished mathematician, he invented an ingenious arithmetical machine, besides making many brilliant experiments in hydrostatics and pneumatics.

**Pasternak, Boris Leonidovich** (b. 1895), the greatest living poet in Russia.

**Pasteur, Louis** (1822-95), French chemist, whose work was inspired by an interest in the chemistry of life which abided with him until his death. His researches on fermentation led to the science of bacteriology and his investigations into infectious diseases and their prevention to the science of immunology. The pathological bacteriological import of Pasteur's researches came about mainly through his disciples (Lister, Roux, and others) and not directly, though all founded on his early non-medical investigations on organisms of fermentation, etc., which were of great importance in industry, and fundamental. He spent most of his life as administrator and director of scientific studies at the École Normale at Paris, where he was appointed in 1857. The Institut Pasteur was founded in 1888.

**Pattmore, Coventry** (1823-96), poet of the Victorian era, and author of *The Angel in the House*.

**Paton, Sir (Joseph) Noel, R.S.A., LL.D.** (1821-1901), sculptor, historical artist, archaeologist, and poet.

**Patrick, St. (c. 387-c. 463)**, the patron saint and Apostle of Ireland, was for many years a great and successful Christian missionary in that country. Few authentic facts about his life are known, but many miraculous stories, such as his alleged extermination of serpents in the island, have been associated with him.

**Patti, Adelina Juana Maria** (Baroness Cederström) (1843-1919), Italian soprano singer, was born in Madrid. Her marvellous voice and brilliant execution made her immediately famous.

**Pattison, Dorothy Wyndlow** (1832-78), a sister of Mark Pattison, who devoted a great part of her



- life to hospital work in Walsall, where, as "Sister Dora," she is revered for her saintly life and devotion to the sick poor.
- Pattison, Mark** (1813-84), scholar and critic, rector of Lincoln College, Oxford. His wife was Emilia Francis Strong (afterwards Lady Dilke), well known as a French art historian and for her work in promoting trade unionism among women workers.
- Pavlov, Prof. Ivan Petrovich** (1849-1936), an eminent Russian physiologist: Director of the Physiological Institute. Foreign member of the Royal Society and Nobel Prize-winner.
- Pavlova, Anna** (1885-1931), a Russian ballet dancer, who by her genius became world-renowned.
- Peabody, George** (1795-1869), an American merchant who lived for the greater part of his life in London, and, acquiring a large fortune, bequeathed immense sums for philanthropic purposes in England and the United States.
- Peacock, Thomas Love** (1785-1866), English satirist, whose novels include *Headlong Hall* and *Nightmare Abbey*, and who will always rank high in English literature for the wit and grace of his style.
- Pearson, Sir Cyril Arthur, Bt.** (1866-1921), journalist and newspaper proprietor, who founded *Pearson's Weekly*, *The Daily Express*, and other publications. Later retired from business because of blindness and devoted himself to the welfare of other blind people, particularly ex-servicemen, being the founder of St. Dunstan's.
- Pearson, Lester Bowles, O.B.E., M.A.** (b. 1897), Canada's Secretary of State for External Affairs.
- Pearry, Rear-Admiral Robert Edwin** (1856-1920), an American Arctic explorer who, in 1891-92, conducted a sledging expedition towards the Pole. In 1893, 1895, and 1898 was again in the Arctic regions; and in 1900-02 reached the highest latitude hitherto attained. In the spring of 1906 he touched 87 degs. 6 min. N. latitude. On April 6, 1909, making the journey by sledge over sea-ice and accompanied by only his native servant, he succeeded in reaching the Pole.
- Peel, Rt. Hon. Sir Robert, 2nd Bt.** (1788-1850), a prominent British statesman who entered Parliament at twenty-one years of age, and immediately exhibited great capacity, being appointed Under-Secretary for the Colonies in the following year. From 1812 to 1818 he was Secretary for Ireland; and in 1822 he became Home Secretary, introducing, whilst fulfilling that office, the new police service associated with his name. In 1834, Peel was for four months Prime Minister, and in 1841 again occupied the same exalted position. It was then that the Anti-Corn Law agitation became formidable, and Peel abandoned his former Protectionist attitude, and carried his Repeal measure eventually in 1846. He was thrown from his horse in Hyde Park on June 25th, 1850, and succumbed to his injuries three days later.
- Penfield, Wilder Graves, O.M., M.A., D.Sc.** (b. 1890), brain surgeon. Dir. Montreal Neurological Inst., Prof. of Neuro-Surgery in Univ. of McGill.
- Penn, William** (1644-1718), became a Quaker, and wrote some powerful pamphlets supporting his new faith. He devoted himself to good works, and in 1682, having obtained a special grant from King Charles II., went to America and founded Pennsylvania.
- Penney, Sir William George, K.B.E., D.Sc., Ph.D., F.R.S.** (b. 1909), Director of the Atomic Research Establishment, Aldermaston, Berkshire; responsible for the design of the British atom bomb and in charge of the technical side of the tests at Monte Belle Is. (1952) and Woomera (1953).
- Pepys, Samuel, F.R.S.** (1633-1703), naval administrator, sometimes called the "Father of the British Civil Service." The *Diary* was written while he was a comparatively young man and is a unique revelation of a man and his age, besides including eye-witness descriptions of the Great Plague and Fire of London.
- Perciles** (590-429 B.C.), the distinguished Athenian statesman, general, and orator, who raised Athens to the point of its fullest prosperity.
- Perkin, Sir William Henry, F.R.S., D.Sc.** (1838-1907), discoverer of the mauve dye-stuff, and founder of the industry in coal-tar colours.
- Perkin, William Henry (junior)** (1860-1929), foremost organic chemist of his day; Professor of Organic Chemistry at Manchester University, 1892-1912 and later at Oxford. His researches led to important industrial results.
- Persius Flaccus, Aulus** (A.D. 34-62), a famous Stoic philosopher.
- Perugino, Pietro** (1446-1524), a great Italian artist, excelling in religious subjects, and the painter of numerous fine frescoes including some in the Sistine Chapel at Rome. Raphael was his pupil.
- Pestalozzi, Johann Heinrich** (1746-1827), was a rich Swiss reformer and writer, who devoted his fortune to benevolent works, especially in connection with the education of poor children.
- Pétain, Marshal Henri Philippe** (1856-1951), became a French national hero after the successful defence of Verdun in 1916 and was made C.-in-C. of all the French armies. In 1940 he became Prime Minister, signed an armistice with Germany, and set up a quasi-independent administration at Vichy. In 1945 he was sentenced to death for treason, the sentence being commuted to life imprisonment.
- Peter I, called The Great** (1672-1725). Czar of Russia, showed great ability and energy of character, devoting himself largely to the reorganisation of his army and navy. He spent some months at Deptford studying shipbuilding. He founded St. Petersburg (1703), which was his "window on to Europe," and gained control in the war with Sweden of Karelia, Ingermanland, and Livonia. Among the prisoners taken by him at the Battle of Poltava (1709) was Catherine Skavronsky, daughter of a Lithuanian peasant, whom he later married. By her care and understanding she did much to strengthen his power. Peter died without naming an heir, and Catherine became Empress of Russia (1725-27).
- Peter, the Hermit** (c. 1050-1115), was the main instrument of the agitation which brought about the first Crusade. He was a French monk, of great eloquence and earnestness, and lived to see Jerusalem in the hands of the Christians.
- Petrarch, Francesco** (1304-74), Italian poet and scholar, whose odes and sonnets *To Laura* are unmatched for their lyrical beauty and passion.
- Petrie, Sir (William Matthew) Flinders, F.R.S.** (1853-1942), British Egyptologist who became interested in archaeological research at a very early age. He carried out excavations in Britain (1875-90), Egypt (1880-1924), and Palestine (1927-38), and wrote many books on the prehistoric civilisation of Egypt. Edwards Professor of Egyptology at University College, London, 1893-1935.
- Phidias, the greatest of Greek sculptors**, flourished from about 500 to 432 B.C., was specially famous for his work in gold, ivory and bronze. Nothing now remains to attest his genius except the sculptures in the British Museum, widely known as the *Elgin Marbles*.
- Philip II. of France** (1180-1223), was a prominent figure in the third Crusade, in which for a time he associated himself with our Richard I. Victor over a strong coalition at the momentous battle of Bouvines in 1214.
- Philip II. of Macedonia** (382-336 B.C.), trained in military arts in Greece, when he came to the throne instilled martial ideas into his subjects, and entered upon a career of conquest that did not end until he had become master of Greece. Father of Alexander the Great.
- Philip II. of Spain** (1527-98), succeeded his father the Emperor Charles V. in half his dominions. The Revolt of the Netherlands, the annexation of Portugal in 1580, and the unsuccessful attempt to subdue England by the Armada, were outstanding events of his troubled reign. He was a devout Roman Catholic, strongly supported the Counter-Reformation, built the strange Escorial, and was four times married, his second wife being Mary Tudor.
- Philip V. of Spain** (1683-1746) founded the Bourbon dynasty in Spain, and was the son of the Dauphin of Louis XIV. and Maria Theresa of Spain. His uncle, Charles II. of Spain, bequeathed the kingdom to him, and this led to the war of the Spanish Succession, which ultimately confirmed him in his kingship.
- Phillips, Stephen** (1868-1915), dramatist and poet

- of distinction. Wrote popular verse dramas, including *Paolo and Francesca*, *Herod*, and *Ulysses*.
- Piasts**, first Polish dynasty in Poland until 14th century and until 17th century in Silesia.
- Piazzi, Giuseppe** (1746-1826), an Italian astronomer. He was the discoverer of the planet Ceres, the first known of the asteroids.
- Picasso, Pablo Ruiz** (b. 1881), Spanish painter who received his early training in Catalonia and settled in Paris in 1903. His influence over contemporary art is comparable with that exercised by Cezanne (*q.v.*) over the artists of his time. His work is to be found in public galleries and private collections all over the world and is represented by *Femme Nue dans un Fauteuil Rouge* in the Tate Gallery. His genius has also found scope in sculpture and etchings and he has designed decor costumes for the ballet.
- Picard, August** (b. 1884), Swiss physicist, professor of physics at Brussels until the German invasion in 1940. Noted for his ascents into the stratosphere by a special balloon in 1931 and 1932 and for his more recent attempts to study deep-sea life.
- Pickford, Mary** (b. 1893), was the leading film actress of the silent days and affectionately known as "the world's sweetheart."
- Pilsudski, Marshal Joseph Clemens** (1867-1935), wielded despotic power as the virtual Dictator of Poland for most of the time from 1920 until his death.
- Pindar** (522-443 B.C.), the eminent lyric poet of ancient Greece.
- Pinero, Sir Arthur Wing** (1855-1934), was an able English dramatist and former actor, of Portuguese descent. *Dandy Dick*, *The Second Mrs. Tanqueray* and *Mid-Channel* are among his plays.
- Pirandello, Luigi** (1867-1936), was a prominent Italian dramatist and novelist, many of whose works have been translated into English. Awarded Nobel Prize for Literature, 1934.
- Pissarro, Camille** (1830-1903), French Impressionist painter of landscapes; studied under Corot.
- Pitman, Sir Isaac** (1813-97), founded the Pitman system of phonographic shorthand.
- Pitt, William** (1759-1806), was the second son of the Earl of Chatham. Entered Parliament at twenty-one, and by his brilliant oratory captivated the House of Commons. In 1782, when only twenty-three, he became Chancellor of the Exchequer, and in the following year was made Premier, and held that office for seventeen years, through the trying period of the French Revolution, when war with France was almost continuous. He was undoubtedly one of the most brilliant statesmen that England has produced, and his death at the early age of forty-six was a great loss to the country. He was buried in Westminster Abbey.
- Pius XII.**, Cardinal Eugenio Pacelli (b. 1876), Elected Pope, March 2, 1939. A brilliant diplomat, scholar, and linguist. As Papal Secretary of State, 1930-39, was outspoken in his condemnation of those aspects of the policy of the Totalitarian States which he considered anti-Christian. Was for many years Papal Nuncio in Germany. In 1936 visited the U.S.A., where he was the guest of President Roosevelt.
- Pizarro, Francisco** (c. 1471-1541), was an adventurous Spaniard who, after Columbus's discoveries in the New World, set out for South America, conquering Peru for the Emperor Charles V. Pizarro's career in Peru was characterised by excessive cruelty, and in the end he was killed by his own soldiers.
- Planck, Prof. Dr. Max** (1858-1947), German physicist, whose investigations into radiation of energy culminated in 1901 in his law of radiation, which laid the foundation of the quantum theory. Awarded Nobel Prize for Physics, 1918.
- Plato** (427-347 B.C.), the renowned Greek philosopher who taught at Athens, and greatly distinguished himself by his lectures and writings. His *Dialogues* and his *Republic* are among the greatest works of the ancients, and embody a philosophical system which has served for admiration and discussion in all succeeding ages. His real name was Aristocles. He was Socrates' disciple and Aristotle's teacher.
- Playfair, Sir Nigel** (1847-1934), English actor, theatrical manager and producer. Made his professional debut in 1902 in *A Pair of Knickerbockers*. In 1918 became lessee of the Lyric Theatre, Hammersmith, and made a brilliant beginning with *Abraham Lincoln* and *The Beggar's Opera*, which was a remarkably popular and artistic success and ran for nearly 1,500 performances.
- Plimsoil, Samuel** (1824-98), was a native of Bristol, and while M.P. for Derby got up an agitation on behalf of merchant sailors, procuring the passing of the Merchant Shipping Act of 1876, which by defining a line above which no ship must sink in the water when loaded has ever since made the overloading of ships illegal. The line is known as the Plimsoil Mark.
- Pliny**: Pliny the elder was a naturalist of high reputation; Pliny the younger, his nephew, achieved renown by a series of historical *Letters* and died A.D. 113.
- Plotinus** (c. 203-c. 262), Greek philosopher, was the founder of Neoplatonism, which had considerable influence on early Christian thought.
- Plutarch** (c. 46-120) a pagan Hellenic writer, a contemporary of the authors of the two gospels according to St. Matthew and St. Luke. His *Lives of Agis and Cleomenes* form one of the world's most famous literary productions.
- Poe, Edgar Allan** (1809-49), was an American poet of unique genius, author of *The Raven*, *The Bells*, and other poems of haunting melody and dainty fancy. Poe's *Tales of Mystery* are thrilling examples of their class.
- Poincaré, Raymond Nicolas Landry** (1860-1934), was President of France from 1913 to 1920 and won the confidence and admiration of the French people and their Allies by his services during the first world war. He was Prime Minister in 1912, 1922-24, and 1926-29.
- Pollard, Professor Albert Frederick**, F.B.A. (1869-1948), English historian and first director of the Institute of Historical Research. His books include *Factors in Modern History*, *The Evolution of Parliament*, and many authoritative works on the Tudor period, such as his *Henry VIII*, *Wolsey*, and *Somerset*.
- Pollitt, Harry** (b. 1890), Leader of the British Communist Party.
- Polo, Marco** (1256-1323), the famous Venetian traveller and explorer, who made journeys through China, India, and other eastern countries, and published the record of his various wanderings, recounting the many wonders and marvels he had seen—a record which seemed for the most part beyond credence to his contemporaries, but now largely confirmed.
- Pompadour, Jeanne Antoine Poisson, Marquise de**, otherwise known as Madame de Pompadour (1721-64), was for a long time the favourite of Louis XV. of France, over whom she exercised great influence.
- Pompey the Great** (106-48 B.C.), distinguished himself as a general while young, clearing the Mediterranean of pirates, and ultimately became, with Caesar and Crassus, triumvir.
- Pons, Lily** (b. 1904), French coloratura-soprano, who made her debut at the Metropolitan Opera House, New York, in 1930, and toured widely. Became U.S. citizen in 1940.
- Pope, Alexander** (1688-1744), the celebrated 18th century poet and translator of *Homer*. Author of *The Rape of the Lock*, *Essay on Criticism*, and *Essay on Man*.
- Portal of Hungerford**, Marshal of the R.A.F. Charles Frederick Algernon, 1st Viscount, K.G., G.C.B., O.M., D.S.O. (b. 1893), Chief of the Air Staff, 1940-45.
- Pound, Ezra Loomis** (b. 1885), American poet and scholar, founder of the Imagist school of poetry, famous both for the beauty of his individual verse and for his excellent translations of Provencal, Latin, Chinese, French and Italian poets. A scholar with a remarkable knowledge of medieval literature and a master of rhythmic invention in poetry.
- Poussin, Nicolas** (1593-1665), an eminent French painter patronised by Louis XIII.
- Poynter, Sir Edward John**, Bt., G.C.V.O., P.R.A. (1836-1919), President of the Royal Academy, 1896-1919. Had a highly successful career as a painter. At first his work was mainly of a decorative character, but gradually he developed exceptional talent as a painter of classical subjects. His *Perseus and Andromeda*, *Atalanta's Race*, *Nausicaa and Her Maidens*, are all great



pictures. Director of the National Gallery from 1894 to 1905.

**Frasad, Dr. Rajendra** (b. 1884), first President of the Indian Union, 1950; re-elected for 5 years, 1952.

**Praxiteles**, a great Greek sculptor who lived in the 4th century B.C.

**Preece, Sir William Henry, K.C.B., F.R.S.** (1834-1913), a Welsh electrician, connected with the Electric Telegraph Service from 1853, and conspicuously successful in his experiments which led to the later developments in telegraphy. He was associated with Marconi in his wireless-telegraphic schemes and introduced the block system into England.

**Prescott, William Hickling** (1796-1859), one of the best known of American historians.

**Prichard, James Cowles, M.D., F.R.S.** (1786-1848). British ethnologist and physician, whose knowledge of anatomy, psychology, and of languages enabled him to grasp the principle that people should be studied as a whole. He paved the way for future anthropological research.

**Priestley, John Boynton, M.A.** (b. 1894), novelist, playwright and broadcaster, whose work has received great praise and includes the novels *The Good Companions*, *Angel Pavement* and the plays *Dangerous Corner*, *Time and the Conways*, *I have been here before*, and *The Linden Tree*.

**Priestley, Joseph, F.R.S.** (1733-1804), was the discoverer of oxygen and other gases, and wrote *A History of Electricity*. He was also a great advocate of freedom and progress.

**Priestley, Sir Raymond, M.A., D.Sc.** (b. 1886), geologist; Principal and Vice-Chancellor of Birmingham Univ., 1938-52. Took part in the Shackleton Antarctic Expedition of 1907-9 and Scott's Antarctic Expedition 1910-13. President of the British Association, 1956.

**Prior, Matthew** (1664-1721), a well-known poet and wit who acquired celebrity by writing *The City Mouse and Country Mouse*.

**Prokofiev, Serge Sergeyevich** (1891-1953), celebrated Russian composer, whose music has a strong folk-song element, rich in melody and invention. He has written operas: *The Love of Three Oranges*, *The Betrothal in a Nunnery*, *War and Peace*, ballets: *Romeo and Juliet*, *Cinderella*, symphonies, chamber music and the music for Eisenstein's films *Alexander Nevsky*, *Ivan the Terrible*, etc.

**Protagoras** (c. 480-411 B.C.), a Greek philosopher, chief of the Sophists, famous for his scepticism and disbelief in objective truth.

**Proudhon, Pierre Joseph** (1809-65), a French political economist.

**Proust, Marcel** (1871-1922), French psychological novelist; author of a series of 15 novels known under the title of *A la Recherche du Temps Perdu*. Proust's works have been admirably translated into English by C. K. Scott Moncrieff.

**Pruhon, Pierre Paul** (1758-1823), a French historical and portrait painter.

**Ptolemy, Claudius Ptolemæus**, a famous astronomer and geographer of Alexandria, who flourished from c. A.D. 90-168. He founded the Ptolemæic system, which taught that the earth was stationary and the heavenly bodies revolved around it.

**Puccini, Giacomo** (1858-1924), famous Italian operatic composer whose works include *La Bohème*, *Madame Butterfly*, *Manon Lescaut*, and his posthumous *Turandot*.

**Purcell, Henry** (1658-95), was a celebrated organist and composer, who did much to improve the musical service of the Church. Was organist of Westminster Abbey, and the most famous member of a family of notable musicians.

**Pusey, Edward Bouverie** (1800-82), a famous Anglican cleric; he published *Tracts for the Times*, which inaugurated the Tractarian movement that developed into what became known as Puseyism.

**Pushkin, Alexander** (1799-1837), the national poet of Russia, several times exiled for his liberal views and held in high honour by contemporary Russia. Died of wounds received in a duel. His poetical tales are full of dramatic power. *Eugene Onegin* is generally considered his masterpiece and *Boris Godunov* is a fine tragedy.

**Pym, John** (1584-1643), a prominent statesman in the reign of Charles I. A leader of the Puritan opposition in Parliament.

**Pythagoras** (circa 582-500 B.C.), a great Greek philosopher, who taught the doctrine of the transmigration of souls, and also a system of astronomy similar to that of Copernicus.

## Q

**Quaritch, Bernard** (1819-99), a famous dealer in rare books, who was a native of Germany but settled in London, and became naturalised in 1847. His knowledge of scarce and valuable books was unique. His shop in Piccadilly was a storehouse of literary treasures.

**Quiller-Couch, Sir Arthur Thomas** (1863-1944) was a well-known novelist and essayist, who as "Q" published many delightful stories, including *Dead Man's Rock*, *Troy Town*, and *The Splendid Spur*. Edited the *Oxford Book of English Verse*. Professor of English Literature, Cambridge University, 1912-44.

## R

**Rabelais, François** (c. 1495-1553), the great French satirist, first adopted the career of a monk, then studied medicine, and settled at Lyons as a doctor, and it was there that he published his *Gargantua and Pantagruel*, among the wittiest though coarsest books in any language.

**Rachel, Madame** (Elizabeth Félix) (1821-58), the most famous French actress of her time; achieved success in Racine's *Phèdre* in 1843.

**Rachmaninoff, Sergei Vassilievitch** (1873-1943), was a Russian composer, and pianist of great distinction. His first important work, the opera *Aleko*, was produced at Moscow in 1893. In 1899 appeared in London with great success both as a pianist and conductor of his own works. Became a naturalised American citizen in Feb. 1943.

**Racine, Jean** (1639-99), a distinguished French tragic dramatist, best known by his *Andromaque*, *Phèdre*, and *Athalie*.

**Rackham, Arthur, R. W. S.** (1867-1939), a noted English artist who excelled in the illustration of books such as *Peter Pan*, *Alice in Wonderland*, Wagner's *Ring Librettos*, *Mother Goose*, Grimm's and Andersen's *Fairy Tales*.

**Radcliffe, Mrs. Anne** (1764-1823), wrote some highly sensational novels in which mystery and horror were combined with great effect. Her most famous book is *The Mysteries of Udolpho*.

**Radford, Admiral Arthur William** (b. 1896), succeeded Gen. Bradley as Chairman Joint Chiefs of Staff, 1953; formerly C-in-C. in Pacific.

**Radhakrishnan, Sir Sarvepalli, Kt., M.A.** (b. 1888). Vice-President of the Indian Union, 1952; formerly Spalding Professor of Eastern Religions and Ethics at Oxford.

**Raeburn, Sir Henry, R.A.** (1756-1823), was a famous Scottish portrait painter, and friend and pupil of Sir Joshua Reynolds.

**Raemakers, Louis** (b. 1869), famous Dutch cartoonist. He was famous for his scathing satires on the Germans during the first world war, and published *Cartoon History of the War*, 1919.

**Raffles, Sir Thomas Stamford** (1781-1826), an eminent naturalist. He was the founder and first President of the Zoological Society of London. Founded Singapore, 1819.

**Raikes, Robert** (1785-1811), a practical propounder of the Sunday School system.

**Raleigh, Sir Walter** (1552-1618), a scholar, courtier, soldier, sailor, and statesman. In 1584 Queen Elizabeth granted him a patent for the discovery and settlement of unknown countries in the far West. The colonisation of Virginia followed. He is said to have introduced into this country both the potato plant and tobacco. At one time he was in great favour at Court, but quarrelled with the Queen, and suffered in fortune in consequence. When James I. came to the throne, Raleigh was supposed to be implicated in a conspiracy against that monarch, and was sentenced to death. After that he was a prisoner in the Tower of London for twelve years, and there he wrote his *History of the World*, and other works. In 1615 James set him at liberty in order to head an expedition to Guiana in the hope of finding gold, but being unsuccessful he was again imprisoned on his return, and finally beheaded in Old Palace Yard.

**Raleigh, Sir Walter, M.A.** (1861-1922), Professor of English Literature at Oxford, and author of many volumes on eminent men of letters,

- including books on Milton, Wordsworth, and others. His work on Shakespeare, 1907, is his highest achievement.
- Raman, Sir (Chandrasekhara) Venkata, F.R.S.** (b. 1888), Indian physicist whose main work has been in spectroscopy. For his research on the diffusion of light and for the discovery of the "Raman Effect" he was awarded the 1930 Nobel Prize in Physics.
- Rameau, Jean Philippe (1683-1764)**, French composer, who was a church organist at Lille and Clermont-Ferrand before settling in Paris in 1722. He immediately attracted attention by his *Treatise on Harmony*, 1722, which was followed by four other important works on musical theory. These works profoundly influenced musical development in the 18th century. He also composed a number of operas.
- Ramon y Cajal, Santiago (1852-1934)**, Spanish histologist who made many discoveries in the structure of the nervous system. Nobel Prize-man, 1906.
- Ramsay, Sir William, K.C.B., F.R.S. (1852-1916)**, chemist and discoverer with Lord Rayleigh of the hitherto unknown constituent of air, argon. Later discovered helium and detected other inert gases, which he called neon, krypton, and xenon. With F. Soddy carried out research on radium emanation. Awarded Nobel Prize in Chemistry, 1904. President of the British Association, 1911.
- Rank, Joseph Arthur (b. 1888)**, film magnate, who turned his attention from the family flour-milling business to the cinema and has built up a large and powerful organisation.
- Ranke, Leopold von (1795-1886)**, the painstaking and thorough German historian who laid the basis of modern historical research and demonstrated many of its methods.
- Raphael Santi (1483-1520)**, the distinguished Italian painter whose works excel all others in their beauty of expression and inspired treatment. He lived a considerable period in Rome, where he painted his famous frescoes for the Vatican and St. Peter's and also the celebrated cartoons designed for the tapestries of the Papal chapel, which afterwards were brought to England, and are now at the Victoria and Albert Museum. His last painting was *The Transfiguration*. Examples of his work are to be found in most of the great European collections, including our own National Gallery.
- Rasputin, Grigori Yefimovich (1871-1916)**, Russian monk who lived quietly in his native village until 1904, when he became notorious for his extravagant teachings, which gave him a Messianic-like position, and advocated sin in order to obtain repentance and salvation. In 1907 he was presented to the Court, where he soon became all-powerful. A seeming miracle which improved the health of the Tsarevitch Alexis increased his influence with the Czar and Czarina, although he was hated by the bulk of the nation, and most of the nobility.
- Rathbone, Eleanor (1872-1946)**, social reformer, humanitarian, and independent politician. Championed widows' pensions and family allowances and laboured for political refugees, particularly children.
- Ravel, Maurice (1875-1937)**, was one of the foremost French composers. Famous for his piano compositions, chamber music and orchestral compositions.
- Raven-Hill, Leonard (1867-1942)**, English artist and cartoonist, was well known for his drawings and cartoons in *Punch*, 1896-1935.
- Rawlinson, Sir Henry Creswicke, Bt., G.C.B., F.R.S. (1810-95)**, diplomatist, soldier and Orientalist. For a number of years he superintended explorations in Assyria and Babylon, accumulating a valuable collection of antiquities now in the British Museum.
- Ray, John (1627-1705)**, an English naturalist. Was famous for his contributions to science of botany. Has been called the "father" of English natural history.
- Rayleigh, 3rd Baron, O.M., F.R.S. (1842-1919)**, one of the most eminent of British physicists; an authority on sound vibrations, and the co-discoverer with Sir William Ramsay of argon. In 1904 was awarded the Nobel Prize for physics.
- Read, Sir Herbert, Kt., D.S.O., M.C. (b. 1893)**, English poet and critic. He was assistant keeper at the Victoria and Albert Museum (1922-31), professor of fine art at Edinburgh (1931-33), and edited the *Burlington Magazine* (1933-39). His writings include *Poems 1914-1934*, *In Retreat*, *Reason and Romanticism*, *Education through Art*.
- Reade, Charles (1814-84)**, holds high rank amongst the Victorian novelists. His first story, *Peg Woffington*, was published in 1852. *It's Never too Late to Mend*, *Griffith Gault*, and *The Cloister and the Hearth* are his best-known novels.
- Reading, Rufus Daniel Isaacs, 1st Marquess of, P.C., G.C.B., G.C.S.I., G.C.I.E., G.C.V.O. (1860-1935)**, Liberal statesman, who became Attorney-General in 1910 and Lord Chief Justice in 1913, served as Viceroy of India from 1921 to 1926, and was Foreign Secretary in the National Government of 1931.
- Reaumur, René Antoine Ferchault de (1683-1757)**, an eminent French chemist, who invented the thermometer which bears his name.
- Récamier, Madame Jeanne Françoise Julie Adélaïde Bernard (1777-1849)**, a noted society woman of the days of Napoleon.
- Reeves, (John) Sims (1818-1900)**, was the most celebrated English tenor of his time.
- Regnault, Henri Victor (1810-78)**, a French scientist who made highly successful experiments in regard to the physical properties of bodies and their relation to heat.
- Regnault, Jean Baptiste, Baron (1754-1829)**, a talented French genre painter.
- Reith, John Charles Walsham Reith, 1st Baron (b. 1889)**, British civil engineer, the first Director-General of the British Broadcasting Corporation, 1927-38. Recognised as a man of great organising ability, he has served successively as Chairman of Imperial Airways (1938-39), Chairman of B.O.A.C. (1939-40), Min. of Information (Jan.-May 1940), Min. of Transport (May-Oct. 1940), Min. of Works and Buildings (Oct. 1940-Feb. 1942), Dir. of the Admiralty's Combined Operations Material Dept. (1943-45), Chairman Commonwealth Telecommunications Conference (1945), Chairman Commonwealth Communications Council (1946), and Chairman of the Colonial Development Corporation.
- Rembrandt, Harmens van Rijn (1606-69)**, one of the greatest of the Dutch school of painters who produced many remarkably successful portraits, as well as numerous figure subjects, all of them distinguished by their masterly qualities. He was an etcher of high ability also, and a number of his works are in the British national collections.
- Renan, Ernest (1823-92)**, a noted French author who wrote much upon religious subjects, and won special fame by his *Life of Jesus*, published 1863.
- Renl, Guido.** (See Guido Renl.)
- Rennie, John F.R.S. (1781-1821)**, a Scottish civil engineer. He was the constructor of the Waterloo and Southwark and new London bridges over the Thames, the London Docks, the East and West India Docks, the Plymouth breakwater, and many other works at Liverpool, Leith, Dublin, Hull, and elsewhere.
- Renoir, Auguste (1841-1919)**, great French artist of the Impressionist school, whose vision was carefree and romantic. Some of his greatest achievements were in still-life and landscape. *La Loge*, *Les Parapluies*, *La Première Sortie*, *Grandes Baigneuses* are famous pictures.
- Reuter, Baron Paul Julius de (1821-99)**, was the pioneer of telegraphic press services.
- Reymont, Vladislav Stanislaw (1868-1925)**, Polish novelist; Nobel Prize 1924. (*The Peasants*).
- Reynolds, Sir Joshua, P.R.A. (1723-92)**, was the first President of the R.A. from 1768 till his death, and the most eminent English portrait painter of his time.
- Rhodes, Rt. Hon. Cecil John (1853-1902)**, born at Bishop's Stortford. Went to South Africa in 1871, entered upon a diamond-mining enterprise at Kimberley, and acquired a considerable fortune. Was a member of the Cape Legislature in 1881, and became Premier in 1890. He was at the head of the British South Africa Chartered Company, for which a vast amount of territory was annexed, the holding obtaining the name of Rhodesia. Mr. Rhodes was Cape Premier again in 1896; then followed the Jameson Raid and his retirement from political life. During the Boer War he was detained in



- Kimberley and did not live to see the campaign closed. He left the bulk of his fortune for the founding of scholarships at Oxford.
- Ricardo, David** (1772-1823), a celebrated English political economist of Hebrew descent, whose *Principles of Political Economy* gained him a high place among the exponents of the science.
- Richard I.** (1157-99) was King of England from 1189 to his death. He laid heavy burdens upon the people in order to equip an army for the third Crusade. At first he was victorious and did such valiant deeds that he received the name of "Cœur de Lion." Being ultimately defeated, he signed a truce with Saladin, and on his way back to England was shipwrecked. Disguised as a pilgrim, he was identified in Austria, and handed over to the Emperor of Germany, who imprisoned him in a remote castle. A large sum was demanded and paid for his ransom, and after over a year of durance he returned to England, and was crowned at Winchester. Later he was engaged in a war with France, and was mortally wounded by a bolt from a crossbow while besieging the castle of Chalus in the province of Limousin.
- Richard II.** (1367-1400), son of the "Black Prince," succeeded his grandfather, Edward III., in 1377, when but ten years old, a Regency being appointed during his minority. In the Wat Tyler rising of 1381 the King confronted the rioters and promised them redress, an undertaking which he did not fulfil. For a time he was greatly under the influence of his uncle, Thomas, Duke of Gloucester, but on coming of age dismissed him, and ruled with some approach to dignity for the next seven years. After 1396 he developed a highly tyrannical disposition and banished or put to death many of the leading statesmen, practically freeing himself from Parliamentary control. The opposition against him came to a head in 1399, when Bolingbroke defeated him, and he was made prisoner and died—probably by violence—in Pontefract Castle.
- Richard III.** (1452-85) last Plantagenet king of England who usurped the throne on the death of his brother Edward IV in 1483, murdering his two young nephews in the Tower. This led to a rebellion in favour of the Earl of Richmond (later Henry VII) and he was slain on Bosworth Field. His character has been the subject of dissension among historians but there is no doubt that despite his unscrupulousness he was a brave soldier and able administrator.
- Richards, Sir Gordon** (b. 1904), British jockey who had one of the most successful riding records in the history of the British Turf: 21,834 mounts, 4870 winners, including the Derby (1953). Retired, 1954.
- Richardson, Sir Albert Edward**, K.C.V.O., P.R.A., F.S.A., F.R.I.B.A. (b. 1880), British architect and Pres. of the Royal Academy since 1954.
- Richardson, Sir Owen Williams**, D.Sc., F.R.S. (b. 1879), distinguished English physicist. Awarded Nobel Prize in 1928 for his researches on the emission of electricity from hot bodies.
- Richardson, Sir Ralph David** (b. 1902), actor who has made many appearances on stage, screen, and radio. Among his films are *South Riding*, *Anna Karenina*, and *The Fallen Idol*.
- Richardson, Samuel** (1689-1761), author of *Pamela*, *Clarissa Harlowe*, and *Sir Charles Grandison*, exercised considerable influence on the development of the novel in England.
- Richelieu, Armand Jean du Plessis, Cardinal Duc de** (1585-1642), the eminent French ecclesiast and statesman, who was Minister to Louis XIII. for eighteen years. He was practically Master of France during the best part of his Cardinalate.
- Ridley, Nicholas** (1500-55), was Bishop of Rochester in 1547 and Bishop of London in 1550. He took an active part in the Reformation. He was burned at the stake along with Latimer.
- Rienzi, Cola di** (1313-54), a Roman patriot of humble birth who inflamed the people against their rulers, and aroused such enthusiasm that they proclaimed him "Tribune." During the seven months that he was permitted to exercise supreme power, he proved himself the true friend of the poor. Ultimately, however, his enemies proved too strong for him and he was imprisoned for three years at Avignon. Later murdered in a popular uprising.
- Rilke, Rainer Maria** (1875-1926), German lyric poet, born in Prague. His work, marked by great beauty of style, culminated in the *Duinese Elegies*.
- Rimbaud, Jean Nicolas Arthur** (1854-91), French poet of great originality and friend of Paul Verlaine. All his poems were written between his sixteenth and nineteenth years.
- Rimsky-Korsakov, Nicolas Andreievich** (1844-1908), an eminent nationalist Russian composer whose works include *Le Coq d'Or*, *Scheherazade* and many orchestral suites, overtures, songs, and piano pieces.
- Rizzio, David** (c. 1540-66), was the Italian secretary of Mary Queen of Scots and an accomplished musician. Suspected of a too great attachment to Mary, he was murdered by Darnley and his friends in the Queen's presence in the Palace of Holyrood.
- Robbia, Luca Della** (1400-1482), a famous Florentine sculptor. He was the introducer of enamelled terra-cotta work.
- Roberts, Field-Marshal Earl**, V.C., K.G., P.C., K.P., G.C.B., O.M., G.C.S.I., G.C.I.E. (1832-1914), the distinguished soldier, first saw service in the Indian Mutiny, when he won the V.C. In 1880 during the Afghanistan campaign made his historic march from Kabul to Kandahar where he won a complete victory. After serving as C.-in-C., India, 1885-93, and as C.-in-C., Ireland, 1895-99, took over in South Africa in December, 1899, and entirely reversed the unhappy military situation before handing over to Kitchener a year later. C.-in-C. from 1901 until the office was abolished in 1904, and was latterly an ardent advocate of conscription.
- Robertson, Sir Charles Grant**, C.V.O. (1869-1948), English historian who was Vice-Chancellor of Birmingham University, 1927-38, and Principal 1920-38. His works include *The Rise of the English Nation*, 1895, *England under the Hanoverians* 1911, and *Bismarck*, 1918.
- Robertson, Field-Marshal Sir William**, Bt., G.C.B., G.C.M.G., G.C.V.O., D.S.O. (1860-1933), the only British soldier to rise from Private to Field-Marshal, served as C.I.G.S., 1915-18. His son, General Sir Brian Hubert, G.C.B. (b. 1892), has had a distinguished military career and was appointed Chairman of the British Transport Commission in 1953.
- Robeson, Paul Le Roy** (b. 1898), the famous negro singer and actor, who through his singing of spirituals has increased our knowledge and understanding of the negro. Was a great success in London in 1930 playing *Othello*.
- Robespierre, Maximilien François Marie Isidore de** (1758-94), was a country advocate until the outbreak of the French Revolution, when he went to Paris, became an enthusiastic leader of the Jacobin Party, and was made a Member of the Assembly. In the Reign of Terror as President of the Committee of Public Safety he sent vast numbers to the guillotine. Then a counter-movement was set on foot and he was denounced in the Assembly, and, trying to escape, was shot and subsequently guillotined.
- Robey, Sir George**, C.B.E. (George Edward Wade), (1809-1954), famous British comedian of the music-hall. His greatest success was in the revue *The Bing Boys Are Here* during the First World War. Knighted in 1953.
- Robinson, Sir Robert**, O.M., F.R.S., D.Sc. (b. 1886), British scientist of outstanding brilliance in the field of organic chemistry; Pres. of Royal Society, 1945-50; Pres. of British Association, 1955; Prof. of Organic Chemistry at the Universities of Sydney, Liverpool, St. Andrews, Manchester, University College, London, and Wayneite Prof. of Chemistry at Oxford, 1931-55. Nobel Prizewinner, 1947. Awarded the Priestley medal in 1953, the highest honour in American chemistry.
- Robinson, William Heath** (1872-1944), was an English artist who soon made his mark as an illustrator of books, but was even better known by his humorous drawings in *The Sketch* and other British and American periodicals.
- Rob Roy** (the traditional nickname of Robert McGregor) (1671-1734), a noted Highland outlaw who levied blackmail on the farmers and rich people of the country-side in return for certain protective services. He belonged to the clan McGregor.

**Roberts, Amy** (1532-1560), daughter of Sir John Roberts, and wife of Robert Dudley, afterwards Earl of Leicester. While living in seclusion at Cumnor Place under the charge of Anthony Forster, she met her death either by accident or foul play, by the latter according to common belief, Elizabeth's favourite having reason to wish her out of the way. She was discovered dead at the bottom of an old staircase.

**Rockefeller, John Davison** (1839-1937) was said to be the richest man in the world. Was born on a small farm in New York State, and there worked until sixteen. Migrated to Cleveland, and found employment in an office for a few years. About this time the oil trade was in a disorganised condition, owing to the reckless trading and crude methods of refining. Rockefeller saw what was wrong, and resolved upon trying to remedy it. Later he began oil-refining, and entered into the business with such vigour of purpose, and made so many improvements, that he became a millionaire in a very few years. From the exertions of himself and associates grew the Standard Oil Trust, beginning with a capital of £200,000 in 1870, and extending at such a rate that in 1892 the capital had reached twenty-two millions sterling. During his life-time he gave some 750 million dollars to education and charity.

**Rodin, Auguste** (1841-1917), the most celebrated French sculptor of recent days, who possessed a bold and original genius. His numerous statues and his fine historic monuments, especially that for Calais commemorating the bravery of Eustache de Saint-Pierre, brought Rodin well-deserved fame.

**Rodney, 1st Baron, K.B.** (1719-92), a famous English admiral who, having gained numerous victories, routed the French fleet under the Comte de Grasse, whom he took prisoner, the result of this crowning success being the Peace of Versailles, 1783.

**Rogers, William Penn Adair** ("Will") (1879-1935), was America's foremost humorist and a famous stage and film actor; was killed with Wiley Post on a holiday flight to Alaska Aug. 15, 1935.

**Roland de la Platière, Madame Manon Jeanne** (1754-93), was one of the leading figures of the French Revolution. Her husband, Jean Marie Roland de la Platière (1734-93), who was one of the Ministers during the Girondist period, escaped from Paris on the disruption of his Party, but his wife remained behind, and was sent to the guillotine. During her incarceration she wrote an *Appeal to Posterity*, remarkable for its beauty of sentiment and patriotic enthusiasm. Her husband committed suicide on receiving the news of her execution.

**Rolland, Romain** (1866-1944), an eminent French author whose finest work, *Jean-Christophe*, in ten vols., gained him the Nobel Prize for Literature, 1915.

**Romilly, Sir Samuel, K.C.** (1757-1818), a famous English lawyer who was Solicitor-General in 1806 and for many years had a distinguished career both in Parliament and at the Bar. He effected many improvements in the Criminal Law.

**Rommel, Field-Marshal Erwin** (1891-1944), was probably the ablest German general engaged in the second world war. His conduct of the war during the North African campaign won high praise and brought the redoubtable Afrika Corps nearly to Alexandria. He was also engaged in the campaigns in Western Europe in 1940 and 1944.

**Romney, George** (1734-1802), was born in North Lancashire, studied portrait painting with a Kendal artist, and for a few years obtained a living by local portrait painting. Going to London in 1762, his talent gained him speedy recognition; and after studying for a couple of years in Rome, he set up as a portrait-painter in Cavendish Square, and became highly successful. His portraits are among the finest examples of that kind of art that England has produced, and to-day realise large prices.

**Röntgen, Professor Wilhelm Konrad** (1845-1923), the eminent German scientist who discovered the Röntgen rays in 1895. He made other important laboratory investigations, resulting in the solution of difficult chemical problems.

**Roosevelt, President Franklin Delano** (1882-1945), great American statesman. Was Assistant

Secretary to the Navy under Wilson and unsuccessful Democratic candidate for the vice-presidency in 1920. In 1921 was stricken with infantile paralysis, but recovered sufficiently to re-enter public life and become Governor of New York in 1929. From 1933 until his death served as President of the U.S.A., being the first American to be elected for more than two terms. His New Deal programme (see Gen. Information Section) was outstanding in its domestic policy. His "good neighbor" attitude towards the other American countries, his hamstrung efforts to restrain Axis aggression in the 1930s, his inspired and generous adoption of Lend-Lease, his war-time meetings with Churchill and Stalin, and his energetic prosecution of the war after Pearl Harbour, were the more important features of his foreign policy. His "fireside" talks on the radio brought him into close contact with the American people and his passing in the hour of victory was mourned all over the world. In 1905 married his distant cousin, Eleanor Roosevelt (b. 1884), who has become known on her own account as a sociologist and newspaper columnist. She became Chairwoman of the U.N. Human Rights Commission in 1947.

**Roosevelt, Theodore** (1858-1919), Republican President of the U.S.A., 1901-9, and unsuccessful third party candidate in 1912 following a dispute with Taft. His daring exploits in the Spanish-American war won him wide popularity and he was elected vice-president in 1900 becoming president on McKinley's assassination. For his efforts in promoting peace, notably between Russia and Japan, was awarded the Nobel Prize in 1906. The great struggle with the Trusts marked his years of office.

**Rops, Felicien** (1833-98), Belgian artist, famous for drawings, etchings and illustrations. His work is highly original, spirited, humorous and a valued commentary on the life at the time. Was an engraver of magnificent technical skill and a painter of merit.

**Rosa, Salvator** (1615-73), a great Italian painter, who first attracted notice by selling pictures in the streets of Naples. Being encouraged by Lanfranco, he went from Naples to Rome, and quickly became one of the most noted artists of his time. His pictures were chiefly landscapes and battle-pieces.

**Rosebery, Earl of, K.G., K.T., F.R.S.** (1847-1929), prominent Liberal politician and statesman. Was Foreign Secretary 1886 and 1892, and Prime Minister 1894-5.

**Ross, Sir James Clark, F.R.S.** (1800-62), most experienced polar explorer of the century. He accompanied his uncle, Sir John Ross, and Captain Parry on their expeditions. In the *Victory* commanded by his uncle he located the north magnetic pole in 1831. He commanded the expedition of the *Erebus* and the *Terror* to the antarctic (1839-43), discovering Victoria Land, Mounts Erebus and Terror, and the Ross ice barrier.

**Ross, Rear Admiral Sir John, K.C.B.** (1777-1856), the eminent explorer who made several voyages to the arctic and searched for the North-west Passage. He discovered Boothia peninsula, and his nephew reached the magnetic pole.

**Ross, Colonel Sir Ronald, K.C.B., K.C.M.G., F.R.S.** (1857-1932), professor of tropical sanitation and a leading authority on tropical diseases generally, was for many years in the Indian Medical Service, and was awarded the Nobel Prize for Medicine in 1902. Discovered the malaria parasite.

**Rosse, William Parsons, 3rd Earl of, K.P., F.R.S.** (1800-67), was an astronomer of considerable note who contributed greatly to the advancement of science by erecting in his Irish park at Birr Castle, King's County, the largest telescope that had up to that time been constructed. It cost £30,000, and afforded the means of discovering and defining the spiral nebulae. From 1849 to 1854 was President of the Royal Society.

**Rossetti, Dante Gabriel** (1828-82), was the son of Gabriele Rossetti (1783-1852), an exiled Italian author who settled in London in 1824. Dante showed great talent as a painter from boyhood, and became one of the Pre-Raphaelite Brotherhood, formed in 1848. From about 1850 he



- produced a great number of pictures remarkable for their extreme beauty of drawing, splendour of colouring, and poetic force. Among his best-known paintings are his *Ecce Ancilla Domini*, *Sons of Solomon*, *Beatrice*, *Lullih*, and *Dante's Dream*. He also distinguished himself as a poet: his two volumes published in 1870 and 1881 reflect many of the characteristics of his paintings. His sister, Christina Georgina Rossetti (1830-94), was also noted as a poet.
- Rossini, Gioachino Antonio** (1792-1868), one of the most brilliant of modern Italian composers, who devoted his genius principally to opera. His first opera, *Tancredi*, was produced at Venice when he was twenty-one. It was followed after a short interval by *Il Barbiere di Siviglia*, *La Cenerentola*, *Otello*, *Mosè in Egitto*—this latter an oratorio—*La Donna del Lago*, *Semiramide*, and *Guillaume Tell*. All these appeared between 1816 and 1820. He also wrote a *Stabat Mater* in 1842, and a *Messe Solennelle* in 1864.
- Rostand, Edmond Eugene Alexs** (1868-1918), dramatist and member of the French Academy, jumped into fame by his *Cyrano de Bergerac*, 1898.
- Rothenstein, Sir William** (1872-1945), was a distinguished English painter and writer. Was Prof. of Civic Art in Sheffield University, 1917-26; Principal of Royal College of Art, 1920-35; Trustee, Tate Gallery, 1927-33. His paintings include *Doll's House*, *Aliens at Prayers*, *Jews Mourning in a Synagogue*. His son, Sir John Rothenstein, C.B.E. (b. 1901), is Director and Keeper of the Tate Gallery.
- Rothschild, Anselm Meyer** (1743-1812), the founder of the famous financial family was born at Frankfurt-on-Main. After some experience in a bank as clerk, set up for himself first as a moneylender, then as a banker and displaying a genius for finance acquired a large fortune. His son, Nathan Meyer Rothschild (1777-1836), took charge of the London house, and conducted its affairs with great success, and was made an Austrian Baron in 1822. He was succeeded by his eldest son, Baron Lionel de Rothschild (1808-1879), who was the first Jewish member of the House of Commons.
- Roubillac, Louis François** (1695-1762), a French sculptor who contributed many monuments to Westminster Abbey.
- Rouget de Lisle, Claude Joseph** (1760-1836), a French poet who was the author of the words and the music of the *Marseillaise*, the revolutionary song and national anthem of France.
- Rousseau, Jean-Jacques** (1712-78), was born at Geneva, and after a hard and wandering life made the acquaintance of Madame de Warens, with whom he resided for ten years as secretary and companion. In 1745 he proceeded to Paris, where, after a time, he made the acquaintance of Diderot, and wrote under his encouragement. Meanwhile Rousseau had been studying social questions with great ardour, and in 1759 published his romance, *Jouliu, ou la Nouvelle Héloïse*, which was followed in 1762 by *Emile*. These two works contained so much that was at variance with convention, and so opposed to all ideas of moral restraint, that they called forth the condemnation of the orthodox, and Rousseau was obliged to leave France for a time. It was while in England that he wrote his remarkable *Confessions*, and his celebrated *Le Contrat Social*. He gave to France a new field of thought, and laid down principles of government and conduct which bore fruit in the French Revolution.
- Royden, (Agnes) Maude, C.H. (Mrs. Shaw), (b. 1876)**, noted woman preacher, Assistant preacher at the City Temple, 1917-20.
- Rubens, Sir Peter Paul** (1577-1640), one of the most notable of Flemish painters. In 1629 he painted for Charles I., who knighted him.
- Rubinstein, Anton Grigorovich** (1829-94), a famous Russian pianist and composer and founder of the Conservatory at St. Petersburg.
- Rupert, Prince** (1619-82), the brilliant Royalist cavalry general and an admiral opposing Cromwell and later the Dutch, was also an early mezzotinter, an experimental scientist, and the first governor of Hudson's Bay Company.
- Ruskin, John** (1819-1900), writer and art critic, the son of a wealthy London wine merchant. His *Modern Painters* exhibited a masterly perception of the principles of art and a boundless gift of literary expression. Other volumes appeared at intervals including *The Seven Lamps of Architecture* and *The Stones of Venice*, two memorable works which considerably enhanced the author's fame. His writings undoubtedly hastened the recognition of Turner and the Pre-Raphaelite painters. Always taking a deep interest in economic questions, Ruskin delivered and published numerous lectures on a wide range of subjects—art, pleasure, religion, war, work and so forth; and he was acknowledged to be one of the greatest thinkers of the time. Often his views were impracticable and even eccentric, but behind them there was always evident a sincere desire to promote the well-being of the people.
- Russell, Bertrand (Arthur William) 3rd Earl, O.M., F.R.S., M.A., (b. 1872)**, great English philosopher and mathematician, whose vigorous and sceptical writings are having a profound effect on present-day thought. He writes and speaks in a clear and elegant style and regards the task of the philosopher as one of clarification rather than of speculation. *The Principles of Mathematics* (1903), *Principia Mathematica* (1910), written in collaboration with A. N. Whitehead, *Problems of Philosophy* (1911), *Marriage and Morals* (1929), *History of Western Philosophy* (1945), *Human Knowledge* (1948) are among his many works. Nobel Prize for Literature, 1950.
- Russell, Sir (Edward) John, O.B.E., D.Sc., F.R.S. (b. 1872)**. A leading expert on soil chemistry, he has visited most countries of the Commonwealth, the U.S.A., U.S.S.R., and many European countries lecturing and advising on agricultural problems. President of the British Association, 1949.
- Russell, Mary Annette (pseudonym Elizabeth), Countess** (1866-1941). English writer who became famous as the author of *Elizabeth and her German Garden* (1898). Married Count von Arnim in 1890; the 2nd Earl Russell in 1916.
- Russell, George William** (1867-1935), Irish poet generally known by his pen name of A.E. or Æ. Widely known as a leader in co-operative enterprise and a pioneer of Abbey Theatre, Dublin.
- Russell, John, 1st Earl, K.G., P.C. (1792-1878)**, third son of the 6th Duke of Bedford. Entered Parliament as Lord John Russell on attaining his majority, and, ranging himself on the Liberal side, showed great capacity for affairs. Introduced first great measure of Reform, which was passed in 1832. Held several offices before succeeding Peel as Prime Minister in 1846. Remained in power until 1852 and was again Prime Minister from 1865 to 1866, resigning when he failed to carry a further reform bill. He also wrote lives of Thomas Moore and Charles James Fox.
- Russell of Killowen, Baron, P.C., G.C.M.G. (1832-1900)**, Lord Justice of England 1894-98. Was one of the greatest British judges and advocates of the 19th century.
- Rutherford, Lord, O.M., F.R.S. (1871-1937)**, of New Zealand birth. Physicist, pre-eminent in the field of atomic research. Conducted his experiments at Montreal, Manchester, and at the famous Cavendish Laboratory at Cambridge, which attracted brilliant young scientists from all over the world. In 1911 announced his nuclear theory of the atom, and in 1918 succeeded in splitting the atom for the first time. His work paved the way for future nuclear research.
- Ruysdael, Jacob van (c. 1628-82)**, great Dutch landscape painter, some of whose pictures are in the National Gallery.
- Ruyter, Admiral Michiel Adriaanszoon de (1607-76)**, the Dutch admiral who in 1667 invaded England with a fleet of Dutch war vessels, advancing up the Thames and Medway and setting fire to considerable shipping. He soon saw fit to retreat, and more serious trouble was averted.

## S

**Sachs, Hans** (1494-1576), the German shoemaker-poet of Reformation times, was an earnest worker in the Protestant cause, and wrote over 5,000 different pieces, poetry and prose.

**Sadi, or Saadi (Munsh-Uddin) (c. 1184-1292)**, the Persian poet who flourished in the 13th century, and won national fame by his poems *The Garden of Roses* and *The Orchard*.

**Saint-Just, Antoine** (1767-94), one of the later leaders of the French Revolution closely associated with Robespierre.

**St.-Laurent, Rt. Hon. Louis Stephen, Q.C.** (b. 1882), Prime Minister of Canada since 1948.

**Sainte-Saëns, Charles Camille** (1835-1921), a distinguished French composer whose works include the operas of *Samson et Delilah* and *Henri VIII*.

**Saint-Simon, Claude, Comte de** (1760-1825), a French scientist and socialist who had great influence upon the thought of his time.

**Salisbury, George Edward Bateman** (1845-1933), Professor of Rhetoric and English Literature, Edinburgh University, 1895-1915. Author of numerous critical works on literary subjects, on which he was a leading authority.

**Saladin** (circa 1137-93) was Sultan of Egypt, a conquering general, and a deadly foe of Christianity. He swept over Syria and Macedonia, and captured Jerusalem after a great victory at Tiberias. It was against Saladin that the Third Crusade was undertaken, and after his defeat by Richard I. in 1191 his power was shattered.

**Salazar, Antonio d' Oliveira** (b. 1889), Prime Minister and virtual dictator of Portugal since 1932 and responsible for drafting the Portuguese constitution of 1933. Foreign Minister, 1936-47.

**Salisbury, Robert Arthur Talbot Gascoyne Cecil, 3rd Marquess of, K.G.** (1830-1903), led the Conservative Governments of 1885-86, 1886-92, and 1895-1902. Has been considered one of the best Foreign Secretaries England has ever had, holding the office from 1878 to 1880, when he attended the Congress of Berlin, and for much of his premiership. Retired from political life after peace was declared in South Africa. His grandson, Robert Arthur James Cecil, 5th Marquess of Salisbury, K.G. (b. 1893), is Leader of the House of Lords and since 1951 has served successively as Lord Privy Seal, Sec. of State for Commonwealth Relations, Lord Pres. of the Council, and Acting For. Sec. As Viscount Cranborne served as Sec. of State for the Dominions and for the Colonies.

**Salter, James Arthur, 1st Baron, P.C., K.C.B., G.B.E.** (b. 1881), British economist. Successively Min. of State for Econ. Affairs, 1951-52, and Min. of Materials, 1952-53. Assisted the Government in the direction of shipping in both world wars. Independent member for Oxford University 1937-50.

**Sammons, Albert, C.B.E.** (b. 1886), one of the most popular of British violinists. Has been at various times leader of the London String Quartette, the Chamber Players, and the Russian Ballet. Famous as a solo violinist at the Sir Thomas Beecham, B.B.C., London Symphony, Philharmonic, Hallé, and Scottish orchestral concerts and leading Festivals.

**Samuel, 1st Viscount, P.C., G.C.B., G.B.E.** (b. 1870), High Commissioner for Palestine, 1920-25; Postmaster-General, 1910-14, and again May to Dec. 1915; Home Secretary, 1916, and again 1931-32. M.P. for Cleveland Division (N. Riding, Yorks), 1902-18, and Darwen Div. of Lancs., 1929-35. Was Under-Sec. to the Home Dept., 1905-9; Chancellor of the Duchy of Lancaster, 1909-10 and 1915-16. Leader of the Liberal Party in the Commons, 1931-35, and in the Lords, 1941-55.

**Sand, George** (1804-76) the leading French authoress of her time—proper name, Armandine Lucile Aurore Dupin, baronne Dudevant—who, both as novelist and dramatist, achieved the highest success. A friend of men of such singular power as Alfred de Musset, Chopin and Sandeau.

**Sankey, Ira David** (1840-1908), the celebrated American evangelist, singer, and composer, associated with Dwight L. Moody, the revivalist (1837-1899), in mission-work in America and Great Britain for many years.

**Sankey, Viscount, P.C., G.B.E.** (1866-1943). Was a Judge of the King's Bench Division, 1914-23, and a Lord Justice of Appeal, 1928-29. Then Lord Chancellor to 1935. He presided over many important committees, and was Chairman of the Coal Mines Commission, 1919, when he declared for the nationalisation of the mines.

**Santayana, George** (1863-1952), philosopher and poet, born in Madrid of Spanish parentage. He was Professor of Philosophy at Harvard University (where he graduated in 1886) from 1907-12, when he moved to France and thereafter spent

his time wandering from country to country. His books include *The Life of Reason* (1905-6), the four volumes of *Realms of Being* (1923-40), *Persons and Places* (1945), and *The Middle Span* (1948).

**Santos-Dumont, Alberto** (1873-1932), a successful experimenter in aerial navigation, his most notable flights being made in Paris, and at Monte Carlo. He visited London in 1903.

**Sappho** (flourished 611-592 B.C.) was the famous lyric poetess of ancient Greece, whose romantic story of *Unrequited Love* is better known than her poetry, of which only a few samples survive.

**Sardou, Victorien** (1831-1908), began writing plays in 1854, but was at first unsuccessful. Later he obtained an introduction to Mlle. Dejazet, the famous actress, for whom he wrote some plays that proved highly popular and placed him at the head of French dramatists. Then followed a long series of successes—*Nos Intimes*, *Séraphine*, *Rabagas*, *Divorcés*, *Fédora*, and so on, from triumph to triumph. Later he turned his attention to historic subjects, and in *Theodora*, *Patrie*, *La Tosca*, *Madame Sans-Gêne*, *Robespierre*, and *Dante*, the last-named written specially for Sir Henry Irving, achieved further fame. He was elected to the French Academy in 1877.

**Sargent, Sir Harold Malcolm Watts, A.R.C.O., F.R.C.M., F.R.S.A.** (b. 1895), one of the best known modern British conductors. Succeeded Sir Adrian Boult as permanent conductor of the B.B.C. Symphony Orchestra, 1950.

**Sargent, John Singer, R.A.** (1856-1925). He was of American parentage and received his art education in Paris. As a portrait-painter he had few equals.

**Sarolea, Charles, D.Ph., D.Litt., LL.D.** (b. 1870), a great scholar and authority on literature. Belgian by birth, but now a naturalised Englishman.

**Sartre, Jean-Paul** (b. 1905), French philosopher, dramatist, and novelist. Founder of the French *Existentialist* school of philosophy. Imprisoned by the Germans 1940-41, and joined Resistance Movement after his release. Author of the plays *Huis Clos*, *La Putain Respectueuse*, *Crime Passimel*.

**Sassoon, Siegfried (Lorraine), C.B.E.** (b. 1886), an English poet and writer of outstanding ability who received the Hawthornden Prize, 1929, for *The Memoirs of a Foxhunting Man*. Became widely known in 1918 after the publication of his *Counter Attack*, which is a condemnation of war, and has since published a series of other notable works.

**Savonarola, Fra Girolamo** (1452-98), the great Florentine preacher and reformer, a monk of the Dominican order who denounced the follies and luxuries of his time, especially attacking Pope Alexander VI., who dealt out vengeance upon him. He was excommunicated, imprisoned, and put to a dreadful death. Savonarola was one of the most learned men of his time, and his works have been translated into nearly all languages. George Eliot's *Romola* contains a fine estimate of his character, and his life by Villari is a great biography.

**Sayce, Prof. Archibald Henry, D.Litt., LL.D., D.D.** (1845-1933), a distinguished Assyriologist and philologist who was Prof. of Assyriology at Oxford University, 1891-1919. His most important works are *Introduction to the Science of Language* 1879, *Ancient Empires of the East*, 1884, *The Principles of Comparative Philology*, 1874, and *Egypt and Babylonian Religion*, 1903.

**Sayers, Dorothy Leigh** (b. 1893), English authoress who has become famous as a writer of detective fiction.

**Scarlatti, Alessandro** (1659-1725), Italian musician whose influence on the history of opera has been great, founded the Neapolitan school. He composed over 100 operas, 200 masses, and over 700 cantatas and oratorios. His son Domenico (1685-1757) was a harpsichord virtuoso and his work has had an important influence in the evolution of the sonata. The chief years of his life were spent at the Spanish Court in Madrid.

**Schiaparelli, Giovanni Virginio** (1835-1910), famous Italian astronomer who was Director of the Milan Observatory, 1862-1900, and did valuable work on meteors and double stars, but is best known for his discovery of so-called canals on Mars.



- Schiller, Johann Christoph Friedrich** (1759-1805), the famous German dramatist and poet. Was born at Marbach in Württemberg. Educated at the Military Academy at Stuttgart, and intended for a soldier, he evinced an irresistible desire for literary fame, and in 1782 had his first play, *The Robbers*, successfully produced at the Mannheim Theatre, to which he was subsequently appointed dramatic composer. He left Mannheim for Leipzig in 1785. Later he proceeded to Dresden, where he completed his *Don Carlos*; and in 1789 he was at the University of Jena as Professor of History. While engaged in this capacity he wrote his *History of the Thirty Years' War*, and made the acquaintance of Goethe, at whose suggestion he removed to Weimar, and during the next ten years produced his greatest works—*Wallenstein*, *Mary Stuart*, *The Maid of Orleans*, and *William Tell*. He died at the early age of forty-six.
- Schlegel, August Wilhelm von** (1767-1845), was a famous German critic who for a number of years held the post of Professor of History in the University of Bonn. He is best known in this country by translations of his *Lectures on Dramatic Art and Literature*, which are remarkable for their appreciation of Shakespeare and their scholarly handling of the drama in all its leading phases. He spent many years with Madame de Staël.
- Schnabel, Artur** (1882-1951), American pianist of Austrian birth, regarded as the greatest exponent of Beethoven's pianoforte sonatas.
- Schönberg, Professor Arnold** (b. 1874), Austrian composer who emigrated to the United States during the Nazi regime. Among his works are the choral orchestral *Gurre-Lieder* and *Pierrot Lunaire*, a cycle of 21 poems for voice and chamber music.
- Schopenhauer, Arthur** (1788-1860), was a German philosopher of a pessimistic cast of mind. His mysticism partakes somewhat of the higher Buddhism. His chief works are *The World Considered as Will and Idea* and *The Two Fundamental Problems of Ethics*.
- Schreiner, Olive**, pen name of Mrs. Cronwright Schreiner (1855-1920), a noted South African novelist, born in Basutoland. She first attracted attention with her successful *Story of an African Farm* (1883) by which work she is best known. She excelled in depicting veldt scenery and Dutch character.
- Schubert, Franz Peter** (1797-1828), one of the most eminent of Austrian musical composers, whose songs and symphonies are among the most inspired of musical compositions, full of melodic beauty, and instinct with emotional power. He also wrote operas, Masses, and cantatas, all of which reached a high level of merit.
- Schumann, Robert Alexander** (1810-56), a famous German composer and musical critic, who did much to help forward the advanced school of German music. He was the author of numerous fantasias, songs, and orchestral compositions, and attained a prominent position among modern composers. His wife, Clara Schumann (1819-96), was a noted pianist and interpreter of Chopin, and a composer of meritorious music.
- Schweitzer, Albert, D.Theol., Dr. Phil., Dr. Med.** (b. 1875), missionary in Lambaréné, a musical critic and authority on Bach's music, a famous organist, and a noted biblical critic who became a Doctor of Medicine in order to devote his life to missionary work in Equatorial Africa. Awarded 1952 Nobel Prize for Peace and Hon. O.M. in 1955.
- Scipio, Publius Cornelius** (circa 232-183 B.C.), the greatest of the Scipios known as *Scipio Africanus the elder*. A distinguished Roman general in the 2nd Punic War.
- Scott, Charles Prestwich** (1846-1931), English journalist who was editor of the *Manchester Guardian* from 1872 to 1929, which under his editorship became one of the leading journals of the country.
- Scott, Sir George Gilbert, R.A.** (1811-78), an eminent architect who gained special fame for his restorations of Gothic churches; designer of the Albert Memorial and the Martyrs' Memorial at Oxford.
- Scott, Sir Giles Gilbert, O.M., R.A., F.R.I.B.A.** (b. 1880), eminent architect. Architect for the Liverpool (Anglican) Cathedral. Grandson of Sir George Gilbert Scott (q.v.).
- Scott, Peter Markham, M.B.E., D.S.C. (b. 1909)**, son of Captain Scott, is known as yachtsman, broadcaster, author of *The Battle of the Narrow Seas*, and bird-arist.
- Scott, Captain Robert Falcon, C.V.O.** (1868-1912), commanded the National Antarctic Expeditions in 1901-4 and in 1910. His ship, the *Terra Nova*, left England on June 1, 1910. In Jan. 1911, winter quarters were established at Cape Evans, and in the following November Scott and a select party left Hut Point for the South Pole, which they reached on Jan. 18, 1912, finding there the Amundsen records. On the return journey every member of the party perished. Seaman Edgar Evans died from concussion of the brain on Feb. 17; Capt. Oates from exposure on March 17; and on March 29 the rest of the party (Scott, Wilson and Bowers) died from starvation and exposure in a blizzard when only 11 miles from One Ton Depot.
- Scott, Sir Walter, Bart.** (1771-1832), one of the greatest of British novelists and a distinguished poet. He was educated for the Bar. His *Minstrelsy of the Scottish Border* was published in 1802. This was followed in 1805 by *The Lay of the Last Minstrel*, in 1808 by *Marmion*; *The Lady of the Lake*, *Rokeby*, and *The Lord of the Isles* coming afterwards in quick succession. In 1814 he published *Waverley* anonymously, which obtained instant success. Other stories followed and the *Waverley* novels and their author, "The great Unknown," were everywhere the subject of discussion. *Guy Mannering*, *The Antiquary*, *Old Mortality*, *Rob Roy*, and *The Heart of Midlothian* were all published before the secret of their authorship was disclosed. Scott made large sums of money by his writings, purchased Abbotsford, and was in the full tide of success when the failure in 1826 of his publisher, Constable, and with him Ballantyne and Co., his printers, involved him in financial ruin. Scott, who was fifty-five, placed himself in the hands of trustees and set himself to pay off the combined debts of over £120,000. The last outstanding debts were cleared after his death on the security of copyrights. His chief works produced in these last painful years were *Woodstock*, *Life of Napoleon*, and *Tales of a Grandfather*. He died at Abbotsford. Created a baronet in 1820.
- Scott-Paine, Hubert** (1891-1954), pioneer in the design and construction of aircraft and sea craft, in particular flying-boats and high-speed motor-boats.
- Scriabin, Alexander Nikolaevich** (1872-1915), a Russian musical composer who invented a new tonality to express his own philosophical ideas. His big orchestral compositions include *The Divine Poem* and *The Poem of Fire*.
- Seaman, Sir Owen, Bt.** (1861-1935), English author and humorist who joined the staff of *Punch* in 1897, and was its editor, 1906-32. His many volumes of verse were characterised by a remarkable gift for humour and parody, combining scholarship with wit that always glittered, and satire with a sting that was never in bad taste.
- Seeley, Sir John Robert, K.C.M.G.** (1834-95), was an historian of note, but acquired his chief fame as a writer by his *Ecce Homo* and *Natural Religion*.
- Selfridge, Harry Gordon** (1858-1947), the American who revolutionised the British department store when he opened the famous shop of Selfridges in Oxford Street in 1909. Noted for his ambitious advertising and lavish entertaining.
- Selous, Capt. Frederick Courtenay, D.S.O.** (1851-1917), a famous English big-game hunter, who in 1871 went to South Africa, where for nearly 20 years he hunted big-game and engaged in scientific exploration. His fine collection of trophies was presented by his widow to the Natural History Museum.
- Senanayake, Rt. Hon. Don Stephen** (1884-1952), First Prime Min. of Ceylon, 1947. Did much to improve the island's agricultural economy.
- Seneca, Lucius Annaeus** (circa 4 B.C.-A.D. 56), the famous stoic philosopher, who was tutor to Nero, and one of that emperor's most influential advisers; he was sentenced to end his own life, a sentence which he courageously carried out.
- Senefelder, Alois** (1772-1834), was the son of an actor at Munich, and himself engaged in dramatic composition. Being too poor to bear

the cost of having his works printed, he turned his attention to inventing lithography, the main feature of the invention being discovered by accident.

**Service, Robert William** (b. 1874), Canadian poet and novelist whose best known works are *Songs of a Sourdough*, *Ballads of a Cheechako*, and *Rhymes of a Rolling Stone*.

**Severus, Lucius Septimius** (146-211), was Roman Emperor from 193 to his death. After many victories in the East he passed over to Britain with an army, subjugated the Caledonians, and repaired and partly rebuilt the famous Hadrian's wall from the Solway Firth to the mouth of the Tyne. He died at York.

**Shackleton, Sir Ernest** (Henry), C.V.O., O.B.E. (1874-1922), commander of the Nimrod Farthest South expedition of 1907-9, reached within 100 miles of the South Pole, and embarked on a new expedition in 1914. He died whilst on a scientific voyage to the Antarctic.

**Shaftesbury, Anthony Ashley-Cooper, 7th Earl of** (1801-85), a distinguished philanthropist, identified himself with the Ten-Hours Bill, connected with the Ragged School Union, Reformatories, Refuges, and Christian Associations of many kinds.

**Shakespeare, William** (1564-1616), England's greatest poet and dramatist, was born at Stratford-on-Avon, and was the son of a tradesman of that town who must have been at one time fairly well-off, seeing that he was made an alderman, and afterwards served as High Bailiff. Later on, however, he appears to have been unfortunate and fallen into straitened circumstances. William was the eldest son, and was probably educated at the Stratford Grammar School, but very little is known of his career up to his eighteenth year, when we have it on record that he married Anne Hathaway, who was eight years his senior. Five years after his marriage he went to London, and the next we hear of him is that he was connected with the Globe Theatre and appeared in sundry small parts. He first appeared before the public as a poet in 1593, with his *Venus and Adonis*, following this in 1594 with *The Rape of Lucrece*. Shortly afterwards he was proprietor of the Globe Theatre, and also had an interest in the Blackfriars Theatre. Then he began that remarkable career of play-writing which has since been the wonder of the world. It is impossible to name the thirty-five plays that he wrote in the exact order in which they were produced, but *Love's Labour's Lost* and *The Comedy of Errors* seem to have been among the earliest, being followed by *The Two Gentlemen of Verona*, and *Romeo and Juliet*. Then followed *Henry VI*, *Richard III*, *Richard II*, *Titus Andronicus*, *The Taming of the Shrew*, *King John*, *The Merchant of Venice*, *A Midsummer Night's Dream*, *All's Well that Ends Well*, *Henry IV*, *The Merry Wives of Windsor*, *Henry V*, *Much Ado about Nothing*, *As You Like It*, *Twelfth Night*. Then came some of his greatest plays, *Julius Caesar*, *Hamlet*, *Troilus and Cressida*, *Othello*, *Measure for Measure*, *Macbeth*, *King Lear*, *Timon of Athens*, *Pericles*, *Antony and Cleopatra*, *Coriolanus*, *Cymbeline*, *A Winter's Tale*, *The Tempest*, *Henry VIII* (part only). It was evident that his plays were remunerative, inasmuch as in a few years he was able to purchase property at Stratford, and when he retired from his profession (about 1610 or 1612) he returned to his native town to live in a house which he had himself built. He died at Stratford at fifty-two, and was buried in Stratford Church.

**Sharp, Granville** (1735-1813), slavery abolitionist and founder of the colony of Sierra Leone.

**Shaw, George Bernard** (1856-1950), brilliant Irish dramatist who conquered England by his pungent wit and devastating exposure of hypocrisy, cant and national weaknesses, and persistently expressed a highly individual opinion whether in his musical criticisms, socialist pamphlets or plays. He wrote many plays including *Man and Superman*, *Heartbreak House*, *Back to Methuselah*, *Saint Joan*, *The Apple Cart*, *Buoyant Billions*, most of which have important prefaces, sometimes equalling the play in length. Was music critic (1888-94) successively to the London *Star* and *World* and during this period wrote *The Quintessence*

of *Ibsenism* and *The Perfect Wagnerite*. Joined the Fabian Society in 1884 and was awarded Nobel Prize for Literature in 1925. He was greatly interested in the reform of the alphabet to save time and labour, and left on trust part of his estate for the carrying out of his ideas. His house at Ayot St. Lawrence was taken over by the National Trust.

**Shelley, Percy Bysshe** (1792-1822), one of the most brilliant poetic geniuses of the 19th century, renowned for the daring and unorthodox opinions which he held. His *Queen Mab* (written when he was nineteen), his *Alastor*, *The Revolt of Islam*, *The Witch of Atlas*, and *Adonais* all breathe the true spirit of poetry, securing him a place in the first rank of British poets. He showed fine dramatic gifts in the *Cenci* and *Prometheus Unbound*, almost reaching sublimity in the latter masterpiece. His *Adonais* was a splendid tribute to the genius of Keats. His first wife, whom he married while very young, committed suicide. He afterwards married Mary Wollstonecraft Godwin, and formed other attachments of a complicating nature. Was always at war with his family, and finally, after spending some time with Byron and Leigh Hunt and other friends in various parts of Italy, was drowned in the Gulf of Spezia by the capsizing of his boat in a storm.

**Shepard, Ernest Howard** (b. 1879), chief cartoonist of *Punch* since 1945. Illustrator of *Winnie-the-Pooh* and other books by A. A. Milne.

**Sheppard, Very Rev. Hugh Richard Lawrie** (Dick), C.H., D.D. (1880-1937), Vicar of St. Martin-in-the-Fields, London, 1914-27, where he established a reputation by his broadcast sermons and attracted large crowds of listeners. Dean of Canterbury, 1929-31; Canon of St. Paul's, 1934-37. Buried in Canterbury Cathedral.

**Sheraton, Thomas** (1751-1806), was the last of the great English cabinet-makers of the 18th century. The Sheraton style which he introduced marks a reaction against Chippendale (*q.v.*).

**Sheridan, Rt. Hon. Richard Brinsley Butler** (1751-1816), one of the greatest of English playwrights, whose comedies are frequently revived. Was born in Dublin, and educated partly at Harrow. Showing considerable capacity for dramatic composition he obtained an introduction to the Covent Garden management, and it was at the Covent Garden Theatre in 1775 that his first comedy, *The Rivals*, was produced, with such a gratifying result that Garrick, who was then at Drury Lane, opened up negotiations with the dramatist which ended in Sheridan becoming part (and ultimately sole) proprietor of Drury Lane. *The Duenna*, a musical comedy, was produced in 1775, and ran through the winter. From 1777 Sheridan managed Drury Lane, opening with an adaptation of Vanbrugh's *Relapse*. This was followed by the production of the greatest of his comedies, *The School for Scandal*, which had a wonderful success. In 1779 *The Critic* was given, and after that Sheridan wrote no more plays until 1789, when *Pizarro* was produced. In the meantime he had gained a high reputation in another sphere. In 1780 he obtained a seat in Parliament and although he only spoke on certain set occasions, he acquired a reputation for oratory which stood him in very good stead, and he filled one or two minor Ministerial offices, remaining in Parliament until 1812.

**Sherman, General William Tecumseh** (1820-91), a famous American soldier who, after taking part in the War with Mexico (1846-48), volunteered at the outbreak of the Civil War (1861). He took part in the battles of Bull Run and Shiloh, and was placed in command of the Army of the Tennessee (1863) and of the military division of the Mississippi with a force of 100,000. In 1864 there occurred the famous 300-mile march across Georgia to the sea. In 1865 his second march, through the Carolinas, culminated in the defeat of Johnston, which led directly to the termination of the war.

**Sherrington, Sir Charles Scott, O.M., G.B.E., F.R.S., M.D., D.Sc.** (1857-1952), one of the greatest of British scientists, and a leading authority on the physiology of the nervous system, whose research work over many years led to great advances in the surgery of the brain. Pres. of the British Association 1920,



- and of the Royal Society, 1920-25. Awarded Nobel Prize for Medicine, 1932.
- Shirley, James** (1596-1666), was an eminent dramatist and poet, imbued with the Elizabethan traditions. He and his wife are said to have died from shock after the Great Fire.
- Shostakovich, Dmitry Dmitriyevich** (b. 1906), one of the most celebrated of present-day Russian composers. His music is complex, profound, and deeply significant of the Soviet age in which he lives. His works include operas, ballets, symphonies, chamber music, and music for films.
- Sibelius, Jean Julian Christian** (b. 1865), Finnish composer, generally acknowledged as the greatest of the century. Works include seven symphonies, violin concerto, several tone poems, about 200 pianoforte compositions and songs.
- Sickert, (Walter) Richard** (1860-1942), British painter and etcher; became President of Royal Society of British Artists, 1928.
- Siddons, Sarah** (1755-1831), the daughter of Roger Kemble, a theatrical manager. The greatest tragic actress of her time.
- Sidgwick, Henry** (1838-1900), Professor of Moral Philosophy at Cambridge, and besides being an eminent educationist in the broader sense, devoted himself with special success to the cause of women's education. Newnham and Girton being largely the outcome of his efforts.
- Sidney, Sir Philip** (1554-86), statesman, poet and soldier; was one of Queen Elizabeth's favourites, and a man of singular ability and bravery. While living in temporary retirement he composed his famous *Arcadia*, but did not allow it to be published in his lifetime. He did not lack for literary fame, however, his *Apology for Poetry and Defence of Poesy*, as well as numerous miscellaneous pieces all distinguished for their beauty of expression and tender sentiment, having won much favour, especially in the circle of the Court. In 1586 he was given a command in the Netherlands and was killed at Zutphen.
- Siemens, Sir William, F.R.S.** (1823-83), a German-born scientist and inventor, chiefly in the field of heat and electricity. Constructed many overland and submarine telegraphs. Brother of Werner v. Siemens, founder of the famous firm of Siemens-Halske.
- Slenskiewicz, Henryk** (1846-1916), famous Polish novelist; Nobel prizewinner, 1905 (*Quo Vadis*).
- Skorski, Vladislav** (1881-1943), Polish general and statesman; Prime Minister during second world war.
- Simon, 1st Viscount, P.C., G.C.S.I., G.C.V.O.** (1873-1954), M.P. for the Walthamstow Div., 1906-18, and Spen Valley, 1922-40; Solicitor-General, 1910-13; Attorney-General, 1913-15; Home Secretary, 1915-16 and again 1935-37; Foreign Secretary, 1931-35. Chancellor of the Exchequer, 1937-40; Lord Chancellor, 1940-45.
- Simonds, Viscount (Gavin Turnbull Simonds), P.C., Q.C.** (b. 1881), Lord High Chancellor of Gt. Britain, 1951-54; Lord of Appeal in Ordinary, 1944-51; Chairman Nat. Arbitration Tribunal, 1940-44.
- Simpson, Sir James Young, Bt., F.R.S.** (1811-70), the discoverer of the utility of chloroform as an anæsthetic, was a native of Scotland, and was a most accomplished experimental surgeon.
- Stclair, Upton** (b. 1878), whose fame as a writer was established when he wrote *The Jungle* in 1906. Made a bold bid for election as Democratic candidate for the Governorship of California in 1934, but was defeated.
- Singer, Isaac Meritt** (1811-75), American mechanical engineer who devoted himself to the improvement of the early forms of the sewing-machine and patented a single-thread and chain-stitch machine.
- Sisley, Alfred** (1839-1899), French Impressionist painter of English origin. Painted with great delicacy and sensitivity, landscapes, villages, trees and rivers. Influenced by Corot and Manet.
- Sitwell, Edith (Louisa), D.B.E.** (b. 1887), English poet whose works include *Eucolic Comedies*, *Gold Coast Customs* and *Collected Poems*. Her two brothers are Osbert (b. 1892), a well-known poet and novelist, and Sacheverell (b. 1900), a poet and critic.
- Sitwell, Sir Osbert, Bt., C.B.E., LL.D., F.R.S.L.** (b. 1892), English writer who made a reputation for bitter, satire drawing his inspiration in the first place from his War experience. His works include several books of poems, short stories, novels, and a family history. He is the leader, with his sister, of a literary group.
- Slm, Field-Marshal Sir William J., G.C.B., G.C.M.G., G.C.V.O., G.B.E., D.S.O., M.C.** (b. 1891), Gov.-Gen. of Australia 1953-. In 1943 took command of the 14th Army in Burma, later becoming commander of the Allied Land Forces, S.E.A.C., and then Commandant of the Imperial Defence College. In 1947 joined the Railway Executive, but left a year later to succeed Lord Montgomery as Chief of the Imperial General Staff (1948-52).
- Sloane, Sir Hans, Bt., F.R.S.** (1660-1753), was born in County Down, Ireland, but settled in London, and became famed as a physician and naturalist. For some years he held the office of President of the Royal College of Physicians, and was elected President of the Royal Society in succession to Sir Isaac Newton. His Library of 50,000 vols., and treasures in natural history and MSS., worth from £50,000 to £80,000, were offered by his will to, and bought by the nation for £20,000, and with that nucleus the British Museum was founded.
- Slowacki, Julius** (1809-49), Polish romantic poet. He was a revolutionary, lived in exile and died in Paris. His tragedies include *Kordian*, *Belladonna* and *Lilli Weneda*.
- Smeaton, John** (1724-92), who rebuilt Eddystone Lighthouse, which had been burned down; he subsequently constructed many important works in connection with harbours and canals. He was also the inventor of an improved blowing apparatus for iron-smelting.
- Smetana, Bedich** (1824-84), was the first important Czech composer and the first conductor of the Prague National Theatre, for which he wrote most of his operas, including *The Bartered Bride* and *Libus*. He wrote much fine choral and piano music. In 1874 he became completely deaf and ten years later died in an asylum. He was the founder of the modern Czech School of Music.
- Smiles, Dr. Samuel** (1812-1904), was in early life a medical practitioner; achieved wide popularity by his *Self Help*, a book that has had an enormous sale.
- Smith, Adam, F.R.S.** (1723-90), the father of the science of political economy. Author of *Theory of Moral Sentiments* and *Wealth of Nations*, which immediately obtained the admiration of the leading men of the day, and secured him the friendship of Gibbon, Hume, Burke, Reynolds, and Dugald Stewart.
- Smith, Sir (Charles) Aubrey** (1863-1948), was not only an outstanding British stage and screen actor for many years but also an accomplished cricketer and a charming and well-loved Hollywood character.
- Smith, Sir Grafton Elliot, M.A., Litt.D., D.Sc., F.R.S.** (1871-1937), a distinguished Australian anatomist and archaeologist who was successively Professor of Anatomy in the University of Manchester, in the Egyptian Government School of Medicine, Cairo, in University College, London, and from 1933 until his death in Jan. 1937 Fulleren Professor of Physiology at the Royal Institution. He conducted brilliant researches on the structure of the mammalian brain, and stood in the front rank of comparative anatomists. His works include *The Royal Mummies* (1912), *Tutankhamen* (1923), *The Evolution of Man* (1924), and *The Diffusion of Culture* (1933).
- Smith, Captain John** (1580-1631), the noted seafarer and adventurer who in 1605 was the leading spirit of an expedition to Virginia, and founded Jamestown.
- Smith, Joseph** (1805-44), founder of Mormonism, son of a Vermont farmer. Claimed to have been granted revelation of the *Book of Mormon*, which came to be held as equal in authority and as a necessary supplement to the Scriptures. Smith, who was murdered, was not a polygamist; Brigham Young, who succeeded him, was. See Mormonism, Gen. Inf.
- Smith, Sydney** (1771-1845), an Anglican divine, who enjoyed a great reputation as a wit and writer. Founder of and contributor to the *Edinburgh Review* and author of *Peter Plymley's Letters*, supporting Catholic Emancipation.
- Smollett, Tobias George** (1721-71), a famous English novelist and humorist, whose *Roderick Random*, *Peregrine Pickle*, *Count Fathom* and

*Humphrey Clinker* abound in fun and genial characterisation, while their pictures of sea-life are inimitable.

**Smuts, Field-Marshal Rt. Hon. Jan Christiaan, O.M., C.H., K.C.** (1870-1950). South African soldier and statesman, one of the dominating political figures of our century. Born in Cape Colony, studied at Cambridge University, and called to the Bar. Was an outstanding Boer commando leader during the South African War, but afterwards worked for friendship with the British and took office in Botha's Government when the Union was set up in 1910. In the first world war joined the Imperial War Cabinet. As Prime Minister, 1912-24, helped to launch the League of Nations, and more recently was associated with the United Nations. Prime Minister, Foreign Minister and Minister of Defence from 1939 to 1948 when he was defeated at the General Election by the Nationalists under Dr. Malan. He was a keen botanist; Pres. of British Association, 1931. His book *Holism and Evolution*, published in 1926, was widely discussed in the scientific world.

**Smyth, Dame Ethel Mary, D.B.E., Mus. Doc., D.Litt.** (1858-1944), the most notable of British women musicians and conductors. Operas *The Wreckers* and *The Boatswain's Mate*.

**Snowden, Viscount, P.C.** (1864-1937), Chancellor of the Exchequer in the first Labour Government, 1924, and again, 1929-31; Socialist M.P. for Blackburn, 1906-18; Colne Valley, 1922-31; Lord Privy Seal, 1931-32.

**Snyders, Frans** (1597-1657), a great Flemish still-life and animal painter who studied under Breughel.

**Soane, Sir John, R.A.** (1753-1837), an eminent architect who designed numerous public buildings. By his will he left his museum, library, pictures, etc., for the use of the public, and the house in which he lived at Lincoln's Inn Fields still constitutes the Sir John Soane Museum.

**Sobieski, John III.** (1624-96), King of Poland from 1674, and heroic defender of his country from Cossacks, Tartars, and Turks.

**Socinus, Lælius** (1525-62), an Italian Protestant thinker and anti-Trinitarian, founder with his nephew Faustus Socinus (1539-1604), of the Socinian system of theology.

**Socrates** (469-399 B.C.), the distinguished Greek philosopher, was the son of a sculptor and for some time followed that calling himself, but, having other ambitions, joined the army, and was present at the battle of Potidæa, and also at the battle of Delium, saving the life of Alcibiades in the first, and of Xenophon in the second. Returning to Athens he devoted himself to study and began to exhort the people on public questions and the conduct of life. In 406 B.C. he was made one of the Senate of Five Hundred, and had other honours accorded him, continuing his teaching alternately with his public duties. Not long afterwards Anytus charged him with impiety and he was found guilty and sentenced to death. When the fatal day came he calmly drank the poison which terminated his career.

**Soddy, Prof. Sir Frederick, M.A., LL.D., F.R.S.** (b. 1877), Prof. of Inorganic and Physical Chemistry, Univ. of Oxford, 1919-36. Nobel Laureate in Chemistry 1921. The foundation of the isotope theory was laid by him in Glasgow about 1912 before the physicists became prominent in that field.

**Sokolovsky, Marshal Vasilij Danilovich, C.-in-C.** of Soviet occupation forces in Germany, 1946-49, First Dep. Min. of Armed Forces, 1949-.

**Solon** (638-558 B.C.) was one of the Seven Sages of Greece, and became an eminent legislator, after having made a reputation as a poet. Solon's Laws were so highly esteemed that they were adopted by the Romans in their Twelve Tables.

**Solyman** (1490-1566), the celebrated Ottoman Sultan known as "the Magnificent," who won fame as a conqueror, law-giver, administrator and patron of learning.

**Somerset, 1st Duke of** (1506-52), was Protector of England in the early part of the reign of Edward VI., but was deposed from power, tried for felony, and executed. A liberal and tolerant ruler who opposed enclosures and pursued a moderate religious policy.

**Sophocles** (495-406 B.C.), the famous Athenian dramatist who enjoyed the highest popularity

at Athens, and in a contest with Æschylus was crowned the victor. Of the 100-odd plays of Sophocles only seven have survived: *Antigone*, *Electra*, *Edipus*, *Ajax*, *Trachinice*, *Philoctetes*, and *Edipus at Colonus*.

**Soult, Marshal Nicolas Jean de Dieu, Duke of Dalmatia** (1769-1851), was one of Napoleon's favourite and most capable generals, distinguishing himself in the Swiss and Italian campaigns, and also in the Peninsular War, where he was Wellington's bravest opponent.

**Southey, Robert** (1774-1843), poet and author. In 1803 he went to live near Keswick to be near Coleridge where he resided until his death. In 1813 he was made Pct Laureate. In poetry he was overshadowed by the greater genius of Byron and Shelley, but in prose he was eminently successful, his *Life of Nelson*, his *Doctor, Commonplace Book*, and other works being as strong and vigorous as his verse was tame.

**Southwell, Robert** (1561-95), a famous Jesuit and religious poet of Elizabethan times. Beatified in 1929.

**Spaak, Paul-Henri** (b. 1899), Belgian statesman; Prime Minister 1946-49; first President of the U.N. General Assembly in 1946 and of the Assembly of the Council of Europe during its first session in 1949.

**Spaatz, General Carl Andrew** (b. 1891), held high commands in Europe, North Africa, and the Pacific, 1942-46; Commanding Gen. of U.S. Army Air Forces, 1946; Chief of Staff, U.S. Air Force, 1947-48.

**Spartacus, a Thracian** who became a Roman slave and gladiator in Capua, and headed an insurrection in Italy in 73 B.C. The slaves he raised routed several Roman armies, but he was eventually defeated by Crassus in 71 B.C. and slain.

**Speke, Capt. John Hanning** (1827-64), was the discoverer, along with Lt.-Col. J. A. Grant, of the Kagera, the main source of the White Nile, in 1862. In 1856 he discovered Lake Tanganyika and in 1858 Victoria Nyanza.

**Spencer, Herbert** (1820-1903), was the son of a Derby schoolmaster. For some time followed the profession of civil engineer. His first book was published in 1851, under the title of *Social Statics*, when he was filling the position of sub-editor of the *Economist*. In 1855 his *Principles of Psychology* appeared, in which he seems to have anticipated Darwin's theory of Evolution. The *System of Synthetic Philosophy* began to appear in 1860, and the last of its ten volumes was issued in 1896.

**Spencer, Stanley, C.B.E., R.A.** (b. 1891), British artist whose work shows great visionary and spiritual power. His paintings include the Resurrection pictures and the Cockham Regatta series.

**Spenser, Edmund** (1552-99), was born in London, educated at Cambridge, and early attracted notice by his poetic writings. After the publication of his *Shepherd's Calendar*, he was made known to Queen Elizabeth, and in 1580 received the appointment of Secretary to the Lord Deputy of Ireland, and in the division of confiscated lands that afterwards took place, Spenser received Kilcolman Castle and 3,000 acres of land. Here he wrote his *Faerie Queene*. In 1598 a rebellion broke out, and Spenser's castle was burned to the ground. He then returned to London, and there died.

**Spinoza, Baruch** (1632-77), the greatest modern pantheist, was born in Amsterdam of a Jewish family, but, having expounded philosophical doctrines antagonistic to Judaism, was excommunicated by the rabbis as a heretic. In 1663 he published his era-marking work on the Cartesian philosophy, from which he widely differed, and set forth a system of Pantheism which makes God the cause and substance of the universe, abolishes free-will, and establishes the necessity of the Divine nature. His *Ethics* was not published until after his death.

**Spurgeon, Rev. Charles Haddon** (1834-92), a renowned Baptist preacher.

**Squire, Sir John Collings** (b. 1884), English man of letters. He engaged in journalism, and edited the *New Statesman* 1913-18, and was the founder and editor of the *London Mercury*, 1919-34, with which his name is inseparably connected. A prolific writer, he published among other works *Grub Street Nights*, *Steps*



- to *Parnassus, Collected Parodies, American and other Poems, Outside Eden*, also many volumes of collected criticism.
- Stacpoole, Henry de Vere (1863-1951), novelist of Irish origin. Published several very successful stories, including *The Blue Lagoon*, a delightful romance of life on a South Sea island.
- Staël, Madame de (Anne Louise Germaine Necker, Baronne de Staël-Holstein) (1766-1817), the daughter of Necker, the famous Finance Minister under Louis XVI., was married to Baron de Staël (Swedish Minister) at twenty. She was a brilliant woman, deeply imbued with philosophical sentiments. Two years after her marriage she made a considerable impression by her *Letters on Rousseau*, and was regarded as in sympathy with the Revolution. Later on, however, she was in disfavour, first with the Revolutionary leaders, and then with Napoleon, and was in turn exiled by both and during this time wrote *Corinne* and other able works.
- Stalin, Generalissimo Joseph Vissarionovich (Djugushvili) (1879-1953), Soviet statesman who for nearly thirty years was leader of the Russian people. Studied for the priesthood at the Tiflis theological seminary. From the age of 17 was an active revolutionary and took important part in the civil war after 1917. After the death of Lenin became the outstanding figure in Russia and his aim to make Russia a great industrial power was carried into effect by modernizing agriculture on socialist lines and by a series of five-year plans, the first of which was introduced in 1929. Defended his country against the German invasion. Attended the allied war conferences at Teheran, Yalta and Potsdam. His published works in English include *Leninism, Problems of Leninism, The Great Patriotic War of the Soviet Union*.
- Stanford, Sir Charles Villiers, Mus. D. (1852-1924), Professor of Music at Cambridge University, and Professor of Composition and Orchestral Playing in the Royal College of Music. An organist and conductor of remarkable ability, and a composer of much fine instrumental, choral, operatic, and other music.
- Stanley, Sir Henry Morton, G.C.B. (1841-1904), English explorer, after an adventurous early career during which he fought for the Confederates in the American Civil War, joined the *New York Herald* as a correspondent in 1867 and was commissioned by Gordon Bennett to search for Livingstone. In 1871 he discovered the great missionary at Ujiji and with him explored the northern end of Lake Tanganyika. After further exploration he founded the Congo Free State in 1879. Among his books were *How I found Livingstone, Through the Dark Continent, In Darkest Africa*, and an *Autobiography*.
- Stanley, Colonel the Rt. Hon. Oliver Frederick George, M.C., M.P. (1896-1950), a leading Conservative politician. Colonial Secretary 1942-45.
- Stead, William Thomas (1849-1912), a famous English journalist and publicist, who founded the *Review of Reviews*, 1890. Was particularly famous for his anti-vice crusade in the *Pall Mall Gazette*, which led to his being imprisoned for three months in 1885. He wrote on an encyclopaedic range of subjects in attractive style. Was drowned in the *Titanic* disaster.
- Steele, Sir Richard (1672-1729). Born in Dublin, he was the son of a lawyer, who died while Steele was a child. Through family influence he was sent to the Charterhouse School (where he made Addison's acquaintance) and to Oxford and afterwards entered the Army and rose to be a captain in the Horse Guards. Then he drifted into literature, and wrote poems and pieces for the stage, but his first real success came when, in 1709, he began the publication of the *Tatler*, which made a great hit, Addison contributing many papers. Two years later he and Addison were associated in *The Spectator*. Addison, however, being the leading contributor; the *Guardian* was another of Steele's ventures. He sat in Parliament for some time, and was knighted by George I.
- Steer, Philip Wilson, O.M. (1860-1942), was the most distinguished of British landscape painters, and a fine portraitist.
- Stefansson, Vilhjalmur (b. 1879), a famous Arctic explorer, born in Manitoba of Icelandic parents. Studied Theology and Anthropology at Harvard.
- Took part in the Anglo-American Arctic expedition 1908-12 and led the Canadian Arctic Expedition 1913-18.
- Stein, Sir Aurel, K.C.I.E. (1862-1943), was a famous British archaeologist who conducted expeditions, chiefly to Chinese Turkestan, resulting in priceless additions to the British Museum and the Delhi Central Indian Museum. Explored Baluchistan, 1926-28, and South Iran, 1932-33. Was Superintendent of Archaeological Survey, North-West Frontier Circle, India, 1910-29.
- Stendhal, pseudonym of the French novelist, Marie Henri Beyle (1783-1842); *Le Rouge et le Noir, La Chartreuse de Parme*.
- Stephen (1105-54) was King of England from 1135 to his death, usurping the crown that belonged to Matilda, the daughter of Henry I.
- Stephen, Sir Leslie, K.C.B. (1832-1904), an eminent writer, critic and biographer. Edited the *Cornhill Magazine* (1871-82), and the *Dictionary of National Biography* (1882-91). Wrote *Hours in a Library*. Was the father of Mrs. Virginia Woolf (q.v.).
- Stephenson, George (1781-1848), was born at Wylam, near Newcastle, and up to 1804 was mainly engaged in ordinary colliery occupations. In 1804, however, an engagement as brakesman at Killingworth colliery brought him in touch with the working of Watt's steam engine, and his first efforts in invention were in improving one of those engines, showing so much ability that he was offered an engine-wright's position at Killingham, which he held for some time. Then it was that he began to think seriously of producing a locomotive engine, and managed to construct an engine that would draw coal trucks at the rate of four miles an hour. In 1821, when the Stockton and Darlington Railway was undertaken, he was appointed engineer, and when the railway was opened in 1825, as a line for the transport of coal only, Stephenson won his first great triumph, by putting a locomotive on the line that was able to draw a train of thirty-eight carriages, laden with goods and passengers, at a rate of twelve miles an hour. George Stephenson, subsequently, assisted by his son Robert, constructed the Liverpool and Manchester line, and after that the railway era commenced.
- Stephenson, Robert, F.R.S. (1803-59), the only son of George Stephenson, attained great eminence as a civil engineer, constructing numerous important railways and bridges, being designer and contractor for the High Level Bridge at Newcastle, the Menai and Conway Tubular Bridges, the Victoria Bridge across the St. Lawrence at Montreal, and two notable bridges over the Nile.
- Sterne, Laurence (1713-68), one of Britain's greatest humorists. His great work *Tristram Shandy*, the first two volumes of which were published in 1759, and the last in 1767, was so unique in character and so sparkling with wit and high spirits that, despite a certain coarseness, it made him famous. He also wrote *The Sentimental Journey*, and published some volumes of sermons.
- Stevenson, Robert, F.R.S.E. (1772-1850), a native of Glasgow, and famed as a builder of light-houses, including that on Bell Rock. He also invented the "flashing" system of throwing light at sea.
- Stevenson, Robert Louis (1850-94), was the Scottish author of a remarkable series of essays, stories, and poems, including *Travels with a Donkey, Virginibus Puerisque, Treasure Island, Kidnapped, Dr. Jekyll and Mr. Hyde, and A Child's Garden of Verse*. He always suffered from delicate health and travelled extensively, finally settling in Samoa with his Californian wife, formerly Mrs. Osbourne. His literary influence was considerable, particularly on the generation which followed him.
- Stinnes, Hugo (1870-1924), German industrialist who built up a huge coal-mining, iron and steel, and transport business, and also developed a large shipping concern. His group controlled the greater part of Germany's coal, iron and steel supply. In 1920 he entered the Reichstag, and later became a newspaper proprietor.
- Stokes, Sir George Gabriel, LL.D., F.R.S. (1819-1903), a distinguished Irish mathematician and physicist who became Lucasian Professor of Mathematics at Cambridge, 1849;

- Secretary of the Royal Society, 1854-85 (President 1885-90) and was President of the British Association, 1869. To him is due the modern theory of viscous fluids, while in optics his theory of diffraction opened up hitherto unexplored fields of research. Was the practical founder of the science of geodesy; the discoverer of the nature of fluorescence, and an original and brilliant investigator.
- Stopes, Marie Carmichael, D.Sc., Ph.D., F.L.S., F.R.L.S. (b. 1880),** an eminent woman scientist. Has published many works on birth control.
- Stowe, Harriet Elizabeth Beecher (1811-96),** the famous authoress of *Uncle Tom's Cabin*. Written to expose the horrors of slavery, it did much to advance the cause of abolition which the Civil War finally effected.
- Strachey, Rt. Hon. Evelyn John St. Loe (b. 1901),** Labour M.P. for Dundee West. Writer of lucid and vigorous books on socialist economics.
- Stradivari, Antonio (1644-1750),** an Italian maker of violins, first in his art in the world of all time.
- Stratford, Thomas Wentworth, Earl of (1593-1641),** the distinguished statesman, sent by Charles I. to Ireland as Lord Deputy in 1631. Was the founder of the Irish linen manufacture. He obtained the name of "Thorough" by his sweeping measures for asserting the King's authority, but was ultimately impeached on a variety of charges, found guilty, and executed.
- Strauss, David Friedrich (1808-74),** German theological writer, who made a great stir in the religious world by his *Life of Jesus*, published in 1835, which attempted to prove that the evangelical history mainly rested on a series of myths.
- Strauss, Johann (1804-49),** an Austrian composer and conductor, famous for his dance music, of which he produced some 250 pieces, many of them of a very high level. His son, Johann (1825-99), was even more distinguished in the same line as the composer of the *Blue Danube* waltz and nearly 400 other dance tunes; while a younger son, Eduard (1835-1916), became conductor of the Court balls at Vienna in 1870, and was responsible for well over 200 compositions; and yet another son, Joseph (1827-1870) composed some 270 dances. The famous Strauss band compelled the admiration of generations of music lovers in this country as well as in the capitals of the Continent.
- Strauss, Richard (1864-1949),** the son of a horn player in the Court Opera House at Munich, where he himself became conductor in due course, later being given the baton at the Royal Opera House, Berlin. He composed many charming songs, and won great distinction in the writing of elaborate instrumental music, operas, symphonies, etc.
- Stravinsky, Igor Fyodorovich (b. 1882),** a Russian composer; his compositions are highly original in structure; *Firebird* (1910), *Petroushka* (1912), *Les Noces* (1923). U.S. citizen, 1945.
- Stresemann, Gustav (1878-1929),** German statesman who was notable under the Weimar Republic. His conciliatory foreign policy was directed towards peace, and culminated in the Locarno Pact.
- Strindberg, Johan August (1849-1912),** Swedish dramatist, novelist, and poet of intense creative energy. His work is subjective and reflects his personal conflicts. He married three times but never happily. *Lucky Peter*, *Gustav Adolf*, *Till Damascus*, *The Father*, *Miss Julie* are among his works.
- Strong, Leonard Alfred George (b. 1896),** poet, novelist, short story writer, and critic. Author, among other books, of *Dublin Days*, *The Brothers*, and *The Last Enemy*, and with Cecil D. Lewis editor of *A New Anthology of Modern Verse*.
- Strydom, Johannes Gerhardus (b. 1893),** succeeded Dr. Malan as leader of the Nationalist Party and Prime Min. of South Africa, Dec. 1954.
- Stuart, Arabella (1575-1615),** daughter of the Earl of Lennox and cousin of James I., whose next heir she was both to the English and Scottish thrones. In 1610 she married William Seymour, afterwards Earl of Hertford and Duke of Somerset, and thereby incurring the king's displeasure, she was incarcerated in the Tower of London, where she died insane.
- Suckling, Sir John (1609-42),** wit, courtier, and poet; served under Gustavus Adolphus and in Charles I's first Scottish war (1639). Being concerned in a plot to rescue the Earl of Strafford from the Tower, he fled to France, where he may have killed himself. He wrote poems, ballads, songs, and prose work and is said to have invented cribbage.
- Sudermann, Hermann (1857-1928),** German dramatist, poet and novelist. His brilliant novel, *Frau Sorge* (1887), translated into English as *Dame Care* (1892), reached its 125th edition in 1912. From 1890 he produced a succession of realistic plays and novels.
- Sullivan, Sir Arthur Seymour, C.V.O. (1842-1900),** gifted composer, gained his first musical experiences as choir-boy at the Chapel Royal, and later studied at Leipzig. He composed oratorios but at the same time cultivated a lighter vein with pronounced success. Became famous for the light operas written in collaboration with W. S. Gilbert, which include *Trial by Jury*, *The Sorcerer*, *H.M.S. Pinafore*, *Pirates of Penzance*, *Patience*, *The Mikado*, *The Yeoman of the Guard*, *The Gondoliers*.
- Sully, Maximilien de Bethune, Duc de (1560-1641),** a French Protestant statesman, a friend and companion of Henry of Navarre. His *Memoirs* made notable reading.
- Sun Yat Sen, Dr. (1867-1925),** the founder and first President of the Chinese Republic, 1912, resigning almost immediately in favour of Yuan Shih Kai. Was the first graduate of medicine at Hongkong, 1891. Founded in 1905 the China Revolutionary League in Europe and Japan, and played a large part in the revolution of 1911, being elected President of the Southern provinces by the Nanking Convention in 1912.
- Sutro, Alfred (1863-1933),** author and dramatist. His most successful plays were *The Walls of Jericho* (1904) and *John Gayde's Honour* (1907).
- Swan, Sir Joseph Wilson, F.R.S. (1823-1914),** was born at Sunderland, and first became known as an inventor in photography, being the discoverer of the autotype process, and of the art of making rapid dry plates. Turning his attention to electric lighting he invented the incandescent electric lamp.
- Swedenborg, Emanuel (1689-1772),** Swedish philosopher, scientist, mystic. In later life he announced that Divine authority had been given him to explain natural and spiritual evidences. He published in quick succession *Arcana Celestia*, *The Apocalypse Revealed*, *Four Preliminary Doctrines*, and *The True Christian Religion*. He also claimed that his soul had been permitted to travel into hell, purgatory and heaven. His works became the scriptures of the sect named Swedenborgians.
- Swift, Jonathan, Dean (1667-1745),** was born at Dublin, educated at Trinity College at the expense of an uncle, became secretary to Sir William Temple, and looked for political preferment, but it did not come. Entering the Church, he was made Dean of St. Patrick's in 1713. Getting entangled in political controversy, and changing his views from the Whig to the Tory side, he lost favour with the popular party, but consoled himself with a devotion to literature, which he greatly enriched by some powerful satires, poems and discourses. *Gulliver's Travels*, *A Tale of a Tub* and *The Battle of the Books* are among the best-known works. His romantic attachment to "Stella" (Hester Johnson, whom he is believed to have married privately) and "Vanessa" (Esther Vanhomrigh), and their devotion to him, are familiar stories.
- Swinburne, Algernon Charles (1837-1909),** was educated at Oxford, and in the early 'sixties of last century gave to the world a number of poems of singular poetic beauty and musical charm, which procured him a high rank among English poets. Mr. Swinburne's most famous productions include *Atalanta in Calydon*, *Songs before Sunrise*, *Bothwell*, and *Mary Stuart*. Perhaps the best of his writings is his essay on William Blake.
- Swithin, St. (circa 800-862),** Bishop of Winchester in 852, and on the translation of his remains to a shrine in the interior of the cathedral from the graveyard, fixed for July 15th, 971, violent rain intervened, and, it is said, continued for forty days; hence the superstition as to rain upon St. Swithin's Day.
- Symonds, John Addington (1840-93),** acquired



fame as a poet and writer on *The Renaissance Period in Italy*.

**Synge, John Millington** (1871-1909), Irish poet and playwright. His best known work, *The Playboy of The Western World*, met with a hostile reception when first produced in Dublin in 1907, but English audiences were at once enthusiastic.

**Szigeti, Joseph** (b. 1892), famous Hungarian violinist, who made his debut in 1905, toured through Europe and settled for some years in England. He made an immense reputation on the Continent, and was Prof. at the Geneva Conservatorium, 1917-24.

**Szymanowski, Karol** (1833-1937), Polish composer and director of the Conservatoire at Warsaw.

## T

**Tacitus, Caius Cornelius** (55-circa 120). His chief claim to remembrance is that he was one of the ablest of Roman historians, and left behind him a number of works; among them a life of Agricola and his *Annales*, which have formed the ground-work of much that has since been written on the period he covered.

**Tacitus, Marcus Claudius** (205-276), the Roman Emperor who succeeded Aurelian in A.D. 275. His short reign was wise and marked by moderation.

**Taft, Wm. Howard** (1857-1930), Chief Justice United States 1921-30. President of the United States 1903-12.

**Tagore, Rabindranath** (1861-1941), a Bengal poet who won the Nobel Literature Prize in 1913.

**Talbot, William Henry Fox, F.R.S.** (1800-1877), English scientist who first discovered the principles of photography in 1833. Inventor of the calotype or Talbot-type process of which modern photography is a development.

**Talleyrand-Perigord, Charles Maurice de** (1754-1838), French politician and diplomat, led a mission to England in 1792 and was Foreign Minister from 1797 until 1807. He represented France at the Congress of Vienna.

**Tallis, Thomas** (c. 1510-85), a distinguished musician, who was, as organist, attached to the Chapel Royal under Henry VIII., Edward VI., Mary, and Elizabeth, and was the composer of some of the finest of our Church music.

**Tamerlane, or Timūr the Tartar** (1335-1405), descendant of a follower of Jenghiz Khan, and founder of the Mogul Dynasty in India. He succeeded as chief of the Berlas Turks in 1361, and in turn conquered Turkestan, Persia, and Syria. He was a masterful warrior, and a terrible butcher, the scourge of the East in his day, and, after establishing himself in India, died whilst preparing for the invasion of China. His familiar name is a corruption of Timūr-lenk = "Timūr the Lame."

**Tannhäuser, a mythical German minnesinger** of the 13th century, who belonged, according to the legend handled so romantically in Wagner's opera, to the Salzburg family of Tanhusen, and was the beloved of Lisaura.

**Tarkington, (Newton) Booth** (1869-1946), a leading American novelist, author of a wide variety of books, of which probably the best known is *Monsieur Beaucaire*, a sentimental romance, the dramatic version, in which he collaborated, achieving a great success.

**Tarquin Superbus** (or "the Proud"), the last King of Rome. Was banished 510 B.C. After his deposition came the Consuls.

**Tarquin the Elder, 5th King of Rome**, succeeded Ancius Mastius 615 B.C., reformed the laws, embellished the city, and was assassinated.

**Tasman, Abel Janszoon** (circa 1602-59), a famous Dutch navigator; in 1642 he discovered the island of Tasmania and New Zealand shortly thereafter.

**Tassigny, Jean de Latre de, Marshal of France**, Hon. G.C.B. (1890-1952), outstanding commander of the Free French Movement in Second World War; High Commissioner and C-in-C. Indo-China, 1950-52. C-in-C. Land Forces, Western Europe, 1948-50.

**Tasso, Torquato** (1544-95), was one of the great Italian poets of the 16th century.

**Tauber, Richard** (1893-1948), Austrian tenor, sang Mozart and German Lieder impeccably; made first appearance in England, 1931, in

Lehar's *The Land of Smiles* which brought him world-wide fame.

**Taylor, Brook, LL.D., F.R.S.** (1685-1731), an English mathematician of high attainments, who solved the problem of the centre of oscillation, and is best known as the discoverer of "Taylor's theorem."

**Taylor, James Henry** (b. 1873), one of the greatest golfers of all time, was five times Open Champion and founder and first chairman of the British Professional Golfers Association.

**Taylor, Jeremy** (1613-87), an English divine of great influence. The most famous of his works was his *Holy Living and Holy Dying*.

**Tedder, Marshal of the R.A.F., Arthur William**, 1st Baron, G.C.B., B.A. (b. 1890), was Deputy Supreme Commander under Eisenhower for the invasion of Europe, Chief of the Air Staff, 1946-48; Chairman, Western Europe Chiefs of Staff committee, 1948-50; Chancellor of Cambridge Univ. and Vice Chairman of the Governors of the B.B.C., 1952-54.

**Telford, Thomas** (1757-1834), was a Scottish working stone-mason who became a great engineer and attained special fame as a builder of bridges, the Menai Suspension Bridge being, perhaps, his greatest work. He constructed the Ellesmere Canal, made many hundreds of miles of difficult mountain roads, was chief engineer of the Caledonian Canal, and altogether did an immense amount of public work.

**Tell, William**, a legendary figure in Swiss folk-lore. The story of his having been compelled to shoot an apple from the head of his boy by Gessler and his dramatic revenge is regarded as a legendary feat which had been attributed on English territory to William of Clouesley, and had become a common Teutonic tradition before Tell's time. The Switzer hero of the Uri had, however, a great part in the strenuous struggle for Swiss independence in the early 14th century.

**Temple, Most Rev. Frederick** (1821-1902), a famous Anglican Churchman who became Headmaster of Rugby in 1858; in 1860 attained notoriety as the author of the first of the much-controverted *Essays and Reviews*, advocated the disestablishment of the Irish Church in 1868, was appointed Bishop of Exeter in 1869, translated to London in 1885, and in 1890 was raised to the Primacy. He made a strong Archbishop, and dominated the Church with his vigorous personality.

**Temple, Most Rev. William, P.C., D.Litt., D.D.** (1881-1944), one of the outstanding Christian leaders of his time and the son of Frederick Temple, was Archbishop of Canterbury, 1942-44, after being Headmaster of Repton, 1910-14, Bishop of Manchester, 1921-29, and Archbishop of York, 1929-42. His influence was felt among Christians of all denominations, and he strove for the unity of the Churches.

**Temple, Rt. Hon. Sir William, Bt.** (1628-99), English statesman and author; was Ambassador to The Hague in Charles II.'s time, and is understood to have been instrumental in bringing about the marriage between William of Orange and the Princess Mary. William III. twice offered him the position of Secretary of State, but he declined the honour, spending the years of his retirement at Moor Park (where Swift served him for a time as private secretary). Married Dorothy Osborne (1627-95), the letter-writer.

**Templer, Gen. Sir Gerald Walter Robert, G.C.B., G.C.M.G., K.B.E., D.S.O.**, Chief of the Imperial General Staff since Nov. 1955, formerly High Commissioner and Director of Operations in Malaya.

**Templewood, Samuel John Gurney Hoare, 1st Viscount, P.C., G.C.S.I., G.B.E., C.M.G.** (b. 1880), Conservative politician; Sec. of State for Air, 1922-29; Sec. of State for India, 1931-35; Foreign Sec., June-Dec. 1935; Home Sec., 1937-39; Special Ambassador to Spain, 1940-44.

**Teniers, David (the younger)** (1610-94), was born at Antwerp, and his paintings of the old rustic Flemish life are unsurpassed in their humour and fidelity. He died at Brussels. His father, David Teniers the elder (1582-1649), was also one of the leading landscape painters of the time.

**Tenniel, Sir John** (1820-1914), for over fifty years leading artist of *Punch*, illustrated numerous books, including *Alice in Wonderland*.

**Tennyson, Alfred Lord** (1809-92), was Poet

- Laureate from 1850 to his death. Born at Somersby, in Lincolnshire, he showed poetic gifts while quite young, and in 1827, joined his brother Charles in the publication of *Poems by Two Brothers*. In 1830 and 1832 he again appeared before the public, the two small volumes of those years, written entirely by himself, serving to mark him out as one of the coming men in poetry. It was not until 1842 that he was again attracting attention with two volumes; but these more than confirmed previous promise. In 1847 he published *The Princess*; in 1850 *In Memoriam*, a poem of great beauty and depth of thought, in which he enshrined his affection for the memory of his dead friend Arthur Hallam; and in 1855 *Maud* appeared. His other works include *The Idylls of the King*, *Enoch Arden*, *Queen Mary*, *Harold*, and *Becket*.
- Terence, Publius Terentius Afer (circa 194-158 B.C.), a Roman poet and dramatist, who rose from the position of a slave to that of one of the most honoured men in Rome.
- Teresa, St., or Theresa (1515-82), a Spanish saint and author, born at Avila, entered the Carmelite order in 1534, established a reformed order in 1562, became famous for her ascetic life and mystic visions, and died at Alba de Liste. Her religious writings include *The Way of Perfection* and *The Castle of the Soul*. She was canonised by Pope Gregory XV.
- Terry, Dame Ellen, G.B.E. (Mrs. James Carew) (1848-1928), one of the most distinguished of English actresses. Played Shakespeare with Sir Henry Irving at the Lyceum and later appeared in plays of Bernard Shaw, who was her friend.
- Tertullian, Quintus (circa 150-230), a Father and writer of the Latin Church. His chief work was his *Apologeticus*, a defence of Christianity.
- Tetrazzini, Luisa (1871-1940), was an Italian prima donna who sprang into sudden prominence in 1907 by her wonderful singing at Covent Garden. She was hailed as a second Patti, and achieved a brilliant success.
- Tetzl, John (c. 1460-1519), the German Dominican monk and Inquisitor, the scandal of whose sale of indulgences roused Luther to publish his memorable ninety-five theses at Wittenberg in 1517, and led up to the Reformation.
- Thackeray, William Makepeace (1811-63). His first ambition was to be an artist, he seriously proposed to be an illustrator of Dickens's works, but he never got much beyond the amateur stage in pictorial work, the drawings he made to illustrate some of his own novels being crude and inefficient. As a humorist and novelist he, however, attained high rank. To *Fraser's Magazine* and to *Punch* he contributed a large number of burlesques, sketches, poems, etc., all full of spirit and fun; but it was not until later life that his greatest successes were won. *Vanity Fair*, which was issued in monthly parts between 1846 and 1848, proclaimed him a master in the realm of fiction. *Pendennis*, *Esmond*, *The Newcomes*, *The Virginians*, *Philip and Love* the *Widower* make up the main of his finished stories, and English literature is all the richer for them. He edited the *Cornhill Magazine* from the first number, January, 1860, for a few years his most notable contributions being his *Roundabout Papers*. His *Yellowplush Papers* and *The Book of Snobs* (republished under *Punch*) were widely read and admired; and the lectures he delivered in America on *The Four Georges* were pungently powerful.
- Thales of Miletus (circa 640-546 B.C.), a geometer, astronomer, and philosopher, and one of the seven wise men of ancient Greece. The earliest of the Ionian philosophers, he created a sensation by the pre-calculation and prediction of an eclipse of the sun, which took place 585 B.C., and he looked upon water as the basis of all material things.
- Themistocles (c. 514-449 B.C.), Athenian soldier and statesman. By fortifying the harbour of Piræus as the port of Athens, by the remission of taxes on aliens, and by the creation of the Athenian navy, he established Athenian prosperity and made possible the later Athenian empire. Defeated the Persian fleet at Salamis in 480 B.C.
- Theocritus (285-247 B.C.), one of the great Greek poets. Thirty *Idylls* have come down to us and a number of *Epigrams*.
- Theodoric the Great (455-526), a celebrated King of the East Goths, born at Pannonia. In mediæval German romance he is known as "Diëtrich von Bern," and had a reputation for good government, akin to that ascribed in England to King Alfred. He was the founder of the Gothic Kingdom of Italy.
- Theodosius the Great (346-95) was Roman Emperor of the East for nearly twenty years. He gained victories over the Goths, and the year before his death became sole Emperor. Noted in ecclesiastical history for his conversion to Christianity, and for his submission to the penance imposed by St. Ambrose.
- Theophrastus (circa 372-287 B.C.), succeeded Aristotle as President of the Lyceum at Athens. His *History of Plants* and his *Moral Characters* are the best known of his writings.
- Thibaud, Jacques (b. 1880), famous French violinist.
- Thierry, Jacques Nicolas Augustin (1795-1856), a distinguished French historian, known by his *History of the Norman Conquest*.
- Thiers, Louis Adolphe (1797-1887), a French statesman and man of letters, author of *History of the French Revolution*.
- Thomas, Dylan (1914-53), Welsh poet whose *Eighteen Poems* (1934) brought him instant recognition as an original and gifted artist. Other works include *Twenty-five Poems* (1936) and *Deaths and Entrances* (1945).
- Thomson, James (1834-82), a Scottish poet who wrote *The City of Dreadful Night*.
- Thomson, Sir (John) Arthur (1861-1933), was a well-known biologist.
- Thomson, Sir Joseph (John), O.M., D.Sc., F.R.S. (1856-1940), physicist and mathematician; Master of Trinity College, Cambridge, 1918-40; Cavendish Prof. of Experimental Physics, Cambridge, 1884-1919. Awarded Nobel Prize in 1906 for his work on conduction of electricity through gases; also discovered the electron. Wrote learnedly on electricity, magnetism, radio-activity, etc. His son, Sir George Paget Thomson, F.R.S., is also a physicist and Nobel Prizeman; Master of Corpus Christi College, Cambridge.
- Thoreau, Henry David (1817-62) was a natural philosopher and nature-worshipper, who forsook trade and devoted himself to a primitive kind of existence in the American woods. He was the friend of, and for a time lived with, Emerson, but in 1845 adopted his career of solitude, and pursued those studies of nature which afterwards gained him a high reputation. His *Walden*, or *Life in the Woods*, is a unique book.
- Thorez, Maurice (b. 1900), Secretary General of the French Communist Party.
- Thorncliffe, Dame Sybil, D.B.E., LL.D. (b. 1885), a celebrated British actress. She had a great success in *Macbeth*, also in G. B. Shaw's *St. Joan* and in several Greek tragedies. Wife of Sir Lewis Casson, the actor.
- Thornycroft, Sir John Isaac, LL.D., F.R.S. (1843-1928), founded the well-known Thornycroft shipbuilding works at Chiswick in 1866, where he built many noted high-speed vessels, and in later years devoted much attention to the improvement of motor vehicles.
- Thornycroft, Sir William Hamo, R.A. (1850-1925), English sculptor whose works include the Gladstone Memorial, the statue of General Gordon in Trafalgar Square, of Queen Alexandra in the Royal Exchange, Lord Granville in the Houses of Parliament, Cromwell at Westminster, and John Bright in Rochdale.
- Thorpe, Sir (Thomas) Edward, C.B., Ph.D., D.Sc., F.R.S. (1845-1925), a noted English chemist. His chief research work was done on paraffin hydrocarbons, and the derivatives of fluorine and phosphorus. Was the author of a standard *Dictionary of Applied Chemistry* and a *History of Chemistry*.
- Thorwaldsen, Bertel (1770-1844), a famous Danish sculptor.
- Thucydides (c. 460-399 B.C.), the first scientific historian, was an Athenian and took part in the Peloponnesian War, about which he wrote his *History*. Attempted an impartial account, weighing the testimony of eye-witnesses and keeping to carefully verified facts. The



- History* is a graphic narrative, but Thucydides was not merely a chronicler; he saw the general significance of particular events and wished to pass on the political lessons of the past to the future. The speeches which he put into the mouths of the various actors reveal the political ideas and climate of opinion of contemporary Greece, and include the famous Funeral Oration of Pericles.
- Tiberius, Claudius** (42 B.C.-A.D. 37), the second Emperor of Rome, had an evil reputation but was an able ruler and successful soldier. Spent his later years in Capri.
- Tiffin, Arthur Ernest** (1896-1955), succeeded Arthur Deakin as general secretary of the Transport and General Workers' Union in 1955.
- Tillett, Benjamin** (1860-1943), M.P. for North Salford 1917-24 and again 1929-31, came into prominence in the great dock strike of 1889. He was the organiser and secretary of the Dockers' Union; for several years alderman of the L.C.C.; and an active labour leader. Chairman of the General Council T.U.C. 1928-29.
- Tillotson, John** (1630-94), a celebrated preacher at Lincoln's Inn, "Popery" and "Atheism" being the main objects of his attacks: in 1691 became Archbishop of Canterbury.
- Tindal, Matthew** (c. 1653-1733), noted English Deist.
- Tintoretto (Jacopo Robusti)** (1518-94), the famous Venetian painter, whose numerous religious pictures are of great value and interest. His real name was Jacopo Robusti, and he received the cognomen of Tintoret, or Tintoretto, from his father's avocation, that of a dyer.
- Titian, or Tiziano Vecelli** (1477-1576), one of the greatest of painters. He studied under the Bellinis, and made his first essays in painting for the public in conjunction with Giorgione, whom he soon surpassed. In 1511 he was at Padua, where he painted some notable frescoes; in 1512 he was back in Venice, with a studio on the Grand Canal, employed on important commissions. From this time forward he was in great demand, and exercised his marvellous powers almost to the end of his life, dying of the plague at ninety-nine.
- Titians (or Tietjens), Teresa** (1831-77), a famous German operatic prima donna and concert-room singer.
- Titu, Marshal (Josif Broz)** (b. 1892), Prime Minister of the Federal People's Republic of Yugoslavia since 1945. Leader of the partisan forces which successfully fought against German occupation. President National Liberation Committee, 1943.
- Titus** (40-81), the Roman Emperor, and son of Vespasian. Attained great renown by his successful part in the Jewish war which terminated in the capture and destruction of Jerusalem: he was deemed a profligate and a tyrant, but no sooner was he in sole power than he exerted himself to the utmost to please the people, completed the Colosseum, gave plenty of exhibitions, built splendid baths, and otherwise made himself popular.
- Tizard, Sir Henry Thomas, G.C.B., F.R.S.** (b. 1885), scientist and administrator. President of the British Association, 1948. Played important part in the higher scientific direction of the second world war.
- Tocqueville, Alexis, Comte de** (1805-59), author of *De La Démocratie en Amérique* and *De L'Ancien Régime*, which set out nineteenth-century liberal ideas and are also useful historical sources.
- Tolstoy, Count Leo Nikolayevitch** (1828-1910), was the most distinguished personality in modern Russian literature. Born of a good family, he was for a time in the army, but was so greatly moved by the trials and sufferings of the people that, out of pure sympathy of heart, he was impelled "to take up his pen and write." At twenty-four he published his *Childhood*, and in 1854, while in camp in the Crimea, wrote his *Tales from Sebastopol*, which procured him considerable literary fame. Later on he was a persistent advocate of progressive ideas, and, before the Emancipation Act for freeing all Russian serfs was enforced, he himself had given the serfs on his own estate their freedom. In 1862 he married, and settled down to a quiet country life, shortly afterwards publishing his *War and Peace* and *Anna Karenina*. In his latter years Tolstoy developed a sort of religious mysticism. Among his later works are *The Power of Darkness*, *The Kreutzer Sonata*, *The Cossacks*, *Resurrection*, and *The End of the Age*.
- Tone, Theobald Wolfe** (1763-98), the Nationalist agitator who founded the Society of United Irish men in 1791. Being refused death by shooting, he escaped hanging by cutting his throat.
- Tooke, John Horne** (1736-1812), English politician and pamphleteer, was a supporter of Wilkes and later of Pitt. His tracts advocated reform. After the French Revolution was tried for high treason, but was acquitted.
- Toole, John Lawrence** (1832-1906), for half a century a popular English comedian.
- Torquemada, Tomas de** (1420-98), the chief officer of the Spanish Inquisition.
- Torricelli, Evangelista** (1608-47), Galileo's pupil. He invented the barometer and improved both the microscope and the telescope.
- Toscanini, Arturo** (b. 1867), famous Italian conductor, La Scala Theatre, Milan, 1898-1908 and 1920-29; at the Metropolitan Opera House, New York, 1908-15; and of the Philharmonic Symphony Society of New York, 1926-36. Returned to Milan in 1946 after a ten-year exile. Retired, 1954.
- Tosti, Sir (Francesco) Paolo, K.C.V.O.** (1847-1916), a famous Anglo-Italian composer and song writer. *Good-Bye, Ask Me No More*, and *For Ever*.
- Toulouse-Lautrec, Henri de** (1864-1901), French painter, whose pictures portray with stark realism certain aspects of Parisian life in the nineties.
- Tovey, Sir Donald Francis, Mus. Doc.** (1875-1940), was a noted British musician, who as a child showed remarkable ability both as a pianist and in his mental grasp of the art of music. His chief composition is Concerto in A for piano and orchestra.
- Toynbee, Arnold** (1852-83), after graduating at Oxford, devoted himself to practical philanthropy and social reform. From his self-denying efforts sprang the settlement in East London—Toynbee Hall.
- Toynbee, Arnold Joseph, Hon. D.Litt** (Oxford, Cambridge, and Birmingham) (b. 1889), eminent scholar and historian, nephew of above. Dir. of Studies Royal Inst. of Int. Affairs, 1925-55. Major work *A Study of History* (10 vols.) was completed in 1954.
- Trajan (circa 52-117)** was Roman Emperor from 98 to his death. His rule was enlightened, and he was esteemed by the people.
- Tree, Sir Herbert Beerbohm** (1852-1917), the London actor-manager who scored successes at the Haymarket and His Majesty's Theatres.
- Trenchard, Marshal of the R.A.F., Viscount, G.C.B., O.M., G.C.V.O., D.S.O.** (1873-1956). Chief of Air Staff, 1918-29; Chief Commissioner of Police, 1931-35; often known as the father of the Air Force and largely responsible for the establishment of the R.A.F. College at Cranwell and the Hendon Police College.
- Trent, 1st Baron, of Nottingham (Jesse Boot)** (1850-1931), founder of Boots Cash Chemists, Ltd.; a great benefactor of Nottingham, especially of the University of Nottingham.
- Trevelyan, George Macaulay, O.M., C.B.E.** (b. 1876), English historian, son of Sir George Otto Trevelyan and great nephew of Thomas Babbington Macaulay. Regius Professor of Modern History at Cambridge 1927-40; Master of Trinity College, 1940. Chancellor of Durham University, 1949. His chief works are: *History of England*; a trilogy of books on *Gari-baldi*; *England under the Stuarts*; *England under Queen Anne*; *Grey of Palladoon*; *English Social History*; *An Autobiography and other Essays*.
- Trevelyan, Rt. Hon. Sir George Otto, 1st Bt., O.M.** (1838-1928), Liberal statesman and historian. Became Chief Secretary for Ireland in 1882, and was later Secretary of State for Scotland. Wrote a biography of his uncle, Lord Macaulay, which was highly praised. Father of Professor G. M. Trevelyan.
- Trevithick, Richard** (1771-1833), a Cornish mine-manager's son, who invented the road-locomotive, putting upon the highway on Christmas Eve, 1801, the first steam-propelled vehicle for passengers.
- Trollope, Anthony** (1815-81), author of many

- novels. His Barchester series depicts a number of scenes of higher clerical life with great fidelity and success.
- Trotsky, Leon**, name assumed by Lev Davidovich Bronstein (1879-1940), one of the leaders of the Bolshevik revolution. War Minister of the Bolshevik Government and its leading representative at the Brest-Litovsk conference of 1917-18. He differed from the Communist Party on policy and was dismissed from office in 1925. In 1929 took up exile in Mexico where he was assassinated.
- Truman, Harry S.** (b. 1884), President of the United States, 1945-52. Inherited the Presidency on the death of Roosevelt in 1945 and won the Pres. election in 1948. Outspoken supporter of the New Deal and the rights of Labour. He took the historic decision to enter Korea in 1950, dismissed Gen. MacArthur in 1951, and will perhaps best be remembered for his "Point Four" programme of raising levels of living in backward and under-developed countries.
- Tschaikovsky, Peter Ilyich** (1840-93), a Russian musical composer of great force and originality. He excelled in several branches of composition, and many of his works are well known in Britain. They include operas, ballets, symphonies, piano concertos, and other orchestral works.
- Turenne, Henri de la Tour d'Auvergne, Vicomte de** (1611-75), a famous French commander and Marshal of France, who was highly successful in the Thirty Years' War.
- Turgenev, Ivan Sergeyevich** (1818-83), was a friend of Gogol and Tolstoy (*qq.v.*), and a famous Russian novelist and short-story writer, the first of his country to achieve international fame. His works were frequently satirical and directed against the oppression of the peasants by the nobles. Was the inventor of the term "nihilist" to describe the Russian anarchist movement.
- Turner, Joseph Mallord William, R.A.** (1775-1851), was the son of a London barber, but while quite a child showed the possession of artistic genius. In 1789, after some miscellaneous schooling, he entered the Royal Academy classes, and soon began to make headway. Of his larger pictures may be mentioned *The Sun Rising through Vapour*, *Crossing the Brook*, *Dido Building Carthage*, *The Fighting Temeraire*, and *Calais Pier*. Ruskin, in his *Modern Painters*, wrote with great eloquence and critical insight regarding Turner's work, and brought about a fuller appreciation of his genius. He never married, and took little interest in anything outside his art. He left the oil paintings and drawings he had preserved to the National Gallery.
- Tussaud, Madame Marie** (1760-1850), a Swiss who, while practising the art of modelling wax in Paris at the time of the French Revolution, made her escape to England and set up a small exhibition of wax figures in the Strand, later carried on by her son, grandson and great-grandson at Baker Street and in 1884 transferred to Marylebone Road.
- Tut-ankh-amen** (circa 1350 B.C.), an Egyptian Pharaoh of the 18th dynasty, whose tomb was discovered by Howard Carter in 1922, with the mummy intact. The magnificence of the coffins and ornaments, together with large quantities of furniture, etc., of that time, caused world-wide interest. Died at age of about 18 years.
- Twain, Mark.** (*See Clemens, Samuel L.*)
- Tweedsmuir, John Buchan, 1st Baron, C.H.** (1875-1940), Gov.-Gen. of Canada 1935-40, journalist, politician, and author, wrote numerous biographies, historical novels, and adventure stories, including *Montrose*, *The Path of the King*, *Greenmantle*, and *Sick-Heart River*, and an autobiography *Memory Hold the Door*. Under the pen name "O. Douglas," his sister, **Anna** (d. 1948), published some charming tales of domestic life.
- Tyler, Wat** (d. 1381), the leader of the peasants' revolt of Richard II.'s time against the iniquitous poll-tax. Over 100,000 peasants followed Tyler into London in June 1381, and the king met them in Smithfield and made promises of redress that were never fulfilled. It was at this meeting that Sir William Walworth, Lord Mayor of London, stabbed Tyler with a dagger, and afterwards handed him over to his followers to kill outright.
- Tyndale, William** (c. 1492-1536), was educated at Oxford, and conceived a strong desire to be the medium of presenting the Bible to his countrymen in their own language. He completed the translation of the New Testament at Wittenburg, where he was associated with Luther. This version was first published at Antwerp, and then found its way to England, where it was publicly burnt at St. Paul's Cross. Tyndale afterwards was associated with Miles Coverdale in a translation of the Old Testament, but only completed the Pentateuch and the book of Jonah. Antwerp was Tyndale's retreat during this later period, and in 1535 he was arrested for heresy and put to death by strangling and burning.
- Tyndall, Prof. John, F.R.S.** (1820-93), was an eminent scientist. His books on light, sound, and heat are well-known text-books.

## U

**Ulanova, Galina**, Russian ballet dancer, made her debut in 1928 and is the world's greatest living exponent of the art. She danced in Florence in 1951.

**Undset, Sigrid** (1882-1949), a Norwegian novelist who established her reputation after the publication of her novel *Jenny* in 1912 as one of the most outstanding Scandinavian writers of her time and is known by her principal study of Scandinavian life in the Middle Ages. Was awarded the Nobel Prize for Literature, 1928.

**Unwin, Sir Raymond** (1863-1940), English architect and expert on Town Planning, who became known as the architect of the first garden city at Letchworth, and of the Hampstead Garden Suburb.

**Ursula, St.**, is said to have been an English princess, who with 11,000 virgins set out on a pilgrimage, but compelled by a fierce storm to take refuge in Cologne, was there put to death with her following by an army of Huns.

## V

**Valentine, St.**, was a Christian martyr of the reign of the Emperor Claudius II (d. 270 A.D.). His festival was commemorated on February 14 before Gregory the Great's time. The custom of sending valentines had its origin in a heathen practice associated with the worship of Juno about this date in the calendar, and had no connection with the saint.

**Valentino, Rudolph** (1895-1926), whose real name was Rudolph Alphonso Guglielmi di Valentino d'Antongueita, an Italo-American film actor who made his screen debut as Julio in *The Four Horsemen of the Apocalypse* in 1922, his success being enormous. His good looks, grace, virility and great dramatic talents made him the idol of countless men and women.

**Vambéry, Arminius** (1832-1913), a celebrated Orientalist and traveller.

**Vanbrugh, Sir John** (1664-1726), was a prominent architect as well as a successful dramatist.

**Vancouver, George** (1758-98), a British navigator who served under Captain Cook, and later explored the Gulf of Georgia and the Straits of San Juan de Fuca, as also the shores of Vancouver Island.

**Vanderbilt, Cornelius** (1794-1877), a noted American merchant and railway speculator who accumulated a fortune of twenty millions sterling. His son William Henry Vanderbilt (1821-85) inherited and added to it.

**Van Dyck** (or Vandyke), Sir Anthony (1599-1641), was born at Antwerp, and after studying under Rubens went to Italy and there made a name as a portrait painter. In 1629 he came to England on the invitation of Charles I., but remained only a short time; in 1631 Charles prevailed upon him to return, made him a knight, granted him an annuity, and he became the Society painter of the day.

**Vane, Sir Henry** (1613-62), was a prominent statesman and diplomatist. At the Restoration he was arrested as an enemy to the State and ultimately beheaded on Tower Hill.

**Van Gogh, Vincent** (1853-1890), Dutch painter of some of the most colourful pictures ever created. With passionate intensity of feeling he painted without pause whatever he found around him—



- landscapes, still-lives, portraits: his was a truly personal art. His life was one of pain, sorrow and often despair and in the end he committed suicide.
- Van Loon, Hendrik Willem** (1882-1944), Dutch-American historian, born in Rotterdam. Went in 1903 to the U.S.A., where he became a journalist, and then a teacher of history. He became famous in 1922 with the publication of *The Story of Mankind*, a picture history-book originally intended for children.
- Van Zyl, Rt. Hon. Gideon Brand** (b. 1873), Gov.-Gen. of South Africa, 1945-50.
- Vauban, Marshal Sebastien le Prestre de** (1633-1707), a renowned French military engineer who introduced great improvements in methods of fortification, conducted fifty-three sieges, and took part in 140 battles.
- Vaughan Williams, Ralph, O.M., M.A., D.Mus.** (b. 1872), English composer. After Charterhouse and Cambridge studied music in Berlin under Max Bruch and, later in Paris, under Ravel. Besides symphonies he has written a number of choral and orchestral works including *Sancta Civitas* and *Benedicite*, *Magnificat*, *Four Tudor Portraits*, *Dona Nobis Pacem*, operas including *Hugh the Drover*, *Riders to the Sea*, ballets, chamber music and songs. Has shown great interest in folk tunes.
- Velasquez, Diego** (1665-1523), a Spanish soldier and companion of Columbus, sent to conquer Cuba. Velasquez founded Santiago and Havana.
- Velasquez, Diego Rodriguez de Silvey** (1599-1660), a famous Spanish painter, whose pictures rank among the finest in Spanish art.
- Venizelos, Eleutherios** (1864-1936), the Greek patriot and statesman, suffered many vicissitudes of fortune during his career. A Cretan by birth, he became Prime Minister of Greece for the first time in 1910, and again on several subsequent occasions, but died in exile. Best known probably for his activity during the Balkan wars, his finally successful attempts to bring his country into the first world war on the side of the Entente Powers, and his ambitions in Asia Minor. At the post-war conferences in 1919 he exercised more influence than anyone else outside the "Big Four."
- Verdi, Giuseppe** (1813-1901), the most popular composer of Italian opera of the 19th century. His works include *Nabuccodonosor*, *I Lombardi*, *Ernani*, *Rigoletto*, *Il Trovatore*, *La Traviata*, *Aida*, *Otello*, and *Falstaff*.
- Verlaine, Paul** (1844-1896), French poet, also well known for his memoirs and confessions; died in great poverty and degradation in Paris.
- Vermeer, Jan** (1632-75), Dutch painter and the greatest of all the "Little Masters." Jan Vermeer of Delft, as he was frequently referred to, was born in Delft, and obtained considerable recognition in his lifetime, but strangely his existence was entirely overlooked after his death, and until 1860 his paintings were attributed to other Dutch painters. *Lady at the Virginals* is in the National Gallery.
- Verne, Jules** (1828-1905), was one of the most popular authors of wonder-stories in Europe. The best-known of his numerous works are *Five Weeks in a Balloon*, *Twenty Thousand Leagues Under the Sea*, *Round the World in Eighty Days*.
- Vernier, Pierre** (1580-1637), inventor of the small sliding scale which enables readings on a graduated scale to be taken to a fraction of a division.
- Veronese, Paul, or Paolo Cagliari** (1528-88), a celebrated Italian painter of religious subjects. His *Marriage Feast at Cana in Galilee*, *The Feast in the House of Simon*, and *The Presentation of the Family of Darius to Alexander*, are paintings of world-wide celebrity, while his *Adoration of the Magi*, in our National Gallery, is a grand work.
- Veronica, St.**, a legendary woman of Jerusalem, who was said to have handed to Christ her kerchief on His way to Calvary. The old belief was that the Redeemer wiped His brow therewith, leaving on the handkerchief a miraculous impression of His face, the so-called "Veronica." The Saint is commemorated on February 4th.
- Vespasian (Titus Flavius Vespasianus)** (9-79) was Roman Emperor during the last nine years of his life. At one time he commanded the Roman army of occupation in Britain.
- Vespucci, Amerigo** (1451-1512), Florentine merchant and navigator, who settled in Spain as commercial agent of the house of Medici. He made several voyages across the Atlantic and, according to his own accounts, which are disputed by many authorities, reached the American continent on June 16, 1497. A German geographer paid him the tribute of giving the name America to what is now known as South America in a map he published in 1507.
- Victor Emmanuel II.** (1820-78) was King of Sardinia from 1849 to 1861, became King of Italy, according to the Proclamation of the Sardinian Senate; but it was not until 1870, when the unification of Italy was fully secured, that the title came to have its true significance.
- Victoria** (1819-1901), Queen of Great Britain and Ireland and Empress of India, was daughter of the Duke of Kent, and came to the throne in 1837 on the death of her uncle, William IV. In 1840 she married Prince Albert of Saxe-Coburg-Gotha, who died in 1861. Lord Melbourne was Prime Minister at the date of the Queen's accession, and for a number of years the country lived through troublesome times, the Corn Law and Chartist agitations being at times very threatening, but a more settled condition of things supervened, and for the remainder of the long and illustrious Victorian reign there was no serious home unrest. The Jubilee of Queen Victoria's accession was celebrated in 1887, and the Diamond Jubilee 10 years later.
- Villeneuve, Pierre Charles Jean Baptiste Silvestre** (1763-1806), the French naval commander who was opposed to Nelson at Trafalgar and captured along with his ship, the *Ducentaure*.
- Villon, Francois** (1431-c. 1485), French poet who lived at a turbulent time in French history at the close of the Hundred Years War. His extant works consist of *Le Lais* (or *Petit Testament*) and *Grand Testament*, masterpieces of French medieval verse.
- Virgil (Publius Vergilius Maro)** (70-19 B.C.), the great Roman epic poet, was born near Mantua, and cultivated a farm in the adjacent village of Andes. He proceeded to Rome in his thirtieth year to obtain redress for the occupation of his lands by the military. Became known to Octavian and Maecenas, and, having had his demand satisfied, began the writing of his *Ecloques*. The *Georgics* followed; his most famous work, the *Aeneid*, comprised twelve books, dealing with the story of the wanderings of Aeneas after the destruction of Troy.
- Vitus, St.**, Roman Catholic saint and martyr, who lived in the 4th century. It used to be the custom to dance before his shrine on his festival day, June 15th, in the belief that good health was thereby ensured for the next twelvemonth. The nervous ailment, St. Vitus' dance, derives its name from this practice.
- Volta, Alessandro, Count** (1745-1827), Professor of Natural Philosophy both at Como and at Pavia University. In the course of his studies on electricity he discovered the voltaic pile, giving his name thereto, and also to the electrical unit, the volt.
- Voltaire, François Marie Arouet de** (1694-1778), one of the greatest of French philosophers and writers. His first essays offended the authorities, and he lived in London for a couple of years (1726-28), and there wrote some of his dramas. Returning to France, he published his *Philosophical Letters*, which aroused the enmity of the priesthood. At this juncture, the Marquise du Châtelet offered him the asylum of her castle of Cirey, and for the next fifteen years he made this his home, writing there his *Discourses on Man*, *Essay on the Morals and Spirit of Nations*, *Age of Louis XIV.*, &c. From 1750-53 he lived in Berlin, on the invitation of Frederick the Great.
- Vondel, Joost van den** (1587-1679), the greatest of the Dutch poets. Most of his dramas are on biblical subjects, and the two most famous are *Jephtha* and *Lucifer*.
- Voroshilov, Marshal of the Soviet Union Klimentiy Efremovich** (b. 1881), President of the Supreme Soviet of the U.S.S.R. since Stalin's death in 1953; commander of the Leningrad defences in 1941.
- Vyshinsky, Andrei Yanuarievich** (1883-1954), Permanent Soviet Representative at U.N. Acted as either prosecutor or judge at many notable trials and became deputy to Molotov on the outbreak of war in 1939.

## W

- Waddell, Helen** (b. 1889), scholar and author, whose works include *The Wandering Scholars, Medieval Latin Lyrics* (a translation), and *Peter Abelard*.
- Wade, George** (1668-1748), military engineer who after the Jacobite rebellion of 1715 commanded the royal forces in Scotland and constructed the great military roads through the Highlands, some of which have continued to be the main lines of communication. Promoted to Field-Marshal in 1743 and in 1744 George II made him Commander-in-Chief in England. In the last Jacobite rising of 1745 his army was the first to be evaded by the Young Pretender, Charles Edward, on his famous march south.
- Wagner, Wilhelm Richard** (1813-83), born at Leipzig, was the composer who exerted the greatest influence upon musical art during the 19th century. He revolutionised operatic methods, and doing away with set ballads and choruses, endeavoured to give the same unity of action to an opera as would be realised in a play without music. This continuity of musical thought and action was a long time in forcing itself into acceptance, but to-day is acknowledged as the only adequate interpretation of dramatic musical expression. Wagner fought for his position with great pertinacity and courage, but it was not until the King of Bavaria enabled him to indulge his aims to their fuller development that he realised his ambition. At the famous opera house at Bayreuth were produced all the later Wagnerian operas of the *Ring des Nibelungen* tetralogy. His last work, *Parsifal*, given in 1882, shows the fullness of his powers. In 1870 married Cosima (1837-1930), daughter of Liszt.
- Wakefield, Edward Gibbon** (1796-1862), British colonial statesman who played an important part in the colonisation of South Australia, 1836. Through his action Britain anticipated France in annexing New Zealand, 1839.
- Waley, Arthur, C.H., C.B.E., M.A.**, orientalist, well known for his translations of Chinese and Japanese poetry and prose, being the first to bring the literature of those countries to the western world.
- Walker, George** (1618-90), the hero of the siege of Londonderry, in 1688, who kept the besiegers at bay for 105 days.
- Wallace, Alfred Russell, O.M., F.R.S., LL.D.** (1823-1913), celebrated naturalist, a native of Usk, attracted much notice as far back as 1853 by his book *Travels on the Amazon*, detailing his experiences in that region. In 1858, while down with illness in the Moluccas, the idea of the evolution theory occurred to him, and curious to say, he drafted his first notes upon it and sent them to Darwin in England while the latter was on the eve of publishing his own exposition of the theory, the result being the reading of a joint paper on the subject to the Linnean Society. The coincidence was fully acknowledged by Darwin. There are differences, however, between the points of view of the two thinkers.
- Wallace, Edgar** (1875-1932), English novelist and playwright, famous for his detective thrillers. A man of enormous and unflagging energy, he published some 150 crime novels (of which as many as five million were sold in a year), 14 plays, film scenarios, dramatic criticism and a daily racing article.
- Wallace, Sir Richard, Bt.** (1818-90), son of the Marquis of Hertford, and inheritor from him of a famous collection of pictures and other works of art, to which he himself added largely. This was bequeathed to the nation by his widow along with Hertford House, and now forms one of the most important exhibitions in London.
- Wallace, Sir William** (circa 1270-1305), the great Scottish patriot and chieftain who led the Scottish armies against Edward I, and for a time the English were kept completely in check. Later, Edward defeated him at Falkirk, and finally in 1304 he was captured, taken to London, condemned for treason, executed at Smithfield.
- Wallenstein, Albrecht von** (1583-1634), German soldier and statesman during the Thirty Years' War. An able administrator of his own estates, he sought the unity of Germany, but was distrusted, possibly rightly, and was eventually assassinated.
- Waller, Edmund** (1606-87), was one of the most graceful of English poets, who tuned his lyre to suit both the Cromwellians when they were a power, and Charles II, when his turn came.
- Walpole, Horace** (1717-97), was the younger son of Sir Robert Walpole, filled a number of Government positions, and was a member of the House of Commons. He retired in 1768 to his favourite house at Strawberry Hill, and devoted himself to the writing of books and the accumulation of works of art.
- Walpole, Sir Hugh Seymour, C.B.E.** (1884-1941), was a well-known British novelist, whose novels included *Fortitude, The Dark Forest, Jeremy*, and *Mr. Traill*.
- Walpole, Sir Robert, K.G.** (1st Earl of Orford) (1676-1745), was the great Whig statesman of the early part of the 18th century. He resolutely opposed the South Sea scheme, and showed enlightened views of financial policy. He was Prime Minister for twenty-two years; he relieved from duty more than 100 export and 40 import articles, a policy which greatly extended the scope of British commerce.
- Walter, Bruno** (b. 1876), a noted conductor of German birth and American citizenship, associated especially with the opera in many different cities.
- Walter, John** (1776-1847), son of the founder of *The Times* and known as the second John Walter. Was the leading spirit of *The Times* from 1803 to 1847, and it was his efforts that made the journal the greatest newspaper in the world.
- Walton, Izaak** (1593-1683), one of the most lovable of English writers, the famous author of *The Compleat Angler, or the Contemplative Man's Recreation*. Also published lives of Donne, Hooker, and George Herbert.
- Walton, Sir William Turner** (b. 1902), English composer, whose works include concertos for string instruments, a symphony, the coronation march, *Crown Imperial*, and an oratorio, *Belshazzar's Feast*.
- Warbeck, Perkin** (1474-99), a Pretender to the English Crown. The son of a Tournaise Jew, he claimed to be Richard, Duke of York, supposed to have been murdered in the Tower, and therefore entitled to the throne of England in preference to its then occupant, Henry VII. The Duchess of Burgundy and Charles VIII. of France and James IV. of Scotland gave him their countenance. Warbeck was enabled in 1497 to appear in England at the head of a force of 7,000 men, but was easily defeated, tried for treason and hanged at Tyburn.
- Warner, Sir Pelham Francis** (b. 1873), the first man to be knighted for his services as a cricketer, captained Middlesex and England and has written many books on the game.
- Warwick, Richard Neville, Earl of** (circa 1428-71), "The King Maker," was the leader of the York party in the Wars of the Roses. At the battle of Northampton he made Henry VI. captive, and afterwards proclaimed Edward, Earl of March, king under the title of Edward IV. Then, when Edward showed a disposition to resent Warwick's protection, the latter drove Edward from the country and once more placed Henry VI. on the throne. He lost his life at the battle of Barnet.
- Washington, Booker T. Taliaferro** (1858-1915), a famous negro educationist who was Principal of Tuskegee Institute, Alabama, the first and greatest Institute for negro education, from 1881 until his death. He was a tireless worker for a better understanding between negroes and whites. Wrote several books, including his autobiography, *Up from Slavery*.
- Washington, George** (1732-99), was of English descent, and was living on his American estate at Mount Vernon when the dispute between the British home government and the colonists broke out. He became one of the leaders of the local opposition, and later was elected to the first Congress at Philadelphia. The following year, 1775, saw him Commander-in-Chief of the American army, and from that time to the end of the struggle in 1783 he was trusted and adored by the people, and on the founding of the Republic became its first President in 1789.



He served a second term of office from 1793 onwards, and refused election for a third time. Watson, John Broadus (b. 1878), American psychologist of international fame who formulated the theory known as Behaviourism, of which he became the leading exponent. It substantiates the work of the late Professor Pavlov.

Watson-Watt, Sir Robert, F.R.S. (b. 1892), physicist and engineer, meteorologist and journalist. Scientific adviser on radio subjects to Air Ministry and Ministries of Supply, Transport and Civil Aviation; Vice-Controller of Communications, Equipment, Min. of Aircraft Production, 1942-46. Chief of team of scientists engaged in radiolocation research which resulted in every aircraft and ship being equipped with radar aids enabling them to detect, locate and shadow enemy craft with great accuracy during the second world war. Awarded £50,000 for his radar work in the war.

Watt, James, F.R.S., F.R.S.E. (1736-1819). Born at Greenock, this genius was originally a mathematical instrument maker, and being brought into touch with mechanical problems, conceived the idea of the modern, that is, high-pressure steam-engine. Watt took out his first patent in 1769; the engine, however, was used only for mining operations until 1785, when it was applied to a cotton factory, Watt being greatly aided in his developments of the engine by the business ability of his partner, Matthew Boulton.

Watteau, Jean Antoine (1684-1721), a French landscape painter of transcendent ability, and especially great in *genre*. His shepherds and shepherdesses, rustic dance and fête scenes were wonderful for their harmonious brilliancy of coloration. His *chef-d'œuvre* is the *Embarkation for the Isle of Cytherus*, in the Louvre.

Watts, George Frederick, O.M., R.A. (1817-1904), occupied a unique place in English art. His works are numerous; among them may be mentioned *Love and Death*, *Hope* and *The Angel of Death*. He bequeathed to the nation a large number of his finest pictures. His portraits of Swinburne, Carlyle, Cardinal Manning, Browning, and Tennyson are especially fine.

Watts, Isaac (1674-1748), a great English hymn-writer; author of *O God, our help in ages past*.

Watts-Dunton, Walter Theodore (1836-1914), a prominent critic and close friend of Swinburne. Published *The Coming of Love* in 1897, and *Aylwin* in 1898.

Waugh, Evelyn Arthur St. John (b. 1903), English satirical writer, author of *Vile Bodies*, *Scott-King's Modern Europe*, *Brideshead Revisited* and *Life of Edmund Campion*, for which he was awarded the Hawthornden prize in 1936. His brother, Alec Waugh (b. 1898), is also a successful writer, the author of *The Loom of Youth*, *So Lovers Dream*, and *His Second War*.

Wavell, Field Marshal Earl, P.C., G.C.B., G.C.S.I., G.C.I.E., C.M.G., M.C. (1883-1950), Viceroy of India 1943-47; Com.-in-Chief India 1941-43; Com.-in-Chief British Forces in Middle East 1939-41; previously Southern Command 1938-39 and of troops in Palestine 1937-39. Described as one of the cleverest generals in the British Army, his strategy against the Italians in the winter campaign of 1940-41 was brilliantly successful.

Webb, Sir Aston, G.C.V.O., C.B., R.A. (1849-1930), President of the Royal Academy, 1919-24, one of our foremost architects, and the designer of the general scheme of the Victoria Memorial in front of Buckingham Palace, the new Birmingham University, the Britannia Naval College at Dartmouth and other fine structures.

Webb, Matthew (1848-88), in 1875 swam the English Channel in twenty-two hours, and was drowned eight years later in an attempt to swim through the Niagara rapids.

Webb, Rt. Hon. Sidney James, O.M. (1859-1947), eminent Socialist, one of the founders of the Fabian Society in 1884. Sec. of State for the Colonies 1929-31, and for the Dominions, 1929-30. Pres. of Board of Trade in first Labour Government, 1924. His wife Beatrice, equally with himself, was a great investigator and writer on political and economic affairs. Among their books were *History of Trade Unionism*, *English Local Government* and *Soviet Com-*

*munist*. He founded (1913) and edited (till 1922) the *New Statesman*. Raised to the Peerage, 1929, as Lord Passfield.

Weber, Carl Maria Friedrich Ernst von (1786-1826), German composer, who has usually been considered the founder both of the German and of the romantic schools of opera. His fame rests principally on the operas *Der Freischütz*, *Euryanthe*, and *Oberon*, the last of which was written for Covent Garden. He worked in many cities, studying at Vienna under Abbé Vogler, and was pianist, conductor, and musical director as well as composer.

Webster, Daniel (1782-1852), an American, who, as statesman, lawyer, and orator, exerted enormous influence on American constitutional ideas and practice. Served twice as Secretary of State and in 1842 negotiated the Ashburton Treaty which settled the Maine-Canada boundary.

Webster, Noah (1758-1843), the American lexicographer and grammarian. Author of the *Dictionary of the English Language*, and works on literary and political themes.

Wedgwood, Josiah, F.R.S. (1730-95), was the most famous of English potters. He was born at Burslem, served an apprenticeship that carried him through all the branches of the trade, and in 1759 was able to set up in business for himself with money he had saved. He persevered through failure after failure, and in a few years produced such an improved form of ware that it came into great demand. He engaged Flaxman to make classical designs for him, and his pottery became the fashion, and led to a great extension of the Staffordshire earthenware industry.

Weingartner, Dr. (Paul) Felix (1863-1942), was a famous Austrian composer and conductor who soon became known throughout the world as a conductor of Beethoven. A pupil of Liszt, he conducted many German orchestras, including the Berlin Philharmonic, and was musical director of Vienna Opera from 1935-42.

Weismann, August (1834-1914), a distinguished German biologist who was Prof. of Zoology at Freiburg, 1866-1912. His great work was done in the field of evolution, especially on the question of individual variability. He is particularly remembered for his theory that heredity is a question of the continuity of the germ-plasm and that acquired characteristics cannot be transmitted to descendants.

Weizmann, Chaim, D.Sc., LL.D., Ph.D. (1874-1952), Zionist leader, became provisional President of Israel in May 1948, and was elected first President in 1949. He was a distinguished organic and biochemist.

Wellesley, Marquess, K.G., P.C., K.P. (1760-1842), elder brother of the great Duke of Wellington, and himself a statesman of note.

Wellington, Arthur Wellesley, 1st Duke of, K.G., P.C., G.C.B. (1769-1852), was the most famous British general of the 19th century. He distinguished himself in India and conducted successfully the Peninsular War. In 1814 he was British Ambassador at Paris. Then came Napoleon's escape from Elba, the short and sharp campaign which terminated at Waterloo, and the final overthrow of Napoleon. Wellington became the most prominent man in the Empire. From 1828 to 1830 he was Prime Minister. From 1842 to his death he was Commander-in-Chief. His funeral at St. Paul's was one of the great pageants of last century.

Wells, Herbert George, D.Sc. London (1866-1946), distinguished English novelist whose work, whether romantic as in *Kipps* and *The History of Mr. Polly*, or scientific as in *The Outline of History*, gained him a world-wide reputation. Social, political and educational problems are treated with breadth of vision and are clearly analysed in his books. Among his later books are *A Short History of Mankind*, *Work, Wealth and Happiness of Mankind*, *The Shape of Things to Come*, *The Fate of Homo Sapiens*.

Wesley, Charles (1708-88), brother of John Wesley, and the poet of Methodism. Wrote a large number of hymns of enduring merit.

Wesley, John (1703-91), the founder of the great religious communion of the people called "Methodists," and the son of a clergyman of the Anglican church. Taking orders himself, in

- 1735, he went to Georgia as a missionary and allied himself with the Moravians, but later he abandoned all ecclesiastical traditions, and established, on a wonderfully well-devised basis, the connexion called by his name. His own open-air preaching was powerful in the extreme, his energy and depth of purpose inspiring, and his organising ability exceptional. He accomplished a great work of religious revivification, taking the world as his parish; and profound as was his conviction of his high calling as an Evangelist, John Wesley "built better than he knew" in rearing the denominational edifice which is the monument of his faith and strenuousness.
- West, Benjamin, P.R.A. (1738-1820)**, was born in America, but settled in England in 1763. He was a painter of religious and historical pictures, such as *Christ Healing the Sick*, *Penn's Treaty with the Indians*, *The Black Prince at Poitiers*, and *The Death of General Wolfe*.
- West, Rebecca, C.B.E. (Mrs. Cicely I. Andrews) (b. 1892)**, writer and critic. Her critical works include *Henry James*, 1916; *The Strange Necessity*, 1928; and *Particular Graces*, 1933. Among her novels are *The Return of the Soldier*, 1918, *The Judge*, 1922, and *Harriet Hume*, 1924; *Black Lamb and Grey Falcon*, 1942, is a travel book and commentary on Yugoslavia.
- Westermarck, Edward Alexander, Ph.D. (1862-1939)**, a distinguished Finnish scientist who was Professor of Sociology at the University of London, 1907-30. Born at Helsingfors, he made an international reputation with his monumental *History of Human Marriage*, written in English and published in 1891. His *Origin and Development of the Moral Ideas*, 1906-8, was followed by many other works, including *A Short History of Marriage*, 1926; *Ethical Relativity*, 1932; and *The Oedipus Complex* and other essays on sex.
- Westinghouse, George (1846-1914)**, American engineer who built the dynamos for Niagara Falls, and in 1865 invented the compressed air brake known by his name and developed a compressed air system of railway signalling.
- Westmacott, Sir Richard, R.A. (1775-1856)**, a great English sculptor who studied under Canova at Rome, and succeeded Flaxman as Professor at the Royal Academy. He executed many fine monuments in Westminster Abbey, at St. Paul's Cathedral, and elsewhere, including the statue of Achilles in Hyde Park and the pediment of the British Museum.
- Wharton, Edith (Jones) (1862-1937)**, American novelist whose *House of Mirth* (1905) brought her fame as a social satirist. Her work was greatly influenced by her friend Henry James, and most of her fifty-four volumes were written after she was thirty-five.
- Whately, Archbishop Richard (1787-1863)**, was for over thirty years Archbishop of Dublin, and achieved a high reputation as a writer on theology and philosophy. His treatises on *Rhetoric and Logic* are among the most notable books of their class.
- Wheatstone, Sir Charles, F.R.S. (1802-75)**, was an eminent English electrician and scientist, whose experiments in association with Mr. W. F. Cooke resulted in the first application in this country of the principle of the electric telegraph. The stereoscope was also one of his inventions. He was Professor of Natural Philosophy to King's College, London, for many years.
- Whistler, James Abbott McNeill (1834-1903)**, was an original artist, writer, and wit, who first came to Europe from America in 1857, and made a name as an etcher both in Paris and in London. His studies of Thames scenery are especially fine. When he began to exhibit pictures in oils he greatly puzzled the critics, some of whom discovered in his "nocturnes" and other studies an impressionist of surpassing genius, while others, including Mr. Ruskin, who described one of the "nocturnes" at the Grosvenor Gallery as a "pot of paint flung in the public face," looked upon them as mere audacious eccentricities. The finest of his oil paintings are his portrait of his mother, and that of Carlyle. He brought an action against Ruskin for the criticism referred to, but only obtained a verdict of one farthing damages without costs. His *Genius Art of Making*
- Enemies* is a brochure that will long be remembered.
- White, Field-Marshal Sir George Stuart, V.C., G.C.B., O.M., G.C.M.G., G.C.I.E., G.C.V.O. (1835-1912)**, the heroic defender of Ladysmith in the South African War and a soldier who achieved renown at many points of a long military career.
- Whitefield, George (1714-70)**, was for a time associated with John Wesley at Oxford in the propagation of Methodism and attracted great attention by his gifts as a preacher. He was Wesley's most powerful champion; but in 1741, differing from Wesley on a point of doctrine he left the Methodists, and thenceforward simply preached as an evangelist, allying himself with no sect, but expounding Calvinistic doctrines with fervour and eloquence. The Countess of Huntingdon built and endowed numerous chapels for him in various parts of the country. He died in America on his seventh tour.
- Whitgift, John (1530-1604)**, a gifted Anglican prelate. Persecuted the Puritans, and was one of the authors of the famous *Lambeth Articles*. Was Archbishop of Canterbury 1583-1604.
- Whitman, Walt (1819-92)** was an original figure in the world of American authorship, and produced many works of striking poetic merit. He served in the Civil War, and his vigorous humanity, as expressed in his writings, made him a distinguished personality. His works include *Leaves of Grass*, *Drum Taps*, and *Democratic Views*.
- Whittier, John Greenleaf (1807-92)**, America's Quaker poet, was the son of a New England farmer, and for a time followed the trade of a shoemaker. After some experience in journalism, he published his first book of poems, *Legends of New England* (1831). His best-known volumes are: *Lays of My Home* (1843), *Voices of Freedom* (1846), *Songs of Labour* (1850), and *National Lyrics* (1865).
- Whittington, Richard (circa 1358-1423)**. The son of a Gloucestershire knight who was outlawed. Richard went up to be apprenticed in London and there found fortune and fame eventually as a merchant. Four times Mayor of London and representative of the City in Parliament he was a great man in his time, engaging in many profitable and honourable enterprises. Richard was well styled "the model merchant of the Middle Ages," and he did marry his master's daughter, and no doubt drew some sort of inspiration from the bells of Bow.
- Whittle, Air Commodore Sir Frank, K.B.E., C.B. (b. 1907)**, pioneer in the field of jet propulsion. The first flights of Gloster jet-propelled aeroplanes with Whittle engine took place in May 1941.
- Whymer, Edward, F.R.S.E. (1840-1911)**, a wood-engraver and artist; also one of the best-known Alpine climbers, and the first to reach the summit of the Matterhorn. Author of books on mountaineering in various countries.
- Wiggin, Kate Douglas (Mrs. George C. Riggs) (1856-1923)**, an American novelist of quaint charm and humour. Author of *Rebecca of Sunnybrook Farm*.
- Wilberforce, William (1759-1833)**, was the son of a Hull merchant. He was educated at Cambridge, and entered Parliament in 1780. In 1789 made the first of his many proposals in the House of Commons for the abolition of the slave trade, but it was not until 1807 that the Act embodying these proposals was carried.
- Wilcox, Mrs. Ella Wheeler**, a popular American poetess (1855-1919). Writer of sentimental verse.
- Wilde, Oscar Fingall O'Flahertie Wills (1866-1900)**, Irish author and dramatist. The son of Sir William Wilde, a well-known Dublin surgeon, was the leader of the cult of æstheticism, of art for art's sake. His works included poems, fairy-tales and short stories. He is best known, however, for his brilliantly witty comedies, *Lady Windermere's Fan*, *A Woman of No Importance*, *The Ideal Husband* and *The Importance of Being Earnest*.
- Wilder, Thornton Niven (b. 1897)**, American author and playwright. Among his books are *The Bridge of San Luis Rey* and *The Ides of March*.
- Wilkes, John (1727-97)**, was a forcible, daring, and original Whig politician, who championed the cause of the people with great vigour, and



was for a time exceedingly popular. For a violent attack on the Government in his paper *The North Briton*, he was committed to the Tower, but obtained release on the ground that he was a member of Parliament. He was later expelled from the House and fled to France, returning in 1763, and elected M.P. for Middlesex. A fresh prosecution, however, and a fresh expulsion took place, and three times he was expelled and as often re-elected. A great agitation ensued, and so high was he in favour among the people, that he was made alderman, then sheriff, then Lord Mayor of London. In the end his opponents gave way, the orders against him were withdrawn, and from 1779 he was Chamberlain of the City of London.

**Wilkie, Sir David, R.A. (1785-1841)**, was an eminent painter of popular subjects, mostly of rural life.

**Willcocks, Sir William, K.C.M.G. (1852-1932)**, a British engineer, born in India, who in 1893 planned the great Assuan Dam, which he completed in 1902. In 1911 he undertook for Turkey a vast scheme for irrigating some 31 million acres in Mesopotamia.

**Willet, William (1856-1915)**, an English builder, noted for his long and tireless advocacy of the Daylight Saving scheme, which, however, he did not live to see put into effect. It was adopted as a war-time measure in the year following his death. (See Summer Time, Gen. Inf.)

**William I. (1027-87)**, the "Conqueror," Duke of Normandy, claimed the English throne as legally appointed successor to Edward the Confessor and, at the Battle of Hastings in 1066, defeated Harold II, who was killed. The new king crushed Saxon resistance in the North and West, transferred most of the land to his Norman followers, and drew England into closer relations with the Continent. Maintaining many old institutions such as the shire-court and the fyrd (a non-feudal army), William governed firmly, and was supported by the Church, especially by Lanfranc, Abp. of Canterbury. In 1085 he ordered the Domesday Survey (q.v.).

**William I. of Prussia (1797-1888)**, the maker of modern Germany, succeeded to the throne of Prussia in 1861. It fell to him to have the control of his country during a period of mighty transition and development, with Bismarck as his chief minister. The war with Austria rendered him highly popular, and when in 1870 the war with France was entered upon the whole German people rallied round him, and after a series of brilliant achievements by his army he was proclaimed German Emperor on the 18th of January, 1871.

**William II. (1056-1100)**, the Conqueror's son, surnamed "Rufus," King of England from 1067 to his death. Was in constant conflict with his barons, lived a life of wanton pleasure, was oppressive to his subjects, and was shot (by accident or design) while hunting in the New Forest.

**William II., the Kaiser (1859-1941)**, King of Prussia and German Emperor 1888 until he abdicated Nov. 9, 1918, and fled to Holland, where he was subsequently interned in the castle of Doorn, living there in complete retirement until his death in June, 1941. Educated at Cassel and Bonn, afterwards entered the army and took a keen interest in military affairs. Succeeded his father, the Emperor Frederick, in 1888. His reign was marked by a strong militarism and an intense ambition to secure the dominance of Germany in the Councils of Europe—an ambition which by unscrupulous action and utter disregard of treaty obligations brought about the war of 1914-18. To him was due the introduction of a system of war savagery which greatly increased the horrors of warfare and must leave an indelible stain upon his name. Visited England in 1907, was present at King Edward VII.'s funeral in 1910, and in 1911 at the unveiling of the memorial to Queen Victoria.

**William III. of England (1650-1702)** while Stadtholder of Holland, married Mary, eldest daughter of the Duke of York (afterwards James II.). As captain-general of the Dutch forces he was successful against the French, and in 1688, when James had abdicated and fled the country, William was invited to succeed him and he and Mary afterwards became

joint King and Queen. Later he was at war with France, and suffered defeats, but ultimately effected an honourable peace by the Treaty of Ryswick in 1697.

**William IV of England (1765-1837)** was the third son of George III., and ascended the throne in 1830 in succession to his brother, George IV. He had seen some sea service, and was flatteringly styled the "Sailor King." He showed little of kingly capacity, he was genial and pleasure-loving, and placed no obstacles in the way of government, so was, after a sort, popular. In the early part of his reign (1832) the first great Reform Bill was passed.

**William the Silent (1533-84)**, Prince of Orange, made many attempts to secure a peaceful settlement of Netherlands' disputes with Philip II, but became the leader of the ensuing Revolt and was assassinated. He established the independence and Protestant character of the Northern Netherlands, where literary, artistic, colonising, and commercial activity flourished in the following century.

**Williams, Sir George (1821-1905)**, the founder of The Young Men's Christian Association.

**Williams, (George) Emyln (b. 1905)**, Welsh actor-playwright, and producer, who has had great success in numerous plays and films, and latterly in his readings from Dickens and Dylan Thomas. Author of *Night Must Fall*, *The Corn is Green*, and *The Light of Heart*.

**Willington, 1st Marquess of, P.C., G.C.S.I., G.C.M.G., G.C.I.E., G.B.E. (1866-1941)**, Governor-General of Canada, 1926-31. Viceroy and Governor-General of India, 1931-36.

**Wilson, Henry Maitland, Field-Marshal Lord, G.C.B., G.B.E., D.S.O. (b. 1881)**, held a variety of commands in the Middle East, 1939-44, when he became Supreme Allied Commander for the Mediterranean area. Led British Joint Staff Mission in Washington, 1944-47.

**Wilson, Richard, R.A. (1714-82)**, a landscape and portrait painter. Was the pioneer of modern landscape painting.

**Wilson, (Thomas) Woodrow (1856-1924)**, President of the United States 1913-21. Was Governor of New Jersey, 1912-13. In 1916 secured from the Kaiser a promise to abandon the more inhuman forms of submarine warfare, and, on their resumption in 1917, broke off official relations with Germany and proclaimed a state of war. Entered into the conflict with the utmost vigour, bringing the full military and financial resources of the Republic into play against Germany. Was a great factor in the winning of victory and in the concluding of a just peace. Largely responsible for the setting up of the League of Nations, which was foreshadowed in his famous Fourteen Points.

**Wingate, Major-Gen. Orde Charles, D.S.O. (1903-44)**, was the renowned and daring leader of the Chindit forces engaged behind the Japanese lines in Burma during the second world war. Killed in an air crash.

**Winifred, St.**, the 7th-century patron saint of virgins, a Welsh maiden, who, importuned by Prince Caradoc, treated him with scorn, and he had her beheaded.

**Winnington-Ingram, Rt. Rev. and Rt. Hon. Arthur Foley, P.C., K.C.V.O., D.D., LL.D. (1858-1946)**, Bishop of London, 1901-39. Published works include *Work in Great Cities* and *Christ and his Friends*.

**Wiseman, Nicholas Patrick Stephen, Cardinal (1802-65)**, who became in 1850, on the restoration of the Roman Catholic Hierarchy in England, the first R.C. Archbishop of Westminster, and created Cardinal. The remainder of his life was spent in the reorganisation and development of the Roman Catholic Church in Great Britain. He was one of the three great R.C. prelates of the nineteenth century, the other two being Manning and Newman.

**Woffington, Peg (1720-60)**, an Irish bricklayer's daughter, who became a celebrated actress, and was great at the impersonation of male characters and a fine singer. She also shone in the role of Society-lady and in high-comedy parts, and was much sought after in private life by people of rank and talent. For a while she lived with Macklin and Garrick in Bow-street, and atoned a good deal for her lack of moral restraint by her abounding charity.

- In 1757 she was stricken with paralysis whilst playing *Rosalind*.
- Wolf, Friedrich August** (1759-1824), a great German scholar, regarded by some as the founder of scientific classical philology.
- Wolfe, Humbert, C.B., C.B.E.,** (1885-1940). English poet and critic. Entered the Civil Service in 1908 and became Dep. Sec. of the Min. of Labour. His poems include *London Sonnets*, *Kensington Gardens*, *Unknown Goddess*, *Requiem*.
- Wolfe, General James** (1727-59), commanded the British forces in Canada at the siege of Quebec, where he won a brilliant victory, which cost him his own life.
- Wolsey, Field Marshal Garnet Joseph, 1st Viscount** (1833-1913), led the expedition to the relief of Gordon in 1884, and was C.-in.-C. 1895-1900. Published *A Life of Marlborough and The Decline and Fall of Napoleon*.
- Wolsey, Cardinal Thomas** (1471-1530), was the son of an Ipswich butcher. Showing ability, he was sent to Oxford to be educated, later on entering the Church, where he gradually rose to a position of eminence, and was entrusted with several diplomatic missions. He was especially favoured by the King, Henry VIII., and secured rapid preferment under that monarch, being in turn Bishop of Lincoln, and Archbishop of York. He was subsequently made Cardinal and became Henry's Chancellor. For a number of years he was supreme, and by his diplomacy did much to strengthen the kingly power. But when Wolsey was unable, though willing enough, to obtain the papal sanction for Henry's divorce of Catherine, he fell into disfavour, and his decline was rapid indeed. From being a great personage, with a princely entourage, he was humbled, persecuted, and harried, and died at Leicester Abbey a broken, dejected man.
- Wood, Sir Henry Joseph, C.H.** (1869-1944), was the most popular English musical conductor of his day. He introduced many works and composers previously unknown to the British public and greatly stimulated and encouraged interest in classical music. His long association with the Promenade Concerts began in 1895 at the Queen's Hall, and after it was destroyed in an air raid in 1941 the concerts continued at the Albert Hall and are now named after him. He composed songs and cantatas, and his arrangement of sea shanties ends every series of Promenade Concerts.
- Woodville, Elizabeth** (1437-91), wife of Sir John Grey. After her first husband's death she made a secret marriage with Edward IV., and became the mother of Edward V. and his brother Prince, both of whom were put to death in the Tower by order of Richard III. She was also mother to Elizabeth, Queen of Henry VII.
- Woolf, Mrs. (Adeline) Virginia** (1882-1941), English novelist and essayist, daughter of Sir Leslie Stephen and wife of Leonard Woolf, writer and publisher. Together they formed the Hogarth Press. Among her best known works are *To the Lighthouse*, *Mrs. Dalloway*, *The Wave*, *The Years*, *A Room of One's Own*, *Orlando*.
- Woolley, Richard van der Riet, Sc.D., F.R.S.** (b. 1906), succeeded Sir Harold Spencer Jones as Astronomer Royal at the Royal Greenwich Observatory in 1956; formerly Commonwealth Astronomer and Director of the Commonwealth Observatory at Canberra.
- Woolton, Frederick James Marquis, Viscount, P.C., C.H., M.A.** (b. 1883). Chairman of the Conservative Party, 1946-55.
- Wootton, Barbara Frances, M.A., J.P.** (b. 1897). Prof. of Social Studies, Univ. of London, 1948-52; a Governor of the B.B.C. since 1950.
- Wordsworth, William** (1770-1850), the chief of the "Lake Poets," and one of the most inspired of all British bards, was a native of Cockermouth, and was educated at Hawkshead and St. John's College, Cambridge. In association with Coleridge he issued a volume of *Lyrical Ballads* in 1793. The following year saw him settled at Grasmere, and there and at Rydal Mount he passed the rest of his days. In 1802 he married Mary Hutchinson, his cousin, and the two, with the poet's sister Dorothy, formed an ideally poetic household. Here he carried out his creed of "plain living and high thinking," and produced at intervals some of the purest and noblest poetry in the language. As an interpreter of Nature in her many moods he stands unrivalled. Succeeded to the Poet Laureateship on the death of Southey in 1843.
- Wotton, William** (1666-1727), a scholar of marvellous precocity, who was entered at Cambridge University in his twelfth year took his B.A. a year later, then knowing twelve languages, and was Fellow of St. John's at nineteen. Wootton became a clergyman of some distinction, and is best remembered as an author by his *Reflections upon Ancient and Modern Literature*.
- Wren, Sir Christopher, F.R.S.** (1632-1723), the most famous English architect of his time. He did not quite have all his own way with the tremendous thirty-five years' task he accepted in undertaking the reconstruction of St. Paul's after the Fire, but he produced a masterpiece of which Britain may well be proud. Chelsea and Greenwich Hospitals, and a number of London's finest churches were also his work.
- Wright, Sir Almroth (Edward), K.C.B., C.B., M.D., F.R.S.** (1861-1947), discovered the system of anti-typhoid inoculation, the method of therapeutic inoculation for bacterial infections (vaccinotherapy), and methods of measuring the protective substances in human blood.
- Wright, Orville** (1871-1948), American airman who, with his brother Wilbur (1867-1912), began gliding experiments on the sand dunes at Kitty Hawk, North Carolina. To the glider they built they added a petrol engine, and on 17th Dec., 1903, they made four flights, the longest being 852 ft. These flights were the first in which a man had been carried from the ground on flight by a power-driven aeroplane.
- Wyatt, James, R.A.** (1746-1813), a celebrated architect in his day. He built Fonthill Abbey for Beckford and the Royal Military Academy at Woolwich. Pres. of R.A. 1805-6.
- Wyatt, Sir Thomas** (1503-42), was the first writer of English sonnets, and a poet who did much to develop the earlier forms of verse. He was also a distinguished diplomatist.
- Wyatt, Sir Thomas ("The Younger")** (c. 1520-54); joined with the Duke of Suffolk in favour of Lady Jane Grey and against Queen Mary. Son of the last-mentioned. Led the men of Kent in rebellion on London in 1554, but was captured and executed.
- Wycherley, William** (1640-1715), the Restoration dramatist, was for many years in high favour at Court. His genius for comedy writing was remarkable and readily adapted itself to the Restoration atmosphere; thus while he provided wit and intrigue and plot and characterisation in plenty and of great merit, the taint of the time was over it all. His plays include *The Country Wife*, *Love in a Wood*, and *The Plain Dealer*. He lived recklessly, was generally in pecuniary difficulties, and marrying the Dowager Countess of Drogheda late in life, placed himself in bondage to a highly jealous woman.
- Wyclif, John** (c. 1324-84), born in Yorkshire, educated at Oxford, and one of the most eminent ecclesiastics of his time. He adopted principles many of which became general at the Reformation, and brought down upon himself the bitter enmity of the Roman Catholic leaders, and would probably have been put to death but for the protection of John of Gaunt. While in comparative retirement as Rector of Lutterworth, in Leicestershire, he finished his translation of the Bible.
- Wykeham, William** of (1324-1404), was Bishop of Winchester from 1366 to his death, and from 1367 to 1371 Lord Chancellor. He was a man of great learning and an excellent preacher, and wielded great influence. He founded New College, Oxford, in 1379 and Winchester College in 1387.
- Wyllie, William Lionel, R.A.** (1851-1931), an English marine painter who excelled in the draughtsmanship of seafaring craft of all kinds, and also won a high reputation as a water-colourist and etcher. His picture, *The Thames Below London Bridge*, was bought by the Chantrey Bequest. Among his other well-known works are *The Battle of Trafalgar*, and *The Port of London*.
- Wyspianski, Stanislaw** (1869-1907), great Polish poet, dramatist and painter.



## X

**Xavier, St. Francis** (1506-1552), the apostle of the Indies, was the follower of Ignatius de Loyola, and devoted his life to missionary work in the East. He was canonised in 1622.

**Xenophon** (444-359 B.C.), the Athenian general and follower of Socrates. His chief works are *Anabasis Hellenica*, and *Cyropaedia*.

**Xerxes** (circa 519-465 B.C.), King of Persia, was the son of the first Darius and a great commander. In 481 B.C. he started on his famous expedition against Greece when, according to Herodotus, he had a combined army and navy of over two and a half million men. He defeated the Spartans at Thermopylae, but his fleet was overcome at Salamis. He reigned from 485 to 465 B.C. and met his death by assassination.

**Ximenes de Cisneros, Francisco** (1436-1517), Spanish statesman and Cardinal who reformed the Franciscan Order to a great extent, and in 1502 began to direct the preparation of a polyglot bible, the *Complutensian*, which greatly influenced subsequent versions. In 1506 was made Regent for Queen Juana, and raised to the cardinalate in 1507. Personally conducted a military campaign in Africa in 1509, and afterwards became Inquisitor-General, and in 1516, Regent of Castile, but in the following year was dismissed by the Emperor Charles V.

## Y

**Yeats, William Butler** (1865-1939), Irish lyric poet and dramatist and major figure in the Irish literary revival of the 20th century. With Lady Gregory and others founded the Abbey Theatre in Dublin, for which he wrote many plays. Interested in mysticism and the occult. Member of the Irish Senate, 1922-28; awarded Nobel Prize in Literature in 1923. Some of his best work was written in his later years in *The Tower* (1928) and *Last Poems* (1940). Plays include *Cathleen Ni Houlihan* (1902), *The Hour Glass* (1904), *Deirdre* (1907).

**Yonge, Charlotte Mary** (1823-1901), author of over 120 novels, school books, and other works, including *The Heir of Redclyffe*, *The Daisy Chain*, *The Dove in the Eagle's Nest*, and *The History of Christian Names*.

**Young, Brigham** (1801-77), Mormon leader, and head of the Latter Day Saints of Salt Lake City. At his death he had seventeen wives.

**Young, Francis Brett** (1884-1954), British novelist. His books include *My Brother Jonathan* and *Doctor Bradley Remembers*.

**Young, James, F.R.S.** (1811-88), a Glasgow chemist who discovered the method of distilling oil from shale, and founded the mineral oil industry of Scotland, which led to the development of petroleum concerns.

**Young, Thomas** (1773-1829), one of the most versatile geniuses in history, descended from a Quaker family of Somerset. Studied languages, medicine, and held the Professorship of Physics at the Royal Institution. In 1804 elected Foreign Secretary of the Royal Society. He was very successful in deciphering Egyptian hieroglyphics and was the first to translate the inscription on the Rosetta Stone. Famous for his share in establishing the undulatory theory of light and for his work on physiological optics.

**Youngusband, Lt.-Col. Sir Francis Edward, K.C.S.I., K.C.I.E.** (1863-1942), soldier, explorer and writer. Wrote many works on the East. Headed the British Mission to Tibet, 1903-04. Was *Times* correspondent with the Chitral expedition. Pres. of Royal Geographical Soc., 1919-22.

**Ypres, 1st Earl of, P.C., K.P., G.C.B., O.M., G.C.V.O., K.C.M.G.** (1852-1925), entered Navy in 1866, afterwards passing into Army in 1874, making his mark as a Cavalry officer in the Egyptian campaign of 1884; served in South African War with brilliant success. C-in-C. British Forces in France, 1914-15; C-in-C. Home Forces, 1915-18; Lord Lieut. of Ireland, 1918-21.

**Ysaye, Eugene** (1858-1929), Belgian violinist and conductor, noted chiefly for his playing of the works of Bach and César Frank.

**Yukawa, Hideki** (b. 1907), Japanese physicist, who received the 1949 Nobel Prize for predicting the

existence of the meson. Prof. of Physics at Kyoto Univ. since 1939.

## Z

**Zadkiel** (the angel of Jupiter in Jewish rabbinical lore) was the name assumed by Lilly (1602-81) the astrologer, and also by Richard James Morrison (1794-1874), Hebrew scholar and amateur astronomer, in the almanack known as *Zadkiel's Almanack* and first issued in 1831.

**Zaharoff, Sir Basil, G.C.B., G.B.E.** (1849-1936), was an influential Greek banker and financier who became an armaments magnate, supplying the Allies in the first world war.

**Zamenhof, Ludwig Lazarus** (1859-1917), Polish linguist who was by profession an oculist, but gained fame as the inventor of Esperanto.

**Zangwill, Israel** (1864-1926), President of the International Jewish Territorial Organisation. Made a hit with *The Premier and the Painter* in 1888; afterwards edited a comic weekly called *Ariel*; then began novel writing.

**Zapotocky, Antonin** (b. 1884), Pres. of Czechoslovakia since 1953; Prime Min., 1948-53; formerly trade union official.

**Zaro, Aga** (c. 1776-1934), a Turkish centenarian claiming to have been born in 1776, he asserted that he could remember the American War of Independence, that he had seen Napoleon when fighting with the Turkish Army in Syria, and that later he had fought in Greece during the war for Greek independence. Zaro first came into prominence in 1930, when he was exhibited in the United States, and in the following year toured England with a circus. From examination under X-rays when he first went into hospital, doctors declared his age to be not more than 120.

**Zeno of Citium** (c. 340-264 B.C.) was a Greek philosopher who founded the Stoic system.

**Zeppelin, Ferdinand, Count von** (1838-1917), inventor of the huge dirigible airship bearing his name. His first ascent was in 1900. He organised a Zeppelin service for the German army in the war of 1914-18, but their extreme vulnerability militated severely against their usefulness.

**Zeromski, Stefan** (1864-1925), great Polish novelist, poet and playwright.

**Zhukov, Marshal of the Soviet Union Grigory Konstantinovich** (b. 1895), led the defence of Moscow and Leningrad during second world war; served on Allied Control Commission in Germany; C-in-C. Land Forces and Deputy Minister of Armed Forces of Soviet Union, 1946-55; succeeded Marshal Bulganin as Defence Minister in 1955.

**Zhukovsky, Vasily Andreyevich** (1783-1852), Russian poet whose original work had very important influence on Russian literature.

**Zinoviev, Grigoriy Evseyevich** (1883-1936), Russian Communist leader, known in England in connection with the notorious "Zinoviev letter", later proved a forgery, which brought about the defeat of the Labour Party in the 1924 general election. Executed in 1936.

**Zola, Emile Edouard Charles Antoine** (1840-1902), was the son of an Italian engineer, and came before the public as a novelist in 1867 with *Thérèse Raquin*. He then conceived the idea of a series of novels which should depict the history of a Second Empire family in various realistic phases, and began the series with *La Fortune des Rougons*, in 1871. In 1877 he made a higher success by *L'Assommoir*. From that time every novel he published had an immense sale.

**Zorn, Anders Leonhard** (1860-1920), was a noted Swedish painter, etcher and sculptor.

**Zoroaster**, the Greek form of the name of the Persian prophet, Zarathustra, who lived about the seventh century B.C. He was a monotheist, believing in a good and holy God whom he called Ahura Mazda. Many of his teachings were absorbed by the ancient Persian religion which survives today among the Parsees in India.

**Zuccarelli, Francesco** (1702-88), a very celebrated Italian artist, who came to England, succeeded, made a handsome fortune, and was one of the first members of the Royal Academy.

**Zwingli, Ulrich** (1484-1531), was one of the ablest of the Swiss Reformation leaders.

**Zwirner, Ernst Friedrich** (1802-61), an eminent Silesian architect. Restored Cologne Cathedral.

# A Citizen's Guide



## TABLE OF CONTENTS

Local Government	122-25	Conduct of Meetings	143-46
Central Government	125-28	Hints for Speakers	146-47
Law and the Courts	128-30	Societies	147-48
Industrial Relations	130-34	Working of the United States Government	149
The British Commonwealth	134-36	Changes in France since the War	149
The United Nations	136-39	The Government (1955-56)	150
Western European Union	139-42	General Election Results (1950, 1951, 1955)	150
Asian Changes	142-43		
Books and Libraries	143		



# A Citizen's Guide

## A GUIDE TO LOCAL GOVERNMENT.

**What is Local Government?**—Local Government is concerned with the domestic duties of a community as distinct from national questions like defence or taxes which must be decided by Central Government. Beyond Central Government innumerable tasks remain for the elected Local Authorities—the maintenance of order, sanitation and similar services, the provision of education, highways, etc. They are responsible for matters which affect the citizen at every turn. Schools, roads, the safety of towns, disposal of sewage, the fight against infectious diseases, libraries, parks, museums, maternity centres, child-welfare clinics, cemeteries, swimming-pools, safety at the cinema and the theatre—all these, which we so often take for granted, are the concern of local bodies. A full list of all the services performed by Local Government would be impossible. Its range would seem fantastic—from Town and Country Planning to the inspection of meat in the butcher's. Local Government consists largely in providing essential services, but in matters affecting the public welfare it also controls certain activities of citizens. It is a striking feature of Local Government in Great Britain (as compared with some other countries) that responsibility for Local Government is shared by a council and not borne by a single individual. This corporate responsibility is an early principle in our history and is at the root of many of our democratic institutions—not only Local Government bodies but institutions like the jury system and Parliament itself.

**What Can the Citizen Do?**—Good Local Government depends upon intelligent, and interested citizens. Public opinion is a distinguishing feature of a democracy, as distinct from an autocratic form of government, which controls public opinion instead of the other way round. It is open to you to attend Council meetings. If you feel you cannot conscientiously support any of the candidates you should consider becoming one yourself when an election comes round. You may have something to contribute to the welfare of the community in which you live. Many men who have become national political figures received long training first in Local Government.

**What Local Government is there in a Village?**—Three bodies share the Local Government in a village:—

(1) A Parish Council of between five and fifteen members is elected in all rural parishes where the population is over 300. A Parish Meeting is an assembly of all the Local Government electors of the parish, and it meets every March. Where there are more than 200 electors they may set up a Parish Council; if there are more than 300, they must do so. Where there is no Parish Council the Parish Meeting assembles twice a year.

(2) Second, there is the *Rural District Council* taking in its area a group of adjacent parishes and consisting of a Chairman and Councillors.

(3) Third, there is the *County Council*, consisting of a Chairman, County Aldermen, and County Councillors. The Parish Council deals with the purely local matters we have described. The Rural District Council takes the medium-sized problems like housing and housing conditions and sanitary services. The County Council takes the major services, like education, police, roads.

**Value of the General Parish Meeting.**—In the great majority of rural parishes little or no use has been made of the General Parish Meeting. But the meeting offers the electors of the parish an opportunity to review all those various matters which closely affect their general welfare. For example, on Housing it may make recommendations to the Rural District Council on accommodation needed and on possible housing sites; on water supplies and sewage it may make recommendations to the District and County Council

on conservation of resources, prevention of pollution, and extension of water supplies and sewerage; on Transport, recommendations on local needs to the British Transport Commission; and on Electricity, Education, Postal Services, Roads and Footpaths, suggestions and comments similarly to the appropriate bodies.

**Importance of the Parish Council.**—Of all forms of government the Parish Council is in closest touch with the area which it represents, and it can become the Parliament of the village. The legal powers of the Council may be limited, but because it knows its own village it has a duty to convey its knowledge to the District Council, and, if necessary, to the County Council. It is important for Parish Councils to realise the full extent of their many powers and responsibilities and to ensure that they are used to the fullest extent for the benefit of the village. The Parish Council has power and duties in regard to Allotments, Footpaths, Street Lighting, Burial Grounds, Sanitation, Bathing Facilities, Seats and Shelters. The Parish Council can help forward the spread of further education (under an Act of 1944) by initiating the formation of informal groups for adult education in villages. There is a growing general desire to understand the problems of modern life, and the Parish Council, by setting up a Further Education Advisory Committee, can do much to assist the parish to secure the best available facilities for classes, discussions, and lectures. Among other public services which can be rendered by any determined Parish Council are those relating to Old People's Welfare, National Savings, Village Produce, Rural Trades and Crafts, and Advice to Citizens. For adequate guidance on this subject enquiry should be made to the National Association of Parish Councils, 26 Bedford Square, London, W.C.1.

**The Local Government in a Small Town.**—Here Local Government is shared by two authorities, the Urban District Council and the County Council, the major services going to the County authority.

**The Local Government in a Medium-sized Town.**—Here, too, we find only two authorities, the Borough Council and the County Council. The Borough Council is very similar to the Urban District Council mentioned in the preceding paragraph, but the chairman of the Borough Council is a Mayor. Not all areas looked after by an Urban District Council are small. There are five with a population of over 100,000. On the other hand, not all areas with a Borough Council are medium sized, many of them having less than 5,000. A town becomes a borough by obtaining a Royal Charter, and the borough becomes a corporate body with a Mayor, Alderman, and Burgesses (or Citizens).

**The Local Government in a Large-sized Town.**—In the largest towns there is only one body. The County Council plays no part, and the Local Authority is the County Borough Council. Thus Leicester is a County Borough independent of the Leicestershire County Council. New County Boroughs are created by Parliament and the requisite minimum population is 100,000; but certain towns have retained their status because of their historic standing, examples being Oxford and Canterbury. There are eighty-three County Borough Councils in England and Wales. A County Borough may also be a City (which is a title of honour conferred upon a town by the Crown), but it may not be. It may have a Lord Mayor, but not necessarily.

**The Administrative County.**—In England and Wales sixty-two administrative counties, covered by County Councils, have been created. The number exceeds the number of geographical counties because the division for Local Government purposes has been made on grounds of convenience. For example, Sussex is split into

the two Administrative Counties of East Sussex and West Sussex.

**How Does London Run its Government?**—Owing partly to its size and density of population London has its own special form of government. There are no County Borough Councils within the Administrative County of London, and responsibility is divided among the London County Council, the City Corporation, and the Metropolitan Boroughs. The county is divided into twenty-eight metropolitan boroughs, each having a Borough Council. The City of London Corporation is rich in tradition, and it has remained untouched by the general law relating to Local Government. Its functions are small compared to its prestige, and it carries out a good deal of ceremonial entertainment of distinguished visitors. It works through three assemblies. They are first, the Court of Common Hall consisting of the Lord Mayor, Aldermen, Sheriffs, and those liverymen of the City Companies who are freemen of the City. It elects the two City Sheriffs, and nominates two Aldermen for Lord Mayor. Second, there is the Court of Aldermen which appoints the Lord Mayor from the two Aldermen nominated by the Court of Common Hall. Finally, there is the Court of Common Council which includes both Aldermen and 206 Common Council men.

**Local Authorities in Scotland.**—These consist of County Councils, Burgh Councils, and District Councils. The County Councils have powers and duties similar to those in England and Wales. Burgh Councils are of three kinds (Royal, Parliamentary, and Police Burghs). The Royal Burghs (holding rights directly from the Crown) and Parliamentary Burghs (created by the Reform Act, 1832) correspond generally to County Boroughs in England and Wales, but they are not entirely independent of the County Councils. The Police Burghs correspond generally to the Urban Districts and Non-county Boroughs in England. The town councils of Burghs consist of Provost, Bailies, and Councillors, corresponding to the Mayor, Aldermen and Councillors of English Councils. The District Councils broadly correspond to English Rural District Councils. Central control of Scottish Local Authorities is exercised by the Secretary of State for Scotland, the Department of Health for Scotland, the Scottish Education Department, and other Scottish Departments.

**Local Authorities in Northern Ireland.**—These comprise six Administrative Counties (Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone); two County Boroughs (Belfast and Londonderry); three Boroughs; and a number of Urban and Rural Districts.

**Who Run Local Government?**—We have seen that, excluding the area of the London County Council, there are seven different types of local authority:—

- Parish Meeting.
- Parish Council.
- Rural District.
- Urban District.
- Borough.
- County Borough.
- County.

Except for the first they consist of representatives elected by the citizens, who ultimately control them. The whole of the members of a Parish Council retire every third year. But in Rural and Urban District Councils and Borough Councils it is the normal practice for one third of the councillors to retire each year. No election can therefore produce a totally new Council, and some continuity of experience is thus assured.

Besides Councillors there is another group of members called Aldermen in Borough Councils, County Borough Councils, and County Councils. They are elected, not by the public but by the Council itself, forming a fixed percentage of the total membership of the Council. Thus Borough Councils may consist of eighteen Councillors and six Aldermen presided over by a Mayor. The Councillors are elected by the Burgesses, the Aldermen by the Councillors, and the Mayor by the

Councillors and Aldermen together. If a Councillor is made an Alderman he ceases to be a Councillor, and the vacancy is filled by an election. Aldermen hold office for six years, one half of them retiring every third year. An Alderman need not have been a Councillor, but he must be qualified for election as a Councillor. Such a system enables a Council to invite to join them men and women of experience who have not stood for election. Urban and Rural District Councils do not have Aldermen.

**Who May Vote for Local Government?**—A Register of Electors valid for elections between February 16, 1956, and February 15, 1957, contains the list of electors who were resident on the qualifying date October 10, 1955, or were otherwise eligible.

**Who May be Elected?**—Eligibility for nomination as a candidate depends in the first place upon registration as a local government elector for the area and thereafter upon a number of qualifications and disqualifications designed to secure that the candidate is a suitable person.

**How Does Local Government Get its Powers?**—A Local Authority may do only those things which it has been empowered to do by Act of Parliament. There are three kinds of such Acts: General, Adoptive, and Local Acts. A General Act may require a Local Authority to do something, or it may permit it to do something if the authority so wishes. Thus Parliament having decided that the minimum school-leaving age is to be fifteen, Local Authorities must see that that rule is carried out: they cannot choose some other school-leaving age. Sometimes the Act lays a duty on the public and requires the Local Authority to see that it is carried out, examples being the Shop Acts fixing hours of shopkeepers.

An Adoptive Act is one which confers power to do something if the Local Authority wish to adopt the provisions of the Act, an example being the Public Libraries Act.

The third kind of Act, the Local Act, confers special powers upon a particular Local Authority to which the Act refers, e.g., the widening of roads, or the establishment of a municipal theatre. It has sometimes happened that a local enterprise authorised to one authority by a Local Act has been afterwards adopted as a model for a General Act for all authorities.

**Who Does the Work?**—A Local Authority appoints and pays its officials, who have the responsibility of the day-to-day work. A Parish Council may appoint only two officials, a clerk and treasurer (who may be members of the Council). The clerk may be paid (if he is not a member), but the treasurer is not paid.

All local authorities must appoint a clerk. He is called a Town Clerk for a Borough Council, otherwise the Clerk of the Council. Every County Council must appoint a Medical Officer of Health, a Surveyor, and a Treasurer. Borough Councils (County and non-County) and District Councils are required to appoint a Medical Officer of Health, a Surveyor, a sanitary inspector, and a Treasurer.

Many other appointments are often necessary e.g., directors of education, public analysts, shop inspectors, chief constables, registrars of births, marriages and deaths, librarians, health visitors, solicitors, architects.

**Where Does the Money Come from?**—The money comes from the public, and the yearly bill is in the neighbourhood of £500 million. The main sources of money are rates, government grants, trading undertakings, and loans.

Rates are a local tax on the occupation of property. Each separate property is assessed according to its rental value, and the amount paid for rates depends upon the amount of this assessment. It is the occupier on whom liability rests, although he may pay his rates indirectly as part of his rent. Thus, if the half-yearly rate is 2s. 6d. in the £1 (the rate for the year being 5s.) an occupier of property rated at £32 a year will pay in



each half year £4 in rates. On the back of the demand note is a statement showing the services for which the money is required. Government grants are given towards expenditure on services like education, police, housing, and highways.

An authority also obtains income from municipal undertakings. Finally, there is the possibility of obtaining a loan, generally for a long term capital development like new schools or housing estates.

**How Does Central Government Supervise Local Government?**—Local Authorities, in providing services (for example, a Police Force) required by Act of Parliament, are in effect carrying out local administration of a national service. Therefore a Government Department is held responsible for seeing that the Local Authorities carry out their local duties. As regards police, the department is the Home Office; for education, the Ministry of Education; for town and country planning, the Ministry of Housing and Local Government. Excluding these specific services which are the concern of another Government Department, the Ministry of Housing and Local Government has a general concern for Local Government as a whole. That Ministry took over that general concern from the Ministry of Health, and until 1919 the Ministry of Health was known as the Local Government Board.

The tendency is for Central Government to lay down broad principles and advice to the Local Authorities, but it is the latter who know local circumstances. Supervision is strengthened in two ways—by financial control and by inspection. There is need for public-spirited men and women to take part in Local Government, and for all citizens to take interest in local affairs.

**The Trend towards Central Administration.**—It is being increasingly felt that the country as a whole should be responsible for running certain services which have been administered locally, or that it should take a more prominent part or exercise a closer control. Thus hospitals were transferred to the Central Government under the National Health Service Act. Further examples are the removal of responsibility for trunk roads from local highway authorities; the ownership of civil airfields; and diminished responsibility for public assistance. Changes in the field of public utilities—passenger road transport, electricity supply, gas undertaking—have also affected local authorities. But there are dangers in this trend. There is a weakening of smaller units of Local Government by the removal of many old functions either to larger units or to the Central Government itself.

**The Boundary Commission.**—A Boundary Commission was established under an Act of 1945 to make a survey in order to create more effective and convenient units of Local Government. The Commission thought that the weaknesses in Local Government were due to (1) the disparity in size and resources of individual counties, county boroughs, and county districts; (2) the failure of the Local Government system to adapt itself to the changing pattern of industrial England, particularly in regard to what are called the

great conurbations (a term given to the concentrated urban districts like those of Manchester and Merseyside); (3) the haphazard allocation of functions; and (4), the conflict between County Councils and County Borough Councils. The Commission recommended the merger of certain of the smallest county councils and the division of some of the biggest. They also suggested one-tier County Councils for certain urban conurbations or densely populated areas. Furthermore, they suggested that in future not all County Boroughs should be separate from the Administrative County for all purposes; but that in some County Boroughs the County Council and not the County Borough Council would be responsible for services like the main town and country plan, the police force, the fire service, land drainage, remand homes, and other subjects. Thus some County Boroughs would be "most-purpose" authorities (as the Report describes them) instead of being "all purpose" as they are at present. The proposals would thus eliminate the unfit units, as the weaker County Councils and County Boroughs are removed from the rank of the new top-tier authorities. But the problem remained of carrying large regional areas and authorities capable of planning services which require large-scale planning.

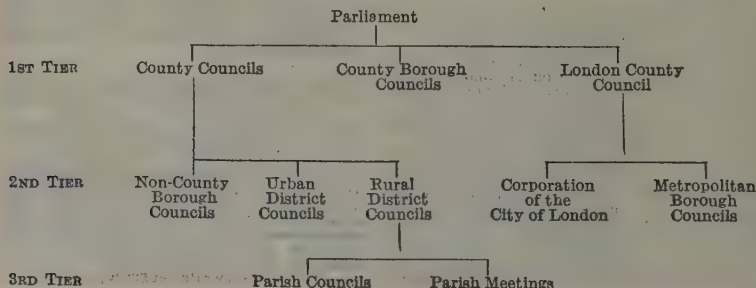
**Termination of the Boundary Commission.**—In June 1949 the Commission was wound up by the Government. Up to February 1956 there had been no announcement of the Government's proposals for reform.

**Proposals for Reform.**—Four national associations of local authorities made agreed proposals in March 1953. They assumed the continuance of two-tier government within conurbations and administrative counties (with parish councils forming a third tier in rural districts); and one-tier government elsewhere. But they proposed division and alteration of administrative counties to make them effective and convenient units; the reversion to non-county borough status of county boroughs with less than 75,000 population; and they suggested that the boundaries of the great conurbations should be defined and schemes of government for them approved by Parliament. No hint was given as to the kind of conurbation contemplated or of the form of its government (except that it should be a two-tier system).

**New Towns.**—The building of new towns can be appropriately mentioned here. It was a recommendation of the Reith Committee that local authorities should be permitted to initiate the creation of new towns if they desired to do so. They had in mind particularly the case where a large town, in order to carry out re-development on sound lines, needs to move a part of its population and industry, and this can best be effected by building a new town. But this proposal was not accepted and new towns are being built without participation of local authorities.

**Entertainments and Museums.**—It is not widely known that since 1948 certain local authorities

### Local Government in England and Wales



are empowered to take steps for the provision of a theatre, concert hall, dance hall, and other premises suitable for giving entertainment. Outside London the local authorities so empowered are county boroughs and county districts. Their expenditure for the provision of entertainment, which includes maintaining a band or orchestra, is limited to the product of a sixpenny rate, plus receipts from charge for admission, etc. Much better use needs to be made of this power if the low cultural quality of life in provincial cities is to be raised. Another element in cultural life which needs encouragement is the provision of museums. The value of a museum as a stimulus to general interest and education is only being slowly realised, and a large number of towns are devoid of anything in the nature of a museum. But both urban and rural authorities are free to establish museums and maintain them.

**Wales.**—From December, 1955 all local government functions relating to Wales and Monmouthshire are exercised through the Welsh Office at Cardiff of the Ministry of Housing and Local Government, except where such arrangements present special difficulties. This completed a process which had been going on for some time. Cardiff was designated as the capital of Wales.

### OUTLINE OF CENTRAL GOVERNMENT.

**What is Democracy?**—Democracy is a form of Government in which the supreme powers of Government are vested in the whole body of citizens. It thus differs from an autocracy, in which these powers are vested in one person, from an oligarchy (powers vested in a few people), and from an aristocracy (powers vested in a privileged class). This country, the United States, the Scandinavian countries, and most of the Dominions are among the examples of a democracy. The classification of Governments into monarchy (a form of government with a King or Queen at the head) and republic (which has no King or Queen but a President) cuts across the division of Governments into those which are democratic and those which are not. For example, the United States is a democracy, but not a monarchy. In this Guide we try to explain how democracy works in Great Britain; the essential methods whereby the people control the Government; and the way Government itself works (including Parliament, the Civil Service, Local Government, and the Judiciary).

**Essentials of Democracy.**—The fundamental way in which the mass of citizens control the Government is a combination of methods, namely universal suffrage, the rule of the majority, and the right to oppose the Government. Under the first of these three principles all citizens, male or female, over the age of twenty-one have the right to elect their own member of Parliament and to vote in local elections. Although we may sometimes take universal suffrage for granted, it came only in 1928, and is the culmination of slow growth. Under the second principle the majority has the right to rule, subject to the safeguards we shall describe later and subject especially—and this is the third principle—to the right of the minority to oppose. This consideration is vital to a democracy and opposition is so essentially a part of the British Constitution that the Leader of the Opposition is paid a salary by the Government. The idea of opposition entails the existence of parties, dealt with later.

**What is the British Constitution?**—The statement that our Constitution is an unwritten one means that there is no single document called a Constitution. In this respect this country is unique. Democracy is preserved by the ordinary law, by the political organisation of the people, by custom, and by rights which depend upon the capacity of the people to preserve them.

**Government of the People.**—The supreme law-making body is Parliament (a word which originally meant a talk). Parliament has grown from

the original principle that in important matters such as making the laws the monarch ought not to act without counsel and consent, and it now consists of two Houses, the House of Lords, composed of lords spiritual and temporal, and the House of Commons representing the commoners.

**House of Commons.**—The principal share of parliamentary business is conducted in the Commons. Its business is divided into three branches: legislative, financial, and critical.

**Composition of the House of Commons.**—Its members consist of 630 citizens of the United Kingdom and Northern Ireland, who receive a salary. Women are eligible for membership. Adult citizens of both sexes have the right to vote at general elections subject to certain qualifications. The Speaker or chairman is elected by a free vote of the House from among the members. As Speaker he presides over debates with impartiality and safeguards the rights of members. He is the link between the House and the Crown. The life of a Parliament is limited to five years, although, on the advice of the Prime Minister, the Queen may dissolve Parliament and issue a proclamation calling for election of a new Parliament. Parliament is adjourned from day to day while in session. At the end of the session it is prorogued. At the expiry of its life it is dissolved. The work of the House is governed by rules called Standing Orders. Theoretically a member cannot resign. If he wishes to retire he applies for an office called "Stewardship of the Chiltern Hundreds," an historic office which, being an office under the Crown, disqualifies the holder from sitting in Parliament.

**Legislation.**—Legislation is the work of making laws. The law of this country consists of common law, statute law, and equity. One may describe the common law as that based on custom and usage as declared and expounded by judges. Statute law is the law made by Parliament, enshrined in Acts of Parliament or statutes of the realm. Parliament is thus concerned with the making of statute law. The classification of law is explained in another part of this section.

**How Laws are made.**—Any member of the House of Commons may present a Bill after giving formal notice, but the principal Bills are those introduced by the Government based upon its programme as outlined in the Queen's Speech. The Bill has to pass three Readings before it is agreed by the Commons. The First Reading is a formality. The House gets down to discussion at the Second Reading, when general principles as distinct from details are discussed. If these principles are approved, the Bill passes its Second Reading and is then referred to a Committee. This Committee is a Committee of the whole House, with the Chairman of Committees presiding in place of the Speaker (a proceeding adopted for the more important Bills) or it may be a Committee composed of a lesser number of members divided between the parties on relative strength in the House itself. Finance Bills and other money Bills go to a committee of the whole House. In Committee the Bill is examined clause by clause. After the committee stage follows the report stage. The House (with the Speaker) considers the Bill as reported to it by the Committee and considers whether further changes should be made. Where the House reports to itself this stage is a formality. The final stage in the Commons is the Third Reading (when only verbal alterations are allowed) and the House considers the Bill as a whole and whether it should or should not become law. The Bill having passed through all its stages in the House of Commons is sent to the Lords, who may reject or amend it, but they have no power to amend or reject a finance or other money Bill. If the two Houses differ and agreement cannot be reached by informal agreement, the Bill drops, for except as provided for by the Parliament Acts of 1911 and 1949 a Bill cannot be presented for the Royal Assent until the concurrence of both Houses has been obtained. Under the Parliament Act of 1911, the Lords had power to delay all Bills



except Money Bills for two years if they are unacceptable. The Parliament Act, 1949, reduced the Lord's delaying power from two years to one. The Lords can delay a Money Bill for only one month. When a Bill has been passed by both Houses or in accordance with the Parliament Acts 1911 and 1949, the final stage is the Royal Assent.

**Money Functions of the Commons.**—We return to the Commons and its second function (and one of its earliest in history) to provide the State with money. The Government cannot raise money by taxation (or in any other way) or spend money without the authority of Parliament; and this power of authority belongs exclusively to the Commons. The House can vote money only on the demand and on the responsibility of a minister of the Crown. The work of government, whether it be the maintenance of armed forces or education or health measures—all costs money. All monies raised by Parliament (taxes or loans) are paid into the Bank of England into a fund called the "Consolidated Fund," and all payments by the State are from this fund. There is thus one national till. Some taxes are permanent, and some imposed for a year at a time. Some expenditure is permanent (like interest on the National Debt), and some is granted annually by Parliament. The annual proposals of the Government for raising money are called the Budget. The proposals for spending the money are called Estimates.

**Critical Functions of the Commons.**—Parliament itself does not govern. The Queen's ministers are responsible for government and parliamentary government means that Parliament ensures that those ministers represent and have the confidence of the party which possesses a majority in the House; and further, that it controls the action of ministers by questions and criticisms. Any member may address a question to any relevant minister (being a member of the House). He may ask either for an oral or a written answer. Oral answers are given at Question Time, and supplementary questions may be put. No debate is allowed to arise. This practice is an important safeguard against bad administration or abuse, for it concentrates a powerful form of criticism on government action or inaction. Furthermore at the end of each sitting a half an hour is allocated for further development by a member of a matter on which he considers he has had an unsatisfactory reply. This is called raising matters "on the Adjournment." Or the House can ask for a return of information, although the Government lays papers before the House on its own initiative. These are called "Command Papers" because they are supposed to be presented by command of the Queen. Other methods of obtaining information are the appointment of a Royal Commission (like that on Capital Punishment) or a parliamentary committee or a departmental committee. Any member may propose a motion of condemnation of any member or department of the Government, and such a motion would become a vote of want of confidence if it were made by the leader of the opposition. The verbatim official report of the debates in Parliament is known as "Hansard," which is published on the morning following a debate. There is also a weekly edition of Hansard.

**House of Lords.**—There are about 790 members including royal princes, archbishops, dukes, marquesses, earls, viscounts, bishops, barons, and judicial life peers. It is the oldest second chamber in the world and the most hereditary in its character. The Lord High Chancellor presides. The House of Lords has two sets of functions, legislative and judicial. It is a party to legislation within the limits imposed by the Parliament Acts of 1911 and 1949. The judicial functions of the House of Lords sprang from the fact that it is the highest Court of Appeal for the United Kingdom. Only the nine Law Lords and those peers who have held judicial appointments hear these appeals, which are presided over by the Lord Chancellor. These decisions are final and become part of Common Law. In 1949 the Lords

expressed their desire that peeresses in their own right should be allowed to sit in that House.

**The Queen.**—We have seen that the Central Government is vested in the High Court of Parliament or The Queen in Parliament, consisting of the Queen and the two Houses. The Queen's tenure of the Crown holds for life (unless she abdicates), it is hereditary, and it is held by statutory right. The Queen is a constitutional monarch; she takes an oath at her Coronation to rule according to the laws and customs of the people. She is the link binding the United Kingdom with the independent countries of the Commonwealth (where she is represented by a resident Governor-General). The Queen is the fount of honour and justice in the realm. She is the head of the Forces, which are governed by "Queen's Regulations." She is also head of the Executive, that is all the work of the State is enacted in the name and under the authority of the Crown. She opens Parliament by reading a speech from the Throne in the House of Lords, and this speech, for which the Government is responsible, outlines the Government's programme for the session. Her assent is necessary before a Bill becomes an Act of Parliament.

**The Parties.**—We have said that the right of a minority to oppose is an essential of democracy, and this idea means that political parties are allowed to function. The party system implies a government party (which has the largest number of candidates) and an opposition known as Her Majesty's Opposition (the leader of which receives a salary). The party system emerged in the latter half of the seventeenth century as Parliament gained the right to be the law-making body. The original division was between Tories and Whigs, the former representing broadly country interests and emerging from the Cavaliers, and the latter broadly representing new interests and having their origin in the Roundheads. Thus of the three main political parties today, we may say that the Conservative Party's line of growth is from Cavalier to Tory, to Unionist and to Conservative; the Liberal Party's growth is from Roundhead to Whig and now Liberal; while the Labour Party is the youngest of the three. The Conservative Party advocates private ownership of land and the means of life and is inclined to take a cautious attitude to reform. The Liberal Party strongly advocates free trade and also supports private enterprise, but initiates and supports reform. The Labour Party distrusts exclusive reliance upon private enterprise and looks to State action or nationalisation to bring about a better distribution of wealth. In 1918 the Labour Party broadened its constitution to include "all workers by hand and brain" and first took office as the Government in 1924, but in a minority position. The first Labour Government with a majority of its own was that elected in 1945. Each party has a Leader in the House. The Leader of the largest party is the Prime Minister, and his chief supporting party colleagues are the Cabinet. The Leader of the main opposition party is the Leader of the Opposition. The rank and file of supporters are called Back Benchers. All parties have Whips, who discuss between them the arrangement of business and "whip" up members to vote in support of their party.

**The Executive.**—We must now turn from law-making by Parliament to the carrying out of the law. The work of applying the law and securing obedience is called the executive work of the Government. The Executive comprises five bodies; the Queen, the Privy Council, the Cabinet, the Government Departments or Departments of State and the Civil Service. The Queen as the Head of the State is the nominal head of the executive.

**The Privy Council** is the Queen's own Council, consisting of over 300 distinguished men drawn from all walks of life. Its function is to give private advice to the Queen. From it have sprung many organs of the constitution. For example, the Judiciary or courts of justice have grown from the Queen's Council sitting as a Court

of Justice, and today the Judicial Committee of the Privy Council is a body of distinguished lawyers acting as a Court of Appeal from courts of the Commonwealth. Many of our Government Departments have grown from Committees of the Privy Council formed for specific tasks, for example, finance, education, trade.

The Cabinet was originally a committee of the Privy Council. It consists of the principal Ministers of the Crown, and is responsible for deciding the policy of the Government on all matters affecting the country, whether on foreign or home affairs. It has also complete control of the Government Departments. It is thus the central link in the whole machine of government. Presided over by the Prime Minister, it generally includes the Lord President of the Council, the Lord Chancellor, the Chancellor of the Exchequer, the leading Secretaries of State, and other Ministers at the discretion of the Prime Minister. Cabinet meetings are held in secret. The Cabinet is responsible for the individual actions of its members. This follows from the requirement that a Minister's policy must be in agreement with Cabinet policy. Thus the Government have a common policy and act as one man. This is the meaning of the phrase "Ministerial responsibility."

**The Prime Minister.**—The office of Prime Minister, like the existence of the Cabinet, was not formally mentioned in law until recent times. He is the link between Cabinet and Queen. It is he who decides when to advise the Queen to dissolve Parliament. He is leader of the Government party in the House of Commons and gives a lead on policy. A recent writer has pointed out how the Constitution has, after long evolution, divided the functions of leadership and vested them in two personages—a Prime Minister who is temporary and removable by the will of the electorate, and the Queen, who, by contrast, embodies the principle of continuity.

**The Government Departments.**—The work of administering the laws is delegated to different Departments according to subject. At the head of each is a Minister, responsible for his work to Parliament, with an Under-Secretary, also a member of the Government. We may divide the Departments into six groups: the Defence Services, the Taxing Departments, the Social Services, the Post Office, Productive Departments and others.

**Defence Services and their Supply.**—These consist of the Board of Admiralty, the Army Council (War Office), the Air Council (Air Ministry), the Committee of Imperial Defence, and the Ministry of Supply.

**The Taxing Departments** consists of the *Inland Revenue*, which assesses and collects Income Tax, and the *Customs and Excise*, which collects taxes on certain goods when imported into this country and certain commodities produced in this country (e.g., beer, liquors), and taxes certain transactions (e.g., purchase tax) or activities (entertainment tax).

**The Social Services.**—Into this important group we may put the following:—

*National Assistance Board* conducts the administration of national assistance and non-contributory old-age pensions.

*Ministry of Pensions and National Insurance* operates pensions for death or disablement in war (including civilians) and the care of disabled and war orphans; and it also operates the National Insurance Acts and Family Allowances.

*Ministry of Labour and National Service* operates the Employment Exchange, the Appointments Department, Unemployment Insurance, Resettlement, Training of the Disabled, Factory Inspection, and Training Centres.

*Ministry of Education.*—The education services

are operated by the local education authorities, but the Ministry controls and guides such services.

*Ministry of Housing and Local Government* deals with housing and new towns, planning and control of the use of land.

*Ministry of Health* administers the National Health Service.

The Post Office employs more staff than any other department, and works the posts, telegraphs, telephones, and the Savings Bank. Through its 20,000 Post Offices it does a large number of tasks, such as paying out pensions and family allowances, and issuing wireless licences.

**Productive Departments.**—A number of other Departments produce essential and useful products. The *Ministry of Supply* organises the production of armaments and equipment, and the *Ministry of Works* supplies building material.

**Other Departments.**—There still remains some forty or more other Departments. The most important offices:—

*Treasury:* controls national finance and manages the Civil Service.

*Foreign Office:* conducts relations with foreign countries.

*Ministry of Agriculture, Fisheries, and Food.*

*Colonial Office* manages relations with Colonies, protectorates, protected states, and trusted territories.

*Commonwealth Relations Office* deals with affairs relating to self governing member countries of the Commonwealth and S. Rhodesia.

*Ministry of Fuel and Power* directs and controls the production and consumption of coal, gas, and electricity.

*Home Office* is responsible for Police, Prisons, Aliens, Children, National Fire Service, etc.

*Department of Scientific and Industrial Research.*

*Board of Trade* covers certain activities of industry and trade, except fuel and power, building, agriculture, and food. In September 1953 a Minister of State was appointed to give special attention to the promotion of exports and overseas trade.

*Ministry of Transport and Civil Aviation* controls all forms of transport and traffic and road construction; and directs civil aviation.

*Scottish Department of Agriculture* deals with agriculture in Scotland.

*Scottish Department of Health* directs and controls health services in Scotland.

*Welsh Affairs.* In 1951 the Home Secretary was also given the appointment of Minister for Welsh Affairs, with an Under-Secretary for that purpose.

**The Civil Service** consists of all employees in the Government Departments. They are employed by "The Crown," and their salaries are authorised annually by Parliament. The employees of Public Corporations (like the National Coal Board) are not Civil Servants, nor are those employed by local authorities. It was decided to introduce equal pay with men for most non-industrial women in the Civil Service by seven annual stages from January 1955. A Royal Commission reported in 1955 upon the reorganisation of the Civil Service. The Civil Service (leaving out the postal workers) is divided broadly into five classes: the Administrative; the Executive; the Professional, Scientific and Technical; the Clerical; and the Messengers, Cleaners, etc.

**The Reform of Parliament.**—So long ago as 1917 a Conference presided over by the Speaker of the House of Commons unanimously approved Proportional Representation in the larger boroughs and by a majority approved the Alternative Vote for the rest. The Alternative Vote appeared in a Bill in 1931. But these proposals have not been developed, although there have been requests for Committees to enquire further into them. In 1952 a Select Committee was set up to consider means of supervising "delegated legislation" e.g., statutory regulations and orders.



**Proportional Representation** is a method of allocating seats among the parties in accordance with the proportion which they receive of the total votes cast, so as to ensure the representation of minorities. At present the candidate who gains the greatest number of votes in a constituency gains the seat, although it commonly happens that the successful candidate polls less votes than the combined votes of his opponents. The effect of this must be a disproportionate reflection of the respective strength of parties in the country. Opponents argue that P.R. eliminates personal contact between voter and candidates because the constituencies under that system would have to be so large; and that by favouring small parties would promote political fragmentation of the country or "splintering."

**The Alternative Vote.**—Under this system an elector who has to choose from three candidates could indicate not only his first choice but also his second choice. If no candidate obtains more than half the votes after first choices have been counted, then second choices are also counted to decide who wins.

**Reform of the House of Lords.**—A controversy between the two Houses arose during 1947/48 on two matters, one the proposal to nationalise the Iron and Steel industry and the other upon the Commons' proposal to suspend capital punishment. During the course of this controversy about the House of Lords it was agreed, on the initiative of the Conservative Opposition, to set up an inter-party Conference to consider whether agreement could not be reached on the future of the House of Lords. The party leaders did agree provisionally on certain proposals. They agreed that the existing constitution of the House of Lords should be modified to ensure that the Second Chamber was complementary to and not a rival of the House of Commons and that there should be no permanent majority for any one political party. On the composition of the new House it was agreed that:—

1. The present hereditary Peers would not automatically be qualified to attend and vote.
2. Instead new "Lords of Parliament" would be appointed on grounds of personal distinction or public service. They would be drawn either from the hereditary Peers or commoners who would be created Life Peers. They would be paid and would be disqualified if they neglected or became unable or unfitted to perform their duties.
3. Women should be eligible to take their place in the Lords.
4. Peers who were not Lords of Parliament would be able to vote at elections and be candidates for the House of Commons.

But the Conference broke down on a point on which agreement could not be reached. It concerned the powers which should be vested in any reformed Upper House, and in particular the length of time that would be reasonable for the performance of its functions. A proposal for another informal Conference on the subject was made in 1953, but came to nothing. The House of Lords is said to be the only public institution in our country from which women as such are excluded.

**Public Corporations.**—Government has, especially since 1945, applied a process of nationalisation to certain industries. By that process Government becomes the owner of all the shares in all or most of the companies in some important industry. But long before 1945 social control had been exercised in regard to essential services such as water, gas, electricity, and transport by means of the Public Utility Companies. Before 1939 there were four State-controlled public corporations in existence—the British Broadcasting Corporation, the Central Electricity Board, the London Passenger Transport Board, and the Port of London Authority. Since 1945 many enterprises have been nationalised, the most important being the Bank of England, the National Coal Board, the

British Electricity Authority, the Airways Corporation, the Gas Council, and the British Transport Commission. These corporations, although in charge of national enterprises and subject to general governmental policy, are not Government Departments and are not staffed by Civil Servants.

## LAW AND THE COURTS.

**Criminal and Civil Law.**—The most obvious practical division of English law is into criminal and civil law. Criminal law treats of crimes, which may be defined as offences against the community, and whose commission is punished by the State, usually by imprisonment or a fine. With some exceptions every citizen has a right to institute criminal proceedings, but in practice this is usually done by the police or other official bodies, e.g., Government Departments, or in the case of serious crimes, by the Director of Public Prosecutions.

Civil law treats generally of a special relation between one citizen and another. To slander some one is a civil wrong, and so is a breach of contract. In such cases the injured party or "plaintiff" has a civil right of action against the other, the "defendant," and if successful he will be awarded "damages." These damages are intended as a compensation to the plaintiff, not as a punishment to the defendant (though incidentally they may be that as well). Often an act may be both a crime and a civil wrong, e.g., an assault or the injuring of an innocent pedestrian by a drunken motorist.

An important distinction between criminal and civil wrongs is that criminal proceedings, once started, cannot be abandoned except by permission of the court, while civil actions may be settled out of court or abandoned by the plaintiff at any stage.

**Common Law, Statute Law, and Equity.**—*Common Law.*—Another important division of the law is that into Common Law, Statute Law, and Equity. Common Law is the body of customary or "case" law which has not been enacted by Parliament, but which is to be found in the judgments of superior courts extending back over many hundreds of years. A judge will not admit that he "makes" law. When a superior judge has to decide a point of law not covered by statute, he refers to and is guided by the Common Law as embodied in these judgments, which constitute "precedents" and are binding upon him. In giving his judgment he does not declare what the law shall be, but only enunciates what it already is. For example, murder and conspiracy are Common Law crimes, and slander a Common Law "tort," or civil wrong. Their definitions and the law relating to them are judge—and not Parliament—made.

*Statute Law.*—Statute law is the law made by the Queen in Parliament, that is to say, approved as a Bill by both Houses of Parliament and then given the Queen's assent. It would be unconstitutional for the Queen to withhold her assent to a Bill which has passed both Houses of Parliament.

Both Houses must approve a Bill before it is presented for Royal Assent. Under the Parliament Act, 1911, passed as a result of a constitutional crisis, a Money Bill, may, after a month, become law without the Lords' approval, and a Bill other than a Money Bill if passed by the House of Commons in three successive Parliamentary Sessions. Under the Parliament Act, 1949, it is possible to secure the enactment of legislation, in spite of its rejection by the House of Lords, within a period of one year from the Second Reading, or nine months from the Third Reading in the House of Commons.

Statute law is supreme in three senses. First, it can override or overrule any part of the Common Law, or even its own previous enactments. Secondly, there is in theory no limit, not even a physical one, to what can be enacted by it; for example, it might even be possible to enact that a particular man was a woman, or that two and two were five, "for the purposes of the Act." Thirdly, there is no authority which can undo or

override its enactments except another Act, and a duly enacted Act of Parliament can therefore never be declared illegal. There is here a striking contrast with Acts of the United States Congress, which can pass only such laws as are by the terms of the American Constitution within its powers. Laws passed by Congress have on occasions been declared by the U.S. Supreme Court to be unconstitutional and therefore invalid.

**Equity.**—England is peculiar in possessing a second judge-made body of civil law known as "equity," which is administered in the civil courts concurrently with the Common Law. The system originated in the Middle Ages when persons seeking relief which the Common Law could not give them, invoked the aid of the Chancellor, "the keeper of the King's conscience." Originally the Chancellor's decisions and those of his deputies, delivered in the courts of Chancery, were founded more or less on principles of natural justice, but in time they became crystallised into a body of rules known as "equity." These two systems continued to be administered in different courts until 1873, when it was enacted that the civil courts should henceforth administer both systems concurrently. "The currents of law and equity flow in a single stream, but their waters do not mingle," and a lawyer has still often to consider the merits of his client's case both "in equity" and "at law."

The Chancery Division of the High Court is now principally concerned with the matters with which the Court of Chancery formerly dealt, that is, matters of which the Common Law took no cognizance, *e.g.*, trusts, or the specific performance of contracts.

**Crime Prevention and Detection.**—The primary duty of the police is the maintenance of law and order and the prevention of crime. They are also concerned with the investigation of crimes committed. There is no national police force, but about forty separate bodies under the immediate control of County and other local authorities. "Scotland Yard," for instance, is not a Central Government body, but merely the Criminal Investigation Department of the Metropolitan Police and does not investigate crimes outside the Metropolitan Police Area unless requested to. All police forces are, however, under the general control of the Home Secretary to ensure that conditions of work and pay are comparable throughout the country. To qualify for Central Government grants towards their upkeep, all forces are required to maintain a certain level of efficiency.

**Crime Investigation and Prosecution.**—Every citizen has a right to arrest a person whom he sees committing a serious offence, but a police officer has certain additional powers of arrest. When a crime is reported or suspected, it is the duty of the police, or in some cases of official bodies, to investigate the facts.

It is a presumption of English law that a man accused of an offence is innocent until his guilt is proved, and this is not considered to be done until the prosecution has shown not only that an offence has been committed, but that, beyond all reasonable doubt, the prisoner committed it. Otherwise he must be found not guilty and discharged. A man may not be tried twice for the same offence.

**The System of English Courts.**  
**I. Criminal Courts.**—1. *Courts of Petty Sessions.*—At the bottom of the ladder are the Courts of Petty Sessions, which can try minor offences punishable either by fine or imprisonment, with a maximum of six months' imprisonment for one offence and twelve months for two or more. These courts are presided over by not fewer than two local Magistrates, called Justices of the Peace, whose office is honorary, and who are appointed by the Lord Chancellor on the recommendation of the Lord Lieutenant of the County. Some officials, *e.g.*, Mayors during their term of office, are J.P.s *ex officio*. Most J.P.s are laymen, but all Petty-Sessional Courts are assisted by a  
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trained magistrate's clerk, who is usually a solicitor.

These courts also act as courts of preliminary inquiry to determine whether there is a *prima facie* case (*i.e.*, a case that requires to be answered) against an accused which will require his being "indicted" for trial by jury. This they do by taking depositions from witnesses. If they decide that there is no *prima facie* case, the accused is discharged; if that there is such a case, he is committed for trial either to the Quarter Sessions or the Assizes. In many of the bigger towns a barrister known as a "Stipendiary Magistrate" is appointed to act as sole and permanent magistrate, and in London there are a number of such magistrates known as Metropolitan Police Magistrates.

2. *Quarter Sessions.*—These courts have a wide jurisdiction, but cannot try the most serious crimes, *e.g.*, murder, treason, or bigamy. Trial is by jury. The courts are of two kinds. Those which sit for the county are presided over by magistrates for the county; those for boroughs by experienced barristers known as "Recorders." Courts of Quarter Sessions also hear appeals from Petty Sessions.

3. *Courts of Assize.*—England and Wales are divided into a number of circuits of very ancient origin, each comprising a number of Assize towns. One or more judges of the High Court go on each circuit at least three times a year. Their criminal jurisdiction is unlimited, and they also deal with such civil cases as can be conveniently dealt with locally rather than at the High Court of Justice in London. A great many divorce cases are thus disposed of.

The Central Criminal Court, or Old Bailey, as it is popularly known, is the seat of the Assizes for the City and County of London and certain parts of the home counties. Because of the immense population of this area, the Sessions are held once a month, and four courts are held at a time.

4. *The Court of Criminal Appeal.*—This court is situated in the Royal Courts of Justice Building in London and usually consists of two judges of the Queen's Bench and the Lord Chief Justice. Appeals from Quarter Sessions and the Assizes lie to this court, which has powers to quash, reduce, or augment sentences on appeal.

5. *House of Lords.*—An appeal from the Court of Criminal Appeal lies to the House of Lords. This appeal is not, however, of right, and the "flat" or permission of the Attorney-General must be obtained.

The constitution of the House of Lords as a judicial body is discussed on another page.

**II. The Civil Courts.**—1. *The County Court.*—There are about 500 County Courts in England and Wales which are grouped into circuits (not the same as the Assize Circuits). A County Court Judge visits each court at least once a month. Broadly speaking, his function is to try civil actions when the amount involved is not over £200, or in some cases £500.

2. *High Court of Justice.*—The High Court of Justice is one of the two branches of the Supreme Court of Judicature, the other being the Court of Appeal, described below. The High Court deals with all civil cases, except those dealt with by the County Courts or by the civil side of the Assizes. Since 1873 it has been divided into three divisions:—

- (1) the Queen's Bench Division, which is principally concerned with Common Law cases (*e.g.*, defamation, breach of promise, damages for injuries, or breach of contract);
- (2) the Chancery Division, whose functions have already been outlined; and
- (3) the Probate, Divorce, and Admiralty Division, whose title is self explanatory.

3. *The Court of Appeal.*—Appeal lies as of right from decisions of the County Court and from the High Court of Justice to this court. Appeals are heard by courts consisting of three appeal judges, at the head of whom is the "Master of the Rolls." The court can dismiss an appeal, allow it or make a fresh order as the damages or costs, or order a new trial.

4. *The House of Lords.*—Appeal lies from the



Court of Appeal to the House of Lords. In some cases an appeal may be made without leave, in others leave of the Court of Appeal must be obtained. Only the "Law Lords" (or "Lords of Appeal in Ordinary"), who are eminent lawyers and life peers, and certain other high judicial appointees assist when the House of Lords is constituted as a judicial body to hear either civil or criminal appeals. They are presided over by the Lord Chancellor, who is the head of the English Judiciary. While other judges are appointed for life, his appointment is a political one, and he retains office only during the tenure of power of his party. He is, of course, always an eminent lawyer.

**Judicial Committee of the Privy Council.**—This is a committee of lawyers, drawn from the Privy Counsellors, who hear appeals from decisions of colonial and ecclesiastical courts.

**Juvenile Courts.**—This is a special kind of Magistrates' Court to deal with accused persons under the age of eighteen. The magistrates chosen are specially qualified for the work, and where possible a woman is appointed as one of the three Magistrates who constitute the Court. The Court is held in private away from the ordinary court room. The object of the Juvenile Court is to introduce into the trial a plan to reform the offender by providing for the care and protection which he may need, by removal from undesirable surroundings, and by subsequent education or training. In these objectives the Court has the co-operation of social workers, including Probation Officers.

**Probationary Officers** are attached to particular Courts, sometimes a Magistrates' or a higher court. Sometimes an offender is not sentenced to punishment, but is released "on probation," that is on the condition that he behaves well and follows directions given by the Court or by a probation officer. Such an officer is a trained man (or woman) who advises, assists, and befriends people who have been committed to his care by a court of law. The probation officer, by his assessment of the social background of the offender, can advise the court upon the wisdom of putting the offender on probation. The probation officer by his understanding can so befriend an offender as to provide a basis for his rehabilitation. He undertakes the "after care" of those released from prison or Borstal or approved schools, to which juveniles are sent.

**Legal Aid.**—If your means are small and you have reasonable grounds for taking proceedings in the High Court of Justice or Court of Appeal you can have the free services of a solicitor and, where necessary, of a barrister. A pamphlet explaining in broadest outline the main feature of the scheme for legal aid (under the Legal Aid and Advice Act 1949) is issued by the Law Society. The Society has set up Area Committees and Local Committees on the subject. You can obtain the address from any County Court, any office of the National Assistance Board or any Citizens Advice Bureau. Your Local Authority may also be able to give you the address. Full information is contained in a book published by H.M. Stationery Office entitled "Legal Aid under the Legal Aid and Advice Act 1949." No one should act on the assumption that he is eligible for legal aid until a decision is reached. The Act provided for free legal advice (apart from litigation) similar to the Poor Man's Lawyer Service. It is intended to extend the operation of Legal Aid to the County Courts so that it will be possible for a person to be assisted in cases of a very much smaller nature than can be heard in the High Court.

## OUTLINE OF INDUSTRIAL RELATIONS.

The economic progress of the country and its future welfare hinge so much upon healthy relations between employers and employees that some of the main aspects of industrial relations are here outlined. This account includes a description of Trade Unions and their organisation

and some approaches to industrial peace and welfare.

**The Working Population.**—The total working population in September 1955 was over 24 millions, over 16 millions being men, and nearly 8 millions women. Split up into the three main categories, there were over 4 millions in the basic industries; over 9 millions in manufacturing industries; and over 11 millions in other industries, in the professions, and in public administration. In the basic industries there were 1,713,000 in transport, etc., 1,057,000 in agriculture and fishing, and 860,000 in mining and quarrying. In the manufacturing industries there were 4,627,000 in metals, engineering, and vehicles industries (nearly half the total of those in manufacturing industries) and nearly a million in textiles (the next highest). In the third category 1,474,000 were engaged in building and contracting, and 4,090,000 were engaged in professional, financial, and miscellaneous service; the latter number did not include 578,000 in National Government Service and 737,000 in Local Government Service. At the beginning of 1956 the unemployed represented about 1.0 per cent. of the total number of employees.

**Government and Industry.**—To make planning on a national scale a success it was essential that Government and Industry should be able to consult each other and an Economic Planning Board has been set up consisting of representatives of both sides of industry and the Government Departments concerned. The Board meets under the direction of the Government's Chief Planning Officer, who thus has direct contact with both sides of industry for his vital work of advising the Government.

**The National Production Advisory Council.**—To secure planning on democratic lines it was appreciated that the understanding and co-operation of those expected to carry it out must be sought from the beginning. Among the more important permanent bodies which exist to see that this is done is The National Production Advisory Council on Industry, which meets under the chairmanship of the Chancellor of the Exchequer, with representatives of both sides of industry and of the Government Departments concerned. As its name denotes, the Council covers the problem of industrial production.

**The National Joint Advisory Council.**—While the Production Council just described deals with the wider problem of production, the Joint Advisory Council, under the chairmanship of the Ministry of Labour, is chiefly concerned with all matters affecting the relations between employers and workers. These two bodies and the Economic Planning Board ensure that a two-way channel of advice and information is open between the Government and both sides of industry.

**Regional Boards for Industry.**—This machinery of consultation has its regional side to enable it to be fully informed for the solution of local problems. There are therefore ten Regional Boards for Industry in England and Wales and a Scottish Board for Industry.

**Employers' Organisations.**—The British Employers' Confederation, together with the Trade Union Congress, have long been recognised as the authoritative means of consultation between the Government and organised employers and workpeople. The membership of the Confederation consists of the national federations in industries employing approximately 70 per cent. of the total industrial population of the country. The Confederation has represented British employers at the International Labour Organisation since that organisation was set up in 1919.

**Trade Unions** are a British institution with a long history during which they have changed so much that it is difficult to find a final definition. The Webbs defined a Trade Union as "a continuous association of wage earners for the purpose

of maintaining or improving the conditions of their working lives." We may say briefly that a Union is a permanent organisation of people whose livelihood is based upon a contract of employment. Besides being concerned in protecting the weaker members of the community, the Unions have participated not only in Joint Production Councils, but in the Industrial Councils assisting in the direction of the economic life of the nation. The Unions have responded to the demands made upon them by the community and have deepened their outlook by an increasing sense of social responsibility.

**Trade Unions and National Production.**—It was upon the advice of the Trades Union Congress during the early years of the Second World War, that the mechanism of war production was reorganised, and a National Production Advisory Council (referred to in an earlier paragraph) instituted. After the War most of the Joint Production Committees operating at the workshop level in thousands of firms collapsed; but in 1947 the need for increased production being as great as ever, they were revived. The number of workers covered by these Committees is estimated at over 3½ millions in workshops, collieries, shipyards, and elsewhere.

**Collective Bargaining.**—The wages and conditions of more than half the workers of the country are settled by machinery voluntarily set up by agreement between employers' organisations and Trade Unions for this purpose. These collective agreements although not legal contracts are honoured by both sides. They cover not only wages, but hours and overtime, holidays, training, relations between management and workers, procedure for avoiding disputes, etc. Trade Unions have preferred this collective bargaining with employers under a voluntary system rather than seek protective legislation, although legislation has been framed in certain necessary circumstances, such as the Factory Acts restricting the hours of work of women and young children.

**Voluntary Negotiations on Wages.**—The procedure for wage and other negotiations in the primary industries varies with the industry and often depends on long-established practice or custom. Thus in the building industry there has been a National Joint Council since 1920. In some other industries—for example, engineering and shipbuilding—joint conferences are called when a demand is formulated by either side. A Joint National Negotiating Committee was set up in the coal-mining industry in 1943, with a National Reference Tribunal which adjudicates where the Committee cannot agree.

**Joint Industrial Councils.**—These Councils offer a pattern of voluntary negotiating machinery. This is a system whereby in an industry there are national and district councils and works committees composed of representatives of employers and workers to discuss and reach agreement on subjects of joint concern. The basis of the system is the recognition of organisation on the one side through employers' associations and on the other through Trade Unions. The system was recommended by the Whitley Committee on Relations between Employers and Employed, appointed by the Government in 1916, and their recommendations were accepted by the Government not only for industry, but for the public services. About 100 J.I.C.s were formed after the first world war and a large number of Works Committees were also formed; but after a time many of these bodies ceased to operate. The second world war bringing a fresh challenge and need to organise industrial relations on a sound basis, led to a revival of J.I.C.s and there are now over one hundred of these bodies. They vary considerably in structure, in degree of authority within the industry, and in the nature and extent of their activities. The industries concerned include wool, hosiery, boots and shoes, chemicals and branches of retail distribution. The Whitley system had always been successfully applied in the Civil Service.

**Wages Council.**—In addition to these voluntary methods the Wages Council Act of 1945 formed, by law, in certain industries, Councils composed of equal numbers of employers and work people and a number of independent members to fix minimum wages, enforceable by law. The Act thus extended the powers of the old Trade Boards which had been set up to deal with "sweated" trades. There are now over sixty Wages Councils. Special legislation has been necessary to regulate wages in three industries: agriculture, catering, and road haulage.

**Methods of Settling Disputes.**—It must be remembered that the majority of disputes are settled by direct negotiation and the use of voluntary joint machinery, which in some industries includes recourse to arbitration.

**Voluntary Arbitration.**—Under the Conciliation Act, 1896 and the Industrial Courts Act of 1919 the Minister of Labour may take steps to promote a settlement in any trade dispute reported to him or on behalf of the parties. No action is normally taken until any suitable negotiating machinery has been fully used. Both Acts provide for arbitration by consent of both parties. Broadly, the Minister may refer disputes to arbitration by the Industrial Court, by single arbitrators, or by Boards of Arbitration. Arbitration awards under these two Acts are not legally binding on the parties, but since they are the result of joint application to the Minister they are almost invariably implemented. The Industrial Courts Act, 1919 also empowers the Minister to appoint Courts of Inquiry to inquire into the causes and circumstances of a dispute. The Court of Inquiry has no power to enforce settlement, but its report often contains recommendations which pave the way for a settlement.

**What Can a Court of Inquiry Do?**—The Court of Inquiry whose interim report averted a threatened railway strike in January 1955, was the subject of much public discussion, because it enunciated a new doctrine. It declared there was no substance in the argument which had been used by the Transport Commission that there is an absolute statutory bar which prevents the Commission from paying such rates of wages as may involve them in any particular year in a deficit. The question was asked whether such a Court of Inquiry had the right to interpret an Act of Parliament, and, despite previous assumptions, lay down general principles for the payment of wages in a nationalised industry.

**Compulsory Arbitration.**—The Industrial Disputes Order 1951 provides a form of compulsory arbitration. Under this Order either party to an industrial dispute may report the dispute to the Minister of Labour and National Service and, provided certain conditions are satisfied, the Minister is required to refer it to the Industrial Disputes Tribunal for settlement. An award of the Tribunal becomes an implied term of the contract between the parties, and is thereby enforceable in the civil courts.

**Strikes and Lock-outs.**—Negotiating machinery is not perfect—in common with other things in life—and conciliation, despite great goodwill, is not invariably successful. In the last resort therefore a strike may break out, or the employers may lock-out the workers.

**Membership of Unions.**—The aggregate membership of Trade Unions in the United Kingdom at the end of 1954 was about 9,495,000. This was about 35,000 more than in 1953. The total number of trade unions known to have been in existence at the end of 1954 in the U.K. was 674. Thirty-three unions had a total membership of nearly 7½ million members and seventeen of these had a total membership of nearly 6½ million members or 67 per cent. of the total membership of all unions. There are still 372 unions with fewer than 1,000 members each, and most of these have fewer than 500 members.

The following table gives in *thousands* the in-



Industrial distribution of trade-union membership at the end of 1954 :—

	Thousands
General Labour Organisations . . . . .	2,078
Agriculture, Forestry and Fishing . . . . .	148
Coal Mining . . . . .	840
Other Mining and Quarrying . . . . .	7
Treatment of Non-Metalliferous Mining Products other than Coal . . . . .	37
Chemical and Allied Trades . . . . .	20
Metal Manufacture, Engineering, Shipbuilding, Electrical Goods Vehicle and Other Metal Trades . . . . .	1,803
Cotton . . . . .	219
Other Textiles and Textile Finishing . . . . .	173
Leather, Leather Goods, and Fur . . . . .	17
Clothing (except Boots and Shoes) . . . . .	135
Boots, Shoes, Slippers, etc. . . . .	91
Food, Drink, and Tobacco Manufacture . . . . .	62
Manufacturers of Wood and Cork . . . . .	125
Paper and Printing . . . . .	316
Other Manufacturing Industries . . . . .	13
Building and Contracting . . . . .	488
Gas, Electricity, and Water . . . . .	41
Railways . . . . .	540
Other Transport and Communication (excluding General Labour Unions) . . . . .	446
Distributive Trades . . . . .	394
Insurance, Banking and Finance . . . . .	93
National Government Service . . . . .	359
Local Government Service . . . . .	441
Education . . . . .	342
Other Professional and Business Services . . . . .	192
Theatres, Cinemas, Sports, etc. . . . .	85
Other Services . . . . .	2

**Evolution of Unions.**—The total membership of Trade Unions at the end of 1952 was the highest ever recorded (9,526,000). There was a slight drop of 0·7 per cent. in 1953 and a rise of 0·4 per cent. in 1954. By amalgamation the number of unions had decreased to 674 in 1954 from over a thousand in 1940.

**Organisation of Unions.**—A craft union is a "horizontal" one which embraces all the skilled workmen of a single trade, so that it includes workers of a particular kind in many industries. An industrial union on the other hand is a "vertical" one since it takes in all workers in a particular industry whatever their trade or skill. Many of the craft unions have opened their membership to less skilled workers closely allied to their work. Thus some craft unions have closely approximated to industrial unions. The National Union of Mineworkers comes nearest to being the industrial union which its title denotes. Craft unions and industrial unions have existed side by side in a given industry or service. For instance, in the railway service there are three unions, one an industrial union catering for the workers in and about the railways, a union of railway clerks and a union of locomotive engineers. Craft unions and industrial unions are able to co-operate in several Federations such as the Federation of Building Trades Operatives and the Confederation of Shipbuilding Unions; and the T.U.C. is encouraging the growth of Federations. Federations like the Printing and Kindred Trades Federation consist of craft unions acting together for certain common purposes. A further kind of union which has grown rapidly is the general union. Of this type, the Transport and General Workers Union is the largest. It is a characteristic of the general union that alongside a large body of workers engaged in a special industry, the remainder come from a multitude of trades.

The Trades Union Congress was founded at Manchester in 1868. It formulates the general economic and social policy of the trade-union movement, promotes trade-union education, resolves inter-union disputes and represents the movement internationally. A Trade Union in affiliating to the T.U.C. does not yield up any of its independence. The unions affiliated are divided into nineteen trade groups, each of which has allocated to it a number of seats on the General Council of 33 members. But the election

of these representatives is undertaken by a general vote at Congress.

**Trades Councils** are the local counterpart of the T.U.C. composed of delegates elected by affiliated union branches. They have been in existence for nearly a hundred years. Some of the Councils have Committees specially concerned in the organisation of women workers. The Councils appoint representatives to such bodies as Local Employment Committees, Insurance Advisory Committees, and Hospital Management Committees. The potential scope of their activities has thus been widened by the growth of the Welfare State. In England and Wales the trades councils are grouped into federations; and the T.U.C. has developed regional machinery.

**The Future of Trade Union Development.**—The following possibilities have been discussed of trade-union development in the future. First, a re-organisation of the central machinery so that the same members are not automatically re-elected to the General Council of the T.U.C. By the setting up of an inner cabinet the services of leaders who have left their Unions could be secured. Second, the powers of this inner cabinet and of the General Council would need to be greater than those of the present General Council as compared to the constituent unions. Third, parallel with this change, it has been advocated that there should be much devolution from the headquarters and district offices of unions to the workshops. This would be facilitated if union branches were founded upon a work-place basis rather than upon a residential area. It has been further urged that the unions should initiate large-scale educational programmes for union officers and members; and that it should attract higher attendances at branch meetings by spreading knowledge about the conduct of meetings, the sifting of business, and the most attractive ways of holding discussions.

**The International Labour Organisation** collects facts about labour and industrial conditions and formulates minimum international standards. It is an association of states and is controlled by representatives of Governments and of Employers' and Workers' Organisations. Its purpose is to promote social justice throughout the world, and it aims to eliminate international trade rivalries based on bad social conditions. Each State sends four delegates to the Conference, two representing the Government and the other two representing respectively the employers and the workers of the country. A large number of Conventions and Recommendations have been adopted relating to unemployment, hours of work, holidays with pay, the employment of women and children, safety and welfare, colonial labour, conditions of employment at sea, etc. This work, which commenced in 1919, has proved one of the most successful adventures in international co-operation.

**Industrial Welfare.**—The Industrial Revolution, which began in Britain about 1750, brought appalling conditions in the factories for men, women, and children. They worked long hours under unhealthy and dangerous conditions, and the rates of sickness, accident, and death were very high. From 1802 onwards, various Acts were passed in an attempt to alleviate these conditions, but it was not until the Act of 1833, which provided for the appointment of inspectors, that any real progress was made. This Act, which applied only to textile mills, limited the hours of work of children to forty-eight in the week, and of young persons of thirteen but under eighteen years of age, to sixty-nine. Employers were made responsible for securing the education of children employed by them, and a standard of cleanliness by periodical lime-washing of the workrooms was laid down. Later Acts enlarged the scope of the legislation to all classes of factories, and extended its requirements to cover such matters as fencing of dangerous machinery, ventilation, and suppression of dust. From the beginning of this century various Codes of Regulations have been made under the Acts, dealing with the precautions

necessary in particularly hazardous or unhealthy processes. The operative Acts are now the Factories Acts of 1937 and 1948. These contain requirements as to cleanliness, overcrowding, temperature, ventilation and lighting of factory buildings, the safeguarding of dangerous machinery, and the construction, maintenance and examination of potentially dangerous plant. The provision of drinking-water, washing facilities, accommodation for clothing, first aid, and suitable facilities for sitting are also dealt with in these Acts. Hours of employment of young persons under sixteen are limited to forty-four hours a week, and of women and young persons over sixteen to forty-eight hours a week (except for a limited amount of overtime). All young persons—that is, those who have not reached the age of eighteen years—have to be medically examined within fourteen days of starting work in any factory, and thereafter yearly until they reach the age of eighteen.

**The Human Factor in Industry.**—Since the First World War industrial management generally has realised more clearly that “people matter” and require individual consideration. Before then the main factors taken into account in making an industrial decision were financial, mechanical, and organisational. Today the human factor is recognised of at least equal importance. While the greater strength of the trade unions and full employment have contributed to this change of attitude, it has also received support from the findings of social scientists.

Concentration of attention on keeping the factories well staffed has resulted in the establishment of specialised personnel departments in most firms of medium or larger size. The Personnel Officers in charge recruit and screen applicants (before their actual selection by departmental managers), and help them to settle down; the responsibility for their training and promotion is likewise shared. The Personnel Officer is also concerned to promote the health, safety, and satisfaction which the employee finds in his work. On the extent that this is achieved largely depends the morale of the working group, assuming that the incentives and personnel policy of the firm are adequate and supervision satisfactory. But over and above this, co-operative attitudes depend upon mutual understanding, and to promote this the personnel officer concerns himself with improving communications and consultation on personnel problems between management, foremen, and employees.

Technical assistance and information on industrial welfare and personnel management is available to their members and member firms from The Industrial Welfare Society and The Institute of Personnel Management. Through the Personnel Management Advisory Service of the Ministry of Labour also, advice and assistance is provided to individual firms and organisations on matters of policy or specific personnel problems.

**Industrial Psychology.**—The National Institute of Industrial Psychology has taken an active part in the development of that branch of knowledge in this country. There have been three main lines along which the subject has developed. During the first phase, after the First World War, hours of work, physical conditions, fatigue, and working methods were studied. In the second phase the psychology of individual differences was found to explain variations in capacity and aptitude, and out of this developed vocational guidance, the selection and placing of workers and their systematic training in working methods. Finally, came a phase characterised by emphasis on social psychology, in which problems of morale and the social atmosphere of work came into greater prominence.

**Training Within Industry for Supervisors.**—This scheme was introduced into the United Kingdom by the Ministry of Labour after a study of the application of the results of the scheme in the United States.

The scheme is concerned with the development of the skills of instructing, leading, and improving methods. It seeks to develop these skills by means of three training programmes: (i) *Job*

*Instruction*, which helps a supervisor to develop skill in instructing new workers, in directing experienced workers, and in the general transmission of information incidental to his daily work. (ii) *Job Relations*, which deals with the techniques of everyday leadership, the maintenance of proper working relationships, and the correct handling of the “human” aspects of supervision. (iii) *Job Methods*, which provides the supervisor with a systematic approach to the improvement of working methods, and helps him to make best use of the resources available to him. These training programmes are generally presented on the firm's premises, and the order of programme presentation is adapted to the needs of the organisation. The main purpose of T.W.I. is to develop the skills of supervision in close relationship to the daily work undertaken by a supervisor. It is not claimed to be in itself a complete system of supervisory training, but is widely regarded within industry as providing a sound basis for other forms of supervisory training. The Ministry offers a free-of-charge introductory service matched to the varying sizes and needs of firms. This service provides information to management on the potential benefits of the scheme and also for the training of employees in the further development of T.W.I. within the organisation. Further details of the scheme may be obtained from any of the Regional Offices of the Ministry. An expert can be made available upon request in order to outline the service most appropriate to the particular organisation.

**Employment of Disabled Persons.**—Under the Disabled Persons (Employment) Act, 1944, there is a Disablement Resettlement Officer at each Employment Exchange with the special duty of helping and advising men and women handicapped by disablement to get and keep suitable employment, or work on their own account. The provisions of the Act include the setting up of a register of disabled persons; and obligation on certain employers to employ a quota of persons so registered; and the power to designate classes of employment which are considered especially suitable for disabled persons. The Act also empowers the Minister to provide, or assist others to provide, courses of vocational training and industrial rehabilitation, and facilities for the more severely disabled to be trained and employed under special conditions. Registration under the Act is voluntary, but is an essential part of the scheme, since it identifies disabled persons eligible to benefit from the employment provisions of the Act.

**Youth Employment Service.**—The Youth Employment Service gives vocational advice to young people under eighteen years of age, or beyond that age if they remain at school; assists them in finding suitable openings; and keeps in touch with them during the early years of employment. The central administration of the Service, in accordance with advice given by the National Youth Employment Council and accepted by the Minister of Labour and National Service, is the responsibility of the Central Youth Employment Executive, consisting of representatives of the Ministries of Labour and Education and the Scottish Education Department. In most areas the Service is operated locally by the Local Education Authorities, but in some, where they have not exercised their option to do so, it is operated from the Ministry's Employment Exchanges. A further function of the Central Youth Employment Executive is to advise industries on the setting up of national joint recruitment and training schemes for young entrants.

**Employment for the Older Person.**—In recent years there has been a new attitude towards the older person and a desire to give older men and women who are fit and efficient the opportunity to work. The proportion of men past 65 and women past 60 is greater than ever before, and their numbers will continue to grow. Similar changes are taking place just below these ages. In the ten years before 1962 the number of people aged 50 to 60 will grow by about one-sixth. At the same time the number of younger people is going down. So jobs must in future be done to



a greater extent by older persons. A National Advisory Committee on the Employment of Older Men and Women recommends giving older people a fair chance on their merits to compete for available jobs. If you are about to retire you should ask yourself whether you will have enough to interest and occupy you. It is usually easier to continue in the old job rather than find a new one. If you do not retire, for every six months' work beyond 65 (60 for women) you are increasing your National Insurance pension.

**The Employment Exchanges of the Ministry of Labour** (of which there are nearly 1,000 throughout the country) provide a service for bringing together employers wanting workers and men and women looking for employment. This employment service is there to help not only the worker who is unemployed but also workers in employment.

**Appointments Offices of the Ministry of Labour** offer a specialist employment service for professional and managerial or senior executive posts. Appointments Offices are at London (1-6 Tavistock Square, W.C.1); Manchester (Aytoun Street, Manchester, 1); and Glasgow (450 Sauchiehall Street, Glasgow). There are also special Employment Exchanges in other towns.

**Technical and Scientific Register.**—This is an employment and careers advice service centralised in London (Aimack House, 26 King St., St. James's Square, London, S.W.1) for scientists, technologists, professional engineers, architects, and surveyors.

**Careers.**—There are pamphlets (which may be bought for a few pence or seen at the Employment Exchange Office) on over fifty careers. A summary of careers information is given in a book (published by the Stationery Office, 3s. 6d.) entitled *Careers Guide: Opportunities in the Professions and in Business Management*. Information about teaching is contained in a leaflet *Notes for the Intending Teacher*, to be obtained free from the Ministry of Education, 11 Bryanston Square, London, W.1.

**National Service.**—Male British subjects ordinarily resident in Great Britain who have attained the age of 18 but not 26 (or 30 in the case of registered medical practitioners or dentists) are liable for military service, under the National Service Acts 1948 to 1950. Certain classes of men are not liable to be called up. Full details are set out in the Ministry of Labour's leaflet NL 2, which also contains notes on part-time service, conscientious objectors, and postponement of liability to call up.

**Reinstatement in Civil Employment.**—An employer is required under the National Service Act 1948 to take into his employment, if it is reasonable and practicable, former employees who are persons to whom the Act applies. Anyone who claims that he has rights under the relative Acts which are being, or have been, denied him, may apply to a Reinstatement Committee set up to determine questions involved in applications made to them. A fully explanatory pamphlet, REL 1 (NS), can be obtained from the Local Office of the Ministry of Labour and National Service.

**A New Industrial Revolution?**—In 1954 the Secretary to the Department of Scientific and Industrial Research drew attention to the likely far-reaching consequences of the increasing use of electronic machines which have been given the label of "electronic brain." These machines are already becoming widespread in many industries and activities where work previously occupied a large number of workers. It is virtually certain that electronic machines will come into wide use. The coming of these machines foreshadows a large reduction in the size of our clerical labour force (some 2 million people at present). The introduction of machines in the eighteenth and nineteenth centuries was made without under-

standing of human relations, and the introduction of the electronic machines of the 20th century will need care and study to prevent damaging social consequences. The prospects, on the other hand, can be very great, for we may be in sight of being able to remove the boredom of repetitive detail.

## OUTLINE of the BRITISH COMMONWEALTH.

The Commonwealth is a free association of eight sovereign, independent States—the United Kingdom, Canada, Australia, New Zealand, South Africa, India, Pakistan, and Ceylon—together with certain dependencies. Southern Rhodesia is, as it were, a junior partner in the Commonwealth, as the United Kingdom retains full responsibility for its external affairs, although it is a self-governing Colony having full responsibility for its internal affairs (with the exception that United Kingdom approval is required for legislation affecting the African population). The United Kingdom, Australia, New Zealand, and the Union of South Africa have dependencies for which they are independently responsible. So vast and complex an association has not been easy to define with precision. For a long time the term "British Empire" was used, and the self-governing countries (other than the United Kingdom) were called "Dominions." These terms have now given place to "Commonwealth" or "Commonwealth of Nations" and "Members of the Commonwealth." The last term describes the eight sovereign countries named in the opening of this paragraph. Other parts of the Commonwealth, such as Colonies, while they may be described as "Commonwealth countries" are not *Members of the Commonwealth*.

**The Nature of the Commonwealth.**—The Commonwealth is not a federation, for there is no central government, defence force, or judiciary, and there are no rigid obligations or commitments between them. Nor is it a contractual association like the United Nations. Like the United Kingdom itself the Commonwealth of Nations has no written constitution. But all its members have a broad community of interests, and they are bound together by a common sense of ideals and by a common interest in the maintenance of peace, freedom, and security. Although the Commonwealth includes about a quarter of the total population of the world about three-quarters of the Commonwealth's people live in India. The White population of the Commonwealth is between one-seventh and an eighth of the whole. The diversity is further illustrated in religion, for the Commonwealth includes over 200 million Hindus, 100 million Moslems and 80 million Christians. The same variety appears in climate and natural resources. But in spite of diversities of race, religion, language, and tradition, members share a common political heritage which has given rise to a broadly common pattern of institutions.

**The Common Heritage.**—All members have certain important constitutional features in common. They are parliamentary democracies, their laws being made with the consent of a freely elected parliament after discussion there. The government holds office because it has the support of a majority in that parliament. Ministers, who must be members of parliament, are collectively responsible for the actions of the executive and must answer in parliament for all governmental administration. These salient constitutional features are similar to those described above in the Outline of Central Government. With only two exceptions the Parliaments of Commonwealth countries have two chambers. The lower houses are elected by secret ballot on a basis of adult suffrage, and they have the power of the purse, since they alone can originate or amend financial legislation.

**The Sovereign and the Commonwealth.**—At the head of each of the parliaments of the Commonwealth—except those of the republics of India and Pakistan—is the Queen, in whose name the administration is carried on. The Queen's legislative

power is a formality—she reigns, though she does not rule; but she provides the element of continuity in the administration. The Queen is, therefore, Queen of the United Kingdom, Canada, Australia, New Zealand, South Africa, and Ceylon, and she is the symbol of their free association in the Commonwealth. India and Pakistan being republics with a President as Head of State, do not owe allegiance to the Queen, but accept her as the symbol of the free association of the member nations of the Commonwealth and as such the Head of the Commonwealth. The Queen has, therefore, in the six countries named above, a relationship with the individuals comprising each country and also a relationship with the nation as a collective entity. In the case of India and Pakistan she has only the latter relationship.

**The Commonwealth in the World.**—The Commonwealth as a whole, including the dependent territories, covers roughly speaking a quarter of the world's land surface and contains about a quarter of its population. The nations vary widely as has been explained, not only in size, background, geographical position, race, religion, language, but also in composition of population, industrial growth, and world importance. It is natural, therefore, that the approach of the different countries to international questions should vary, and on particular occasions they have voted on opposite sides in the United Nations. The entry of the three Asian countries—India and Pakistan in 1947 and Ceylon in 1948—into the Commonwealth has brought new influences and outlook into the councils of the nations. Accepting the democratic traditions of the Commonwealth as their own, the new partners stand as an essential bridge between Asia and the West. Australia, too, as a country which is of the West but not in it, in the East but not of it, is also a valuable interpreter between the two. Similarly, Canada because of her geographical position can act as interpreter between the United Kingdom and the United States.

**Status of Member Nations.**—The subordination of the Dominions, as they were then called, to the United Kingdom had ceased for all practical purposes many years before that fact was embodied in the Statute of Westminster, 1931. The recognition of a situation already existing was made in the following words:

It is in accord with the established constitutional position that no law hereafter made by the Parliament of the United Kingdom shall extend to any of the said Dominions as part of the law of that Dominion otherwise than at the request and with the consent of that Dominion.

The United Kingdom Government cannot declare war or make peace for another Member of the Commonwealth of Nations or determine its foreign or fiscal policy. And that is true, of course, of every Member of the Commonwealth of Nations with regard to every other Member. They make their own laws and they decide their own policies. Now that the independence of Members of the Commonwealth is no longer in question there is a growing consciousness of interdependence—the added security and prestige and wider opportunities which flow from association in the Commonwealth.

**The Right to Secede.**—"The essence of the Commonwealth relation is that it is a free association of nations, with a common purpose, who belong together because they have decided of their own volition to give and to take their fair share in a world-wide partnership." These words were used when the Burma Independence Bill 1947 was being discussed in the House of Lords by Lord Listowel, then Secretary of State for Burma. "We do not regard membership of the Commonwealth," he said, "as something to be thrust by force upon a reluctant people, but as a priceless privilege granted only to those who deeply desire it and are conscious of its obligations as well as of its advantages." Parliament passed the Act whereby Burma became an independent country. But the Member states of the Commonwealth do not for the most part think in terms of the right to

secede. It is a basic assumption that the Commonwealth is not only a voluntary and friendly but also a lasting friendship, providing the basis for long-term planning. In 1948 Eire declared its separation from the Commonwealth, and Parliament next year passed the Ireland Act 1949, recognising that Eire (to be known henceforward as the Republic of Ireland) had ceased to be a part of the King's dominions, while providing that the Irish Republic should not be regarded as a foreign country.

**Defence.**—Each Commonwealth nation is responsible for the organisation and training of its own defence force, and its military action is in no way bound by any decision of the United Kingdom. There is, of course, discussion between the Governments on important questions of policy, and considerable practical co-operation by such means as the exchange of training facilities, standardisation of equipment, and combined exercises.

**Consultation.**—Everyone of the Member nations, as we have seen, enjoys unfettered control of its own policy. It is, however, vital to the maintenance of the Commonwealth relationship as it has developed that there should be community of view and co-operation in action on all matters of common concern. There has therefore been evolved an elaborate system of consultation, including periodical Conferences.

**Colombo Conference 1950 and after.**—It had been suggested that, in the intervals between meetings of Commonwealth Prime Ministers, occasional meetings on foreign affairs should be held at a ministerial level. The first of these meetings was held at Colombo in January 1950, Ceylon being an appropriate meeting place at a time when Asia was the main focus of interest. The Conference recognised that the political stability of South-east Asia depended mainly on the improvement of its economic conditions. The Colombo Plan which emerged is described under that heading in the "Outline of Asian Changes" on p. 142.

**Commonwealth Conference 1955.**—At this conference it was announced by Mr. Mohammed Ali, the Prime Minister of Pakistan, that that country was about to adopt a republican form of Government but desired to remain a member of the Commonwealth. It was agreed that Pakistan should be a full member of the Commonwealth after becoming a republic. Meeting at a time of tension in Formosa, the Conference welcomed the end of hostilities in Indo-China. The Conference did not discuss, as had been expected by some, the question of republican status for South Africa.

**The Colonies.**—As stated in the opening passage of this outline, the United Kingdom in common with other members of the Commonwealth, has certain dependencies which are described as "The Colonies." But this is a loose term, for "the Colonies" are not really all Colonies in the strict sense. What are loosely spoken of as Colonies are properly divided into Colonies, Protectorates, Protected States, and Trust Territories. Colonies (properly called Crown Colonies) are overseas territories which have been annexed to the British Crown. The British Government is responsible for their affairs, both internal and external, and for their defence, and their peoples are British subjects. Examples of Colonies are Barbados, Hong Kong, and Fiji.

**Protectorates** are governed in the same way as Colonies, but have not been annexed. The peoples of Protectorates are not British subjects but British-protected persons, and examples are Uganda, Zanzibar, and the Solomon Islands.

**Protected States** are countries which, while retaining their own sovereignty, have entered into treaties giving the British Government certain rights and responsibilities in them. Their peoples are British-protected persons. Examples are Brunei, Tonga, the nine States (but not the two Settlements) of the Federation of Malaya.



**Trust Territories** are those territories, former colonies of nations defeated in war, whose administration is entrusted to Britain by the United Nations Trusteeship Council. Trust territories are governed on the same lines as Colonies, but a detailed report on them is sent to the United Nations each year. Their people are British-protected persons. Of the ten trust territories under U.N. Tanganyika is administered by the United Kingdom, the Cameroons by Nigeria, Togoland by the Gold Coast, Western Samoa by New Zealand, and New Guinea and Nauru by Australia.

**The Countries of the Commonwealth.**—On pages 380-81 (at end of the Gazetteer) is a list of all the countries of the Commonwealth showing their land area and recent estimates of population. The list distinguishes between the sovereign members and the British dependent territories, and classifies the latter according to the kind of dependency. Not all the British dependencies come exactly within the definition either of Colony or Protectorate, since, for historical reasons, many come partly under one heading, partly under another. Thus Kenya, Nigeria, the Gold Coast, Gambia are all part Colonies, part Protectorate.

**Forms of Government within Dependencies.**—There are many forms of government within the dependent countries, and within each territory the relations between the Governor responsible to the British Government and the assembly representative of local opinion are continually developing. Though their constitutions vary widely, one can make certain broad distinctions. There is a large group of territories whose peoples exercise a direct and important influence over their government without controlling it. As examples one may take Jamaica, the Gold Coast, and Nigeria, all of which colonies have received new constitutions in recent years. Their Legislative Councils are powerful and widely representative bodies, by no means entirely under official control. Such territories are on the way to self-government. But there are other colonies with no large measure of representative government. Though, like the others, their people usually have some representation on the Legislative Council, there is more direct official control. Political progress is constantly going on inside the Commonwealth. The new Constitution of British Guiana was suspended in 1958.

**Malta.**—A Round-table Conference on the future of Malta recommended that Malta, if it chooses, should be given representation at Westminster. It suggested that there should be three Maltese representatives and that they should be elected in the same way and under the same laws governing representation as are members of the United Kingdom. A referendum was to be held in Malta in February 1956.

## OUTLINE OF THE UNITED NATIONS.

**The origin of the United Nations.**—The United Nations, on January 1, 1942—while the war was still being fought—had made a pledge to act together after the war was over. Great Britain, U.S.A., Russia, and China made the first draft of a new World Peace Organisation in 1944 at Dumbarton Oaks, near Washington. There was a strong resemblance in the Charter to the Covenant of the League of Nations, which had been the international organisation between the two World Wars. But an Economic and Social Council was added to help the Assembly on a wide range of subjects. The right to take action to keep the peace was centralised in a Security Council of eleven. How this Security Council was to vote to arrive at decisions was a matter of supreme importance and was left unsettled until the Agreement at Yalta in February 1945.

**San Francisco Conference, 1945.**—The Dumbarton Oaks plan and the Yalta interpretation on voting in the Security Council thus formed the basis of discussion at the San Francisco

meeting of fifty States (some two-thirds of the World and all still at war, some of them fighting for existence) from April to June 1945.

**Charter of the United Nations.**—The Charter of the United Nations was signed on June 26, 1945. The name of United Nations was adopted at the suggestion of President Roosevelt. The purposes of the United Nations can be divided into four groups (security, justice, welfare, and human rights) and the nations undertook to carry out four main duties (to settle disputes peacefully, to refrain from threatening or using force, to assist in carrying out the Charter and not to assist an aggressor).

The four purposes are interrelated. Security is essential for peace. But insecurity, which always threatens peace, arises from a sense of injustice. Therefore UN seeks to maintain justice and friendly relations based on equal rights of peoples. Further, well-being is an essential condition for peace, and UN's third aim is the promotion of better standards of life. Finally UN affirms faith in the human rights of all without distinction of race, language, sex, or religion.

**Membership of UN.**—The original members are those States who were present at the San Francisco Conference or had signed the original United Nations declaration on January 1, 1942, fifty-one in all. They were:—

Argentina	Lebanon
Australia	Liberia
Belgium	Luxembourg
Bolivia	Mexico
Brazil	Netherlands
Byelorussian S.S.R.	New Zealand
Canada	Nicaragua
Chile	Norway
China (Nationalist)	Panama
Colombia	Paraguay
Costa Rica	Peru
Cuba	Philippine
Czechoslovakia	wealth
Denmark	Poland
Dominican Republic	Saudi Arabia
Ecuador	Syria
Egypt	Turkey
El Salvador	Ukraine, S.S.R.
Ethiopia	Union of South Africa
France	Union of Soviet Social-
Greece	ist Republics
Guatemala	United Kingdom
Haiti	United States
Honduras	Uruguay
India	Venezuela
Iran	Yugoslavia
Iraq	

The first new members to be admitted since the admission of Indonesia in 1950 were the following eighteen nations who became members in December 1955:

Albania	Italy
Austria	Jordan
Bulgaria	Laos
Cambodia	Libya
Ceylon	Nepal
Finland	Portugal
Hungary	Rumania
Irish Republic	Spain

On the occasion of those elections Outer Mongolia was vetoed by Nationalist China (which still represented China at the United Nations), and Japan was thereupon vetoed by Soviet Russia. But the admission of the further batch conceded that the only real principle of United Nations membership is "universality of membership."

**Major Organs of the United Nations.**—The United Nations have six major organs: (1) a General Assembly, (2) a Security Council, (3) an Economic and Social Council, (4) a Trusteeship Council, (5) an International Court of Justice, and (6) a Secretariat. It is especially the inclusion of the third body on this list (with all the Commissions and specialised agencies which stem from it) which makes UN more broad and balanced than the League of Nations.

**General Assembly.**—The General Assembly occupies a central position in the structure of the United Nations. But its business is quite distinct from the Security Council. It meets once a year. The Assembly can consider the general principles of co-operation for peace and security and disarmament and regulation of armaments. It can discuss any question concerning peace and security brought before it. It makes recommendations, but any question upon which action is necessary must be referred to the Security Council. The carrying out of its humanitarian work is the function of the new Economic and Social Council (dealt with below) which it elects and supervises. Further, the Assembly controls the purse. It also elects and supervises the Trusteeship Council and shares in the election of Judges for the International Court.

**The Security Council.**—The aims of the United Nations are wide—from feeding starving peoples to encouraging self-government in backward areas—but it cannot advance towards the noble objectives set out in the Preamble unless peace is maintained. The principal organ to preserve peace and security is the Security Council. It has eleven seats, of which five are permanently occupied by Great Britain, the U.S.A., the U.S.S.R., China, and France (which was officially recognised as one of the Great Powers at San Francisco). The other six are elected for two years by the General Assembly. Belgium, Persia, and Peru were elected for two years beginning January 1955; and at the end of 1955 Australia, Cuba, and Yugoslavia were elected. The Security Council sits continuously. It has two functions: (1) to promote the peaceful settlement of disputes and (2) to stop aggression. Under the Charter, parties to a dispute have already promised not to use force, and to settle their quarrels peaceably and to refer their dispute to the Security Council if they really cannot reach a peaceful settlement. On its side the Council can call on the parties to settle disputes peacefully, it can investigate any situation likely to cause a breach of the peace, and at any stage it can recommend a solution.

**The Veto.**—At this point we must deal with the veto, which applies to substantive questions. A decision needs only seven out of eleven votes. Five of the seven votes must be those of the permanent members, namely the United Kingdom, the U.S.A., U.S.S.R., China, and France. In other words if any one of them says "No" to the use of force, even after a full investigation, the Council cannot use force to settle the dispute. Thus when it comes to imposing sanctions for a breach of the peace the assent is required of the Great Powers, and one of them may of course be a party to the dispute. If the Great Powers imposed sanctions on each other it would mean a major war in which the present UN would disappear. Partly in order to overcome the difficulty of the veto the Assembly has set up a Committee to remain in permanent session consisting of one representative of each member. It is known as the Little Assembly, its formal title being the Interim Committee.

**The Economic and Social Council.**—The United Nations pledged themselves to a broad humanitarian policy of which the following are salient points: to promote higher standards of living; full employment; the conditions of economic and social progress; solutions of international economic, social, health, and other related problems; educational co-operation; universal respect for human rights; and the fundamental freedoms for all. The main business of the Economic and Social Council is to carry out this broad policy. To tackle these huge problems the Council established a number of important commissions and bodies, which fall mainly into the following three categories.

#### *Regional Economic Commissions*

Economic Commission for Europe (ECE)  
Economic Commission for Asia and the Far East (ECAFE)  
Economic Commission for Latin America (ECLA)

#### *Functional Commissions*

Technical Assistance Board (TAB)  
Transport and Communications  
Fiscal  
Statistics  
Population  
Social  
Human Rights  
Status of Women  
Narcotic Drugs

#### *Special Bodies*

UN Children's Fund (UNICEF)  
Commissioner for Refugees

#### *Specialised Agencies*

The Economic and Social Council also established relationship with the following specialised agencies, whose activities it co-ordinates:—

International Labour Organisation (ILO)  
Food and Agriculture Organisation (FAO)  
UN Educational, Scientific, and Cultural Organisation (UNESCO)  
International Civil Aviation Organisation (ICAO)  
International Bank for Reconstruction and Development (Bank)  
International Monetary Fund (Fund)  
Universal Postal Union (UPU)  
World Health Organisation (WHO)  
International Telecommunications Union (ITU)  
International Trade Organisation (ITO)  
World Meteorological Organisation (WMO)  
Inter-Governmental Maritime Consultative Organisation (IMCO) (in process of formation)

Several of these organisations were at work before UN was set up. One such body is the ILO whose work is described in the concluding paragraph of page 132.

**Economic Commission for Europe.**—ECE was the first of the great Regional Commissions to be set up under the auspices of the Economic and Social Council, and it was established in 1947 to facilitate concerted action for the reconstruction of Europe. The success of ECE has led to the establishment by the United Nations of similar Economic Commissions for Asia, for Latin America, and for the Far East (as described under "Outline of Asian Changes," p. 142).

**Food and Agricultural Organisation.**—We can here deal with only some of the specialised agencies. It has been a major concern of FAO to improve the world's food supply and to devise ways of preventing both shortages and surpluses of agricultural commodities. It has taken measures to control pests, infestation of stored grains and animal diseases. Rinderpest, the most serious of livestock diseases, kills over 2 million cattle annually in Africa, Asia, and the Far East. The organisation gives technical assistance to countries wherever such assistance can bring new land under cultivation, improve the yield of land already cultivated, raise levels of consumption or provide better living conditions in rural areas.

**The United Nations Educational, Scientific and Cultural Organisation** hopes to build peace and security by assisting in collaboration between nations through education, science, and culture in order to further universal respect for justice, for the rule of law, and for fundamental human rights. It is trying to wipe out illiteracy (which is far more prevalent in many areas than is commonly supposed) and to raise educational standards everywhere. UNESCO, because of its special concern for international understanding, has made suggestions for the teaching of geography and for improving text-books and teaching materials. From the beginning the organisation has endeavoured to mobilise social scientists all over the world for common action and has devised projects into, *inter alia*, the methods of political science and the methods which have developed in education, in psychology, and in philosophy for changing mental attitudes.



The World Health Organisation essays to eliminate three of the world's major diseases—malaria, tuberculosis, and venereal diseases. It has effectively controlled malaria in Italy and Greece, and greatly increased the production of DDT, which is effective in eradicating the carrier of malaria. The disease still kills about 3 million annually throughout the world out of the 300 million whom it strikes. Since malaria incapacitates millions of agricultural workers annually FAO collaborates with WHO to select those areas where control of the disease would result in increased food production. In the field of tuberculosis the organisation has undertaken mass immunisation. It is working to standardise the serological diagnosis of syphilis, to increase the production of penicillin, and to reduce the danger of infection for seafarers and prevent the spread of disease in ports.

The United Nations Children's Fund was established to meet the needs of children, particularly in the war-devastated countries, and to further child health purposes generally. The Fund, in its first six years, brought aid to millions of children and mothers all over the world. Its help is now being given to economically undeveloped countries to enable them to deal with long-standing child-health problems. UNICEF (which are the initials of the original Fund) is assisting the governments in mass campaigns to control tuberculosis, malaria, and yaws. Yaws is a contagious disease that affects children particularly, and in serious cases leaves them crippled. It can be cured by penicillin. The Fund is supported mainly by contributions by some sixty countries on a voluntary basis. Except in emergencies, the Fund's aid is matched in value by the government of the recipient country or by some voluntary agency in the benefiting country. In this way it draws out effort by the people of the assisted country.

**The Trusteeship Council.**—Like the Economic and Social Council, the Trusteeship Council is a subordinate organ under the authority of the General Assembly. The United Nations' plan is wider in its scope than the plan of the League of Nations. Under the Mandates system of the League, where the people of any territory taken from a defeated country were unable to stand by themselves, more advanced nations were mandated, as members of the League, to accept tutelage as a sacred trust. Ten Trusteeship Agreements have so far been approved by the General Assembly.

**The International Court of Justice.**—The new Court set up is very similar to that created by the League of Nations at the Hague and it meets there. The Court is the principal judicial organ of the United Nations and consists of fifteen judges elected by the General Assembly and the Security Council. No two of the judges may be nationals of the same State. The judges must be independent of national interests, and they declare solemnly in open court that they will exercise their powers impartially and conscientiously. Countries which are parties to the Statute of the Court can refer to it any case they wish. Among the disputes which have so far been submitted by states to the Court are the Corfu Channel Case (U.K. vs. Albania); Fisheries Case (U.K. vs. Norway); the Anglo-Iran Oil Company Case (U.K. vs. Iran); and the Channel Islands Case (U.K. vs. France).

**The Secretariat.**—The permanent headquarters are at New York. The present Secretary General is Mr. Dag Hammarskjöld, a Swede.

**What has UN accomplished?**—Early cases to come before the Security Council concerned the presence of troops of some of the Great Powers in Lebanon and Syria. The efforts of UN for conciliation in Indonesia were a major factor in the achievement of independence by that Republic. Following decisions of the General Assembly, the State of Israel was established, and mediation by UN ended armed conflict between

Israel and the Arab States. Fighting between India and Pakistan over Kashmir ceased after mediation by UN. The Berlin blockade in 1948 was settled by negotiations in which UN channels were used. And UN dealt with the disposal of the former Italian colonies. Perhaps the greatest achievement in 1953 was the establishment of the Technical Assistance Board (TAB) to supervise expanded technical assistance to undeveloped countries. This is described in the next paragraph.

But the other side of the picture needs to be faced. The UN has been hampered through its lack of success in achieving a solution of the major East-West issues. For example, little progress has been made in resolving basic differences on the control of atomic energy and the prohibition of atomic weapons and other weapons of mass destruction.

**Technical Assistance to Undeveloped Countries.**—One of the most important and novel of recent achievements has been the creation of a worldwide scheme for the sharing of skills and knowledge between nations. The scheme was envisaged as assistance by rich and well-equipped countries to under-developed countries. But in the event it seems that no country in the world is so completely underdeveloped that it has nothing to put into the pool. Thus a Yugoslav expert in shipbuilding worked in Ecuador; an educational expert in Ecuador helped in Bolivia; a Bolivian helped to combat disease in the Philippines; and so the chain continued. These projects make a vast array in many different technical fields; and in 1954 there were some 800 such projects. Among these were housing in Asia, irrigation in East Pakistan, maternal and child health services in Burma, civil aviation in Ethiopia. This work is carried out under the aegis of the Technical Assistance Board (TAB). A record programme of technical aid was planned for 1956.

**The Control of Armaments.**—To prevent a third world war in the long run, the UN must agree on a plan for the control and reduction of armaments. To help bring about a general regulation and reduction of armaments, the General Assembly in 1946 established an Atomic Energy Commission and the Security Council in 1947 established a Commission for Conventional Armaments. Unfortunately, there was soon a deadlock in both commissions. It proved impossible to secure agreement between the U.S. position and the U.S.S.R. position. The former, with the majority of members concurring, took the view that international control of atomic energy should precede the elimination of atomic weapons and that ownership and operation of atomic energy production facilities should be vested in an international control agency not subject to a veto in the Security Council. The U.S.S.R., on the other hand, took the view that there should be a simultaneous coming into force of conventions for: (a) the unconditional prohibition of atomic weapons, and (b) the international control of atomic energy; and that production facilities should remain in national hands, but subject to international inspection. A fresh Disarmament Commission was established in January 1952.

**Disarmament: The Next Step.**—At their Ninth Session in the autumn of 1954 the General Assembly of the United Nations unanimously agreed to fresh efforts to break the disarmament deadlock. Three main questions seemed linked together—disarmament, development of the peaceful uses of atomic energy, and the urgent need to speed the economic development of the poorer and less developed countries. The United Nations approved the proposal that the disarmament negotiations which had taken place in London in 1954 between five Powers, including Russia, should be resumed.

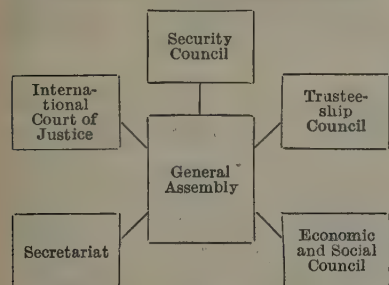
**Atomic Energy for Peaceful Purposes.**—In December 1953 President Eisenhower dwelt on the danger of atomic war to mankind, described the destructive power of atomic weapons, and proposed that those countries involved in the production of uranium and fissionable materials,

including the Soviet Union, should immediately begin to make joint contributions from their stockpiles to an International Energy Agency to be set up under the aegis of the United Nations. He hoped that the greatest of all destructive forces might be developed for the benefit of mankind by reversing the fearful trend of the application of atomic energy. His tentative plan was a world-wide investigation into the most effective peace-time use of fissionable material; and to diminish the potential destructive powers of the world's atomic stockpile. He hoped that all peoples would see that the great Powers (both East and West) are interested in human aspirations first and foremost.

**European Organisation for Nuclear Research.**—Meanwhile, so far back as July 1953, this European organisation had been created to provide at Geneva the first international laboratory for research in nuclear physics for peaceful purposes. The organisation was set up by Great Britain and eight European Powers, including Switzerland. The basic programme is to promote research on high-energy particles, including work in the field of cosmic rays. The Council first met in October 1954, when Sir Ben Lockspeiser, the British scientist, was elected President of the Council.

**The First Geneva Conference on Atomic Energy for Peaceful Purposes** was held in August 1955, and there were no less than 1,260 delegates and a host of observers from seventy-two countries. Over a thousand scientific papers were submitted, and exhibitions were held. Dr. Bhabha, F.R.S., of the Indian Atomic Energy Commission, presiding, predicted that unlimited power would be available to mankind within two decades, by which time, he said, "the energy problems of the world will have been solved for ever." It was announced that British scientists had built a reactor that made two atoms of new fuel for every atom consumed. France has renounced the manufacture of atomic and hydrogen bombs and is undertaking atomic research only for peaceful purposes. A Committee was formed by the British Government to study the effects of radiation.

#### Principal Organs of the United Nations



#### OUTLINE OF WESTERN EUROPEAN UNION.

Western Union was the name originally given to the association of western European powers who were associated in working the European Recovery Programme (described below). The Treaty of Brussels in 1948 between Great Britain, France, Belgium, Holland and Luxembourg formed a nucleus of Western Union, and from it sprang the Council of Europe (1949). The scope of the Treaty itself was widened by the North Atlantic Treaty (1949). Development has been upon three lines—economic, military and political—and the main stages of this threefold progress are described below.

**The European Recovery Programme.**—In 1947 Mr. Marshall, U.S. Secretary of State, invited the

European countries to draft a programme to put Europe on its feet economically. It was clear that early recovery from the war could not be attained unless Europe was assisted to obtain food and raw material from abroad. Mr. Marshall's speech was a call to Europe to unite to plan its own recovery. This was the Marshall Aid Scheme which led to the European Recovery Programme (ERP).

**The Committee of European Economic Co-operation.**—Europe quickly responded to Mr. Marshall's plan, although Russia and her satellites refused to join. In July 1947 sixteen nations agreed to set up a committee of European Co-operation. They were:—

Austria	Italy
Belgium	Luxembourg
Denmark	The Netherlands
Eire	Norway
France	Portugal
Great Britain	Sweden
Greece	Switzerland
Iceland	Turkey

and Western Germany (represented by Allied Zonal Governors).

**Proposals for Economic Co-operation.**—In April 1948 the Organisation for European Economic Co-operation (OEEC) was set up not only to administer American aid but also to bring about a permanently sound European economy.

**Marshall Aid.**—The plan initiated by General Marshall was very successful, and for some of the European countries Marshall Aid was continued until the end of 1951. By the end of 1950 Britain had sufficiently recovered to need no more Marshall Aid. Her share had equalled about £53 for each British household.

**The North Atlantic Treaty 1949.**—The founder members of this Pact (which widened the scope of the Brussels Treaty) were Great Britain, the United States, Canada, France, Holland, Belgium, and Luxembourg, and the nations which were invited by them to join were Norway, Iceland, Denmark, Italy, and Portugal. The parties agreed that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all and consequently they agreed that if such an armed attack occurs, each of them, in exercise of the right of individual or collective self-defence recognised by the Charter of the United Nations, will assist the party so attacked. The West German Republic was admitted to this organisation (NATO) under the Paris Agreements 1954 described below.

**The Political Aspect of Western Union.**—These were the economic and the military origins of a Western Union. There remained the political problem of uniting nations into a federation of other form of political grouping.

**Federal Union.**—This movement had, before the War, urged a federation of Europe as a first step in a progression towards a world federation. The Federalists advocated the surrender of absolute national sovereignty, a part of that sovereignty being vested in a federal authority. This authority should possess a government responsible to peoples and not to the States. It should have a Supreme Court to settle disputes between States which are members of the federation; and it must have an armed police force to uphold its decisions. The European Union of Federalists co-operated in the Hague Congress which was planned by the United Europe Movement.

**The Hague Congress, 1948.**—Several schools of thought were represented at the Congress, one main difference being between the federalists, who want to create a real federation in Europe, and those, like the United Europe Movement, who were not committed to a federation in so



far-reaching a sense. The Congress declared that the European nations must transfer some part of their sovereign rights so as to secure common action, and it demanded an early convening of a European Assembly chosen by the Parliaments of the participating nations. Following the Congress a co-ordinating European Movement was formed.

**The Creation of a Council of Europe.**—In January 1949 the Foreign Ministers of the countries who had signed the Brussels Treaty approved in principle the formation of a Council of Europe. In May 1949 the Foreign Ministers of the ten countries consisting of the five Brussels Treaty Powers and Denmark, Eire, Italy, Norway, and Sweden, concluded a formal Agreement called "The Statute of the Council of Europe." It set up a Committee of Ministers and of a Consultative Assembly, forming together a Council of Europe. The Council was established twelve months after the Hague Congress, almost to a day. The Committee of Ministers provides for the development of co-operation between governments, while the Consultative Assembly provides a means through which the aspirations of the European peoples may be expressed.

**Members of the Council of Europe.**—The original signatory Governments of the Statute were the ten countries referred to above. Greece and Turkey joined in 1949 and Iceland in 1950. The Federal Republic of Germany, an associate member in 1950, became a full member in May 1951. The Saar became an associate member in 1950.

The aim is to achieve a greater unity between its members for the purpose of safe-guarding and realising common ideals. The seat of the Council was fixed at Strasbourg.

**The Consultative Assembly.**—This the deliberative organ of the Council is empowered to debate and make recommendations upon any matter which: (i) is referred to it by the Committee of Ministers with a request for its opinion, or (ii) has been approved by the Committee. The Assembly consists of representatives of each member state appointed in such a manner as the government of that member shall decide. All resolutions of the Assembly require a two-thirds majority of the representatives casting a vote. The Assembly meets annually.

**Council of Europe.**—The Council came into existence in August 1949, and the Assembly opened at Strasbourg when M. Spaak (first President of UN General Assembly and Chairman of OEEC) was elected President. Mr. Churchill (as he then was) sat as an ordinary member. Procedure is a combination of British and Continental systems, but the design of the chamber follows the Continental pattern, delegates sitting at tables arranged to form a semicircle. In November 1949 the Council of Ministers agreed to meet the wishes of the Assembly that it would not in practice exercise its right of control to fix the agenda of the Assembly.

**Limitation of the Assembly's Powers.**—One group of representatives wished a complete change of the Assembly's powers in order to transform the present consultative and deliberative organisation into a legislative body. During the second session of the Assembly (in August 1950) a British delegate submitted a plan, which was not accepted, for a basic revision of the statute so as to give the Assembly a political authority endowed with limited functions but real powers.

**European Coal and Steel Community** provides for the co-ordination of coal and steel production in Germany, Belgium, France, Italy, Luxembourg and the Netherlands. The High Authority of the Community includes a consultative Committee of representatives of management, labour and consumers, an Assembly of Parliamentary delegates, a council of Ministers as a link to the Government, and a Court of Justice to settle disputes. The organisation of the Community is an example of co-operation on a supra-national

basis, since the governing authority is not responsible to the individual governments of member countries but only to the Community. The plan caused great discussion between the two opposing points of view within the European Movement: the Federalists and the Functionalists. The latter advocate integration by specific conventions, and the former aim at a European parliament and government. An attempt was made in 1953 to form a European Political Community. The intention was that, after ratification of the European Defence Community, a new Assembly elected by universal suffrage, should become the representative of both the Coal and the Defence Communities.

**Government of Germany after the War.**—As a result of Germany's unconditional surrender on June 5, 1945, all power in Germany was transferred to the Governments of the four principal Allies. By decisions at Potsdam in 1945 that power was exercised by the Commanders-in-Chief of the United States, the United Kingdom, the Soviet Union, and France, each being responsible in his own zone of occupation. On matters affecting Germany as a whole, the four would be jointly responsible as members of the Control Council. Berlin was divided into four sectors of occupation. Local elections took place in all four zones in 1946, and new constitutions were formed.

**The London Conference 1947** of the four Foreign Ministers concerned failed to agree on a joint German settlement. Unfortunately, the effect was to set in motion political and economic developments which were speedily to make Germany the battleground of the conflict of ideas between Soviet Russia and the Western Powers. The Allied Control Council could no longer function efficiently; and by the end of 1948 four-Power rule had virtually collapsed and the partition of Germany was complete. A federal Parliament and Government were formed in Western Germany. The Soviet zone prepared a rival form of Government for East Germany.

**The Federal Republic of Germany** was officially proclaimed at Bonn on May 23, 1949, and was the first democratic State to arise in Germany since the fall of the Weimar Republic. It comprised two-thirds of the population and about one-half the territory of the former German Reich. Its population was about 45 millions.

**Eastern Germany**—A month after the opening of the German Federal Parliament at Bonn, the U.S.S.R. announced the establishment of a German Democratic Republic at Berlin. Two bodies were set up with Soviet encouragement, the German People's Congress and the People's Council, to foster a form of German unification. During the spring of 1951 the Foreign Ministers' Deputies met in Paris; but they dispersed three months later without even reaching agreement on an agenda. In March 1952 the Soviet Union proposed that the occupying Powers should consider the formation of an all-German Government. The subject was discussed by the Four-Power Conference in Berlin in 1954 without result.

**Western Germany's New Status.**—In May 1952 the German problem acquired a new complexion, when the so-called "Contractual Agreements" were signed by the three Allied Powers and Western Germany at Bonn. These Agreements did not form a Peace Treaty, but they attempted to define how W. Germany and the three Allied Governments should work together. Sovereignty was to be restored to Germany and she was to enter a military alliance with France. Indeed, a Treaty called the European Defence Treaty was drawn up between the four Powers, with Italy and the Benelux countries, which was to fit German Armed Forces into a Western European system. But this system, called the European Defence Community, never came to fruition as such, owing to the refusal of France to ratify the Treaty in 1954.

The European Defence Community—EDC, which, as stated in the preceding paragraph, would have fitted W. Germany into the W. European Security system, was defined as a community "of supra-national character with common institutions, common Armed Forces, and a common budget." The members, France, Italy, Belgium, the Netherlands and Luxembourg, and W. Germany, were to be bound to mutual assistance in the event of attack; and it was intended that they should contribute national contingents of divisional size to a common pool. This arrangement had not been confirmed when the question of Germany was discussed with Russia at the Berlin Conference in January 1954. But the German question was not solved with Russia at Berlin, and EDC remained for ratification. When, after over two years from the inception of the Bonn Agreements, France was called upon to ratify the European Defence Treaty, she declined. Sir Anthony Eden toured the European capitals to see how he could restore the edifice which had collapsed, and he summoned all concerned to a meeting in London.

Brussels Treaty Organisation), which came into being on May 5, 1955. On that date the Occupation Statute was revoked and the Allied High Commission for Germany was abolished.

The Warsaw Conference.—Only six days after this date, when the London and Paris Agreements took effect, the Soviet Union and seven other countries (Poland, Czechoslovakia, Eastern Germany, Hungary, Rumania, Bulgaria, and Albania) signed a twenty-year treaty of friendship, co-operation, and mutual assistance. It also provided for a unified military command for the armed forces of these countries, except of Eastern Germany, whose participation was to be examined later.

The "Summit" Conference, Geneva, 1955.—In July 1955 the long-hoped-for meeting of the Heads of Governments was held, between President Eisenhower, Sir Anthony Eden, M. Faure, and Marshal Bulganin. The atmosphere was conciliatory and hopeful, and after six days the Con-

#### Treaty of Brussels 1948

Council  
of Europe  
1949

NATO  
(North Atlantic  
Treaty Organisation)  
1949

ECSC  
(European  
Coal and Steel  
Community)  
1950

EDC  
(Proposal for a  
European Defence  
Community)  
1952

London Conference  
and Paris Agreements  
1954

#### Western European Union 1955

The London Nine Power Conference and the Paris Agreements 1954.—Thus in the autumn of 1954 representatives of nine Powers met in London and began their search for a substitute for EDC. They were Belgium, Canada, France, the German Federal Republic, Italy, Luxembourg, Netherlands, United Kingdom, and the U.S.A. The Conference dealt with the issues facing the Western world: security and European integration in a framework of a developing Atlantic Community. It also considered how to assure full association of the German Federal Republic with the West and the German defence contribution. All the decisions which were reached formed part of one general settlement and these were embodied in agreements signed shortly afterwards in Paris. These decisions were:

1. That the occupation of W. Germany by Great Britain, the U.S.A. and France should end.
2. That the German Federal Republic and Italy should join the Brussels Treaty Organisation. At the same time the German Federal Republic undertook not to manufacture any atomic, biological, or chemical weapons—called the ABC arms. It was agreed that within the Brussels Treaty Organisation an agency should be established to control the armaments of continental members of the Organisation.
3. Great Britain pledged herself to maintain on the continent four divisions and a tactical air force.
4. The W. German Republic was admitted to the North Atlantic Treaty Organisation (NATO).
5. The W. German Republic pledged herself to conduct her policy in accordance with the principles of the United Nations; and never to have recourse to force to achieve reunification of Germany.

Entry into Force of London and Paris Agreements.—These agreements took effect on May 5, 1955, on which date the occupation regime in Western Germany was ended and the German Federal Republic attained full sovereignty and independence. At the same time the Federal Republic became a member of NATO and also of the Western European Union (the expanded

ference instructed the Foreign Ministers of the four countries to meet in October and to propose effective means for the solution of: (1) European security and German reunification; (2) Disarmament; (3) Contacts between East and West. The Conference formulated general directives for guidance at the meeting of Foreign Ministers which they had ordered.

The Eden Plan was the name given to the steps suggested by Sir Anthony Eden at the Summit Conference for German reunification and the conclusion of a freely negotiated peace treaty with a united Germany. He contemplated five stages: (1) free elections throughout Germany; (2) convocation of a National Assembly based on those elections; (3) drafting of a Constitution and preparation of peace treaty negotiations; (4) formation of a German Government responsible for negotiation and conclusion of peace treaty; (5) signature and entry into force of peace treaty.

The Geneva Conference of Foreign Ministers, 1955.—But after three weeks discussion this sub-sequential Conference found it impossible to reconcile the Western and Soviet viewpoints on any of the three subjects on their Agenda. On Germany the Western Foreign Ministers made a proposal for reunification of Germany by free elections in 1956 and for a Treaty of Assurance giving the Soviet Union far-reaching safeguards against aggression when Germany was reunified. The Soviet proposals, which made no mention of all-German elections or eventual reunification of Germany, provided for: (a) a collective European security treaty with the United States as a member and the People's Republic of China as observer, and (b) the dissolution of NATO, the West European Union, and the Warsaw Treaty organisation (described above) after an interim period following the coming into force of the European security treaty. A bridge between these two sets of proposals could not be found. On Disarmament likewise progress could not be made. The Western proposals included a plan for the exchange of military blueprints and aerial inspection as proposed by President Eisenhower. The Russians asked for reduction of the forces of the United States, China, and of their own Union to a level



between one and one and a half million and of Great Britain and France to 650,000. The Western Powers put forward seventeen points on contacts, including freer exchange of information, censorship, jamming, and private tourism. The Russians laid emphasis on removal of obstacles to trade. In the event no agreement was reached on this third topic. In their final communiqué the four Powers did at least reaffirm the obligation of their Governments to refrain from the use of force in any manner inconsistent with the United Nations Charter.

### OUTLINE OF ASIAN CHANGES.

**Changing Scene in South Asia.**—The situation in Asia has been transformed since the Second World War. India achieved its independence in 1947 and was partitioned into two countries, India and Pakistan. They both chose, of their own free will, to remain within the Commonwealth. Thus, as free members of the Commonwealth, India and Pakistan decide their policies in full sovereign independence. Within a few months of India's independence Britain also ended its responsibilities in Burma and Ceylon; and Burma—but not Ceylon—left the Commonwealth altogether. The Dutch East Indies were free by the end of 1949; and the French Empire in Indo-China, after bringing the world very near to war, is in liquidation. Asia is therefore free of external rule, except for a few pockets. Thus the whole scene in South Asia has changed.

**Steps to Regional Unity.**—An impulse arose among the new Asian states, fostered by India, to form an Asian Union. The lead towards co-operation was taken by India, which had the greatest prestige and which believed in an Asian Union. A conference of 28 Asian delegates held at Delhi in March 1947 failed, however, to create an Asian Union. But the efforts to strengthen community of outlook were not abandoned but taken up later over a more limited field.

**Colombo Conference.**—Thus, in 1954, Sir John Kotelawala, the Prime Minister of Ceylon, summoned a conference of Burma, Ceylon, India, Indonesia, and Pakistan on the line to be taken towards the Geneva Conference on Indo-China; and India, although not a member of that Conference, played a notable part in arranging the settlement on Indo-China. The Conference affirmed the faith of the five countries in democracy. They also reached agreement on a number of subjects, including the importance of controlling the hydrogen bomb and other weapons of mass destruction; the desirability of China being represented in the United Nations by the People's Republic. The United Nations has provided the opportunity for those Asian nations who are members of it to concert their policy. Among the subjects on which they have co-operated is the treatment of nationals of Indian origin in the Union of South Africa.

**South East Asia Treaty Organisation (SEATO).**—An entirely different kind of regional co-ordination has been initiated by the United States. This is an effort to promote regional security in the face of what is held by the United States to be a peril to South Asia from China and Russia. In September 1954, therefore, the United States summoned the Manila Conference; but only the Philippines, Thailand, and Pakistan agreed to attend. In spite of India's refusal to attend, SEATO was brought into being. The Treaty was a pact against Communist aggression in a defined area, which does not, however, include South Korea and Formosa. The countries which participated in the Treaty, besides the three Asian powers mentioned above, were the U.S.A., Great Britain, Australia, New Zealand, and France. The organisation has been described as a somewhat shadowy and unsubstantial one.

**The Colombo Plan.**—This is a plan for economic co-operation which has been much discussed and is inviting wide notice. It was started in 1950 as a venture of the British Commonwealth to

promote the economic advance of Commonwealth countries in Asia. Its scope soon widened and includes most of the countries of South Asia. The object was to enable the countries to help each other to devise plans for their economic development. Thus there is not really one plan but a bundle of individual plans. In preparing these there has been mutual consultation and help and pooling of the assistance given by Western experts brought to Asia. Arrangements have been made for sending Asians abroad for training. A prime object of the plan is to stimulate the flow from the West of capital which had dwindled after the War; and thereby to promote the economic stability of the region. All the loans are made without political conditions. Within three years India's food production increased by a fifth, and industrial production rose by one-third. Unfortunately during those three years the contrast between the standard of living in Asia and the West has increased rather than lessened. The need for technicians in Asia is greater than ever.

**The United Nations Economic Commission for Asia and the Far East (ECAFE).**—We have seen, in the preceding paragraphs, the various patterns which have been drawn of co-operation: an attempt at regional unity; co-operation between Asian Powers at the United Nations; SEATO; and the Colombo Plan. Another grouping is ECAFE—a short title formed from the initials of the body named in the title of this paragraph. This is one of the three regional economic commissions of the United Nations, the other two being the Economic Commission for Europe (ECE) (described in the "Outline of the United Nations" on p. 137) and the Economic Commission for Latin America (ECLA). The job of ECAFE is to help the countries of the region to act together for the development of their economies, to produce more goods and to increase trade both within the region and with the rest of the world. It has been called an economic Parliament for Asia, in an advisory sense. There are fifteen members, and these include Russia, the United Kingdom, and the U.S.A. There are also nine associate members which are territories in the area but are not members of the United Nations. A rather strange feature of ECAFE is that in its membership—as distinct from associate membership—there are just about as many countries outside the region as inside. This is because outside countries were eligible for membership if they had interests in the region; and this brought in countries like Australia, the United Kingdom, the U.S.A., and France.

**The Bandung Conference of Asian and African countries** was held at the town of that name in Indonesia in April 1955. It was the first inter-continental conference of the so-called coloured peoples in the history of mankind, and it represented more than half the population of the entire world. It was organised by the five Colombo Powers—India, Pakistan, Ceylon, Indonesia, and Burma—and it was attended by all the twenty-five countries invited except the Central African Federation. These countries (in addition to the sponsor countries) included China, Egypt, Ethiopia, Japan, Libya, Persia, Siam, Sudan, and Vietnam. The President of Indonesia, who opened the Conference, said that it "must inject a voice of reason into world affairs where others depend on power politics and jet bombers." Sir John Kotelawala (Ceylon) said that none of the Asian or African countries manufacture nuclear weapons.

**Results of the Bandung Conference.**—The members of the conference decided to provide technical assistance to each other and to promote joint ventures. They emphasised the particular significance to Asian and African countries of the development of nuclear energy for peaceful purposes. They recalled that Asia and Africa were the cradle of great religions and civilisations and urged that colonialism suppressed the natural cultures of peoples. Giving their support for the fundamental principles of human rights, as set out in the United Nations Charter, they deplored

policies leading to racial segregation and discrimination. They appealed to the Security Council of the United Nations to support the admission of all those States qualified by membership in terms of the Charter; and these comprised Ceylon, Japan, Jordan, Libya, Vietnam, with others. Finally, they affirmed that freedom and peace were interdependent and that the right of self-determination must be enjoyed by all peoples.

**The Baghdad Pact.**—The story of Asian events would not be complete without a note of the Baghdad Pact. The original Defence Pact was between Turkey and Iraq, and three other countries joined at successive dates in 1955, first the United Kingdom and then Pakistan and Persia. The first meeting of the Pact Council was held in Baghdad on November 21, 1955, the United States maintaining liaison.

### HOW TO COLLECT MATERIAL.

The Springs of Curiosity may be aroused in many ways. To ascertain the facts of a problem your two best courses are to go to the local public library or write to the Society interested in the particular subject. (List of Societies will be found on pp.147-48.) The National Book League offers lists of books on any given subject.

**Classification of Books.**—All libraries are classified to facilitate reference, but the favourite system is the Dewey Decimal System, which divides the whole field of knowledge into ten Main Classes: General Works; Philosophy; Religion; Sociology; Philology; Natural Science; Useful Arts and Applied Science; Fine Arts; Literature; History (including geography and travel and biography). Each of these Main Classes is again subdivided into ten main divisions.

Let us take an example. The main class of Sociology receives the number 300. This range 300 to 400 (the next main class) is graduated into tens, and Economics is 330. The range 330 to 340 is again graduated, and the subject of Labour and Capital is 331. This process is carried on by decimals so that 331.2 deals with Remuneration for Work, 331.22 with Wage Scales, and 331.225 with Extra Pay.

**Library Services in the Rural Areas.**—In most villages there is a "county library centre" to which collections of books are sent by the County Library. In Great Britain there are 24,000 centres of this kind in village clubs, halls, shops, schools, and even homes. In some counties there is a library van or the bibliobus, as it has been called by a French writer. This travelling library tours on a pre-arranged time-table so that everyone knows exactly when it will arrive.

The British Museum Reading Room contains original sources, books, and periodicals which cannot be found elsewhere. Because of necessarily limited accommodation the use of the room is restricted to those who require a wider range of books on the subject of their study than can be found in other libraries. Those who desire to be admitted to the Reading Room must apply in writing to The Director, British Museum, London, W.C.1.

**Special Libraries.**—Four of the best special libraries in the world are open to the public in London. They are:—

1. The Library of the National History Museum (for zoology, geology, and related subjects).
2. The Library of the Science Museum (all branches of science and technology, except medicine).
3. The Patent Office Library.
4. The Library of the Victoria and Albert Museum, which is the national art library containing volumes and photographs on all aspects of fine, applied, and decorative art.

Full details of the large number of specialist libraries in London (including that of the British Library of Political and Economic Science, one of the best collections in the world on this subject, at the London School of Economics) will be found in *The Student's Guide to the Libraries of London*, by R. A. Rye, published by the University of London Press and *The Libraries of Greater London*, by I. M. Harrod, published by G. Bell. Many of the societies described in the "List of Societies" have libraries on special subjects. This is true, for example, of the United National Association, the British Drama League, and the Howard League for Penal Reform.

**How to Use Books.**—Do not be discouraged by the belief that a book must be read through completely. To the question "What, have you not read it through?" Dr. Johnson replied, "No, Sir; do you read books *through*?" There may be books which you will wish to study completely. But if you are gathering information do not hesitate to use them so as to obtain just what you want at the moment. At the end of the book there is nearly always an index which is an alphabetical guide to the topics dealt with. Sometimes also there is a detailed synopsis at the beginning of each chapter. Sometimes again the headline on the right-hand page refers to the principal subject dealt with on that page. Treatises often have headings to the paragraphs. Many books and pamphlets give a bibliography, which is a list of recommended books on the subject of the book and related aspects.

**Note-taking.**—You will find it very useful to make your notes, whether from reading material or from talks and lectures, on cards or slips of paper of uniform size. This will enable you to add to them so as to maintain a logical sequence, to reshuffle them according to your needs, and to weed out notes no longer needed. They will be serviceable if you are writing upon the subject. The uniform size of the notes will be specially convenient when making a speech (see "Hints for Speakers"). Taking good notes of a lecture requires practice. For if you want to keep a note you must listen, select, and write all at the same time. To do this well you must not only grasp the meaning but be able to seize the cardinal points which, being noted down, make up the logical skeleton of the talk. Practise taking a note when listening to a wireless talk.

**Study by Post.**—Those who live away from towns and libraries can study a wide range of subjects by correspondence. Among the organisations which offer facilities are:

The British Drama League,  
National Adult School Union,  
National Federation of Young Farmers' Clubs,

whose addresses will be found in the List of Societies and the

National Co-operative Educational Association, Stanford Hall, Loughboro', Leicestershire.

National Council of Labour Colleges, Tillinacree, Scotland.  
Ruskin College, Oxford.  
Workers Education T.U. Committee, 27 Portman Square, W.1.

Hillcroft College, South Bank, Surbiton, Surrey, caters specially for women. Those at sea in the British Merchant Navy and fishing fleets can engage in correspondence on all general subjects through the Seafarers Education Service, Mansbridge House, 207 Balham High Road, S.W.17. This college of the sea also provides and changes libraries for ships.

### THE WAY TO CONDUCT A MEETING.

A Chairman is necessary for the orderly conduct of a meeting. By a grasp of the main rules of procedure and by a wise attitude, a chairman can



make a meeting—whether large or small, formal or less formal—an agreeable and efficient affair instead of the tedious experience it so often proves.

The following outline is intended to give the necessary knowledge on which to base firm and quick rulings when taking the chair at a meeting. Such knowledge will give confidence. Other qualities are needed too. These are dealt with in concluding paragraphs which deal with hints to chairmen, followed by a special section of advice to speakers. The outline is also intended to be of equal use to all who attend meetings.

**Rules of Debate.**—There is, of course, no legal code of rules which apply to all meetings, but there is a body of customs and practices (called "the Rules of Debate") in general use. Your society or organisation may have prescribed a set of rules, and these "Standing Orders" govern your meetings. You will need to study them, whether you are the chairman or only a member, for they are binding and this outline of the customary procedure will help you to understand them.

The chief debating council in the country is the House of Commons, and the set of rules which it has devised as a result of its centuries of experience are called "Rules of Procedure." Although intended for the House they have formed the model on which, with necessary variation to suit peculiar needs, most rules of procedure have been based.

When a point of order dealing with procedure is raised in debate it must have regard either to standing orders (if such exist for the organisation) or, in their absence, to the customary rules of debate referred to above.

**Agenda.**—The Notice of Meeting is issued by the Secretary, and it should state the items of business to come before the meeting. This list of items is called the Agenda. It is a good step for the chairman to read the Agenda at the opening of the meeting so that any omission can be repaired. As a further safeguard against omission it is best to make a final item "Any other business."

**Minutes.**—Since the Secretary has also to prepare the minutes we might deal with that subject before dealing with the conduct of the meeting itself. The record of a meeting is called the Minutes. The Minutes should record the date and place of the meeting of the Council or Committee and the names of the members present, and should be a concise statement of the decisions taken. It should record the motions submitted, any amendments considered, and the resolutions. The extent to which the points of the discussion are recorded depend upon the practice of the Council or Committee concerned. In any event the minutes should be a clear factual statement of the business transacted. Minutes need to be approved as being a correct and complete statement by the subsequent meeting of the body; and when so approved they are signed by the Chairman. "Approval of Minutes of the last meeting" therefore appears as the first item of the Agenda of a meeting followed by "Business arising out of the last meeting." It is necessary for a Secretary to take a complete note of the business of a meeting so that he can prepare the minutes, and it is usual and advisable for the Secretary to submit to the Chairman his draft of the minutes directly he has written them.

**Quorum.**—This Latin word is used to mean the number which must be present to make the proceedings valid. If a quorum were not present the meeting would not be representative. Every society prescribes what the quorum for its meetings shall be. The quorum for Public Authorities and public companies is fixed by law.

The actual number necessary varies with the kind of meeting, but voluntary societies, say, a football club or allotment holders' society, should fix its quorum for its executive committee. It can be either an actual number or a proportion (which should not be less than one third). This avoids dispute as to whether the decision was taken by a representative meeting. If at any

time after the commencement of business a quorum is not present the meeting should be adjourned.

When you are to chair a meeting go to the meeting early, take the chair promptly and make sure that the necessary quorum is present. You may change the order of business as shown on the Agenda if you explain the reason to the meeting.

**Motions.**—A motion is any proposal, idea, or suggestion properly submitted at a meeting for consideration and adoption.

Notice of motion must be given in the manner prescribed by the rules. A motion must begin with the word "That" and must declare something which it is hoped will be the will of the meeting. The wording should be concise and clear. The person submitting the motion is called the proposer or mover. If the decision is important the motion should be written out. But if it is not written out, the text as taken down by the Secretary should be read out by him, and the Chairman should ask the mover if it is exactly as he intends. The Chairman then asks if it is seconded. A speaker must rise in his place and address the chair. If the motion is not seconded it lapses. If it is seconded it is put to the meeting for debate. The Chairman "states" the question thus: "The question is (*reads the words of the motion*)."

The motion cannot then, without the consent of the majority, be withdrawn, altered, or amended.

**Debating a Motion.**—When the second member who supports the proposal announces "I support the motion" he may speak then in support of the motion or he may reserve his speech for the debate.

As chairman you should allow a member who wants to oppose the motion to speak next, and try to arrange that speakers for and against alternate. This makes the debate more interesting. The speaker whom you first see rising in his place to speak (that is, the one who "catches the Speaker's eye") speaks. Speakers may only address the meeting once on a motion, except the mover of the motion who has the right of reply. Standing orders may impose a limit on length of speeches. The general principle is, the shorter the speech the better, consistent with adequate advocacy. There is no restriction in the Standing Orders of the House of Commons, but all public bodies, including the L.C.C., T.U.C., Co-operative Congress and the I.L.O., have limits on length of speeches. There is sometimes extension by consent.

**Putting the Question.**—When the subject has been ventilated the mover is given an opportunity to reply, and the Chairman then "puts" the question. He says "The question is (*reads the motion*). Are you in favour?" Those in favour then vote by holding up one hand, and these are counted by the Chairman (the Secretary assisting). The Chairman then says "All those against please show." There is a similar counting of hands. The Chairman announces "The motion is carried" if the majority are in favour; contrariwise he declares it lost.

**Voting by show of hands** is the ordinary practice on all but exceptional occasions. The Chairman should be careful if the vote is taken by voice, and vote by hands can be demanded by a member. Sometimes a motion is so acceptable that no voting is necessary, but a vote must be taken if there is any dissent. In large meetings it is usually necessary to appoint members as tellers to count the votes. One is chosen from those who intend to vote in favour and a second from those intending to vote against the motion. These together count the voters and hand the results to the Chairman in writing.

**Resolutions.**—A motion which is carried is thereafter called a resolution. The difference between a motion (which is what is proposed) and a resolution (which is what the meeting adopts as its decision) must be clearly kept. The terms are not interchangeable.

When a motion is rejected, no motion to the same effect can be brought forward at the same meeting. There are generally safeguards in standing orders in regard to rescinding resolutions by requiring specified notice of motion for any rescinding or requiring a special meeting for doing this. The L.C.C. requires twelve months to elapse before a notice of motion to rescind a resolution can be entertained unless such notice is backed by twenty members.

**Amendments.**—But we have not considered what happens when someone wants to alter or improve a motion, in other words to amend a motion. An amendment is a motion which seeks to alter or improve the original motion. Having studied the routine when there are no amendments, let us pass on to study the different kinds of amendments and how they are dealt with.

These must be directly concerned with the subject of the original motion and they can be put into four groups:—

- (1) to insert words in the original motion;
- (2) to delete certain words from the motion;
- (3) to delete certain words and insert certain other words; and
- (4) to delete the whole or practically the whole of the motion and insert other words dealing with the same subject.

An amendment, being a motion, needs to be moved, seconded, and discussed just as we have described for a motion except that a mover of an amendment cannot reply to the debate on his amendment. The mover and seconder of the amendment must not have spoken on the motion, but any member who has spoken on the original motion may speak in the debate on the amendment.

Although several amendments may be moved on the same original motion, they must be taken one at a time, in the order in which they affect the words of the motion beginning at the first word. If an amendment to a later part of an original motion is accepted, an amendment to an earlier part cannot be afterwards considered.

When an amendment is moved, the issue which it raises becomes the first question to be disposed of. If the amendment is carried, the original motion disappears and the amendment becomes the amended or substantive motion and still further amendments may be moved to it.

When the Chairman takes the vote on the amendment he should be clear that he is seeking a decision on the amendment. He should not say "Are you in favour of amendment or original motion?" but "Those in favour of the amendment?" and "Those not in favour of amendment?" If the amendment is carried it is the survivor; if it loses, the ground is clear and the original motion must be put to the meeting. In other words if the amendment is carried the original motion is killed; but if the amendment is lost the original motion comes back into the picture.

An amendment to add words is sometimes called an addendum.

**How Debates are Closed.**—If strong feelings are aroused by a debate it may be difficult for the Chairman to close the debate at his own choice, since he may be held to be favouring one side or the other. It will be better therefore to wait a motion from the body. The ordinary form is "That the question be now put" and can be moved only by those who have not taken part in the debate (otherwise the device would be open to the abuse of preventing others speaking). Motions may propose that the subject be postponed indefinitely (*sine die*) or until a specified date.

Another form of closure is a motion "to proceed to the next business." If carried, no vote is taken on the main subject. If lost, the debate continues.

Another form is a motion for adjournment of meeting.

**"The Previous Question."**—An old and curious motion for closing a debate is one called "The Previous Question." This procedure is best understood by understanding the historic title. It suggests a prior question: Shall we vote or

not vote on the motion? In other words it raises a question previous to the main question, and this previous question is to vote or not to vote.

The "Previous Question" is always put in the form "That the question be now put," and if it is carried, the main question is shelved. If lost, the main question is voted upon. *Thus once Previous Question is accepted by the Chairman it must close the debate whichever way the vote goes upon it.* The Chairman can best keep the two questions clear by referring to the Previous Question as "this motion" and the original question as "that motion." So he takes a vote on "That that question be now put."

The Previous Question cannot be moved when an amendment is actually under discussion. But it can be moved notwithstanding that a number of amendments on the Agenda have not been moved. It will be for the Chairman to determine whether to accept the motion of Previous Question after being moved and seconded.

**A Committee** is a body to whom any subject has been referred or committed, and the House of Commons and large public bodies and societies have committees. They may be *standing committees* which, as their name indicates, have a permanent existence. Thus the municipal bodies have standing committees on finance, general purposes, electricity, education, etc. Or a committee may be a *special committee* to deal with a specific subject which may be too complex for the general body of members to deal with. (In the House of Commons such a Committee is called a *Select Committee*.) A *Joint Committee* is one created by more than one body to deal with a common problem. Thus the Trades Union Congress has a Joint Committee with the British Medical Association. Such a Joint Committee may be Standing or Special. An *ad hoc Committee* is one formed for a particular purpose.

A Standing Committee may be given the executive power to take decisions and conduct business within a specified scope for the parent body; or it may be required only to give the parent body advice.

The procedure for committees follows in general that for ordinary meetings, but more latitude is allowed. A general discussion usually takes place before a motion is crystallised, and when motions are framed they do not need to be seconded. The debate is more informal and speakers remain seated, speaking as often as the Chairman allows.

**Disorder.**—Good order is essential for consideration of business, and it is the first job of the Chairman to maintain it. Although a Chairman needs to be firm and impartial, tact and conciliation go a long way to create harmony. He should be able to take prompt decisions on procedure; but he can ask for time to consult authorities if necessary in an emergency.

But, if disorder does occur, the Chairman names the member, who must withdraw. If the disorder should be on such a scale that the Chairman thinks he should adjourn the meeting, he can do so on his own decision, without anyone moving adjournment. A member who refuses to withdraw offensive remarks is guilty of disorderly conduct.

**Points of Order.**—These are matters which, while acting as a safety-valve for members, are often an irritation for the Chairman, especially because these points are often not points of order at all. A point of order must deal with the conduct or procedure of the meeting. It must show that a speaker is wandering from the scope of the subject or is using unparliamentary language or is breaking a rule of the society or the customary rules of debate. But interjectors often break in with points which are not on these aspects, and the Chairman must be firm with those who interrupt. A speaker may not be corrected under cover of a so-called point of order. A speaker may, with the Chairman's permission, make an explanation on a matter on which there has been genuine misunderstanding, but he must not be controversial.

**Hints for Chairmen.**—Some hints have been sprinkled in the foregoing outline. A Chairman



needs to follow closely everything that is said, to check irrelevance and undue repetition, and to give rulings on questions of order. He must be absolutely impartial, being neither weak nor autocratic. He has the power to give a casting vote if members are equally divided for and against. Generally the voting powers of a Chairman are covered by the organisation's Standing Orders.

But besides maintaining order and ensuring correct procedure a Chairman can perform an even greater service if he can evoke the best thought and counsel from those who have come together to deliberate. If he can foster an atmosphere of co-operation and goodwill he will have created the best chance for fruitful debate and business.

**Hints for Speakers.**—However good the Chairman, the efficacy of a meeting turns largely upon the speakers. So much so, that we devote a special section to assisting speakers in the art of speaking, and another section is devoted to advice on gathering material for speeches.

**Books Recommended.**—Lord Citrine's book *The ABC of Chairmanship* (published by the National Council of Labour Colleges) should be consulted. It is an invaluable and readable guide. There are also *How to Chair* by John Rigg (Allen and Unwin) and *The Chairman's Handbook* by Sir Reginald Palgrave (Dent).

### HINTS FOR SPEAKERS.

These hints are intended to help those who, for whatever reason, need to speak in public or to give instruction to a class or group. The art of rhetoric, so valued in classical times, has been neglected in England since the eighteenth century, and oratory has declined.

**Preparation.**—Digest well beforehand what you are going to say. Plan the sequence of the main points and write them down as the headings of your address. Enable the audience to see clearly this sequence of themes. This will help you considerably and them, too. Such a course breaks the talk down to manageable sections. If he knows the logical sequence of the talk the hearer's interest is sustained. Moreover, he is thus freed to concentrate on the elaboration of a main point and absorb the detail which clusters round it. This advice has been put in the well-known words: "Tell an audience what you are going to say; then say it; and finally tell them what you have said." This advice is intended to emphasise the need to make the outline clear rather than to be taken literally as practical advice. If it is adopted literally you will need to make the beginning and end very brief.

The headings should be written clearly on cards or paper which you can hold in your hands while speaking. The fact that you can refer to your notes and can read them easily will give you confidence. Don't hesitate to refer to your notes, especially because a pause may be all to the good. Incidentally to have something to hold will help you to solve the problem which besets many speakers of what to do with the hands.

If you bear in mind the general background of the audience you will be able to use analogies and examples which are within their experience and thus make your speech more effective.

**Delivery.**—You may be nervous before speaking. So was Gladstone. So indeed are most speakers, even those who have acquired experience and may be regarded as "good speakers." It is little use telling someone who is nervous not to be nervous, any more than it is useful to tell someone with toothache not to think about it. But these notes will help you to have confidence which, in turn, will dissolve nervousness.

Start slowly. This will give you and your audience time to get on terms with each other. It will enable you to judge how to pitch your voice so as to be heard easily by all. Moreover, a deliberate and friendly start will give you a mental foothold from which to embark on more emphatic passages.

If you stand straight with your shoulders back it will help you to be confident and to produce your voice clearly. You will find that a smiling expression will add resonance to your voice.

Even when well launched upon your discourse don't speak too quickly and don't be afraid to pause. A well-chosen pause has many advantages. It helps to clarify the structure of your talk. The pause is in itself a rest to the audience, especially as you are likely to begin again on a different tempo and note in the musical scale. Furthermore, a pause will enable you to adjust your matter to the clock—and speakers err on the side of prolixity rather than brevity.

Speaking, like writing, is a form of communication. You must therefore be quite clear as to the message you want to communicate. Be simple and, above all, sincere. Sympathy, if not a sense of humour, should prevent you from boring the audience.

**Control.**—This advice presupposes an effective control. Good public speech calls for two different but complementary qualities, a flow of spontaneous feeling and, at the same time, control so that the speaker may shape and steer this flow of expression. Just as a car needs not only an accelerator but also steering-gear and brakes, so two functions of the personality need to operate together—motive power and effective control. It will be for each to solve for himself how to harmonise these two aspects of the personality—the dynamic flow upon which a speaker can launch persuasive appeals and convincing statements and on the other vigilance and careful control. Some speakers may feel the need to strengthen their controls; others may consider that it is their enthusiasm which needs kindling.

**Ending.**—Give particular care to the way you are going to end. The first sentence of a wireless talk is an important and difficult sentence to frame. But for a visible audience it is the last passage which should be framed beforehand, however spontaneous the rest of the speech. In those last sentences you have an opportunity of summing up in an effectual way the pith of what you have said. Moreover, some speakers go on speaking unnecessarily rather like guests who do not know how to depart with politeness. Prolixity tends to neutralise the effect they are trying to produce. If, however, the phrases with which to end were already in their minds speakers would be able more easily to round off their address with a decisive and effectual end.

**Interruptions.**—Since it is our object to reassure the beginner it seems scarcely consonant with that aim even to whisper a word about the possibility of interrupters. But although not an extinct race, interrupters are not common, and there is a golden rule in regard to them—remain courteous and calm. We have all relished the classical retorts of great politicians, but it is best for ordinary mortals not to try to emulate them. Maintain courtesy therefore in the face of any discourtesy. You will thereby retain the goodwill and sympathy of your audience. You will naturally be equally courteous to questioners, who often deserve to be thanked. Be candid in regard to any questions to which you may not know the full reply.

**Practice.**—You will need to practise assiduously. Take heart from the fact that Demosthenes, the greatest orator of classical times, had to struggle against the greatest physical disadvantages. His voice was weak and his utterance defective; and it was only by the most unwearied efforts that he overcame these obstacles. One of his methods was to declaim on the seashore to accustom himself to the noise and confusion of the popular assembly—a device which is not necessarily here recommended. In modern times we may cite Bernard Shaw, one of the most brilliant and arresting speakers of our time. He describes the extreme nervousness of his first efforts at speaking, being so nervous that he could not read his notes or remember them. But he joined every debating group which he could and always spoke in debate, likening himself to "an officer afflicted with coward-

dice, who takes every opportunity of going under fire to get over it and learn his business."

**Wider Use of the Art of Speaking.**—Ability to speak well in public can be very valuable upon other important occasions such as informal meetings or interviews. Experience in marshalling facts, in explaining a point of view, in examining diverse aspects of a problem will stand one in good stead when participating in a group meeting of the kind at which, to an increasing extent, business is nowadays conducted. Likewise, experience in public speaking, because it imparts poise and confidence, is a great advantage at an interview of any kind.

The Chief Hints are therefore :—

1. Digest your material well.
2. Be clear as to the sequence of your main points.
3. Make notes of your scheme and don't hesitate to refer to them.
4. Start slowly, maintain a sense of humour and sympathy.
5. Be sincere, above all.
6. Be ready to end in an effective way.

### A GUIDE TO SOCIETIES.

On the following pages are the addresses of some of the societies working in the fields of social service, adult education, international affairs, and outdoor activities. In the article on "Human Relations" in the section "Family Affairs" emphasis is laid upon the way in which fruitful use of leisure can increase a person's happiness. The following addresses will be particularly useful for the lonely person who wants to find a congenial society, where, in company with like-minded people, he can pursue some worth-while activity. They are only a selection from all the societies working in these and allied spheres. Indeed, in the field of social service alone there are some 300 national organisations, many of them co-ordinating other societies with similar interests; and a *Directory of Organisations* so engaged is published by the National Council of Social Service, 26 Bedford Square, London, W.C.1 (6s.). The National Institute of Adult Education, 35 Queen Anne St., London, W.1, publishes a *Directory of Organisations* (5s.) describing all organisations offering a direct educational service; and the National Peace Council, 29 Great James St., London, S.W.1, issue a *Peace Year Book* containing a directory of societies in England working for peace and the chief international bodies.

**What the Societies Offer.**—Many of the societies offer the facility of a unique specialised library, and most of them issue not only journals and magazines but pamphlets giving the latest authoritative views and discussions of contemporary problems. Some, like P.E.P. and the United Nations Association, publish a wide range of background material on current questions. Besides these facilities the associations offer the individual the opportunity of hearing experts and of discussing the subject with others interested in the same subject. Many societies hold not only lectures but conferences, covering the week-end or several days, and some of them hold Summer Schools. A guide to a wide variety of week-end, mid-week, and longer courses called *Calendar of Residential Courses* is issued by the National Institute of Adult Education, 35 Queen Anne St., London, W.1. (1s.).

### Social Service

The National Council of Social Service (26 Bedford Square, London, W.C.1) is the main promotional and co-ordinating organisation of voluntary social work in Great Britain. Its membership includes most of the principal voluntary agencies.

In the countryside it works for Village Halls. It started the Rural Community Council Movement, and has helped to revive rural industries

and preserve the skill of village craftsmen. It has conducted a prolonged campaign to improve Parish Council work (see the section on Local Government); and to promote better conditions of rural life.

In the towns it works for community centres, clubs, and neighbourhood groups and maintains an advisory service to one thousand community clubs.

The Council established the Citizens' Advice Bureaux. It set up the National Old People's Welfare Committee which has taken a prominent lead in getting better conditions of living for old people. The Council publishes a *Handbook of Information on Voluntary Social Services and Directory of Organisations* (6s.).

Some useful addresses are :—

- British Association of Residential Settlements, Toynbee Hall, 28 Commercial St., E.1.
- Central Council for Health Education, Tavistock House, Tavistock Square, W.C.1.
- Citizens' Advice Bureaux Service, 26 Bedford Square, W.C.1.
- Family Planning Association, 64 Sloane St., S.W.1.
- Family Welfare Association, 296 Vauxhall Bridge Rd., S.W.1.
- Industrial Welfare Society, 48 Bryanston Square, W.1.
- Institute for the Study and Treatment of Delinquency, 8 Bourdon St., Davies St., W.1.
- National Association of Parish Councils, 26 Bedford Square, W.C.1.
- National Association of Boys' Clubs, 17 Bedford Square, W.C.1.
- Scottish Association of Boys' Clubs, 12 Alva St., Edinburgh 2.
- National Association of Girls' Clubs and Mixed Clubs, 30/2 Devonshire St., W.1.
- Scottish Association of Girls' Clubs, 13 Eglinton Crescent, Edinburgh 12.
- National Council of Women, Drayton House, Gordon St., W.C.1.
- National Council of Y.M.C.A.'s, 112 Great Russell St., W.C.1.
- 22 Howard St., Belfast.
- National Federation of Community Associations, 26 Bedford Square, W.C.1.
- National Federation of Women's Institutes, 39 Eccleston St., S.W.1.
- Federation of Women's Institutes of Northern Ireland, 28 Bedford St., Belfast.
- National Federation of Young Farmers' Clubs, 55 Gower St., W.C.1.
- National Marriage Guidance Council, 78 Duke St., Grosvenor Square, W.1.
- Save the Children Fund, 20 Gordon Square, W.C.1.
- Scottish Council of Social Service, 10 Alva St., Edinburgh 2.
- Tavistock Institute of Human Relations, 2 Beaumont St., W.1.
- Young Women's Christian Association, Great Britain: 108 Baker St., W.1. Belfast: 3 and 5 Malone Rd., Belfast.

### Adult Education

The National Institute of Adult Education (35 Queen Anne St., London, W.1) was set up by the merger of the National Foundation for Adult Education and the British Institute of Adult Education. It provides information and advice; and it conducts enquiry into problems of adult education. It publishes a *Directory of Organisations* (5s.) which describes all organisations which offer a direct educational service; and gives particulars of colleges offering educational courses. The National Institute also publishes a *Calendar of Residential Courses* (1s.).

Some useful addresses are :—

- Workers' Education Association, Temple House, 27 Portman Square, W.1.
- 177 Hill St., Glasgow, C.3.
- 18 May St., Belfast.



Arts Council of Great Britain,  
4 St. James's Square, S.W.1.  
National Adult School Union,  
35 Queen Anne St., W.1.  
Association for Education in Citizenship,  
3 Elm Mews, Bayswater, W.2.  
British Drama League,  
9 Fitzroy Square, W.1.  
British Film Institute,  
164 Shaftsbury Avenue, W.C.2.  
British Society for International Understanding,  
36 Craven St., W.C.2.  
English Folk Dance and Song Society,  
Cecil Sharp House, 2 Regent's Park Rd.,  
N.W.1.  
National Book League,  
7 Abermarle St., W.1.  
Central Office of Information,  
83 Baker St., W.1.  
Hansard Society,  
39 Millbank, S.W.1.  
Council for Education in World Citizenship,  
25 Charles St., W.1.  
Council for Promotion of Field Studies,  
Ravensfield, Keston, Kent.  
Field Centres at—  
Dale Fort, Haverfordwest, Pems.  
Flatford Mill, East Bergholt, near  
Colchester, Essex.  
Juniper Hall, Mickleham, near Dorking,  
Surrey.  
Malham Tarn, near Settle, Yorkshire.  
National Association of Women's Clubs,  
26 Bedford Square, W.C.1.  
National Central Library,  
Malet Place, W.C.1.  
National Council of Labour Colleges,  
Tillicoultry, Scotland.  
T.U.C. Education Dept.,  
Transport House, Smith Square, S.W.1.  
Educational Centres Association,  
Walthamstow Educational Settlement,  
Greenleaf Rd., E.17.  
Educational Interchange Council,  
43 Parliament St., S.W.1.  
Institute of Sociology,  
Le Play House, Ledbury, Herefordshire  
Rural Music Schools Association,  
109 Bancroft, Hitchin, Herts.  
or 106 Gloucester Place, W.1.  
Seafarers' Education Service,  
Selwyn House, Endsleigh St., W.C.1.

### International Co-operation

The National Peace Council (29 Great James St., S.W.1) established in 1908, is a federation of national societies concerned in the promotion of peace. Individuals may become associate members. Lord Boyd Orr, F.R.S., is the President. The *Peace Year Book* contains a directory of societies working for peace.

#### Useful addresses :—

United Nations Association,  
25 Charles St., W.1.  
Union of Democratic Control,  
21 Scrutton Ground, S.W.1.  
Federal Union,  
20 Buckingham St., W.C.2.  
United Europe Movement,  
Europe House, Smith Square, S.W.1.  
Women's International League for Peace and Freedom,  
29 Great James St., W.C.1.  
International Voluntary Service for Peace,  
19 Pembridge Villas, W.11.  
British Society for International Understanding,  
Benjamin Franklin House, 36 Craven St.,  
W.C.2.  
International Friendship League,  
3 Cromwell Road, S.W.7.  
Friends Peace Committee,  
Friends House, Euston Road, N.W.1.  
Crusade for World Government,  
20 Buckingham St., W.C.2.

### The Citizen Outdoors

The Ramblers' Association (48 Park Road, Baker St., N.W.1) aims to preserve ramblers'

rights and privileges and to secure more favourable facilities for travelling and for visits to places of historical interest or natural beauty. It regards the townsman's right to recreation in the country as fundamental. It is concerned with footpath law and the encouragement of more active interest in footpaths on the part of national and local authorities. The great majority of members are enrolled through one of the various Federations of Ramblers or Rambling Clubs. The minimum subscription is 5s. a year.

#### Useful addresses are :—

Scottish Ramblers Federation,  
44 Buchanan Drive, Cambuslang, Glasgow.  
Youth Hostels Association,  
England and Wales  
National Office: Welwyn Garden City,  
Herts.  
London Office: 22 Gordon Square, W.C.1.  
Northern Ireland: 28 Bedford St., Belfast.  
Scotland: 7 Bruntfield Crescent, Edinburgh  
10.  
Ire: 32 Lower Abbey St., Dublin.  
Co-op Holiday Association,  
Birch Hey, Cromwell Range, Fallowfield,  
Manchester 14.  
Holiday Fellowship,  
142 Great North Way, N.W.4.  
Family Holidays Ltd.,  
6 Dale St., Liverpool 2.  
National Parks Commission,  
3 Chester Gate, N.W.1.  
National Trust (for places of historic interest or  
natural beauty).  
42 Queen Anne's Gate, S.W.1.  
Council for Preservation of Rural England,  
Council for Preservation of Rural Wales,  
4 Hobart Place, S.W.1.  
Commons, Open Spaces, and Footpaths Pre-  
servation Society,  
71 Eccleston Square, S.W.1.  
Central Council for Physical Recreation,  
6 Bedford Square, W.C.1.  
Amateur Athletic Association,  
Crown Chambers, 118 Chancery Lane,  
W.C.2.  
Mountaineering Assn.,  
1 Kildare Gardens, W.2.  
British Mountaineering Council,  
6 Belmont Grove, S.E.13.  
Camping Club of Great Britain and Ireland,  
38 Grosvenor Gardens, S.W.1.  
Youth Camping Association,  
34 Ryde Vale Rd., Balham, S.W.12.  
British Canoe Union,  
33 The Avenue, Radlett, Herts.  
Canoe Camping Club,  
75 Haverhill Road, S.W.12.  
Cyclists Touring Club,  
3 Craven Hill, W.2.  
National Cyclists Union,  
35 Doughty St., W.C.1.  
National Amateur Rowing Assn.,  
144 Clapton Common, E.5.  
Ski Club of Great Britain,  
118 Eaton Square, S.W.1.  
Amateur Swimming Association,  
9 Bedford Avenue, Bedford, Herts.  
Youth Travel Ships,  
17 Meadow Green, Welwyn Garden City,  
Herts.

### Some other Societies

Political and Economic Planning,  
16 Queen Anne's Gate, S.W.1.  
Howard League for Penal Reform,  
Parliament Mansions, Abbey Orchard St.,  
S.W.1.  
National Union of Students,  
3 Endsleigh St., W.C.1.  
Women's Co-operative Guild,  
135 Leman St., E.1.  
Proportional Representation Society,  
82 Victoria St., S.W.1.

[Note: Unless otherwise stated the above addresses are in London, and this is further indicated by the postal number, e.g., S.W.1. Correspondents writing from places other than London should include "London" as well as the postal number, in the address.]

## THE WORKING OF THE UNITED STATES GOVERNMENT.

In a speech in 1953 which attracted widespread attention, not only in Britain but in the United States, Earl Attlee emphasised the widespread ignorance about what is known as the "separation of powers" in the American constitution as between President and Congress. The following brief outline should help to explain the machinery of government there.

**Constitution.**—The constitution of the U.S. was drawn up at Philadelphia in 1787 at a meeting of the thirteen original states, which had just declared their independence of Great Britain. This constitution, applicable now to the present Union of forty-eight States, distributes power between the executive, the legislature, and the judiciary. It also distributes power between the States and the Federation which unites them. The essence of the constitution is that government is so arranged (by this separation of powers) that no part of it can become too powerful.

**Congress.**—The legislature is Congress, which consists of two bodies, the Senate (ninety-six members) and a House of Representatives (435 members). Two senators are elected for six years from each State, this equal number from all States stressing the equality of States. But the members of the House of Representatives are elected on a population basis (so that in this body States have representatives proportional to their population); and they are elected for two years. Bills, passed by both Houses, can be vetoed by the President; but if a Bill, sent back by the President to Congress, then gets a two-thirds majority in both Houses the Bill becomes law despite the veto.

The President is elected for four years, and is partly an uncrowned king and partly a Prime Minister. In the latter capacity he is the leader of a party, and is responsible for policy. But whereas in Britain the Prime Minister would have a majority in the Commons, the President may have a Congress which is hostile to him. But Congress cannot depose a President as a hostile House of Commons could depose a Prime Minister.

**Election of the President.**—Those who framed the constitution intended that the selection of the President and Vice President should be under the control of electoral colleges. Each State was to choose a number of presidential electors, equal to the number of its members in the House of Representatives plus its two Senators; and these electors were supposed to choose the President. But the political parties nominated their candidates for President and Vice-President long before the electors could pretend to exercise their choice. Parties also nominated the State candidates for Presidential electors, so those nominees were pledged in advance to support the party's Presidential candidate. The two Parties—the Republicans and the Democrats—organise (in the summer of election year for President) national nominating conventions.

**The Executive.**—His Cabinet is appointed by the President for a term at his pleasure. It is therefore responsible to him, and is not responsible to Congress as a British Cabinet would be responsible to Parliament. Thus government is in the hands of the President and not Congress, and it is thus the President who supervises the executive departments (or, as we should call them, the ministries). The President controls foreign relations with the assistance of the Secretary of State (or Foreign Minister, as we should call him). The following position, which seems strange to us, may therefore arise: the President and Cabinet and the majority in Congress may all be of the same party, but not necessarily so. The executive

mansion in which the President lives and works is called "The White House."

The difference between a good Congress and a bad one, it has been said, is largely the difference between a Congress which accepts the President's leadership and one which refuses the initiative he tries to communicate.

**The Courts and the Law.**—Another vital difference between the constitutional system in the United States and that in Britain is the position of the Judiciary or Supreme Court. As explained in the paragraph on Statute Law in the section "Law and the Courts" in this Guide, the British Parliament is the supreme law-making body; and the Courts cannot therefore declare a law to be illegal. But in the United States the Supreme Court can decide whether Congress had power under the constitution (which is, of course, a written constitution, and in this respect unlike ours) to make a law. Therefore if a law of Congress is in question or an action of the executive, the Supreme Court decides whether the law or the action is consistent with the written constitution, which the Court interprets.

## CHANGES IN FRANCE SINCE THE WAR.

During the War, at the fall of France in 1940 the National Assembly conferred power on Marshal Pétain, and this act marked the death of the Third Republic of France. After the war, on October 21, 1945, the French people approved, by referendum, the first Law of the Fourth Republic, which provided for the creation of a new Constitution for the Government of France. The text of this was submitted to popular referendum in October 1946, and the new Constitution entered into force on December 24, 1946, M. Vincent Auriol becoming the first President of the new Republic.

**Constitution of the French Republic.**—Parliament is composed of the National Assembly and the Council of the Republic. Both are elected by universal suffrage on a territorial basis, the former body by direct vote, and the latter indirectly by bodies in *communes* and *départements* (which are local units). The President, who is elected for seven years, exercises functions which are, like those of a constitutional monarch, partly ceremonial, partly advisory, and he can act only with the consent of Ministers. His advice is particularly important when there is a change of government. An Economic Council was created to advise the National Assembly. A French Union was also formed to comprise Metropolitan France and overseas and associated territories.

**The Fourth Republic.**—Besides reaffirming the rights and freedoms of man, consecrated by the Declaration of Rights of 1789, the new constitution proclaimed the need to extend them to social affairs and economic life. It spoke of the duty to work and the right to obtain employment. The two most important differences from the constitution of the third republic are: (1) the great weakening of the second chamber, the Council; and (2) the abolition of the right of any other body than the National Assembly to make laws. If the Council rejects a Bill passed by the Assembly, and the Assembly passes the Bill a second time it becomes law in ten days. The outstanding success has been the Presidency. Changes in the constitution can be expected if agreement can be reached. English people are surprised by the frequency of change of government. This instability is due to the tendency, all the stronger because of the system of proportional representation, for a large number of small parties to be formed. These form alliances, as no one party can hope to secure a majority. But these alliances are often short lived, with the result that groups or coalitions break up, and governments fall. This is in part the explanation of the instability of French governments, which puzzles the English observer.



## THE MINISTRY

THE PRINCIPAL MINISTERS AS AT 20 DECEMBER 1955  
IN THE CONSERVATIVE GOVERNMENT

(which had been formed by Sir Anthony Eden in April, 1955)

## THE CABINET (18)

*Prime Minister, First Lord of the Treasury*—Sir Anthony Eden.*Secretary of State for Foreign Affairs*—Mr. Selwyn Lloyd.*Lord President of the Council*—Lord Salisbury.*Lord Privy Seal and Leader of the House of Commons*—Mr. R. A. Butler.*Home Secretary and Minister for Welsh Affairs*—Major Gwilym Lloyd George.*Chancellor of the Exchequer*—Mr. Harold Macmillan.*Minister of Defence*—Sir Walter Monckton.*Secretary of State for Commonwealth Relations*—Lord Home.*Minister of Labour and National Service*—Mr. Iain Macleod.*Secretary of State for the Colonies*—Mr. A. T. Lennox-Boyd.*Lord Chancellor*—Viscount Kilmuir.*President of the Board of Trade*—Mr. Peter Thorneycroft.*Secretary of State for Scotland*—Mr. James Stuart.*Minister of Housing and Local Government*—Mr. Duncan Sandys.*Chancellor of the Duchy of Lancaster*—Lord Selkirk.*Minister of Education*—Sir David Eccles.*Minister of Agriculture, Fisheries and Food*—Mr. Heathcoat Amory.*Minister of Works*—Mr. P. Buchan-Hepburn.

## OTHER MINISTERS

## ADMIRALTY

*First Lord*—Viscount Cleeve.*Parliamentary and Financial Secretary*—Mr. G. R. Ward.*Civil Lord*—Mr. K. S. D. W. Digby.

## AGRICULTURE, FISHERIES AND FOOD

*Parliamentary Secretaries*—Mr. G. R. H. Nugent, Lord St. Aldwyn and Mr. H. Nicholls

## AIR

*Secretary of State*—Mr. Nigel Birch.*Under-Secretary of State*—Mr. C. Soames.

## COLONIES

*Minister of State*—Mr. John Hare.*Under-Secretary of State*—Lord Lloyd.

## COMMONWEALTH RELATIONS

*Under-Secretary of State*—Commander A. H. P. Noble.

## DEFENCE

*Parliamentary Secretary*—Lord Carrington.

## EDUCATION

*Parliamentary Secretary*—Mr. D. F. Vosper.

## FOREIGN AFFAIRS

*Ministers of State*—Mr. Anthony Nutting and Lord Reading.*Under-Secretaries of State*—Mr. A. R. Dodds-Parker and Lord John Hope.

## FUEL AND POWER

*Minister*—Mr. Aubrey Jones.*Parliamentary Secretary*—Mr. D. Renton.

## HEALTH

*Minister*—Mr. R. Turton.*Parliamentary Secretary*—Miss P. Hornsby-Smith.

## HOME DEPARTMENT

*Under-Secretaries of State*—Mr. W. F. Deedes and Lord Mancroft.

## HOUSING AND LOCAL GOVERNMENT

*Parliamentary Secretary*—Mr. J. E. Powell.

## LABOUR AND NATIONAL SERVICE

*Parliamentary Secretary*—Mr. Robert Carr.

## LAW OFFICERS

*Attorney-General*—Sir Reginald Manningham-Buller.*Solicitor-General*—Sir Harry Brauster Hylton-Foster.*Lord Advocate*—Mr. W. R. Milligan.*Solicitor-General for Scotland*—Mr. W. Grant.

## PENSIONS AND NATIONAL INSURANCE

*Minister*—Mr. J. A. Boyd-Carpenter.*Parliamentary Secretaries*—Miss Edith Pitt and Mr. Richard Wood.

## POST OFFICE

*Postmaster-General*—Dr. C. Hill.*Assistant Postmaster-General*—Mr. C. J. M. Alport.

## SCOTLAND

*Minister of State*—Lord Strathclyde.*Joint Under-Secretaries of State*—Mr. N. Macpherson, Mr. J. H. Stewart and Mr. J. N. Browne.

## SUPPLY

*Minister*—Mr. R. Maudling.*Parliamentary Secretary*—Mr. F. J. Erroll.

## TRADE, BOARD OF

*Minister of State*—Mr. A. R. W. Low.*Parliamentary Secretary*—Mr. D. Walker-Smith.

## TRANSPORT AND CIVIL AVIATION

*Minister*—Mr. Harold Watkinson.*Joint Parliamentary Secretaries*—Mr. Hugh Molson and Mr. J. D. Profumo.

## TREASURY

*Economic Secretary*—Sir Edward Boyle.*Financial Secretary*—Mr. Henry Brooke.*Parliamentary Secretary*—Mr. E. R. G. Heath.

## WAR

*Secretary of State*—Mr. Anthony Head.*Under-Secretary of State*—Brig. Fitzroy Maclean.

## WORKS

*Minister*—Mr. P. Buchan-Hepburn.*Parliamentary Secretary*—Mr. J. R. Bevin.

## MINISTER WITHOUT PORTFOLIO

The Earl of Munster.

SPEAKER OF THE HOUSE OF COMMONS—Mr. W. S. Morrison.

LEADER OF THE OPPOSITION—Mr. Hugh Gaitskell.

## GENERAL ELECTION RESULTS

Party	1950 (Electorate 34,269,764)		1951 (Electorate 34,622,591)		1955 (Electorate 34,855,907)	
	Votes	Seats	Votes	Seats	Votes	Seats
Labour	13,295,736	315	13,948,385	295	12,405,246	277
Conservative (and associates)	12,501,953	298	13,724,418	321	13,311,938	345
Liberal	2,621,489	9	730,651	6	722,395	6
Communist	91,815	—	21,640	—	33,144	—
Others	258,454	3	177,329	3	288,031	2
	28,769,477	625	28,802,323	625	26,760,754	630

# The World of Science



## TABLE OF CONTENTS

<b>I. The Origins and Nature of the Universe</b>	<b>152-62</b>	<b>III. The Origins of Mind and Human Society</b>	<b>174-84</b>
The Cosmic Panorama	152	Early Man	174
Origins of the Universe—Historical and Modern Theories	153	Mind and Intelligence	175
Origin of Planetary Systems	155	Physical Environment	175
The Solar System and the Earth	155	Patterns of Culture	176
Revolution in Physics—Newton and Gravitation—Quantum Theory—Relativity Theory	157	Freudian Theory and Mental Mechanisms	179
Nature of Matter—Atomic Theory—Atomic Nuclei	160	Social Change	182
		Social and Psychological Problems of Modern Life	183
		The Modern View of Man and Society	184
<b>II. The Development of Life</b>	<b>162-74</b>	<b>IV. Recent Developments and Discoveries</b>	<b>185-92</b>
Geological Record	162	Astronomy	185
Origins and Nature of Life	164	Atomic Physics	186
Evolution of Plants and Animals	165	Automation and Electronics	188
Adaptation to Environment	167	New Methods in Medicine	188
Physiology of Man	168	Population and Food	191
Physiology of Other Animals	170	Agriculture	192
Life of Plants	171	Psychology and Psychiatry	192
Mechanism of Heredity	173		



# The World of Science

## INTRODUCTION

AT no time in our history has it been more necessary for the ordinary individual—and outside our own specialised knowledge we are all ordinary individuals—to know and understand what the scientists are doing; for we have now reached a state of affairs which may well prove to be the cross-roads of human destiny. The dramatic new developments have made it inevitable that all must live or all must die. On the one hand, there exists the possibility of undreamed-of abundance, peace, and happiness for an ever-increasing number of mankind, and on the other total annihilation, if not of the whole human species, at least of all that makes life worthwhile. Which way are we to choose?

In this choice ordinary people must play a major part, but this they cannot do without understanding the issues involved, since free choice must be based upon a certain minimum of knowledge, and this is the reason why *Pears Cyclopædia* decided to include a section dealing with scientific progress.

The section is divided into two parts, the first (I., II., and III.) setting out to give a very brief account of the universe as seen by modern science and forming a background to the second part (IV.), which will discuss some of the more recent developments and discoveries. It need hardly be said that such a section must be sketchy in the extreme, and that only a very few of the main issues can be discussed. But the writer of this section believes with the Editor that it is worth while trying. We are frequently reminded by the learned that modern knowledge increases so rapidly that no single mind can come anywhere near achieving the sort of universal knowledge which was possible, say, in the eighteenth century—and obviously this is quite true. But all this vast body of knowledge is not essential to most of us, who ask only two things from science: (1) that it should give us a *general* picture of the universe which will give us some idea of where we stand in relation to it; (2) that it should give us *particular* information concerning practical issues which concern us in everyday life. To describe modern knowledge from this point of view is certainly possible, although whether the present attempt succeeds in doing so the reader must decide for himself.

Great works of art should be presented in their entirety without abbreviation or alteration, and the cosmic drama is no exception. But even "Hamlet" is drastically cut on the modern stage, and a mere glimpse of a great creation is better than nothing at all. In accordance with usual procedure, the drama is divided into three Acts. The first Act describes the origins and nature of the universe, the solar system, and the earth; the second, the origins and reactions of life upon earth, and the third the origins of mind and human society. We have made our apologies and admitted our limitations; the spectator has read the Prologue. The darkened auditorium is silent. Up with the Curtain!

## I. THE ORIGINS AND NATURE OF THE UNIVERSE.

### THE COSMIC PANORAMA.

**Astronomical Scale of Measurement.**—Let us suppose that we are standing upon the surface of our earth on a starlit night looking upwards at what poets have often described as the "myriad" stars twinkling in the dark (although, in reality, only about two thousand stars can be seen with the unaided eye even upon the clearest night). On this occasion, however, the scale of things has been changed, so that we are able to see our part of the universe reduced to a more convenient size. Our earth has shrunk to the size of a minute speck of dust, and, on the same scale, the sun, around which the earth, together with eight other planets, is circling, is a mere ball of fire about the size of a grape-fruit; the solar system (that is to say, the sun and its planets) fills an area about  $\frac{1}{2}$  mile in diameter. Nevertheless, even with this greatly reduced scale, the nearest star is 2,000 miles away. A few of these stars are very little bigger than our earth, but most are so large that hundreds of thousands of earths could be packed inside them, and a few giant stars could contain many millions of millions of earths. The total number of all the stars in the universe certainly exceeds the total number of grains of sand upon all the sea-shores of the world, yet in spite of this vast assembly, space is almost unimaginably empty, for, if stars were the size of ships, each would be over a million miles from its nearest neighbour. Stars are not scattered uniformly throughout space, but occur in clusters or galaxies, each of which may contain anything from 100 million to 100,000 million stars. The spaces of the universe are so immense that in order to describe them we have to make use of the unit of measurement used by astronomers known as the "light-year."

**Light-Year.**—A light-year is the distance travelled by a beam of light in one year, travelling as it does at the speed of 186,000 miles per second. In terms of this scale of measurement the nearest star is about four light-years away (since light takes four years to reach the earth after setting out from the star), the moon is rather more than one light-second, and the sun eight light-minutes,

away. (That is to say, light, travelling at 186,000 miles per second, takes just over a second to reach us from the moon, and about 8 minutes from the sun.)

**Our Stellar Galaxy.**—Our sun, with the planets circling round it, is only a minute part of one great disc-shaped cluster or galaxy, which, along with the many other galaxies we have already mentioned, is revolving like a great wheel in space. Although this galaxy is revolving at the outer parts of the disc at the speed of almost a million miles an hour, its diameter of 100,000 light-years is so great that it has turned round completely only about twenty times since the oldest stars were born, about 4,000 million years ago. The sun and our planets lie near the edge of the disc, and this is why, on looking directly overhead, we see the great number of stars known as the Milky Way, whereas, when we look towards the horizon, we see fewer and fewer stars; in the first instance we are looking, as it were, through the diameter of the disc, in the second we are looking through its relatively narrow width.

**Other Galaxies.**—As we shall find later, the "stars" seen in the night sky are by no means all "stars" as the word is generally understood. Some are, indeed, single or double stars, but others are whole galaxies of stars, complete island universes in themselves. If we still further reduce our original scale and think only in terms of galaxies (each of which, it will be remembered, may contain anything from 100 million to 100,000 million stars), reducing each galaxy to the size of a bee, the average spacing of galaxies in the universe would be about 3 yards, and that part of the universe which is visible with the largest telescope would extend in all directions for about 2 miles.

**Basic Materials of the Universe.**—Yet the whole of this vast system of galaxies, stars, suns, and planets is built up from only about ninety basic materials, known as *elements*, and of these ninety only about half a dozen are really plentiful. For example, more than 90% of the earth's crust is composed of the elements oxygen, silicon, magne-

sium, and iron, and the fifty least-common elements together form less than a thousandth part of it. Upon the earth and other planets, however, the elements usually exist combined together in the form of *compounds*; water, for example, is a compound of the two gases oxygen and hydrogen, and its chemical formula  $H_2O$  indicates that the smallest unit of water, described as a *molecule*, consists of two atoms of hydrogen and one of oxygen. Atoms, of course, are the smallest unit of an element.

**Atomic Scale of Measurement.**—The atom is so minute that, just as we required a special unit of size for the vast distances of space, so it is necessary to adopt another unit for the very small distances within the atom. Scientists usually employ the metric system in their measurements, and the basic unit of that system is the centimetre (there are about  $2\frac{1}{2}$  centimetres in an inch); but the centimetre is too large for dealing with atomic particles, which have diameters of about  $10^{-8}$  centimetres. (This is a very useful way of writing very small or very large numbers.  $10^6$  means 1 followed by six noughts, or 1,000,000, and  $10^{-8}$  means  $\frac{1}{1,000,000}$ .) It follows, then, that an

atom measures about the  $\frac{1}{100,000,000}$ th part of a centimetre. At one time it was supposed that atoms were single particles which could not be further subdivided, but it is now known that they are composed of even smaller particles known as protons, electrons, and neutrons; the electron is only about one ten-thousandth part of the size of an atom. Few molecules, with the important exception of those of which living things are built, contain more than half a dozen atoms.

**Time Scales.**—In order to set the stage, we have noted the vastly great and the almost infinitely small sizes to be taken into account in astronomy and atomic physics. But the time scales of the universe are just as impressive. It is believed, for example, that the age of our galaxy is about 4,000 million years, and that the earth is rather more than half that age—between 2,000 and 3,500 million years old. When we remember that man has been upon the earth for about half a million years, and that civilisation began about only five or six thousand years ago, we can see how minute a period of the total is the lifetime of the individual.

## THE ORIGINS OF THE UNIVERSE.

**Historical Theories.**—There are very few tribes or nations who have not made some attempt to explain the origins and nature of the universe. The Hebrew account—or, rather, two separate accounts—occurs in the book of Genesis, and is perhaps the most familiar to Europeans brought up in the Christian tradition. However, the ancient Egyptians, the Indians, and the Babylonians, two or three thousand years B.C. also made such attempts. To the Egyptians, for example, the universe was a sort of rectangular box, with Egypt at the middle of its base; the sky was believed to be supported by four mountains at each corner, and the stars were lamps hung from the sky by cables. Round the land was a river, upon the surface of which floated a boat bearing the sun. The stars were grouped in constellations named after the various gods and identified with them. In Babylonia, although very similar views were held concerning the structure of the universe, a great deal of valuable scientific information was accumulated, records were kept of the motions of the heavenly bodies, and by the sixth century B.C. it became possible to calculate the relative positions of the sun and moon in advance and to predict eclipses. Unfortunately for the peace of mind of future generations, the astronomers who had accomplished these valuable scientific observations became increasingly absorbed in the practice of astrology, the absurd and dangerous belief that the stars control human affairs. The astrologers of today's Sunday papers are the lineal descendants of the astrologers of Chaldea of 2000 B.C., and, indeed, use almost the same methods to produce results which are still accepted by multitudes in spite of the demonstrable stupidity of their underlying suppositions and even of their

failure to predict the future accurately as they set out to do.

The first people to accept a wholly scientific outlook—to assume that the universe works through natural laws and can be explained by rational enquiry—were the scientists and philosophers of ancient Greece. In the period between 580 and 450 B.C. Thales of Miletus in Asia Minor pictured the earth as a flat disc floating on water, Anaximander noted that the heavens revolve round the Pole Star (he also developed one of the earliest theories of biological evolution), and Anaxagoras of Smyrna was the first to suggest that the heavenly bodies are made of the same material as the earth. Much later in history Aristarchus of Samos (310–230 B.C.) was the first scientist to suggest that the earth revolves around the sun in a circular orbit, the sun and the fixed stars remaining unmoved; but this theory was too far in advance of its time, and right up to the sixteenth century men continued to accept the theory of Ptolemy of Alexandria that the earth was the centre of the universe, and the sun, moon, and planets were carried round the earth in crystal spheres. From this period, therefore, we must take a jump through time to 1543, when a Polish mathematician and astronomer, Nicolaus Copernicus, best known by the name of Copernicus, published his book *De Revolutionibus Orbium Coelestium*, in which he suggested that the planets, including the earth, revolve around the sun, which “... in the middle of all, sitting on a royal throne, governs the circumambient family of stars.” As most people know, Galileo, who had found confirmation of this theory by using his small telescope, was reproved by the Papacy in 1616, and the Copernican theory was condemned as “false and altogether opposed to Holy Scripture.” The work of the Danish astronomer Tycho Brahe (1546–1601), the German, John Kepler (1571–1630), and the great Englishman, Isaac Newton (1642–1727), confirmed, explained, and described in increasing detail the new view of the Universe which was to prevail right up to the beginning of the present century.

Nearly all this early work was primarily concerned with the solar system—that is to say, with the sun and its surrounding planets—so that the more distant stars were seen only as a sort of background to events in our own little part of the universe. As we shall see later, such men as Buffon, Kant, and Laplace developed theories of the “origin of the universe” which referred exclusively to the solar system. It was not until about twenty-five years ago that the use of increasingly powerful telescopes which enabled astronomers to see farther into the depths of space began completely to change the nature of the problem. Today, the main problem of cosmology (the study of the origins of the universe) is to explain the origin and development of the stellar galaxies which are scattered through the vast spaces of the universe, and from this point of view the origin of the sun and its planets is but a very minor episode of universal history. One of the first discoveries to introduce this new stage in the development of astronomy was the observation of the American Edwin Hubble (1889–1953) that the galaxies scattered throughout space are all moving rapidly outwards away from the centre—that, in fact, the universe is expanding.

**Modern Theories in Cosmology.**—Concerning the origins of the universe there are numerous theories which fall into two main categories: (1) the theories of Gamow, Lemaitre and others, who maintain that the universe began in the form of a highly compressed mass of material some thousands of millions of years ago, and (2) the theories of Fred Hoyle (whose lectures on “The Nature of the Universe” were broadcast by the B.B.C. in 1951), and the Soviet astronomer Vorontzoff-Velyaminov, both of whom maintain (although for entirely different reasons), that the universe had no beginning but has existed in more or less the same state throughout eternity. The latter theories, which will be dealt with later, assume that matter is being continually created, but, for the moment, we shall discuss the first type of theory, which, on the whole, is more generally held. One of the reasons which seems to make Gamow's theory more probable is that there are



various ways of estimating the ages of the heavenly bodies we observe throughout space, and all these seem to suggest that each had a definite beginning in time. For example it is now known that (contrary to the old belief that the elements of which the universe is composed are indestructible and do not change one into the other), such radioactive elements as radium, thorium, and uranium slowly break up at a constant rate into other simpler elements such as lead, and by measuring the relative quantities of such substances we can tell how long they have been disintegrating, and thus how long they have existed. Similarly, when we know of what material the stars are composed, and what chemical reactions go on in their interiors, we can estimate from observations of their present state how long these reactions must have continued. These, and other methods seem to indicate quite clearly that the universe as we know it today has evolved by processes which must have begun only about 4,000 million years ago.

At the famous Mount Wilson Observatory, Hubble observed through the large telescope that the arms of the Catharine-wheel-shaped body known as the great spiral nebula of Andromeda contained some extremely faint stars of the type known as Cepheid variables. Until that time (1924), these nebulae had always been supposed to be single stars with wisps of gaseous material surrounding them, and it had been believed that they were situated within our own galaxy somewhere in the Milky Way, but the fact that the surrounding "gas" contained other stars meant that they must be very much farther away than had at first been assumed. Furthermore, Cepheid variables, the stars seen by Hubble within the nebula, are a peculiar type of star which pulsates with a regular rhythm which is directly related to its brilliance. This means that, knowing the period of pulsation, one can tell the real luminosity of a Cepheid variable, and by comparing real luminosity calculated in this way with the apparent luminosity as seen from the earth, one can measure its distance with considerable accuracy. Measuring the distance of the great spiral nebula by this method, Hubble was forced to the conclusion that it was extremely far away—in fact, nearly one million light-years from the earth. It therefore became clear that this body along with others which had always been supposed to belong to our own galaxy and to be single stars were in reality whole galaxies of "island universes" composed of thousands of millions of stars and situated so far away that light, travelling at 186,000 miles per second, took almost a million years to travel the distance between. An examination of the light coming from these nebulae soon made it clear that they were moving away into outer space at tremendous speeds, and that the whole of space with its millions upon millions of galaxies was in a state of rapid expansion like a soap-bubble blown by a schoolboy. This observation of Hubble's is one of the fundamental facts to be taken into account in any explanation of the process of evolution of the universe. (See *Size of the Universe*, p. 185.)

**Theories of Gamow and Lemaitre.**—According to G. E. Lemaitre (b. 1894) and G. Gamow (b. 1904), Hubble's observation can be explained only by supposing that all the matter now within the reach of our largest telescopes must at one time have been compressed into a single gigantic sphere about thirty times as large as the sun. In such a state of compression it must have been so densely packed that each cubic centimetre weighed no less than 100 million tons, and it appears likely that at this stage no elements existed—that the primeval matter consisted of nothing but protons, electrons, and neutrons indiscriminately mixed together. The temperature of this mass must have been many millions of degrees high. Such a state of affairs, was, for reasons which cannot be discussed here, too unstable to last, and so the mass—the "primeval atom" (Lemaitre's name for it), or "Ylem" as Gamow describes it—began to expand. As the "Ylem" began to expand it became cooler and less dense, the neutrons, protons, and electrons started to aggregate together, and in this way the elements as we

know them today were formed. The whole process of atom-building, in the opinion of Gamow, must have taken less than an hour, and following this event nothing of interest happened for the next 30 million years. The hot material continued to expand, and its temperature fell from many millions of degrees to only a few thousand degrees. This "gas" was basically a cloud of hydrogen and helium in which floated the more complex elements in the form of a fine dust, and in that form it still exists in interstellar space in the shape of giant clouds which sometimes obscure the view of our telescopes. Whereas in the original state of compression the individual protons and neutrons were dashing about with great energy, constantly smashing into each other and preventing any formation of complex substances, the reduced density produced by expansion began to separate the particles and reduce the temperature of the cloud, so that, not only could more atoms be formed, but they could also condense together in much the same way that steam from the spout of a kettle condenses into droplets of water when cooled. Later, the mutual attraction exercised by gravitation acted to form vast condensations of matter which broke up into large individual clouds with empty space between. These were the beginning of the galaxies.

Had it been possible to have observed this process of creation from some distant point in space, we should have seen the single huge primeval star shining with unimaginable brilliance and supplying light for the whole of observable space. But, as the ages passed by, it would be seen to grow larger and slowly lose its brilliance and heat, until about 30 million years later things had completely changed. The temperature of the universe would have sunk to that of a comfortable room, there would be pitch darkness everywhere, and somewhere in the almost complete vacuum of space would be floating the dark clouds of gas and dust which were to give rise to the galaxies at a later stage.

When the first gas clouds began to break off from the main mass, the violence of the rupture caused them to spin rapidly in much the same way that the pieces of a shell fired from a gun rotate after the shell has burst. The clouds so formed were of various shapes, some spherical, others ellipsoidal, and yet others flat. Most, however, began to spin so fast that they assumed a whorl shape with spiral arms rather like the appearance of a whirling St. Catherine's wheel at a fireworks display. This, as we have already seen, is the appearance of the spiral nebula in Andromeda from which Hubble made his deductions of an expanding universe. But the eddies and currents produced within the clouds by this circular motion produced further areas of condensation, and these began to contract under their own weight to form individual stars of greater or less density. Contraction caused the temperature once more to rise, and at a certain critical temperature the ignition point was reached and "thermonuclear reactions" began to occur in the interior comparable to the processes which go on within an atomic bomb. The stars as we know them began to appear, and one by one the lights went on in space.

**Theory of Hoyle.**—It is now necessary to mention the theories of Fred Hoyle, H. Bondi, and T. Gold of Cambridge, who, as we have already seen, hold that the universe has had no beginning and that matter is being continuously created. Briefly, Hoyle holds that, whilst the galaxies are continually moving away into outer space, matter to replace them is constantly being created elsewhere. The commonest element in the universe is hydrogen, which is all the time being burnt up within the stars and converted into helium and the other elements—but if this is the case, Hoyle argues, hydrogen must be constantly created from nothing, since otherwise it would by now all have been used up. According to this theory, then, clouds of hydrogen—the "background material"—are being created spontaneously, and, as already described, these sooner or later condense into galaxies of stars through rotation and the formation of eddies. But once the stars are formed, say Hoyle and his colleague Lyttleton, they continue to enlarge by absorbing the background material through

which they tunnel as they move through space although to what extent they do this will depend upon the amount of dust they have to pass through and the speed at which they are travelling. Once the stars have been formed, the more complex elements are built up in their interiors—or, at any rate, in the interiors of certain types of stars. Some astronomers, such as the Dutchman van Albada, believe that the elements are created from hydrogen and helium within the stars known as Red Giants, others hold with Fred Hoyle that the process takes place within the stars known as exploding Supernovæ.

**The Evolution of Stars.**—As we have seen, the mere process of contraction due to gravitation causes the temperature of a star to increase and makes it burn brighter. But, were this the only source of energy, the stars would no longer be burning so brightly as they in fact do. It is assumed, therefore, that the stars have some other source of energy, and there is little doubt that this source is the atomic transformations which take place in their interiors. These cannot be discussed in detail here, but it appears that the main reaction taking place is the transformation of hydrogen into helium. This reaction causes the star's energy output to remain unchanged for millions of years; but when all the hydrogen is used up the contraction will continue, and the star will progress slowly to its end as a mass of cold dead matter. Before this occurs, however, stars tend to become unstable in their behaviour; they may become large, red, and of relatively low surface temperature, like the Red Giants; they may pulsate at intervals of from a few days to several months, like the Cepheid variables; they may eject huge streams of gas, like the Wolf-Rayet stars; or they may explode, like the Supernovæ. When the latter event occurs, most of the material of the Supernova—perhaps considerably more material than there is inside the whole of the sun—bursts out into space in the form of a vast cloud of blazing gas moving at the speed of some hundreds of miles a second. For a few days this single star burns with a light brighter than that of all the 10,000 million stars in the galaxy containing it, and then slowly subsides to its death. Such an event is rare within our own galaxy (records exist of Supernova explosions in 1054, 1572, and 1604), but it is, of course, not at all infrequent if we consider all the galaxies in space. The importance of such explosions rests in the fact that some astronomers, including Hoyle, believe them to have been responsible for the formation of planetary system, including that of our own sun. To this problem we must now turn. *See also Recent Developments and Discoveries*, p. 185.

### THE ORIGIN OF PLANETARY SYSTEMS.

In the eighteenth century the French naturalist Buffon put forward the theory that our planetary system arose from the collision of a passing comet with the sun, and somewhat later Laplace of France and the German philosopher Kant developed the second hypothesis that, on the contrary, planets arose by a process of condensation in the gaseous envelope with which stars are surrounded. Both these theories, in somewhat modified forms, are still in existence today. Sir James Jeans, for example, believed that a star passing near our sun had drawn out a vast cigar-shaped cloud of matter which had ultimately condensed to form the planets. This, according to Jeans, was the reason why the smaller planets are those nearer the sun and farthest away from it, the larger ones being in the centre—the “fat” part of the original cigar. If Jeans' theory is true, then, since such meetings of stars must be very rare (owing to the relative emptiness of space), planetary systems, and therefore life, which can exist only upon planets, must also be rare. Gamow, however, accepts a modified form of the Kant-Laplace hypothesis, that the thin lens-shaped envelope of the rotating sun cooled and condensed into planets very much as the gas of a rotating spiral nebula condenses into stars. If this be the case, there must be many such planetary systems, since such condensation must be a fairly common process in the development of stars. Finally, however, we have the hypothesis

of Fred Hoyle, to the effect that our sun once belonged to a binary system—that is to say, two stars rotating around each other. Incredible as it may seem when we look up at the stars in the evening sky, more than 80% of all the stars are multiple systems, mostly binary, but in some cases even triple or quadruple stars. The original companion of the sun was the type of star known as a Supernova, which, as we already know, is liable to explode when it has reached a certain stage of development. This, according to Hoyle, is what did in fact occur. The Supernova exploded, blowing out a great mass of incandescent gas which the sun held on to by force of gravity, whilst its centre left our system altogether and is now some unrecognised and distant star far out in the galaxy. Within such a Supernova the conditions make possible the transformation not only of hydrogen into helium (the usual reaction occurring in stars), but also of helium into the heavy elements such as iron, lead, uranium, and so on. “The importance of this is obvious,” says Hoyle, “... it means that the companion star's final gift to the sun was a cloud of gas with just the right kind of composition necessary to account for the constitution of the earth and the planets.” A former objection to the Kant-Laplace-Gamow theory—that, in fact, the sun consists almost entirely of hydrogen and helium and contains only minute quantities of the elements of which the earth is built, has been got over by the theory of the German physicist Weitzsäcker. Weitzsäcker showed in 1943 that the major part of the material used in building the planets must have come, not from the solar envelope, but from the clouds of dust which, as we have seen, lie distributed throughout interstellar space. If this theory is true, it must be the case that almost every star possesses a system of planets.

**The Solar System.**—The planets circle around the sun in orbits—Mercury nearest the sun, then Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto. All are believed to have developed from the condensation of gas and dust particles which, in turn, came either from the solar envelope and the interstellar dust—as Gamow supposes, or, in the view of Hoyle, from the relics of an exploded Supernova which once accompanied the sun. The moon and other satellites may have arisen either in the initial condensation process when the planets themselves were separating out from the cloud of gas and dust, or, as Gamow suggests, after the planets had already formed. Indeed, Gamow believes that the moon separated off from the earth at quite a late stage in history, and that the Pacific Ocean is the “hole” left in the earth's crust by this event, in which the moon was drawn out of the semi-liquid earth by the tidal action of the sun. Being much smaller, the moon has cooled down more rapidly than the earth; it is a dead cold world, solid right through to the centre. The pock-marks on its surface, once believed to be the craters of extinct volcanoes, are now thought to be due to the bombardment of meteorites. The earth is about 80 times the mass of the moon and 50 times its volume; whereas the sun is 332,000 times the mass of the earth and 1,300,000 times its volume. If we represent the sun as a ball 6 inches in diameter, then Mercury is about 7 yards away, Venus 13 yards, the earth 18 yards, Mars 27 yards, Jupiter 90 yards, Saturn 170 yards, Uranus 350 yards, Neptune 540 yards, and Pluto 710 yards. On the same scale, as we saw before, the earth is a mere speck of dust and the nearest star 2,000 miles away. Of the other planets we can say little here, except that they, like the earth and moon, shine only by the reflected light of the sun, and that it seems unlikely that life as we know it could exist upon any of them other than the earth. (It is, of course, entirely possible, and even probable, that life exists upon the planets of other stars.) As most people are aware, the earth travels round the sun once a year in an oval orbit, and its varying distances from the sun together with the tilting of its axis gives rise to the seasons. The month is based upon the time taken for the moon to go round the earth.

**The Earth.**—The birth of the earth, which has been described above, happened (from the evidence of radioactivity) between 2,000 and 3,500 million years ago, and as it assumed in-



dependence, the planet gradually began to cool down. This cooling was not so great as might be supposed; for there is good reason to believe that the *average* temperature of the earth as a whole has been reduced by only about 20 degrees Centigrade since the formation of its solid crust 2,000 or more million years ago. This is because most of the heat is now within the central regions—a core 3,000 miles in diameter (the diameter of the earth as a whole is about 8,000 miles). This core appears to consist for the most part of a highly compressed fluid which was originally believed to be molten iron or iron and nickel. Some scientists, however, believe that core and crust are composed of the same materials, and differ only in respect of temperature and physical state. As the crust of the earth gradually cooled and hardened, its rigid surface “skin” became too large to fit the shrinking interior, and began to crumple in much the same way as the skin of a baked apple does in the oven. These wrinkles and crumpled areas, of course, became the mountain ranges. The earth’s upper crust is a layer of granite about 50–100 kilometres thick, which rests upon a much thicker layer of the rock known as basalt; the only exception to this rule is the floor of the Pacific Ocean, where no granite layer has ever been discovered. In the opinion of some scientists, this confirms the theory that the moon was torn from that area of the earth’s surface at a time when the rocks were already in process of formation. The body of the moon, if these writers are correct, must have torn away with it the entire granite layer from the Pacific bed. Others, however, tell us that granite rocks are nowhere to be found on the floor of the sea, which consists naturally of basalt, and that the granite layer alone is the material from which the continents have been formed.

There is reason to believe that during the history of the earth there have been at least five periods of mountain-folding activity. (It is of interest to note that the crumpling occurs not only upwards, but also down, so that below every mountain there is a corresponding “negative” mountain beneath the surface of the earth.) The oldest of these upheavals, about 350 million years ago, gave rise to the mountains of the Highlands of Scotland and Wales and the peaks of Norway, and many millions of years later the last and greatest of the upheavals crumpled the earth’s surface from the Alps to the Himalayas. The latter ranges are much higher than the mountains of Norway or the Scottish Highlands largely because wind and weather have eroded the Scottish and Norwegian mountains until they now are no more than the worn stumps of their former selves. There could, of course, be no “weathering” of the rocks until the weather had arrived—until further cooling made it possible for the water vapour in the earth’s atmosphere to fall upon the surface as rain. When this had occurred, the old “igneous” rocks (i.e., rocks made by fire—the granite and basalt of the earth’s crust) were torn and battered, fied down, and shaped by the influence of wind and water. Running down the mountain-sides, rain began to wash away the surface of the rocks into the sea; frost chipped pieces off them; the sun dried and cracked them, and, at a later stage, the sand and pebbles so formed made the process even more effective. Sand, blown by the wind, took its toll, and in these various ways then was created a new type of rock which is described as “sedimentary”—essentially sea-sand compressed into stone, although some sedimentary rocks, such as chalk, are formed from the shells of tiny sea-creatures similarly compressed. From time to time, the molten interior of the earth erupted through the surface and formed a layer over the sedimentary rocks, compressing them still further, and sometimes changing them into what are known as metamorphic rocks by the influence of heat and pressure. Thus it is that, although in theory the oldest rocks should be the deepest down and the more recent nearer the surface, this is not always the case; for molten rock from below sometimes poured over the sedimentary rocks, and the crumpling of the earth’s surface often tumbled the different layers over each other. Nevertheless, geologists are able to tell the order in which the rocks have been laid down, and, from

the fossilised animals and plants therein, it is possible to trace the history of life upon the earth. During these early epochs of the world’s history many changes occurred in the geography of the earth. For example, it seems that 275–250 million years ago most of North and South America, Western Europe, Africa, and what is now the Atlantic Ocean were one vast land mass surrounded by water, whilst a narrow prolongation of the Mediterranean stretched out as an inland sea as far as the coast of North America. The continents of Africa and North and South America were gradually separated by the Atlantic flowing in between until, about 75–45 million years ago, they began to assume more or less their present shape. This, at any rate, is the belief of Professor Suess, derived from a study of the rocks, but another theory—the “continental drift” theory—is more generally accepted today, although it is as yet by no means proven.

**Formation of the Continents.**—As long ago as 1858, Snider had pointed out that the two sides of the Atlantic Ocean, if moved together, fit each other like the pieces of a jig-saw puzzle. He suggested, therefore, that America had once been joined to Europe and Africa, and supported his assumption by pointing out the really astonishing correspondence between animal and plant life at the same latitudes on both sides of the Atlantic. (Many less scientific writers have used these correspondences to support the thesis that there existed at one time a continent known as Atlantis which later sank bodily beneath the sea—an extremely improbable belief.) Snider’s work was taken up many years later by Professor Wegener, who, in 1912, produced a considerable amount of evidence to show that at one time *all* the continents—America, Europe, Africa, Asia, and Australia—had been packed together into one vast land mass. Since the Irish geologist Joly had shown that the basalt crust of the earth at a depth of only 20 miles down is at a temperature very near its melting-point and had given reasons for believing that every 100 million years or so accumulations of heat from radioactive sources might cause the basalt layer to melt, it is possible that when this occurs the granite continents are virtually afloat on the surface of the basalt and may tend to float apart. Wegener believes that in some such way as this, by continental drift, the original land mass separated into the separate continents as we now know them. (Another theory without much scientific foundation assumes that a further lost continent known as “Lemuria” once existed between Africa and India in what is now the Indian Ocean.)

**The Oceans.**—Originally the depths of the ocean had been plumbd by navigators using weighted steel wires or cables, but now the usual method is for the investigators on board ship to measure distances by echo-sounding; with the most modern instruments the whole process is carried out automatically, and charts of the sea depths are drawn without human intervention as the ship goes on its way. The greatest known depth, recorded in 1951 by H.M.S. *Challenger*, is in the Pacific in the Marianas Trench, east of Guam, which is between 5,882 and 5,940 fathoms, exceeding the height of Everest by over 5,000 feet. At such a depth the pressure of water is nearly 7 tons per square inch, and when instruments such as glass thermometers are sent down they are crushed into dust long before they reach the bottom. Attempts have also been made by divers to explore the depths of the sea. The American naturalist Dr. Beebe went down to a depth of over half a mile when the pressure was almost 1 ton per square inch in his “bathysphere”—a steel globe 4 feet in diameter—in 1934, and in 1954 two French naval officers descended to a depth of over 2½ miles in a “bathyscaphe” whose observation sphere was subjected to a pressure of about 2½ tons per square inch.

**The Atmosphere.**—Of course, the greatest depths of the sea and the highest peaks of the Himalayas (25,000–29,000 feet) are a mere nothing in relation to the total size of the earth—no greater than the irregularities of the peel

of an orange in relation to the whole fruit. However, greater heights have been achieved in the exploration of the atmosphere; for in the same year that Beebe was exploring the sea in his bathysphere Soviet balloonists went up to a height of over 13½ miles to a level where the pressure of the air was less than 1 lb. to the square inch. This was no small achievement if we recall that when Coxwell and Glaisher ascended to a height of only 7 miles in 1862 the thermometer registered a temperature of —100 degrees Fahrenheit, and without oxygen supply their ears and noses bled profusely and they became blind. The Soviet record was beaten by the Americans Stevens and Anderson, who, in a helium balloon, reached a height of over 14 miles in 1935. Other balloons, unmanned, but carrying measuring instruments, have risen even farther, and one sent up by the Russians in 1935 reached a height of no less than 25 miles. Even this record came to seem insignificant when the German V2 rockets bombarding London from Holland in 1944 rose to a height of at least 70 miles, and the more recent American modifications of the rocket have risen over 250 miles (in 1949).

From these investigations many interesting facts have been discovered about the upper atmosphere of the earth. For example, it is now known that the temperature of the atmosphere drops until a height of about 10 miles is reached; it then remains more or less constant, until, at a still greater height, it begins to rise again. Much information has been collected by the use of wireless and sound waves for exploring the upper air, and curiously enough, one of the first clues concerning the use of sound waves for exploring the atmosphere came from the diarist Samuel Pepys in 1666. Pepys was at that time President of the Royal Society, and he noted that, during the Dutch War, the sound of gunfire in the English Channel could often be heard in London when it was inaudible at Dover or Deal, which, of course, were much nearer to the source of the sound. (Much later, the same phenomenon was noted during the First World War with the sound of the guns from France.) The explanation of this observation was found to be as follows: when a gun is fired, the waves of sound travel in all directions, but the waves traveling near the surface of the earth tend to become absorbed by such obstacles as houses, trees, and hills. Some waves, however, travel upwards until they reach the layer of warm air which reflects them downwards to reach human ears once more, often at great distances from their point of origin. The details of this process were studied more carefully by the British Admiralty in 1927, when it was found that the upward-moving sound waves from an explosion move in a tremendous curve to a height of 9 or 10 miles (i.e., through the area of decreasing temperature); they then move straight up through the area of constant temperature for a distance of 16 or more miles, until, at a height of 30 miles or more they reach the belt of increasing heat, and at this level are reflected downwards once more. This latter belt is now known to contain ozone—a substance similar to oxygen in which each molecule contains three, instead of two, atoms (oxygen is  $O_2$ , ozone  $O_3$ )—and is important, because it is here that the dangerous ultra-violet rays from the sun are mostly absorbed so that only small amounts reach the earth. Were it not for this protective layer, life upon earth might have been impossible.

Wireless waves penetrate even farther into the upper atmosphere, and, like sound waves, are reflected back at a particular level. In this case, however, reflection occurs at a much higher level in a belt of ionised air which conducts electricity at a height of 70 miles; this belt, which reflects the longer wireless waves, was postulated to exist on theoretical grounds by Oliver Heaviside in 1892. When, at a much later date, it was proved to exist, it was named after him the "Heaviside layer." Yet another layer of the atmosphere at a height of 140 miles reflects short radio waves, and is known after its discoverer as the "Appleton layer." Without these layers it would be impossible for radio messages to be sent round the curvature of the earth; for left to themselves they would simply shoot off into space. However, the longest wireless waves, in general, follow the curve of the earth.

The Heaviside layer is produced by the action of the sun's ultra-violet radiation upon the gases of the air, whereas it would appear that the much higher Appleton layer results from showers of electrons from the same source. Almost incredibly, the area of increasing temperature reaches the heat of boiling water just below the Heaviside layer, and in the Appleton layer is near the melting point of copper and gold—1,800 degrees Fahrenheit. Nevertheless, any human being who reached these areas would probably freeze to death very rapidly; for it must be remembered that *temperature* is merely a measurement of the state of agitation of the molecules or atoms of a substance, and when the atoms or molecules are few and far between, then, however high the *temperature*, the total amount of *heat* may be negligible. In fact, Professor Vegard of Norway has shown that the blue colour of the sky is caused by the existence of crystals of frozen nitrogen (air is a mixture of oxygen, nitrogen, carbon dioxide, and minute quantities of other gases) floating about amongst the heated atoms of the Heaviside layer.

### THE REVOLUTION IN PHYSICS.

**Newton and Gravitation.**—From this consideration of the earth, its atmosphere, and its heights and depths, we must turn once more to the universe as a whole in order to see how modern physics, under the influence of Einstein and others, has developed. It will be recalled that Copernicus, Brahe, Kepler, Galileo, and Bruno had gradually come nearer to a view of astronomy in which the earth was forever banished from the centre of things and which was capable of describing in considerable detail the observed motions of the planets around the sun. However, although the work of Galileo and Kepler in particular had proved capable of *describing* the motions of the planets, it had failed to *explain why* they moved as they did. This explanation came from Sir Isaac Newton, who was born in Lincolnshire in 1642—the very year in which Galileo had died. Galileo had been aware that some force must be assumed which was capable of keeping the planets circling in their orbits, but further than this he was unable to go. Newton, as the story goes, found the clue to this mystery whilst idly watching the fall of an apple in his orchard at Woolsthorpe. Pondering the cause of the fall, he saw that the apple must be attracted by the earth in much the same way that a piece of steel is attracted by a magnet, and the next step was to wonder whether the attractive force of the earth could reach as far as the moon and explain the path of the moon around the earth. Kepler, in his third law, had established that a mathematical relationship exists between the average speeds of the planets and their distances from the sun (The squares of the periods of revolution are proportional to the cubes of the mean distances from the sun), and from this law Newton deduced that the forces keeping the planets in their orbits must vary inversely as the squares of their distances from the centre around which they revolve. Comparing the force needed to keep the moon in its orbit around the earth with the force of gravity upon the earth's surface, Newton found that the two closely approximated, and the way was now open to demonstrate that the force of gravitation could explain the behaviour of all the heavenly bodies, the fall of an apple, or the movements of the tides, which are due, of course, to the gravitational pull of the moon upon the surface of the oceans. The heavenly bodies, once thought to be divine, incorruptible, and subject to different laws from those of our small world, had been brought by Newton within the range of man's enquiry; all their movements could be calculated from the simple assumption that every particle of matter in the universe attracts every other particle with a force proportionate to the product of the two masses and inversely proportionate to the square of the distance between them. Left to themselves, all bodies would remain either in a state of rest or travelling in a straight line, were it not that the force exerted by other bodies pulls them out of their normal course.

Paradoxically, although Newton himself was an intensely religious man, the view of the universe which he himself was mainly instrumental in developing led to a picture of nature which was deterministic, mechanistic, and left little room for



God. By the nineteenth century the universe had come to be regarded as a vast piece of clockwork, obeying inexorable rules, and composed of matter which could be divided up into irreducible fragments known as atoms, which were visualised as tiny hard billiard balls. This view, however, has in recent years dissolved before our eyes, and we now see a universe which is vast, non-mechanistic, indeterminate, and composed of "material" which, so far from possessing the properties attributed to it by the nineteenth-century mechanists, has faded into "waves of probability." This revolution in physics arose in the years between 1900 and 1927 as the result of two great theoretical systems—the Quantum theory of Max Planck and the Relativity theory of Albert Einstein. These we must now discuss in greater detail, but first it will be useful to discuss briefly the important forces known as electricity and magnetism.

**Electricity and Magnetism.**—The magnet was a discovery of the Chinese, who were the first to make use of it in the shape of the compass, but the ancient Greeks had also noticed that a piece of amber when rubbed briskly possesses the property of attracting light objects such as paper or silk. In England, towards the end of the sixteenth century, William Gilbert, later known as the "Father of Electricity and Magnetism," pointed out that it is the earth itself which is the magnet directing the compass-needle, and that the attractive power of amber (or glass) is due to another similar force, which he described for the first time as electricity. Benjamin Franklin in America (who discovered the electrical nature of thunder and lightning), Galvani of Italy (who discovered that the legs of a dead frog "jump" when touched with pairs of different metals), and Volta, also of Italy (who produced, on the basis of Galvani's work, the first electric battery), were amongst the great pioneers in this field. (Hence the words "Galvanism," and "Volt"—not to mention "Paradism"—after Michael Faraday—and "Ohm," after an eminent German physicist). The interrelationship between electricity and magnetism became evident when Oersted of Denmark and Ampère of France discovered that a simple coil of wire could behave like a magnet when a current was passed through it, and the American Henry found that if a soft iron core is inserted in the centre of such a coil a very powerful "electro-magnet" results. The latter discovery is, of course, the basis of the modern electro-magnet used in industry to pick up 20 or more tons of scrap metal, and the similar instrument used in hospitals to remove metal splinters from the eye. Conversely, as Faraday found, a coil of wire moved through the lines of force of a magnet will develop an electric current—a significant discovery which is the basis of the dynamo from which most commercial electricity is obtained today. (A dynamo is simply a machine driven by steam or water power which rotates many thousands of wire coils between the poles of a magnet, thus producing a powerful electric current.) The current created in this way is "alternating," passing first in one direction and then in the other, as the wire moves in and out of the magnetic field; on the other hand, the current from a battery is "direct" and flows in only one direction. But the real nature of electricity was not discovered until in 1878 Sir William Crookes passed a current between two points enclosed in a glass tube from which all the air had been withdrawn, producing the so-called "cathode rays," later shown by Sir J. J. Thompson to be streams of electrons. Electricity, then, consists of a flow of electrons along the wire carrying it, and it can be assumed that amber or glass becomes electrified when it is rubbed because some of the electrons are torn off by the friction, and it is therefore attracted by the electrons available in the molecules of the piece of paper or silk. In 1895 Röntgen noted that a vacuum tube produced other rays than the cathode rays described by Crookes; for when a piece of metal was placed in the way of the cathode stream it began to emit mysterious rays which could affect a photographic plate and had the power of passing through certain solid materials. These rays were later to be described as X-rays, and similar rays are produced naturally by radiu-

or uranium when it breaks down into alpha particles (nuclei of helium), beta particles (streams of electrons), and gamma rays (which are of the same nature as X-rays).

**The Nature of Light.**—It is now known that the white light which is visible to the human eye is composed of electro-magnetic waves varying in wave-length and frequency from the relatively long red rays to the shorter violet ones. But these visible rays are only a fraction of the whole spectrum which contains still shorter waves—ultra-violet rays, X-rays, gamma rays, and the cosmic rays which reach the earth from outer space—and still longer ones—heat waves, radar waves, and television and radio waves. With X-rays and, at the other extreme, infra-red rays, it is possible to photograph objects, although such rays are for ever invisible to the human eye. In short, cosmic rays, X-rays, light, heat, radar, and radio and television waves are all of the same nature, and differ only in wavelength and frequency—that is to say, in the number of oscillations per second and the distance from the crest of one wave to that of the next. But what is the real nature of these waves, and through what medium do they pass? We know, for example, that the waves of the sea move through water and that sound waves pass through the air, and it seems clear that waves must always be in some substance. For this reason it was supposed that the electro-magnetic waves of light, radio, and so on must exist in some stuff through which they have to pass; this substance was described as the “ether.”

In 1887, the German physicist Hertz attempted to prove the theory of the existence of the ether which had first been seriously suggested by Clerk Maxwell. Passing an electric spark between two poles of a plate, he attempted to show that the disturbances thus produced would radiate through the ether to influence a similar unconnected coil some distance away. His experiment was successful in that the current passing through one coil was induced in the other, but what Hertz had really discovered was wireless waves with a wavelength of several metres. Sir Oliver Lodge made the same discovery independently in the same year, and in 1890 the waves were first put to use by Marconi. Sir Oliver Lodge also invented the "cat's whisker," which, however, was replaced at a later stage by the thermionic valve devised by Sir Ambrose Fleming in 1904.

**Quantum Theory.**—Now, in 1666, Newton had carried out various experiments upon the nature of light, showing that when white light is passed through a triangular glass prism it is broken up into its constituent colours by the process known as refraction. That is to say, the different wavelengths of light are bent to varying degrees as they pass through the prism—violet being most refracted and red least. (In a similar way, the “prisms” formed by raindrops cause the phenomenon of the rainbow.) But in the years to follow Newton's views concerning the nature of light, which he believed to consist of a stream of particles—the so-called “corpuscular theory”—were unpopular; for it was generally believed that light consisted of waves conducted through the medium of the ether. However, in 1900, Planck, who had been studying the radiation emitted by heated bodies, came to the conclusion that the heat rays were emitted, not in an unbroken stream, but in discontinuous portions which he described as “quanta.” He found that each quantum carries an amount of energy given by the equation  $E = h\nu$ , where  $\nu$  is the frequency of the radiation and  $h$  is Planck's constant—a minute number which has proved to be one of the most fundamental figures in nature. (Its value, for those who are interested, is roughly 0·00000000000000000000000000006624.) We may suppose for descriptive purposes that each atom is a minute planetary system with a central positively charged nucleus around which circulate a sufficient number of electrons in circular or elliptical orbits to neutralise the charge on the nucleus—i.e., 1 for hydrogen, 92 for uranium. There are a number of possible orbits for these electrons to travel in, and the supplying of energy, from outside to the atom results in the jumping

of an electron from one orbit to another. It is this jumping from one orbit to another which gives rise to the phenomenon of light or other electro-magnetic waves. In other words, the changes of orbit in an electron cause a disturbance in space—at one time we should have said in the ether—and this is what we know as an electro-magnetic wave. The waves, as we have seen, do not come out in constant streams but in the bullets of energy described by Planck as quanta, and, as Einstein showed in 1905, not only the radiant energy which was what Planck was considering when he carried out his experiments, but *all* forms of electro-magnetic energy travel through space in separate and discontinuous quanta. (In the case of visible light the quantum is described as a "photon.") As Sir William Dampier says in his *History of Science*: "It is a remarkable fact that, after a century of pure wave theory of light and forty years of electric particles, physicists are now finding that these particles are associated with waves of extremely short wave length. Indeed this modern view of electron particles with their train of waves is very much like Newton's inspired guess (in his corpuscular theory). His amazing insight into nature is once more demonstrated."

Up to 1925 it was assumed that electro-magnetic energy moved in "packets" of waves, which in some respects behaved as particles and in others as waves, whilst electrons and protons were indubitably particles. Physics had still not got over what has been described as the billiard-ball hypothesis, and although the billiard-ball was no longer the atom, the constituent electrons and protons were confidently pictured as such. The Quantum theory had been a blow, but worse was to follow; for it was in 1925 that the French physicist de Broglie showed that electrons should be regarded, not as particles, but as systems of waves. Worse still, Davisson and Germer in America were able to show in 1927 that not only electrons, but whole atoms and even molecules behave as systems of waves; they can be diffracted by a crystal to produce patterns similar to those produced when a beam of light is passed through a pin-hole. We were now presented with a universe in which light consists of particles and matter of waves. How was this paradox to be resolved?

**The Theory of Heisenberg.**—In the years immediately preceding the Second World War the German physicists Born and Heisenberg developed a mathematical system concerning such phenomena, which, although much too complex to be discussed in detail except by the trained physicist and mathematician, carries the following implications. It is asserted, in effect, that the nature of ultimate reality can never be known—we can never find out what things are "really" like. What matters to the scientist is that he should be able to describe and predict the course of nature. We can never know the structure or detail of the individual electron; for whatever method we use to observe it will change it from its original state. Since an electron is a great deal smaller than ordinary light rays, we shall never be able to see it, however powerful the microscope we might invent—the light rays would simply slip past the electrons. Gamma rays of high frequency might be used, but then they can "illuminate" the electron only by hitting it, and by hitting it they would completely change its state from the original one. As Dr. Bronowski has said, such minute objects as electrons are influenced by the methods we use to observe them much as rabbits scurry away from the bright headlights of a car on a dark night, so that we can never know what they were doing before we arrived. In any case, the nature of the single electron does not matter, since in practice we are always concerned with large numbers of them, and collectively they may be pictured either as waves or as particles, just as water waves consist of particles, or molecules, of water. From now on the physicist must realise that his data are statistical in nature, and so long as he studies large collections of electrons his answers will be accurate, but when dealing with small numbers or single electrons they will become less and less so. Heisenberg's famous Principle of Uncertainty states that it is forever impossible in the nature

of things to determine the position and velocity of an electron at the same time; for by the very act of observing its position is changed. In this way, by showing that we must deal in terms of statistics and probabilities, Heisenberg appears to have completely destroyed two of the fundamental principles of the old physics—causality and determinism. He abandoned the ideas that nature shows an inexorable sequence of cause and effect or that we can ever know the nature of ultimate reality. When dealing with the smallest entities in the universe, as Lincoln Barnett says, the scientist is in the same position as a blind man trying to discern the texture and shape of a snow-flake—as soon as he touches it with his fingers or tongue it dissolves. "A wave electron, a photon, a wave of probability, cannot be visualised; they are simply symbols useful in expressing the mathematical relationships of the microcosm." Science can describe *how* things behave with ever-increasing accuracy; but it cannot now, and never will, be able to say *what* they "really" are or *why* they behave as they do. In short, concerning the question as to why things behave as they do, the only answer is that they do so behave.

**Relativity Theory.**—The earlier physicists, including Newton, were concerned with the problem of relative and absolute motion. Thus, when travelling in a car we may stop to have a picnic, and we then say that the car and its passengers are at rest. Nevertheless, the earth upon which we are at rest is travelling round on its axis at the speed of 1,000 miles an hour, and revolving round the sun at the speed of 20 miles every second. Nor is this all. The entire solar system is moving within the local star system at the rate of 13 miles a second; the star system within the Milky Way at the rate of 200 miles a second; whilst the Milky Way is moving in relation to the remote external galaxies at the speed of 100 miles a second. Now, absolute motion can be only in relation to some body which is absolutely at rest, as Newton himself suggested, but so far as we are aware no such body exists, and we are therefore bound to ask ourselves whether the idea of absolute motion has any meaning at all. When the question was posed in this form, there remained one possible solution to the problem: it was conceivable that motion might occur relative to the ether, the hypothetical substance within which all the heavenly bodies moved and which transmitted waves of light throughout the universe. Unfortunately for this theory, however, a classic experiment had been carried out in America, first by Michelson in 1881, then by Michelson and Morley in 1887. These two workers had reasoned that, just as a swimmer moving upstream is retarded in his progress by the current and is similarly facilitated in his movement when swimming with the current, so a beam of light sent against the ether stream (i.e., the stream of ether flowing past the earth as it moves through space) and reflected back should move more slowly than one sent with the stream and similarly reflected. The experiment was carried out in such a way that a beam of light was split in two, sent in opposite directions simultaneously, and then reflected back for measurement of its speed. But the astonishing result was that there was not the slightest difference in its velocity in either direction. The result of the Michelson-Morley experiment left physicists in the dilemma that either: (1) they could reject the ether theory (in which case they would be left with no explanation as to how, and through what, the electro-magnetic waves could travel), or (2) they could reject the Copernican theory that the earth was in motion. Both alternatives seemed equally impossible until, in 1905, Albert Einstein suggested a solution. His solution to the dilemma was the hypothesis that the speed of light is unaffected by the motion of the earth, that, in fact, the speed of light is constant throughout the universe, and remains uninfluenced either by the motion of its source or the receiver. From this hypothesis it follows that there is no such thing as absolute motion, that motion is always relative to some other object, and that the laws of nature remain the same only within uniformly moving systems. But if absolute motion does not exist, it follows that the



idea of absolute time, just as much as that of absolute space, must be rejected. This is necessary because time and space are related—a year, for example, is measured by the length of time taken for the earth to travel once in its orbit around the sun, and a day is the time taken by the earth to make one complete revolution on its axis. But on the planet Mercury a “year” is only eighty-eight days, and, since in that time the planet also rotates only once upon its axis, a “year” and a “day” are the same. There can, therefore, be no such thing as time independent of the system to which it is referred. This observation becomes even clearer when we consider the extragalactic nebulae which are many light-years away; for, since the light from these bodies has taken, in some cases, thousands or even millions of years to reach the earth, we see them, not as they are now, but as they were when the light now reaching our eyes left its source. In fact, it is quite possible that some stars have already ceased to exist, although their light is still passing through space and we are able to “see” them in the sky.

Einstein was able to show that, whilst the speed of light is always constant, all measurements of time or space vary according to the velocity of the system within which they are moving. The equation by which the physicist is able to calculate such variations is known as the Lorentz transformation, and this equation shows that as velocity increases, time slows down and the size of a body contracts. Thus a yardstick moving at 90% of the velocity of light would shrink to about half of its length, and passage of time would slow down correspondingly. In theory, if it were possible for a body to move with the speed of light (and, of course, it is not possible), it would disappear completely and time would stop. It must be remembered that at all ordinary speeds this effect is almost negligible, but it can nevertheless be demonstrated—for example, in the case of atoms. It has been shown by an American physicist that the periodic radiation of an atom which is regularly emitted and forms, therefore, a kind of clock, changes in frequency with its velocity to precisely the degree predicted by the Lorentz equation.

Not only time and space are relative to the velocity of the systems in which they occur; for, as Einstein later showed, mass is also relative. Now, classical physics distinguished between mass (which is a measurement of inertia, and was supposed to be a fixed amount), and weight (which varies from place to place). The mass of a body, the quantity of substance it contains, was theoretically invariable; its weight, which depends upon gravitation, was not. Thus a pound of butter at the equator weighs slightly less than the same amount in England, and at the North pole it would weigh slightly more. On the sun it would weigh 27 lb., and on a small planet perhaps only a fraction of an ounce. Nevertheless, in all these different situations the *amount* of butter will remain the same—that is to say, its mass will not change. But, although this observation still remains true within any system moving at a constant velocity, Einstein has proved that mass increases with velocity. This effect is so definite that physicists dealing with bodies moving at great speeds (e.g., beta particles or electrons moving in a powerful electric field which may reach velocities up to 99% of that of light) have to make allowance for the increase of mass in their calculations. When designing a proton-synchrotron and similar machines, for instance, the plan of the machine has to be modified to allow for the increased mass of particles as their speed approaches that of light. But Einstein's demonstration of the relativity of mass held an even more significant implication—an implication which may well prove fateful for the human race, although whether for good or ill it is impossible as yet to say: this is the seemingly innocuous implication that energy has mass. Since the mass of a body increases with its velocity, and since motion is a form of energy, it follows that the increase in mass results from its increased energy (i.e., its increased velocity). This relationship is expressed by Einstein in the most famous of all mathematical equations:  $E = mc^2$ . This equation states that the energy contained in any piece of matter is equal to the

mass of the body in grammes multiplied by the square of the velocity of light (in centimetres per second). On the basis of this statement, as Lincoln Barnett points out, it can be shown that 1 kilogram (about 2 lb.) of coal, if converted entirely into energy would yield as much electricity as all the power plants in the United States could generate by running steadily for two months. It was, in fact, this equation which made possible the development of the atomic bomb; for, as most people know, in the atomic bomb a quantity of matter is actually converted into energy. Whereas all earlier explosives were based upon the principle of turning a given amount of solid or liquid material into gas, which, of course, occupied more space, and thus produced the “explosion,” the uranium of the atom bomb is actually annihilated—far from being changed from one state of matter to another, it ceases to exist except in the form of energy.

For reasons which we have already discussed, it is evident that time and space cannot be separated: the astronomer looking through his telescope is looking both outward in space and backward in time. All events occur both in space and time. Therefore Einstein describes the universe as a space-time continuum which has four dimensions: three of space and one of time. Further, Einstein's theory no longer regards gravitation as a force causing bodies to attract one another across empty space; gravitation is one form of inertia, and stars, planets, and comets move in the paths they do simply because the properties of the space-time continuum in a particular area make it easiest for them so to move. Contrary to the Newtonian view that matter exists in a fixed and changeless space across which the stellar and other bodies attract one another, Einstein has shown that the properties of the space-time continuum are disturbed wherever there is matter and motion. A star, a comet, or a galaxy, says Lincoln Barnett, distorts the geometry of the space-time through which it moves just as a fish swimming in the sea agitates the surrounding water. Space, we might say, becomes bent or curved in the region of matter—hence the paths of the planets are the result of moving through space distorted by the sun.

Newton and all later physicists had supposed that light always travels in a straight line. But, according to Relativity theory, light, being a form of energy, has mass, and if this is the case light should be deflected from its path by passing through the gravitational field of a massive body just as is a planet or a comet. In his General Theory of Relativity Einstein predicted that light from the stars passing through the gravitational field of the sun would be bent inwards towards the sun on its way towards the earth, and he was even able to calculate the degree of deflection. In 1919 during an eclipse of the sun (for it is only during an eclipse, when the face of the sun is darkened, that sun and stars can be seen together at the same time) physicists travelled to the equator to make observations and found that the deviation predicted by Einstein on theoretical grounds did, in fact, occur in almost precisely the degree he had calculated.

Finally, if, as we have already seen, the space-time continuum is bent and distorted by the material bodies within it; if space is curved in the region surrounding the heavenly bodies, it follows that all the matter in the universe must produce a similar effect—an overall curvature of the whole space-time continuum. The universe must be regarded as a closed system, “finite but unbounded,” and no longer infinite as used to be supposed. It is impossible, and unnecessary, to visualise this state of affairs, but there is nothing necessarily mysterious about it. The surface of a globe, for example, is finite (i.e., it has a finite area) but unbounded (i.e., we could walk around it forever without ever coming to the “end”). There is reason to believe that the universe is of a size and shape such that a beam of light, travelling at 186,000 miles a second, would return to its source after about 200 billion earthly years.

#### THE NATURE OF MATTER.

Just as the Greeks were the first to study seriously the problems of cosmology, so they were first in the field of atomic theory. Democritus, born in Thrace in 460 B.C., was the originator of a theory

in which he stated that "...according to convention there is a sweet and a bitter, a hot and a cold, and according to convention there is colour. In truth, however, there are only atoms and a void." In short, Democritus was asserting that the qualities we attribute to the universe exist only in our own minds; that all that "really" exists are atoms, the movements of atoms, and empty space. Of course, at this early period of history, there could be no scientific reasons for believing in this theory, which had been worked out purely upon logical and philosophical grounds; it was only in modern times that the atomic hypothesis was given a solid foundation based on research and experiment.

**Atomic Theory.**—Modern chemistry and physics really began with the work of the French chemist Lavoisier and the English chemist Dalton towards the end of the eighteenth century: for it was these men and their colleagues who showed that most of the substances we find in nature are what are known as compounds, which, by chemical action, can be broken up into their component parts or elements. Of these elements about eighty-eight are known in nature, but some fifteen others have been made in the laboratory. A compound is something quite different from a mixture, since in a compound the elements (*a*) are united in specific proportions, (*b*) cannot be recovered without breaking the compound up by chemical processes, and (*c*) show quite different properties from those shown by the elements in isolation. For example, if common salt or sugar is dissolved in water we have a *mixture*, since the salt or sugar may exist in various proportions, and the result still feels wet like water and tastes sweet or salt like sugar or salt. Moreover, all we have to do to recover the stuff we put in is to evaporate the water away. On the other hand, common salt itself is a chemical compound, properly described as "sodium chloride" or, for short,  $\text{NaCl}$  (*Na* stands for "Natrium" the Latin name for sodium), in which the explosive metal sodium has combined with the poison gas chlorine in the proportions of one atom of chlorine to one of sodium, to form the harmless and essential table salt. Water,  $\text{H}_2\text{O}$ , consists of two atoms of the gas hydrogen combined with one atom of the gas oxygen; if, instead of one atom of oxygen we use two, the result is  $\text{H}_2\text{O}_2$ , or hydrogen peroxide, an entirely different substance, used, amongst other things, as an antiseptic mouth-wash. Thus, if we took a crystal of table salt and could go on subdividing it into smaller and smaller pieces, we should end up with a *molecule* of salt— $\text{NaCl}$ —and this could not be broken up any further, since we should then, in theory, be left with no salt, but an *atom* of sodium and an *atom* of chlorine. A molecule is the smallest state of subdivision of a chemical compound, whereas an atom is the smallest state of subdivision of an element. Now, it was the fact that in a compound elements are always combined in definite proportions that first gave scientific support to the atomic hypothesis; for example, since water when decomposed into its elements always gives rise to hydrogen and oxygen in the proportion of 2 grams of the former to 16 grams of the latter, this, bearing in mind the chemical formula of  $\text{H}_2\text{O}$ , means that one atom of oxygen must weigh 16 times more than one atom of hydrogen. Hydrogen being the lightest element, its atomic weight may be reckoned as 1, and the atomic weights of the other elements range from 1 for hydrogen to 238 for the heaviest atom, uranium.

Once the atomic weights of the main elements had been discovered, two interesting observations were made. One was the discovery by the Russian chemist Mendeleev that, when the elements are ranged in order of increasing atomic weight, their chemical properties repeat periodically. For example, the alkaline metals, such as sodium and potassium, are always preceded by a "noble gas" such as helium, argon, or neon, and followed by alkaline earths such as magnesium or calcium. Because of such regularities in the table of atomic weights, Mendeleev was able to predict the existence of elements unknown in his day which have since been discovered. The second discovery was that, although most atomic weights turned out to be whole numbers—oxygen is 16, aluminium 27, and iodine 127—there exist

glaring exceptions, such as chlorine, with an atomic weight of 35.5. How this is explained will be seen later.

By the end of the nineteenth century it became possible to calculate the number of atoms in a given amount of material or the weight and size of a single atom. Such calculations showed how very small atoms are—so small, indeed, that one hundred million atoms laid side by side would form a line only one inch long. But at this time the atom was still thought of, as in the days of Democritus, as indivisible, and it was not until the turn of the century that Sir J. J. Thompson was able to show the existence of the minute bodies later known as electrons within the structure of the atom. Electrons have a negative charge of electricity, and are so light in weight that about 1,840 weigh only as much as a single hydrogen atom. But, since atoms are electrically neutral, it follows that, if negative charges are characteristic of electrons, there must also exist other bodies with a positive charge which keep the system neutral. So in 1910 Lord Rutherford discovered the existence of the proton, a much larger body with a positive charge of electricity, which exists in the central nucleus of the atom. The picture of the atom which then began to emerge was as we have seen that of a minute planetary system in which one or more protons formed the central sun around which electrons circulated like planets in sufficient numbers to neutralise the positive charge of the nucleus, one electron neutralising one proton. Since electrons weigh almost nothing, most of the weight of the atom exists in its nucleus, and as is the case in the astronomical solar system, most of an atom is empty space—the diameter of the whole atom is about 20,000 times greater than the diameter of its nucleus. This concept of the atom and the motions of its electrons is largely due to the work of the great Danish physicist Niels Bohr, who formulated the theory now generally accepted in 1914.

Now, most of the reactions affecting the atom occur only in the surrounding system of electrons. When, for instance, elements combine to form compounds only their electron systems are affected, and when an atom takes in, or gives out, energy, this process, we now know, involves the jumping of electrons from one orbit to another. The atomic nucleus is unaffected. However, as long ago as 1896 and 1900, Madame Curie and Becquerel had described the interesting phenomenon known as radioactivity, in which certain heavy elements such as radium and uranium were noted to give off strange radiations which appear to come from the nucleus. A careful study of these elements showed that they gave off three types of radiation: (1) *alpha particles*, which are identical with the nuclei of the gas helium; (2) *beta rays*, which are streams of ordinary electrons; and (3) *gamma rays*, which are similar to X-rays. In this process, the solid metal radium becomes transformed into a gas known as radium emanation. Breakdown goes on until all the radium and uranium are transformed into such common substances as lead, and is known to be spontaneous and uninfluenced by any known form of interference (as we have seen, the breakdown of these radioactive substances over the centuries can be used as a "clock" to tell the age of the earth). In 1919 Lord Rutherford made use of alpha particles to bombard the gas nitrogen, and made the revolutionary discovery that by so doing some of the nitrogen was transformed into one proton plus a nucleus of oxygen. The results of this experiment showed that the ideas of the old alchemists, who had believed it possible to transform one element into another, were essentially correct, and those of the later physicists who had believed it impossible, were wrong. One of the most fundamental beliefs of physics—that the elements were fixed and immutable—had been utterly destroyed.

**Atomic Nuclei.**—In 1932, Sir James Chadwick made the further discovery that atomic nuclei contain, not only protons, but bodies of similar size and weight which are electrically neutral—these bodies are the neutrons. It then became evident that the number of units of electrical charge on the nucleus depends upon the number of protons, each



proton contributing one unit of positive charge, whereas the atomic weight depends upon the number of neutrons and protons combined. The chemical behaviour of an element is determined by the number of electrons encircling the nucleus, and this, in turn, depends upon the electrical charge of the nucleus—i.e., the number of protons. Thus it is possible for an element to exist in two or more forms, differing only in the number of neutrons within the nucleus, since these do not affect its electrical charge and therefore do not influence the properties of the element. Thus we come to the important question of *isotopes*, so important in modern atomic research. The foundation of isotope theory had been laid by Sir Frederick Soddy and his chemical collaborators in Glasgow about 1912. It was found that those elements which had an atomic weight which was not a whole number existed in the form of a mixture of isotopes—that is to say, forms with the same chemical properties but different atomic weight. One form of chlorine, for example, has a nucleus with 17 protons and 18 neutrons, whereas the other has 17 protons and 20 neutrons; both forms, of course, have the same number of encircling electrons—17—and therefore are chemically identical. This makes two isotopes, one with atomic weight 35, the other with atomic weight 37, and since ordinary chlorine is a mixture of these two isotopes in the proportions of about 3 to 1, the resultant atomic weight is 35.5. We now know that almost every chemical element has several isotopes. Hydrogen exists in two forms, one with atomic weight 1 and another with atomic weight 2, the so-called heavy hydrogen or deuterium, and the metal tin has as many as ten isotopes. The "heavy water" which the Nazis were manufacturing in Norway during the last War is water in which the ordinary hydrogen of atomic weight 1 is replaced by deuterium with atomic weight 2.

Neutrons and protons are held together within the nucleus by the strongest forces known to mankind, although the nature of these forces is a complete mystery. They are certainly neither electrical nor gravitational in origin. But what is of practical importance is that immense energy may be released either by building up simpler nuclei into more complex ones or, conversely, by the splitting of complex nuclei into simpler forms. The former method of producing energy is the one we have already noted as occurring within the sun and other stars, where, for example, hydrogen is transformed into helium. It is also the reaction occurring in the hydrogen bomb. The latter method is that made use of in the ordinary atomic bomb, when uranium 235 (i.e., the isotope of uranium with atomic weight 235) has its nucleus broken up into fragments. During the 1930's, the problem arose of how to split the nucleus and so release this energy.

Lord Rutherford, as we have seen, had managed to split some relatively simple nuclei by bombarding them with alpha particles (i.e., the nuclei of helium which consist of two protons and two neutrons), and protons themselves had also been used for this purpose. But both these methods had the drawback that the bombarding particles held a positive charge of electricity, and were therefore repelled by the nuclei they were supposed

to split, which, of course, also held a positive charge; it was, therefore, only a lucky shot which could manage to reach the target. In order to get over this difficulty an instrument known as the cyclotron was devised by Cockcroft and Walton at the Cavendish Laboratory, Cambridge, and was used to accelerate the protons or alpha-particles to a high speed so that they could the more easily smash their way into the nuclei of atoms. But some years later, the Italian physicist Fermi suggested that neutrons, being without charge, would be more convenient to use, and would not necessitate the use of a cyclotron; but this method, too, had a drawback, since neutrons do not exist free in a state of nature, and themselves are only produced by nuclear reactions—i.e., by splitting atoms. Also, until 1938, all the atom-splitting which had been done yielded a mixture of small and large particles—in other words, only small "chips" had been split off the heavy nucleus—whereas it was known that large releases of energy could be produced only if the resulting particles were of fairly large atomic weight, if for instance, uranium 235 were split into particles of atomic weight around 100. This was the position in nuclear physics just before the war, when in 1938 the German chemist Otto Hahn was able to split uranium into approximately equal parts. Hahn had discovered that when the uranium nucleus is bombarded by neutrons, the process sets free more neutrons, which continue to split more nuclei; he had discovered, in fact, the nuclear chain reaction. From this discovery to the invention of the atomic bomb was merely a matter of devising appropriate techniques; a major part of the problem was the separation of uranium 235 from its more common isotope uranium 238. (It had been found by Bohr that only the former was capable of being split by slow-moving neutrons.) We now know that bombardment of a sufficiently large mass of uranium 235 by slow neutrons may lead to one of three results: (1) the process may go on until all the available uranium has been used up, (2) a large amount of energy may be developed sufficiently rapidly to result in an explosion—as in the case of the atomic bomb, or (3) the process may be deliberately controlled in such a way that the energy output is produced only gradually—this is the function of the atomic piles, which it is hoped to put to industrial and other uses.

In recent years a new element known as plutonium has been created by the bombardment of uranium 238 with neutrons, and this element is the second of the powerful atomic fuels. Either uranium 235 or plutonium may be used in an atomic pile which contains so-called moderators—usually heavy water or graphite—to slow down the chain reaction and keep it under control. The future of such piles is uncertain, although quite a number are at present in use—one of the difficulties to be faced is the fact that the dangerous radiations produced necessitate the use of heavy shields of concrete or other material, and this greatly increases the size and weight of such units. Thus, although submarines driven by atomic power may be a possibility, and factories so powered may also be feasible, it is unlikely that aircraft could be so driven.

## II. THE DEVELOPMENT OF LIFE.

Thus far we have been concerned with the origin and development of the material universe, with what scientists would describe as the inorganic sphere of the non-living. We have seen its immensity in space and time, and, on the other hand, the minuteness and lack of "solidity" of the atoms and molecules composing it. But surely the most striking feature of the universe is its impermanence—galaxies disappear into the unknown depths of outer space, stars are born and die, matter itself may be created and destroyed—nothing is permanent. In everyday life we talk glibly of many things as if they would last for ever—the immortal plays of Shakespeare, the permanence of great buildings and art, the everlasting hills, and Rome the eternal city—but all these manifestations of nature or creative genius are as transitory and fading as life itself. Shakespeare himself, wiser than his admirers, realised this:

"The cloud-capped towers, the gorgeous palaces,  
The solemn temples, the great globe itself,  
Yea, all which it inherit, shall dissolve  
And, like this insubstantial pageant faded,  
Leave not a rack behind. We are such stuff  
As dreams are made on, and our little life  
Is rounded with a sleep." (*The Tempest*.)

### THE GEOLOGICAL RECORD.

London is an old city as cities go, although not so old as Rome, but geologically speaking it is not so long since the land upon which London stands was beneath the sea. Later in time there were tropical jungles on the banks of the Thames in which sabre-toothed tigers hunted their prey, the Thames was a tributary of the Rhine, and, still more recently (in fact only yesterday on the cosmic time-scale), the great Ice Ages brought sub-arctic conditions to our land.

The various stages in the history of the earth

can be read by the geologists in the strata or layers of rock laid down since the planet began to solidify, and it is in these rocks, too, that the record of life upon earth may be traced. The earliest rocks in the record are known as the Azoic (no life) rocks, because they show no trace of living things, and these layers are of such thickness that they occupy more than half of the whole record. That is to say, for more than half of the earth's history nothing living existed upon any part of the globe. For millions of years the surface of our planet was nothing but bare rock without soil or sand, swept by hot winds exceeding in violence the wildest tornadoes of today, and drenched by torrential downpours of tropical rain, which, as we have seen elsewhere, gradually tore away the surface to form sandy sediments at the bottom of the seas. In such ancient rocks pushed above the surface by later upheavals we can still trace the marks of primeval oceans as they rippled upon the barren shores or of raindrops which left their imprint perhaps 1,500 million years ago. As we move upwards through the strata, however, traces of life begin to appear and steadily increase as we come to the more recent levels. The earliest signs appear in what is known as the Early Paleozoic Age (or by some writers as the Proterozoic Age), when we find the fossilised remains of small shellfish, seaweeds, and trilobites—the latter were creatures somewhat like the plant-llice of modern times. All these primitive animals and plants lived in the shallow tidal waters of ancient seas; for as yet life had not invaded either the dry land or the deep oceans. It is, of course, clear that these creatures of Early Paleozoic times were not the first living things; they were merely the first creatures capable of leaving fossilised remains, and without doubt must have had more primitive ancestors—amoebic-like forms, jellyfish, bacteria, and so on whose bodies were too soft to leave any traces in the record of the rocks. This problem, however, will be discussed more fully later.

Towards the end of the Early Paleozoic Era, in what we now know as the Silurian period (see chart), there arose a new form of life: the first backboneed animals, primitive fishes somewhat similar to the sharks of today; and in the division of the Upper Paleozoic Era known as the Devonian, they had come to multiply so greatly that this is frequently described as the Age of Fishes. It is about this time, too, that we begin to find traces of animal and plant life upon the dry land. Both animals and plants had acute problems to solve before it became possible for them to live out of water; for the plants had hitherto been supported by the surrounding water as water plants and seaweeds are today, whilst the animals had been accustomed to breathe air mixed in water. These problems were solved, in the case of the plants, by the development of woody tissues which both supported the weight of the plant and acted as pipes transporting water to its leaves, and, in the case of animals, by a long series of adaptations from gills to lungs which we will discuss at a later stage.

The first type of vertebrates (backboneed animals) to live upon dry land was the group of amphibia in the Carboniferous Age, which is today represented by the newts, frogs, toads, and salamanders. In all these forms there is a tadpole stage, which, hatching out of the egg in the water, lives as a fish for some time until its gills give place to a primitive form of lung which enables the animal to live upon land. Even so, amphibia are restricted more or less to swampy or marshy land, and without a damp environment they would dry up and shrivel to death. The highest form of plant life in the Carboniferous period were the giant horsetails, tree mosses, and tree ferns, the fossilised tissues of which are found in the coal measures and are burned as household coal. But these plants also, as in the case of the amphibia, could exist only amongst the swamps and marshes, and life, although it had freed itself from the necessity of existence in the waters of the earth, still had to return to the water in order to reproduce itself. The highlands and the deeper waters of the planet were still empty of living things. Although the Carboniferous period had been a period of warmth and abundance, the Paleozoic Era came to an end with a long cycle of dry and bitterly cold ages. Such long-term

climatic changes were due, it is now supposed, to such factors as changes in the earth's orbit, the shifting of its axis of rotation, changes in the shape of the land masses, and so on. Long before the Ice Ages of more recent times, there are records in the rocks of alternating periods of warmth and cold as far back as the Azoic and Early Paleozoic Eras. This long cold spell at the close of the Paleozoic Era came to an end about 200 million years ago, and was succeeded by a long era of widely spread warm conditions—the Mesozoic Era, the Age of Reptiles.

This was the Era, so often depicted by artists in their imaginative reconstructions of prehistoric times, during which the earth was peopled, not only by all the creatures and plants we have so far described, but also by the new kings of creation—the giant reptiles. The dinosaur, the *gigantosaurus*, the *tyrannosaurus*, the *diplodocus*, and other species of reptile of this period were considerably larger than any creatures living today. The *diplodocus* and *gigantosaurus*, for example, were often 80–100 feet long, although they were vegetarian in habit and were preyed upon by the almost equally huge flesh-eating dinosaurs. Some reptiles returned to a life in the sea (e.g., the *plesiosaurs* and *ichthyosaurs*), but all differed from the amphibia in that they laid eggs upon land and had no tadpole stage. They had dry skins like the modern snakes, lizards, and tortoises, needed the warmth of the sun, without which they would be sluggish and sleepy, and, although requiring water like all living things, they preferred, for the most part, a dry to a moist climate. The Mesozoic period also saw the development of vast numbers of insect species; in the Paleozoic Era there had been centipedes, millipedes, and dragon-flies with a wing-span of over 2 feet, but now there were beetles and many other species, although bees and butterflies were yet to come. The insects were the first creatures to conquer the air, but it was during the Mesozoic period that the first backboneed animal took to flying—this was the *pterodactyl*, a reptile with a bat-like development of the front legs which enabled it to glide and even fly between the giant fern-trees.

But, perhaps 150 million years later, all this seemingly everlasting warmth and sunshine, the lush tropical life, the giant reptiles who had ruled the world, were wiped out by a new period of bitter cold which only the hardy species could survive. A new Era known as the Cainozoic was beginning, ushered in by a period of upheaval and volcanic activity, following which the map of the world came to resemble more closely the picture we know today. The cold period may have lasted several million years, and the main species to survive it were those which had come into existence towards the end of the Mesozoic Era, the seed-bearing flowering plants, the birds, and the mammals. The once all-powerful reptiles from this time onwards are represented only by the comparatively few and relatively small reptilian species of today: the snakes, lizards, crocodiles, and alligators. It was at this time, too, that, long after the creation of the mountains of Scotland and Norway (the so-called Caledonian revolution), or even of the Appalachian mountains (the Appalachian revolution), there arose the great masses of the Alps, the Himalayas, the Rocky Mountains, and the Andes. These are the mountain chains of the most recent, the Cainozoic revolution. Initially, as we have seen, the climate of the Cainozoic Era was cold, but the weather grew generally warmer until a new period of abundance was reached, only to be followed at the end of the Pliocene by a period of glacial ages generally known as the First, Second, Third, and Fourth Ice Ages. The latter were separated by interglacial periods when the climate was milder—we are, in fact, living at the moment at the end of the last Ice Age, for the retreat of ice from Europe began only about 25,000 years ago. It must be remembered, however, that even at the height of the Glacial periods the ice never extended over the whole face of the earth; it was, indeed, limited to an area which never moved farther south than what is now Northern Germany, Northern France, the larger part of the British Isles, small areas in the North of Asia, and about half of the North America continent. The earliest mammals and birds evolved out of



reptilian-like ancestors, whose scales in the former case had developed into hairy fur, and in the latter, into feathers. No doubt these creatures had been driven by the increasing cold at the close of the Mesozoic Era to adapt themselves by these new developments, and, even more strikingly, by an entirely new type of mechanism in that they became warm-blooded. Whereas the earlier species, the reptiles and amphibia, had been cold-blooded, with a body-temperature little raised above that of the surrounding environment, the warm-blooded birds and mammals developed a temperature-regulating centre in the brain which kept their temperature more or less constant independent of climatic conditions. Furthermore, as we move up the evolutionary tree, we find that increasing attention is given to the care of the young. Birds, like reptiles and amphibia, lay eggs, but unlike these creatures they look after their young, which initially have to be fed by the parents. The earliest mammals also laid eggs (even at the present day two species of mammal, the echidna, and the duck-billed platypus of Australia lay eggs), but increasingly became viviparous and brought their young into the world alive (there are, of course, a few species of snake and lizard which do the same). These undeveloped

young had to be cared for by the parent animal and taught—in short, the possibility of a more or less prolonged period of learning arose. When we think of the young of reptiles, fish, and amphibia, which from the outset can look after themselves, and compare them with the human child, which may spend ten or more years learning how to adapt itself and conduct its life, we can see the great importance of this new development. Intelligent adaptation became more important than mere instinct to the more complex forms of life. Finally, perhaps half a million years ago, during the first glacial epoch of the Pleistocene, the earliest type of man developed from a primaval stock of anthropoid apes.

Turning from this all too brief and necessarily over-simplified account of the history of life upon earth, we have to consider the problem of life in more detail. How did it arise? How have the many species of animals and plants evolved from more primitive forms of life? What is the nature of life, and how does the living organism work? How are living things classified? It need hardly be said that only the most sketchy outline of such matters can be given here, but they are so important that we must do our best to give a simple account of them.

### GEOLOGICAL SYSTEMS.

Age in millions of years.	Geological eras.	Geological periods.	Life.
	Cainozoic	Pleistocene	Man
		Pliocene	
		Miocene	Mammals
		Oligocene	Birds
		Eocene	Flowering plants
50	Mesozoic	Cretaceous	
		Jurassic	Giant reptiles and cone-bearing trees
		Triassic	
200	Upper Paleozoic	Permian	Rise of reptiles
		Carboniferous	Amphibia and tree-ferns
300	Lower Paleozoic	Devonian	Age of fishes. First land animals and plants
		Silurian	First fishes
		Ordovician	More complex sea-life
500		Cambrian	Primitive sea-life
	Azole		Life appears
2000		Pre-Cambrian	

### THE ORIGINS OF LIFE.

There are only three possible explanations of the origins of life upon our earth: (1) that it was supernaturally created, (2) that it was brought from some other part of the universe, or (3) that it arose by natural processes from inorganic matter. In a scientific account, however, we must reject the first two of these explanations, not because we know them to be false, but because they are not strictly speaking explanations. It is in the nature of science that it attempts to define all that we observe in terms of natural laws, and to bring in supernatural assumptions would be to break the rules of the game. This is not, of course, meant to imply that no supernatural sphere exists, but if we habitually brought in such assumptions whenever something appeared difficult to explain "naturally," there could be no science at all. Furthermore, there is nothing whatever irreligious in the assumption (held, incidentally, by many modern theologians) that the Deity works through natural laws and does not break the laws He Himself has created. The second explanation, that life was brought from somewhere else in the universe, is also unsatisfactory: (a) because it does not explain the origins of life but merely pushes the problem one step farther back, and (b) because, if we accept the usual form in which this suggestion is put forward—that life was brought to earth inside a meteorite—we are then presented with the extremely difficult task of explaining how any living substance could survive such a journey.

We are therefore left with only the third possibility, that life arose upon the earth from natural causes, and this thesis must therefore be further investigated.

**The Nature of Life.**—All living things are built up from compounds of the element carbon, which has the peculiar characteristic that it can link its atoms in series to form long chains or rings which are immensely more complex than the compounds formed by any other element. When at an earlier stage we were considering the universe of non-living matter, our natural response was, perhaps, to be overwhelmed by the thought of such vast distances in time and space, to feel mere pigmies in the face of such immensity. Indeed, as Monsi-gneur Ronald Knox has said, "Sheer multitudinosity has power to oppress the mind." But here, when we are beginning our study of the organic sphere, it is worth while administering a corrective to our cosmic awe; for all the vast inorganic universe is really a very simple matter. It consists of nothing but radiations, subatomic particles, and atoms, and even the greatest galaxies contain only the simplest of molecules which rarely possess more than half a dozen atoms. The chemistry of even the simplest living things is almost infinitely more complex than the whole of this tremendous collection of galaxies and stars put together. Compare, for example, the formulae of such inorganic substances as sulphuric acid ( $\text{H}_2\text{SO}_4$ ), common salt ( $\text{NaCl}$ ), Epsom salts ( $\text{MgSO}_4$ ), or hydrogen peroxide ( $\text{H}_2\text{O}_2$ ), with a

biological substance such as insulin, which has a formula so complicated that to write it down in full would take up the larger part of this page, and we shall feel much less impressed by the mere "multitudinosity" of the non-living sphere. In his *Doubt and Certainty in Science*, Professor J. Z. Young has pointed out that the human cerebral cortex, the thinking area of the brain, which represents but a small portion of the whole, contains a number of cells more than seven times the total human population of the entire world. Furthermore, its organisation is of such inconceivable intricacy that beside it the organisation of the whole of the rest of the universe can be regarded only as child's play.

So complex are many of the compounds in living cells and tissues (including blood and sap) that it was long supposed that they could be formed only in living organs. The chemistry of carbon compounds is still called "organic" chemistry. In 1828 the German chemist Wöhler artificially made the substance urea, present in blood and urine of higher animals. Many natural substances have since been made artificially, as well as others, such as chloroform, D.D.T., nylon (pp. 566, 575, 652), many drugs, dyes, etc., which do not occur in nature.

Hydrocarbons (e.g., methane, benzene) consist of carbon and hydrogen only; in sugars, fats, alcohols, and organic acids, oxygen is added; the constituent amino-acids of proteins contain nitrogen in addition (some, also sulphur). Complexity is, however, mostly manifested in *arrangements* of atoms of few kinds; as in the mirror-image molecules mentioned below, and the vitamin-like carotene hydrocarbons all  $C_{40}H_{56}$  which differ biologically and otherwise.

The fact that many of the compounds found in living matter can be synthesised in the laboratory gradually led chemists and biologists to realise that, apart from its greater complexity, there is nothing unusual about the chemistry of life, and a new science, the science of biochemistry, was created. More recently an unexpected link between living and non-living was discovered when it was found that some viruses, the smallest and simplest of living things, can exist in crystalline form. Now in crystals the constituent atoms are arranged in rows one above the other, like bales of cotton in a warehouse, and it is extremely difficult to see how living things can at the same time be "alive" and yet exist in crystalline form. Nevertheless, this is so, and the viruses show the most typical of reactions of living matter in that they are capable of reproducing themselves. It is no longer so easy to draw a sharp dividing line between the organic and inorganic, the living and non-living spheres.

Life probably arose from physical agencies acting differentially on simple materials like water, carbon dioxide or methane, and nitrogenous matter, such as ammonia (along with others) when conditions were very different from those of today. If the first step was for the materials to group into suitable systems of atoms, the question is not only *how*, but what would be suitable? The farther the inquiry is pushed, the more awkward it appears (see *Abiogenesis*, p. 536). Three essentials stand out: the living material must contain water and be compatible with it, but must not be soluble; it must be able to reproduce in a way more specialised than viruses do; and it must have at least two kinds of organisation—biological (into at least single cells) and chemical.

About 1850 Pasteur's chemical studies offered a clue which led him to studies of microbes, via fermentations. Briefly, much of living matter consists of molecules having a one-way twist or polarity; that is true of all sugars and nearly all amino-acids (above). Every such molecule can exist in at least two forms, identical in every feature except that they have opposite twists; one is like the other seen in a looking-glass. Yet, nature tends to employ only one member of the pair: the mirror-image molecule of glucose has never been found naturally.

It has been suggested that natural insistence on unsymmetrical patterns of organic molecules is a reflex or "memory" of primeval conditions exerting some preferential stimulus. Ordinary light vibrates equally—without selection—in all directions; but reflected light, as from the moon or

still water, has its vibrations appreciably in particular planes or modes, and is said to be polarised. Solutions of mirror-image molecules act oppositely on polarised light, that being their main physical distinction which may have given the first selective impulse towards life.

Living is a set of reversible chemical processes, constantly going both ways so that growth or an apparently steady state is attained. When an organism becomes unable to reverse its tissue changes with the aid of its enzymes (p. 168) and water, it dies; because it has lost the ability to maintain its organisation, and is ready for dissolution (p. 173) and for the return of its elements to general circulation.

## HOW PLANTS AND ANIMALS HAVE EVOLVED.

**Historical Theories.**—As most people are aware, the theory which attempts to explain the origin of the many species of animals and plants is Darwin's theory of evolution. But it would be wrong to suppose that the concept of evolution, the belief that all living things have developed over many centuries from much simpler forms, originated with Darwin's work in the nineteenth century; for, as we have already seen, certain Greek writers in the fifth and sixth centuries B.C. had already thought of such a possibility. Much later the Frenchmen Buffon and Lamarck, during the late eighteenth and the early nineteenth centuries, developed similar theories, and the philosopher Descartes (who died in 1650) privately held evolutionary views which he suppressed because of "distaste of hell-fire and respect for the Church."

The importance of Charles Darwin, who, with another Englishman, Newton, may safely be accounted one of history's greatest geniuses, was that he was able to present a scientific account of how evolution might have taken place—the theory of natural selection, generally described as the theory of "the survival of the fittest." Even so, Darwin's work would have been impossible had it not been for the work, particularly in the field of geology, of other great men at an earlier period. In 1788, for example, James Hutton of Edinburgh, the founder of modern geology, had shown that the history of the earth had been marked by widespread changes in sea-level, periodic volcanic action, and the raising and wearing-down of mountain ranges in the way we have already discussed. From his work it followed that the earth must be vastly more old than had previously been imagined by those who, without any adequate theological justification, had claimed the Biblical account in the book of Genesis to be literally true. Hutton was followed by William Smith, who, between 1799 and 1817, developed a technique for dating geological strata by means of the fossils they contained, and thereby showed that, at different periods in the earth's history, widely varied types of animals and plants have existed.

There have been, as we have noted already, periods when fishes were supreme, or amphibia, or reptiles; seaweeds precede ferns in the record of the rocks, and coniferous trees the flowering plants. How else can these facts, which are beyond doubt, be explained, except by supposing that life upon earth has developed in a particular order and, in general, from simpler forms to more complex? Certainly attempts were made to explain away such observations, for example, by the Frenchman Cuvier, who, while accepting the geological data, supposed that each epoch in the earth's history had ended in a world-wide catastrophe, after which creation had begun anew. Even more fantastic was the thesis of the brilliant English naturalist Gosse, who was led by his religious beliefs (he was a member of the Plymouth Brethren) to accept the belief that the fossils had been placed in the rocks by a wily Deity to test man's faith.

However, the work of the early geologists made it possible for Darwin's theory to be more readily accepted by scientists than it might otherwise have been, and this theory was based upon the two facts of variation and natural selection.

**Darwinian and Lamarckian Theories.**—It is an observed fact that the offspring of parents in the



animal and plant world both resemble and differ from their parents, and a matter of common-sense to suppose that, in a world in which not all those creatures which are born can survive, those which are best fitted to do so will live longer and reproduce themselves more abundantly than those which are less fitted to the existing conditions.

This, in essence, is the Darwinian theory, and it must be contrasted with the theory of Lamarck to the effect that characteristics acquire during the life-time of organisms could, if useful, be handed on to their offspring. The latter thesis is known as the theory of the inheritance of acquired characters and is now rejected by most scientists, with a few exceptions who will be mentioned shortly.

To put the matter rather crudely, we might say that Darwin's theory of natural selection implies that giraffes have long necks because, in a country in which the food-bearing trees were tall, those animals which happened to be born with relatively long necks were at an advantage, and lived longer and produced more offspring than those with shorter necks. But long-necked parents have, on the average, more offspring with long necks (since the offspring, for reasons which we now know but Darwin did not, tend to resemble more than they differ from their parents), and so the quality of "long-neckedness" tends to increase and that of "short-neckedness" to die out. Lamarck, on the other hand, would have said that the parent animals had to stretch out their necks in order to reach the more succulent branches of the trees, their necks grew longer, and this acquired change was handed on to the offspring. This theory, however, cannot reasonably be substantiated in the light of modern knowledge. Let us take for example, the now well-known fact of drug-resistance in bacteria exposed to penicillin or the sulphonamides, when the physician finds that the formerly potent drug no longer works to destroy the bacteria and his patient may die. Is this result due, as a Lamarckian might suppose, to the bacteria becoming habituated to the drugs and passing on the resistance they have acquired to their offspring? No, as the American biologist Demerec has shown, this is not at all what has happened. The true explanation is that in every generation of bacteria there already exist, completely by accident, a few variant individuals which are resistant to the drug, and ordinarily these are so few as to make no difference to the effectiveness of penicillin or streptomycin or sulphonamide in curing the patient's illness. But if the treatment is continued too long these variants continue to multiply and survive, whilst their competitors, formerly the "normal" bacteria, are all killed off until finally the new penicillin or streptomycin-resistant strain begins to predominate. Similarly, the insects known as water-boatmen vary "accidentally" in colour and shade, but when exposed to insect-eating fish, the water-boatmen of a colour which makes them inconspicuous against the natural background will survive and the others will not. Darwin's idea, therefore, may be expressed as follows: (1) there are always more organisms born than can possibly survive; (2) all organisms show accidental variations from the norm; (3) any variation which proves useful in a given environment has survival value, and gives its possessor an improved chance of surviving and having more offspring; (4) that variation, therefore, will spread throughout the species by the elimination of those who do not possess it and the favouring by natural selection of those who do; (5) in this way, new varieties and even new species may come to be established.

But, it may well be asked, granted that natural selection can cause minor variations to arise within a species, is it possible to explain in this way the "origin of species"? Can we explain by natural selection the transformation of reptiles into birds or of monkeys into man? The answer, according to the vast majority of modern biologists, is that we can. "Natural selection," says Professor R. A. Fisher, "is a mechanism for generating an exceedingly high degree of improbability." That is to say, changes which are small in themselves, may, when selectively picked out by the mechanism of natural selection, add

up in the millions of years which have been available to very considerable changes in a species. On the other hand, the modern biologist attaches less significance to the importance of the minute "natural" variations which Darwin emphasised, and more to the periodic occurrence of "sports" or mutations which Darwin had thought largely irrelevant. This change in outlook was due to the work of the biologist Hugo de Vries, whose *Mutation Theory* was published in 1901. De Vries claimed, and his view is now generally accepted, that evolution depends, not upon the accumulation of continuous minute variations, but primarily upon relatively large and discontinuous variations or mutations. New species, according to this theory, may arise quite suddenly because of changes in the genetic constitution of the organism of the type popularly known as "sports." Two cases of mutation which are well known to the biologist may be mentioned here: the copper beech and the Shirley poppy. The copper beech-tree, with its brownish-red leaves, is now a familiar sight in most parts of the country; but until the seventeenth century it did not exist. About that time a single specimen arose spontaneously from ordinary beech-tree stock, and it has bred true ever since. The first specimen of the Shirley poppy, with its variously coloured petals, was found by the Vicar of Shirley growing amongst a field of ordinary poppies in 1880; he sowed the seeds of the one plant he had found, and it, too, has bred true ever since. It seems likely, then, that such major types of variation occurring spontaneously are of fundamental importance in the evolutionary process.

**The Evidence for Evolution.**—Let us now sum up the evidence for evolution.

1. *The Geological Record.*—We have already seen that in the record of the rocks the simpler organisms precede in time the more complex. Fish appear before amphibia, and both before reptiles. Animals without a backbone occur much earlier in the record than the vertebrates. Similarly, non-flowering plants occur before flowering, and cone-bearing trees before those in which the seed is enclosed. Unless we are prepared to accept quite fantastic theories such as those of Cuvier or Gosse in order to explain such observations, it seems impossible to avoid the conclusion that evolution has happened, whatever the mechanism by which it has occurred.

2. *"Missing Links."*—Although it is true that the links between species are less common than one might expect, nevertheless such links have in some cases been found. For example, the creature known as archæopteryx, found as a fossil, is bird-like in shape; it possessed wings and feathers, and was obviously able to fly. On the other hand, it had a long tail similar to that of a reptile, a reptile's mouth and teeth, and, whereas in modern birds the bones of the wing are fused together, this creature had a quite definite thumb. This seems a clear case of a missing link between birds and reptiles. It must be remembered that the record of the rocks is by no means complete, and that far more fossils have been destroyed in the long course of prehistory than have ever survived, and, of course, many yet remain to be found.

3. *Relatively Complete Series.*—The development of the horse is known fairly completely from the record of the rocks. The earliest-known "horse" was about the size of a hare or a small terrier, and ran about upon the tips of its three toes. It was vastly different from the horse of today. Similarly, not one, but many links are known between man and ape.

4. *The Evidence from Geographical Distribution.*—The marsupials or pouched mammals (e.g., the kangaroo) are found only in Australia; for the Australian continent was cut off from the mainland about 60 million years ago, and at this time the more modern type of mammal in which the offspring develop to an advanced stage within the mother's womb had not been evolved. Yet, as Julian Huxley points out, although the only type of mammal naturally found in Australia is the marsupial, these have branched out into a large number of species very similar in appearance to those which developed elsewhere in the world amongst the placental or modern mammals. There are marsupials which look like dogs, moles, squirrels, and ant-eaters; yet they have no near biological

relationship to such creatures. It is almost as if life had happened to develop along similar lines in two separate planets with similar environments.

5. *Recapitulation*.—Animals develop in a way which is incomprehensible unless we assume that early development is, in some degree, a recapitulation of biological history. Why, for example, should the human child in the early stages of prenatal development show gill-slits like a fish unless it is recapitulating its evolutionary story?

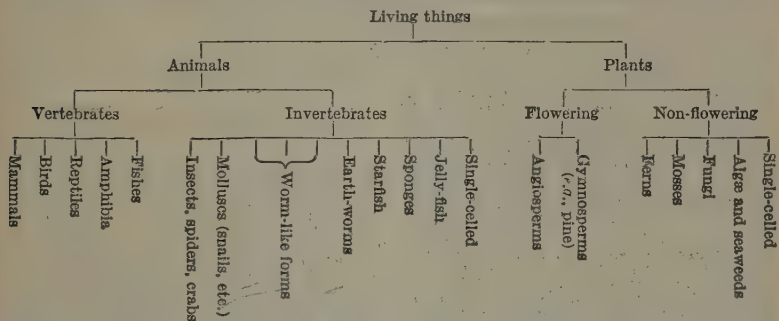
6. *The Evidence from Comparative Anatomy*.—The anatomical similarities between the many different species of vertebrate are striking. As Darwin wrote: "How inexplicable is the similar pattern of the hand of a man, the foot of a dog, the wing of a bat, the flipper of a seal, on the doctrine of independent acts of creation?"

7. *The Evidence from Vestigial Characters*.—There are structures in the human body which are meaningless unless regarded in the light of evolutionary history. The appendix, for example, is useless to man, but important to certain herbivorous mammals; in the inner corner of our eye there is a vestige of the third eyelid found fully developed in birds and rabbits; the muscles whose function it is to move the ear in more primitive mammals no longer work in most men.

The present status of Darwinian theory is best summed up in the words of Professor Neville George, who writes in his *Evolution in Outline*: "A sharp distinction must be made between the two aspects of Darwinism. As an alternative

ments to the contrary in the Bible, he would have been tempted to suggest a common origin for horse and ass, man, and monkey. In botany, John Ray (1627-1705) made a classification of plants in which he divided the flowering plants into the two great categories still used today—the monocotyledons and dicotyledons. (When flowering plants first arise from the seed, it may readily be noticed that some thrust up only one leaf—these, the grasses, are monocotyledons—whilst others thrust up two—these, the dicotyledons, comprise the rest of the flowering plants). But the classification which until fairly recently was the best known was that of the Swedish botanist Linnaeus (1707-78), who devised the double system of scientific nomenclature still used today, and he was the first naturalist to place men, apes, and lemurs into a single category—the order of primates. Below is given a very simple classification of living things which will give some indication of the way in which they are grouped by biologists.

It is, of course, impossible in the space available here to cover the ways of life of the vast number of animals and plants, their physiology (i.e., the way their bodies work), their anatomy (i.e., the geography of their bodies), or their histology (i.e., the microscopic structure of their tissues). Julian Huxley, in his *Evolution in Action*, describes graphically the number and variety of living things with which the biologist has to deal: "At the present time, over a million species of



word for biological evolution, or as an expression of the fact that evolution enters into the ancestral history of animals and plants, it is unexceptionable, and is indeed the central theme of current biology. But as implying a particular kind of evolutionary mechanism which Darwin favoured, it is by some scientists regarded as erroneous and by many others as inadequate. During the present century its deficiencies in genetics have been met by Mendelian theory, the synthesis of Darwinian natural selection and Mendelism being known as Neo-Darwinism."

We may, therefore, conclude: (1) That evolution is an undoubted fact. (2) That "natural selection"—the "survival of the fittest," as described by Darwin is also an undoubted fact. But (3), many scientists doubt whether natural selection is *in itself* capable of explaining the evolution which has occurred (i.e., whether the accumulation of small and continuous variations is the most important mechanism whereby evolution occurs).

**How Are Living Things Classified?**—One of the greatest thinkers of all time, and certainly one of the earliest and best biologists, was the Greek Aristotle, tutor to Alexander the Great. In his writings Aristotle described more than five hundred animals with diagrams illustrating his dissections, and he was one of the first biologists to see the significant differences that may lie between superficial similarities; for example, he was aware that the whale, in spite of its superficial similarity to a fish, is, in fact, a mammal. Many centuries later, Buffon (1707-88), whose name has already been mentioned, made some attempt at classifying animals. Noting the anatomical similarities between mammals, he wrote that, had it not been for the express state-

ments to the contrary in the Bible, he would have been tempted to suggest a common origin for horse and ass, man, and monkey. In botany, John Ray (1627-1705) made a classification of plants in which he divided the flowering plants into the two great categories still used today—the monocotyledons and dicotyledons. (When flowering plants first arise from the seed, it may readily be noticed that some thrust up only one leaf—these, the grasses, are monocotyledons—whilst others thrust up two—these, the dicotyledons, comprise the rest of the flowering plants). But the classification which until fairly recently was the best known was that of the Swedish botanist Linnaeus (1707-78), who devised the double system of scientific nomenclature still used today, and he was the first naturalist to place men, apes, and lemurs into a single category—the order of primates. Below is given a very simple classification of living things which will give some indication of the way in which they are grouped by biologists.

#### ADAPTATION TO ENVIRONMENT.

**The Cell Theory.**—In the early nineteenth century two German scientists, Schleiden and Schwann, were able to show, the former in the case of plants, the latter in the case of animals, that all living tissues are made up of vast numbers of separate cells. These cells all share certain common features, no matter in which tissue they occur, but also, of course, they differ from each other, depending upon the sort of function they have to carry out in relation to the whole. As a "typical" cell, we may take the amoeba, a minute single-celled animal which is small enough to be just beyond the power of the naked eye to see, and consider its structure and mode of life. The amoeba has the appearance of a minute blob of colourless jelly composed of the material known as protoplasm, which was described by Huxley as the physical basis of life. By special methods it can be shown that the



apparently undifferentiated jelly has, in fact, a quite definite structure; for the major part of the cell-body is a spongy network of firm jelly, within the meshes of which a more fluid portion is held. The significance of this type of structure is that the internal surfaces of the cell (upon which most of the physico-chemical reactions of life take place) are thereby enormously increased. (This utilisation of a spongy network to increase the extent of the all-important surface areas upon which chemical and physical reactions most readily occur is a commonly-found technique in living bodies which enables a vast surface area to be contained in relatively small space. The human lung, for example, consists of such a spongy framework enclosing a surface area which, if spread out completely, would cover more than one hundred square yards—of course in the case of the lung the network is made up of millions of cells, whereas here we are discussing the internal structure of a single cell.) Like all cells, the amoeba is bounded by a cell-membrane, a barrier which permits the absorption of materials to be utilised in maintaining life, and conversely, the excretion of waste materials; we may picture the cell-membrane as a sort of national frontier which selectively permits or refuses exit or entrance to would-be travellers. The control of the vital processes in the cell is carried out by a small, roundish body known as the nucleus, which lies usually somewhere near its centre. Without the nucleus the cell could not exist or carry out its essential functions.

The remarkable thing about the amoeba is that within the small compass of a single cell all the necessary functions are carried out just as adequately (although, of course, at a much simpler level) as in the vastly more complex human body. When the amoeba has to move, it does so by thrusting forward a portion of the edge of its limiting membrane in the form of what is known as a pseudopodium, gripping the ground with this, and flowing forward. When presented with a tiny grain of glass coated in meat-extract, it takes the object into its body, absorbs the extract, and rejects its glass core. When presented with a harmful stimulus, it withdraws, and when it feels the need to reproduce its kind it simply divides, nucleus and all, into two. In other words, the simple amoeba, as effectively as the largest elephant or the most intelligent man, carries out the necessary functions of digestion, respiration, circulation, sensitivity and adjustment to the environment, movement, and reproduction; and so, in fact, does every living cell, no matter to what animal or plant it belongs. The cells within the tissues of multi-cellular individuals are, as we have said, modified from the basic plan represented by the amoeba according to the functions they have to perform. Muscle cells, for example, have specialised in the function of movement; nerve-cells have specialised in sensitivity, skin-cells in protection, and so on. There is a close similarity between the single-celled amoeba and the small tribal community of men in which no specialisation has as yet developed—where every man is his own hunter, warrior, cook, and blacksmith. The many-celled animals or plants, on the other hand, resemble a modern industrial city in which each man is highly specialised and has his own particular duty to carry out in relation to the whole—the soldier is almost a whole-time warrior, the scientist a full-time thinker, the cook a specialist in feeding, and so on. (Incidentally, when life gave up dependence upon the sea it did not thereby free itself from the need for salt water; for our blood-stream is an inner sea with the same salinity as the primordial ocean which once bathed our ancestors—we do not need the geographical sea, because we carry it about with us, and our body cells are still bathed in its essential tides). Specialised tissues are recognisable by their design—the skin cell because it resembles a paving-stone, the nerve cell because it resembles a telephone wire, the circular blood-cell, the spindle-shaped muscle-cell, and many other types. It is the work of the histologist, the microscopic anatomist, to study such details of the minute structure of living things.

#### THE PHYSIOLOGY OF MAN.

**Digestion.**—Animals, unlike plants, can exist only by taking in and digesting organic material—

that is to say, the dead bodies of other animals or plants. The necessary materials which they must absorb from their food come under the three categories mentioned elsewhere (p. 783), of protein, carbohydrate, and fats. Proteins are the body-building foods, the "spare parts" if we think in terms of a machine, which are found in lean meat, nuts, cheese, and egg. Carbohydrates, the starches and sugars, are found in fruits, grains, and so on; they are fuel foods, the petrol of the body-engine. Finally, fats, found in animal and vegetable oils and fats, form the insulating system of the living machine. In addition to these, water, vitamins (see in Medical Section), certain inorganic salts, and minute quantities of certain metals (iron and calcium) are necessary to life. Dieticians measure the value of food (a) in terms of the necessary amounts of these basic foodstuffs, and (b) in terms of its energy-giving value. The average man or woman engaged in light work requires  $3\frac{1}{2}$  oz. of protein,  $3\frac{1}{2}$  oz. of fat, and  $16\frac{1}{2}$  oz. of carbohydrate daily, and such a diet, in terms of energy, provides nearly 3000 Calories; an individual doing heavy work may require 6000 or more Calories daily. (It must be emphasised that an adequate diet must supply both the requisite number of calories and the correct proportions of the basic foods.) (See Food in "Medical Section.")

**Enzymes.**—Food, of whatever sort, is broken down in the digestive tract—the stomach and small intestine—into the few simple materials which the body can make direct use of. Fats end up as the so-called fatty acids and glycerine, carbohydrates as glucose and fructose, and proteins as amino-acids. The most elegant meal thus ends up in the same forms as the most humble, and this is the scientific explanation of the observation which troubled the poet:

"It's a very strange thing, as strange as can be,  
That all that Miss B eats turns into Miss B."  
(Walter de la Mare.)

The substances which bring about this breakdown which we know as digestion are known as enzymes, a word which means "in yeast," because it was in yeast that they were first discovered. The enzyme in yeast is, as we know, used in the baking of bread and in brewing, because of its property of breaking-down starch into sugar and alcohol; in the process it liberates carbon dioxide gas, which can be used to leaven bread. The enzymes in the digestive tract of animals, pepsin, rennin, trypsin, steapsin, and others, each perform a specific function in breaking down individual food substances. A very large number of enzymes, each producing different types of effect, have been found in nature in every kind of living thing; they exist in every tissue, and are as necessary to plants and bacteria as to the more complex animals. Life is a matter of enzymes, for nearly all vital processes take place through their activity, and it is an extraordinary demonstration of the essential unity of life that the simplest organisms possess enzymes which are very similar in nature and even in number to those of the highest. For example, a single bacterium so small that it would take about 300 million million to weigh 1 oz. may have in its protoplasm several hundred distinct types of enzyme, or even a thousand or more. It has recently been found that such drugs as the sulphonamides and the antibiotics (penicillin, streptomycin, aureomycin, etc.) produce their fatal effect upon certain bacteria by putting their enzyme systems out of order.

**Environment, Internal and External.**—Absorbed into the blood-stream, the amino-acids, fatty acids, and glucose go each to their appointed place; the amino acids to replace damaged or aged tissue-cells, the fatty acids to the fat stores of the body, and the glucose to the liver, where the excess over what is required is stored in the form of glycogen. Broken-up and useless protein (nitrogenous) material is excreted through the filters of the kidneys in the form of urea and uric acid. The body always works as a unit, and shows a remarkable ability to maintain a constant balance between its constituent substances and to compensate when its balance is upset. This tendency is described by the physiologist Cannon as "homeostasis." Although the body-balance is constantly being

disturbed both by the breakdown of its own tissues and by changes in the surrounding environment, immediate steps are always taken to maintain a state of adjustment. When food material is used up the stomach muscles begin a series of rhythmic contractions which are consciously appreciated as a feeling of hunger and followed by the search for more food to redress the lost balance. Violent exercise necessitates the taking in of more oxygen, and automatically the organism breathes more rapidly; excess heat is produced and, in order to disperse this into the atmosphere, the tiny blood-vessels of the skin dilate, causing more heat to be given off, so that the body-temperature remains almost constant. In cold weather, when heat has to be retained, the blood-vessels contract, the skin becomes pale, and heat-loss is reduced. If we drink a lot, the blood might be expected to become diluted, but the excess water is excreted by the kidneys, leaving the chemical constitution of the blood unchanged; conversely, when water is lacking, the urine excreted is small in amount and concentrated. Within a great variety of changing circumstances the body-balance is maintained.

**The System of Defence.**—The red cells of the blood are mainly concerned with the transport of oxygen, whilst the white cells, which are normally in the proportion to the red of 1 to 500, are of various types, all concerned with defence. Bacteria entering the body exert their harmful activity through the poisonous toxins which they excrete, and one type of white cell has the function of producing antitoxins—substances which neutralise the bacterial toxins. Yet another type of white cell produces antibodies which act upon the germs, causing them to coagulate into clumps which are more easily dealt with by the third type of white cell, the phagocyte, which absorbs bacteria in much the same way as an amoeba digests other small plants or creatures. Bacterial invasions of the body are a battle which either side may win or lose, and there are always casualties; in the case of an infected wound, for example, the pus which exudes from the surface is largely composed of the bodies of white cells which have perished in the struggle. This defensive system is the theoretical basis upon which is built much of the preventive medicine of modern times. When, for instance, a person is inoculated against typhoid, what we are, in fact, doing is to inject into him a carefully calculated dose of dead typhoid germs which will cause his body to respond with the production of antitoxins and antibodies. In the case of any typhoid infection these may destroy the germs completely or, at the worst, ensure that the infection is a very mild one. On the other hand, we can inject animals with the disease, causing them to produce antitoxins which are then withdrawn in the blood-plasma and injected into a person who is either already ill or has recently been exposed to infection. Whereas the former method produces what is known as "active immunity," the latter leads to a more temporary state of "passive immunity." Active agents are known as "vaccines," passive ones as "sera," the plural of the word serum. In some cases—e.g., in the case of the new B.C.G. vaccine against T.B.—the patient is actually injected with live germs which have been bred to produce a weak strain harmless to the individual but nevertheless capable of producing immunity when they are injected.

**The Nervous System.**—Perhaps the simplest way of understanding the nervous system, which has the function of correlating all the activities of the complex mechanism we have been discussing, is to regard it as a hierarchy of control similar to that found in a factory or the army. All the more important messages reach the Board (the cerebral cortex or higher centres of the brain) along the sensory nerves (the incoming telephone system), and on the basis of this information the Board sends out directions as to what to do along the motor nerves (the outgoing telephone system). But, it need hardly be said, the arrival of all available information from below, so far from being a help, would be a nuisance, and to a considerable extent the various departments have to be autonomous and manage their own internal affairs. A prick from a pin causes the limb to

be rapidly drawn away from the source of pain long before ever the message has reached the brain; for the incoming message goes at once to the spinal cord, which automatically sends back the impulse to withdraw. This is an example of the simplest kind of nervous action described as a spinal reflex. A more complex type of automatic control is seen when we attempt to learn skating or cycling; in this case we begin by painfully and deliberately carrying out the appropriate actions, which, at this stage, are initiated by the cerebral cortex. But as we improve the actions are taken over by the lower centres in the cerebellum and elsewhere, which act as an automatic pilot in an aircraft, and we cycle or skate without conscious effort. It is therefore a principle of nervous action in the more complex animals that the higher centres should not be troubled with what can equally or more effectively be carried out by the lower ones.

No part of the body gives a clearer picture of evolutionary development than the nervous system. As we move up the evolutionary scale the older and more primitive types of nervous system do not so much disappear altogether as become overlaid by newer levels. Thus roughly speaking we find the more primitive functions situated in the lower parts of the brain and the functions which are more recent in evolution higher up. The statement of Aristotle that the soul of man has vegetative, animal, and rational parts, is very near to the truth; for in the cerebral cortex is the rational or thinking brain and in the lower centres of the cerebellum and thalamus there lies what might justly be described as an animal brain concerned mainly with sensation or movement and a primitive degree of consciousness. Lowest of all is the vegetative brain of the hypothalamus concerned with the most simple of all the body's functions—the control of the internal organs, the beat of the heart, the movements of the intestines, and so on.

That part of the brain which we have described as the hypothalamus is the control centre of the most primitive nervous system: the autonomic nervous system, which takes the form of certain nerve chains lying at the back of the chest and abdomen. The familiar term "solar plexus" refers to one of the ganglia or knots of nerve cells upon this chain, which possesses many such ganglia scattered throughout its length. Whereas the nerves of the central nervous system are either sensory or motor in function, the nerves of the autonomic system are divided into what are described as sympathetic and parasympathetic groups, the former concerned with preparing the organism for emergencies, the latter with preparing it for relaxation. When the organism meets a dangerous situation, it has only two possibilities of action—fight or flight—and the sympathetic division of the autonomic nervous system has the function of preparing it for such circumstances. It is this part of the nervous system which produces the rapid heart-beat, the dilated pupils, the pallor, and (in the case of hairy animals) the erect hair of the back and neck, all of which are the outward signs of fear and anger. There are also internal changes: an increased blood-sugar, an increase of blood-supply to the muscles with a reduced supply to the internal organs, and so on. All these changes, which result from the secretion of a substance known as adrenalin into the bloodstream under the influence of sympathetic stimulation serve a useful function to the organism—they increase its fighting efficiency, or, should the worst come to the worst, its ability to escape.

The parasympathetic division of the autonomic nervous system has an exactly contrary effect. Under its influence, the heart beats more slowly, digestion (which is inhibited by sympathetic action—hence the danger of eating when one is angry or worried) proceeds peacefully, the pupils contract, and the skin becomes flushed. The results of parasympathetic stimulation are seen at their most obvious in the baby after it has been fed at its mother's breast, or, a somewhat similar situation, in the gourmet who, after a large meal, is settling down to enjoy his cigar. The autonomic nervous system has only recently been fully investigated, and is of tremendous importance in understanding the so-called "psychosomatic disorders" such as angina pectoris, gastric ulcer, high blood-pressure, and so on, all of which are



believed to be physical diseases due basically to chronic anxiety. The autonomic nervous system is, in fact, the physical basis of the emotions; the thalamus, the part of the brain in which emotions become conscious.

**Hormones.**—The sexual characteristics of men and women are controlled by secretions from the sex-glands. These secretions are examples of the important class of physiological substances known as hormones which have a profound influence upon the body functions, structure, and even the personality of the individual. The thyroid gland in the neck produces a hormone named thyroxin which, when secreted in excess, causes the individual to become thin, excitable, flushed, and nervous; when, on the other hand, the secretion is lacking, as in the disease of myxedema, the patient becomes slow, stupid, and emotionally dulled. The suprarenal glands, which, as the name implies, lie above the kidneys, produce several hormones, one of which, adrenalin, we have already described in connection with the autonomic nervous system. Adrenalin enables the individual to face an emergency, to fight or run away. Another suprarenal hormone, cortisone, has recently produced dramatic results in the treatment of certain diseases; it is mentioned in the Medical Section. All these glands have this in common, that they secrete their hormones directly into the bloodstream instead of by way of a duct; they are therefore known as the endocrine or ductless glands. The most important endocrine gland of all is the pituitary, which is about the size of a pea and situated just below the hypothalamic area in the base of the brain. The pituitary has been described as the "conductor of the endocrine orchestra," since it controls all the other glands, and more than any other gland it profoundly affects body-build and character. Pituitary defects or excesses may cause the individual to grow into a giant (gigantism or acromegaly); to grow monstrously fat; to become a human skeleton; to be a wizened dwarf or a child who never grows up. Here again, as in the case of the autonomic nervous system, we find ourselves on the narrow border-line between physiology and psychology.

#### THE PHYSIOLOGY OF OTHER ANIMALS.

**Digestion.**—What we have said about the structure and function of the human body applies very closely to the other mammals. It may be useful to note, however, some of the variations which have resulted from adaptation to widely divergent ways of life. In the case of digestion, for example, there are characteristic differences between the digestive systems of animals which are carnivorous and those which are herbivorous. All herbivorous animals have flat grinding teeth for crushing their food, and sheep have no front teeth in the upper jaw, the teeth being replaced by a horny plate against which it clips off the blades of grass with the lower teeth and swallows them immediately. The stomach of sheep and other animals that chew the cud consists of four separate compartments, and the food swallowed during grazing enters the first two compartments, in which it is stored and softened. After eating, the sheep settles down quietly to "chew the cud"—a process in which the food from the first two compartments of the stomach is returned to the mouth for further chewing; it is then returned through the first two into the third compartment, and returned again. Finally, it reaches the last, the true stomach, where it is digested by the gastric juices. Carnivorous animals need sharp tearing teeth, and as their food is largely protein, and protein digestion begins in the stomach, they gulp their food down, as one may observe in a dog.

The amoeba eats simply by flowing round and absorbing food-particles, and even in more complex animals such as the hydra, the body-cavity and digestive tract are identical. Earth-worms, however, have a more complex digestive tract consisting of mouth, pharynx, crop, and gizzard (in which the humus upon which they feed is crushed into a soft pulp) before entering the intestine. This sort of arrangement is very similar to what is found in birds in which the food from the mouth (which is without teeth) passes down

the cesophagus to be softened and stored in the crop. From the crop it enters the stomach to mix with the digestive juices, and then passes on to the gizzard, which has thick muscular walls and contains stones which the bird has swallowed and which take the place of teeth. In the gizzard the food is ground to a pulp.

In birds there is no separate excretion of urine and faeces, and the faeces contain waste matter from both intestines and kidneys which passes out through a single tube or cloaca, which is also the tube by which impregnation takes place and by which eggs leave the body. Bird faeces are rich in nitrogenous materials and, in the form of guano, are a valuable manure.

**Movement.**—Movement in the mammals is usually upon land, but we have the interesting exceptions of seals, sea-lions, walruses, and whales, in which the limbs have become modified to form flippers for swimming in water. Nevertheless, these flippers in their bony structure correspond, bone for bone, with the limbs of land animals. The limbs of bats have been even more drastically modified for progression in the air; in this case the bones of both fore- and hind-legs have become encased in the covering of skin which forms the wing. Other, although slighter modifications, are seen in the use made by monkeys and man of the fore-limbs for manipulation of objects; man, however, is the only mammal which does not use the fore-limbs for walking at all.

**Reproduction.**—There are two modifications of the reproductive function amongst mammals which are worth noting here. The echidna and the duck-billed platypus are unique in that they lay eggs, and marsupials, such as the kangaroo, compromise between this method of reproduction and that found amongst the placental mammals (i.e., all other mammals which retain the offspring within the uterus until it is more or less ready to assume a semi-independent life of its own). The young of the kangaroo are born when they are only about 1 inch long, and are then placed by the mother in the pouch on the front of her abdomen within which lie the nipples. The young kangaroo attaches itself by its mouth to the nipple, and remains in the pouch until it is fully developed.

Of course, all mammals, in common with birds, reptiles, amphibia, and indeed the vast majority of living things, produce eggs within which their young develop. The only difference is that in the placental mammals the egg hatches out inside the mother and does not possess a hard shell. The human infant, for example, develops within a membrane which resembles a cellophane bag filled with fluid in which the infant floats, and when we read of a baby being born in a "caul" this means that the bag did not rupture before birth as is usually the case. The child, in fact, was born in an egg-shell. Both birds and reptiles lay eggs upon land where they need protection, therefore they usually have a hard, or at any rate a leathery, shell; in the case of birds the egg needs to be kept warm by the parent's body and the offspring has to be fed, but reptiles usually live in hot climates and trust to the heat of the sun to hatch their eggs, after which the young are ignored. The young of reptiles are capable of looking after themselves immediately after birth, so reptiles, unlike birds, have few parental responsibilities. It is obvious, too, that all animals living upon land must reproduce themselves in such a way that fertilisation takes place within the mother's body; their mode of sexual intercourse, therefore, assumes more or less the same pattern as in the mammals. In the case of frogs and other amphibia, however, although copulation takes place with the male lying on top of the female's back and grasping her around the chest, fertilisation actually takes place just outside their bodies in the water as both simultaneously set free the male and female sex-cells.

By the time we reach the level of the fishes the possibilities of love between the sexes and parental care of the offspring become even less; for, although some fishes like the stickleback build nests which are guarded by the male, the eggs of most fishes are fertilised in the water. The female ejects the eggs at random to fall to the bottom of the pool or the ocean bed, and the male later sprays the "milt" or male sex-cells over them to produce fertilisation.

Further peculiarities of sexual reproduction

may be noted amongst the insects. In the ant, for example, the male and female go on a "nuptial flight," during which the female is fertilised; the male is short-lived, and neither male nor female use their wings on any other occasion. On this single occasion, the female takes into her body enough spermatozoa to last her for the rest of her life as a queen. As the thousands of eggs pass out of her body, some are fertilised by the sperms and others not, the fertilised eggs developing into males and females in the usual way, the non-fertilised developing into workers which are sterile or neuter females. Ants, as in the case of butterflies, bees and wasps, and other insects, pass through a complicated life-history; the eggs hatch into grubs or caterpillars, these later build cocoons or chrysalises (which are often mistakenly described by the sellers of fish-foods as "ant's eggs"), and from the cocoon arises the full-grown insect. But worker ants are not the only animals which can develop without fertilisation—even animals as high in the evolutionary scale as frogs can develop from eggs which have been specially treated in salt solution or pricked with a needle. Such individuals therefore have only one parent, the mother.

Still lower down the scale, we find that worms and snails are bisexual—that is to say, both male and female sex cells are present in the same individual. When copulation takes place, each individual fertilises the other. Finally, at the simplest levels, we have the asexual reproduction of the amoeba, which simply divides into two. Other single-celled animals, such as the slipper animalcule, paramecium, can reproduce both sexually and asexually; it may, like the amoeba, simply divide into two, or in the process known as "conjugation," two animalcules join together, mingling their substance, and then separate. From this last example, it can be seen that the significant aspect of sexual reproduction is not simply the increase of the species but rather the mingling of the genetic heritage of two individuals, with consequent possibilities of greater variation in the species. Conjugation in paramecium is not basically directed towards multiplication, but rather towards variation of the stock and regeneration of the individual.

**Respiration.**—Respiration occurs by various methods in different animal species, from the amoeba and other single-celled animals which depend upon direct absorption of oxygen dissolved in the surrounding water to the complex breathing systems of larger creatures. Worms, like amoebae and other simple creatures, absorb oxygen directly through the skin and transport it by means of hæmoglobin, which, as in man, is the oxygen-carrier of the blood. The hæmoglobin of worms, however, is dissolved in the plasma, and is not, as in the higher animals, contained in red cells. The bodies of insects are covered in a hard, horny armour made of a substance known as chitin, and they therefore cannot absorb oxygen directly as worms do. Nor is the oxygen carried in the blood stream. Instead, they have a row of apertures or spiracles along both sides of the body communicating with thin branching air-tubes which ramify throughout the system to which they supply oxygen without the intervention of the blood-stream. The oxygen is forced in and out of the body by movements of the abdominal wall similar to the breathing movements of other animals.

The breathing-apparatus of the fish has to be modified for a life in water, and, as is well known, the oxygen-containing water is taken in at the mouth and passed out at the gill-slits. Beneath the gills there are rows of filaments richly supplied with blood which absorb oxygen and discharge carbon dioxide through their thin walls. The tadpoles of frogs and other amphibia also possess gills, which at first are external, and then, like those of a fish, internal. Finally, some time before the tadpole leaves the water, the lungs develop, and it has to come to the surface in order to breathe atmospheric air. Adult frogs breathe through their nostrils, and air is forced into the lungs by contractions of the floor of the mouth (this, of course, is why the floor of a frog's mouth can be observed to move constantly up and down). But, even when fully-grown, frogs absorb additional air both through the lining of the mouth and through the damp skin.

In birds, breathing is adapted to the necessity of flying and a life of great activity. Muscular contraction of the chest wall produces expiration, not inspiration, as in the case of mammals. The lungs do not expand, and the excess of inspired air is stored in air-sacs outside the lung itself, but communicating with the lungs. When a bird breathes in, fresh air fills both lungs and air-sacs, and the oxygen is absorbed within the lungs as in mammals; on breathing out, the used air leaves the lungs, which are immediately filled with fresh air from the sacs. In the bird, therefore, both inspiration and expiration supply fresh air to the lungs—an important adaptation for such an active creature.

All these modifications of the basic processes of life are mentioned here in order to give the reader some indication of the variety and complexity of living things. We must now glance briefly at the corresponding functions in the plant world, taking as our basic example one of the higher flowering plants.

### THE LIFE OF PLANTS.

A simple classification of plants has already been given elsewhere, and a glance at this will show that there are single-celled plants just as there are single-celled animals. Amongst the most important of these are the yeasts and bacteria, both of which will be mentioned later. Algae, which form the green scum on stagnant ponds, are slightly higher in the evolutionary scale, and the other groups of non-flowering plants: seaweeds, fungi, ferns, mosses, and so on are fairly familiar to most people. Amongst flowering plants, the gymnosperms (i.e., "naked-seed" plants) are those in which the seeds are not enclosed in a fleshy fruit or seed-case—e.g., the firs, pines, and other cone-bearing trees. All the other flowering plants are described as angiosperms, for in them the seed is enclosed in a fleshy box at the base of the petals.

**The Life of Plants.**—Although plants manifest the same vital activities as animals in that they feed, breathe, move, reproduce their kind, and respond to stimuli, their general way of life is in important respects fundamentally different. Whereas animals can live only on the organic materials produced by other animals and plants, plants, with few exceptions, build up their own food from such inorganic materials as water, salts, and the carbon dioxide of the air. Water and salts are absorbed through the roots from the surrounding soil and the carbon dioxide from the air—at any rate in the case of land plants—water plants absorb the necessary gases from the surrounding water.

The method by which absorption of salts takes place is known as osmosis. This is a purely physical process based on the principle that, if two liquids of differing density are separated by a permeable membrane (e.g., a piece of parchment or pig's bladder), the denser attracts to itself the less dense. The roots of the higher plants are covered with fine root-hairs, within the cell-walls of which the sap is of a higher density than the salts dissolved in the water of the soil. The root-hairs, therefore, draw into themselves the weaker salt-solutions of the surrounding earth. However, the linings of the cell-walls are not equally permeable to all substances—they are what is described as semi-permeable membranes which allow some materials to pass and reject others. Each type of plant selects through the semi-permeable membranes of its root-hairs those substances which are most suited to itself; the absorption of salts is selective. (This, incidentally, is the reason why rotation of crops is necessary; for the constant growing of the same crop would very rapidly exhaust the soil of the particular salts it makes use of.)

Carbon dioxide from the air enters the plant by a different route. It passes into the leaves. There, with participation of the green substance chlorophyll, which assists in absorbing quanta (p. 158) of energy from sunlight, water is split up into its elements: the oxygen of water is set free while the hydrogen combines with the carbon dioxide in a manner not fully understood. That process is *photosynthesis*; it is the first of the impulses by which the almost inert carbon dioxide gas is built up into proteins, sugars, and other organic substances, some of which can be eaten and



have their carbon and hydrogen oxidised by animals. Thus the chemical cycle of life revolves around carbon: oxidised in respiration and otherwise, and reduced (combined with hydrogen) in photosynthesis and subsequent processes within the plant. These changes depend fundamentally and exactly on the elements of water.

In the process of *assimilation* or food absorption, therefore, plants take in carbon dioxide and give out oxygen. This, however, is a process distinct from *respiration* in which plants, like animals, take in oxygen and give out carbon dioxide. Respiration in both plants and animals goes on by day and night, whereas assimilation in plants occurs only under the influence of sunlight; since assimilation involves a greater exchange of gases than respiration, plants are actually giving out oxygen into the air in the hours of daylight. At night, on the other hand, when assimilation ceases, they are giving out carbon dioxide in the process of breathing. (This is why plants are removed from sickrooms at night—although the amount of carbon dioxide given out is really negligible.) All life upon earth depends upon the process of photosynthesis, without which inorganic materials could not be built up into the organic substances necessary for animal food.

Fats and proteins are, of course, also found in plants. The former are synthesised from carbohydrates, the latter, which contain sulphur and nitrogen in addition to carbon, hydrogen, and oxygen, are built up from carbohydrates and the organic salts absorbed from the roots. Since plants absorb relatively simple materials, no elaborate digestive system is necessary, nor is there much waste material left over. Excess water is got rid of by *transpiration*, a sort of sweating which takes place through minute openings or stomata on the under-surfaces of the leaves. It is through these openings, too, that carbon dioxide and oxygen enter and leave the plant in respiration and assimilation. Other waste material is got rid of by passing it into leaves which are about to be shed at Autumn or the end of the flowering season.

Stomata are closed during the night, but in the day they often excrete extraordinary amounts of water. The common birch-tree, for example, may pass out into the air anything from 15–85 gallons of water in the course of a single day—the actual amount depending partly upon the size of the tree, partly upon weather conditions and the quantity of water in the soil. Sunflowers excrete one or two pints of water daily, and for this reason are often grown in marshy soil in order to drain it.

**Plant Tissues.**—The salt-containing water which has entered the root-hairs passes by osmosis from one cell to another within the root until it finally enters the specialised tissue whose function it is to transport water. This tissue is the xylem or wood which is composed of cells which have lost their protoplasm but retained their cell-walls arranged in long, thin channels passing up the stem of the plant. Xylem is also the framework upon which the plant is supported, and in this respect it is analogous to the animal skeleton. The water is transported to the leaves, the workshops of the plant, in which salts, carbon dioxide, and water are manufactured into food-stuffs. These food materials now have to be carried throughout the rest of the plant, and this is done by the medium of the other main plant tissue, the phloem or bast. Plants differ from each other in the specific way in which xylem and phloem are arranged within their stems; in trees the wood or xylem tends to be central, and the bast lies round the edges below the bark; in herbaceous plants, on the other hand, the wood is usually at the periphery, either in an unbroken ring or as separate strands. If a cut flower is placed in a jar of water containing red ink or some other dye, sections of the stem will show the woody tissues coloured by the dye.

One of the mysteries of botany which has not yet been satisfactorily solved is the problem of how water passing up the xylem canals reaches the top of a tall tree. To some extent the pressure exerted by more water as it enters the roots must aid the upwards flow, and, on the other hand, loss of water from the upper parts by transpiration from the leaves must exert some pull, but neither of these theories are generally considered adequate to explain the observed facts.

Although plants have no nervous system such as is found in all but the simplest animals, they are, of course, capable of responding to external stimuli; for without response to stimuli to aid adjustment to the environment there can be no life. Plants respond to gravity, to light, to contact, and in a few cases to touch. For example, a plant turned upside down will slowly turn round and grow upwards once more; a seedling grows towards the light, and creepers grow their suckers on the side of the stem next to the wall, their branches and leaves on the other side facing the sun. The so-called sensitive plant has leaves which respond almost immediately to touch by drooping—apparently because the stimulus is transmitted to the base of the leaf, where there are "cushion-cells" which rapidly lose water into the surrounding spaces when the stimulus arrives. The loss of water causes the cushion to become less turgid, and hence produces drooping of the leaves. Somewhat similar, if less dramatic, are the sleep movements of those plants which close their petals for the night. We can only mention here the interesting experiments of the Indian scientist Sir J. C. Bose, who by means of very delicate instruments was able to measure the quivering and shuddering of injured plants and has also claimed that they are subject to shock and to the influence of drugs in the same way as human beings. Many of these responses and other activities of the plant are due to the hormones which, as in the case of animals, play a major part in their economy.

**Reproduction in the Higher Plants.**—Little need be said here about this subject, which to most people is fairly familiar. In the centre of a typical flower is the erect column known as the pistil, and surrounding it the more slender stamens; the former contains at its base the ovary, the latter at their tips the pollen carrying the male sex-cells. Some species carry male flowers (i.e., flowers with stamens) on one plant, female (i.e., flowers with pistils) on another; other species have male and female flowers on the one plant; and in yet others each flower carries both stamens and pistils. In the case of the date-palm, for instance, some trees are male and others female, and the male ones, of course, bear no fruit. On hazel-trees both male and female flowers grow on the same plant, and each is completely different in appearance from the other. In a buttercup, on the other hand, each single flower is both male and female. However the flowers are arranged, most species avoid self-fertilisation by various methods—for example, by ensuring that male and female elements reach maturity at different times, or, in the case where both anthers and pistils occur in the same flower, by having anthers which are too short for the pollen to reach the pistil.

Most plants are fertilised or pollinated either by insects or by the wind, and it is interesting to note that flowers which are insect-pollinated are nearly always gaily-coloured, have large petals, and are scented in order to attract the insect. Wind-pollinated flowers, on the other hand, are usually rather small, drab, and lacking in scent.

When pollen, whether wind- or insect-borne, lands upon the tip of the pistil each pollen-grain sends out a long pollen-tube which dissolves its way through the length of the pistil by secreting digestive enzymes. Finally, the pollen-tube, which carried two male sex-cells at the end, reaches the ovules in the ovary, which are thus fertilised and then become seeds. The former ovary is now described as a "fruit," in the centre of which are the seeds surrounded by the food-stuff, which, in certain species, is used for human food also.

When the seeds are ready to settle down to a separate life in the soil, it is necessary for them to be carried as far as possible away from the parent plant in order to avoid competition for soil and sunshine (this does not apply to annuals, which die down each year). Some seeds are winged in order that the wind may carry them far afield; others have hooks or burrs which adhere to the hides of cattle for the same purpose; the seed-box, as in the case of the gorse-bush, may be arranged so as to "explode" in the heat of the sun, scattering the seeds far and wide; or they may be swallowed by animals, carried in their intestinal canals, and excreted to grow elsewhere. In addition to the sexual mode of repro-

duction described above, most plants spread vegetatively by sending out shoots, and many water-plants are spread far afield when the shoots become entangled in the feet of birds which carry them from one pond to another.

**The Physiology of Other Plants.**—Some plants—indeed a very large number of them—are flowerless, and many of these flowerless plants lack chlorophyll and, therefore, are compelled to live upon organic matter as animals do. Bacteria, yeasts, and fungi are amongst the more important of these organisms, some of which live upon other living things as *parasites*, others upon dead organic matter as *saprophytes*. The bacteria are so universal and so important that they deserve far more space than is available here; for it is often forgotten that the harmful or "pathogenic" bacteria are only a relatively small group, and that most bacteria are not only harmless but necessary to man. Without bacteria to return the dead bodies of animals and plants back to the soil by a process of decay, the soil would not be fertile; for all life is a cycle in which the used-up materials, whether in the form of excreta or dead bodies, must be returned to the workshop of the earth to be utilised in building new life. Some plants, such as clovers, peas, and beans (the legumes or leguminous plants), carry little nodules upon their roots, within which bacteria furnish an additional source of combined nitrogen for protein-formation. (All plants form protein from soil-derived nitrogen, but the nodulated legumes are alone able to make protein from air-derived nitrogen.) Yet other plants obtain some of their protein from the bodies of insects which they trap upon their leaves and digest with enzymes.

The algae which form the green scum in stagnant pools are microscopic plants containing chlorophyll which, under high magnification, can be seen to take the form of long chains of green cells or single cells arranged in clumps. They reproduce both sexually and vegetatively, as do the seaweeds, which are known by the scientist as the group of thallophyta because they have no roots but attach themselves to rocks on the sea-bed by means of a sucker or thallus. As in the case of many animals which live in the water, fertilisation usually occurs by the male sex-cells being set free in the water to swim to the female. In the case of fungi, reproduction is asexual and accomplished by means of spores (these, in the case of mushrooms and toadstools, may be seen between the gills on the under-surface); spores are not seeds, since they are not fertilised but simply germinate where they land and develop into other fungi.

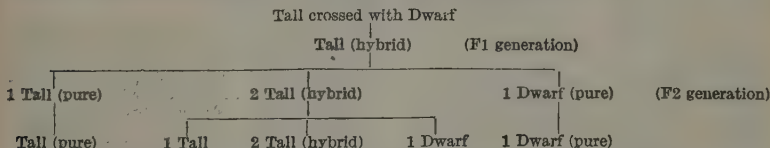
We noted at an earlier stage that in the course of evolution plants, like animals, only gradually

in the water. In both cases the act of fertilisation still occurs in water.

**The Mechanism of Heredity.**—The subject of heredity is a vast one, and no attempt will be made here to describe it in any detail. The most that can be attempted is to give a brief account of how characters are handed on from one generation to another—a discovery which is mainly due to the pioneer work of the Austrian monk Gregor Mendel (1822-84). Curiously enough, although Mendel was a contemporary of Charles Darwin, and had, in fact, discovered facts which would have been of the greatest use to Darwin in elaborating his theory of evolution, nothing was known of Mendel until his theory, published in obscure scientific journals, was brought to the public notice long after his death, in the early years of this century.

It had been known, of course, for many centuries that animals could be mated deliberately in order to produce offspring with the qualities desired by stock-breeders and farmers. But this process had been a haphazard one which by no means always produced the expected results. Mendel, in the garden of his monastery, was the first individual to experiment scientifically with heredity by deliberately observing the interaction of single specific characters. His most important experiments, which we shall describe here, were carried out on the ordinary garden pea, in which it is a relatively simple matter to distinguish several inherited characteristics: some seeds are round, other seeds wrinkled; some seeds are green, others yellow; some plants are tall, others dwarf. By deliberately fertilising one type of plant with the pollen of another, Mendel was able to observe how these characters were handed on.

The layman might suppose that such characters mingle to form others which are a compromise between the two—that the offspring of one tall and one short parent would be medium-sized; that green seeds crossed with yellow would result in greenish-yellow seeds. But this is not the case when we are dealing with pure characters. In his experiments Mendel first of all produced pure lines of dwarf and tall peas by constant inbreeding; these were tall and dwarf lines which bred true to type. He then crossed one with the other and found that the offspring were *all* tall; this is described as the F1 (first filial) generation. When the hybrids of the F1 generation were interbred, another generation—the F2—developed, in which tall and dwarf peas reappeared in the proportion of three tall to one dwarf; but further breeding showed that only some of these tall plants bred true and the others were hybrid. There were, in fact, two hybrid to one dwarf and one tall. This relationship is best expressed in the following diagram:



freed themselves from dependence upon water, and that the amphibia, for example, still have the need to return to the water for purposes of reproduction. Much the same is true of such plants as ferns and mosses, older in the evolutionary sense than the flowering plants, which reproduce in a particularly interesting way. On the back of a fern leaf one may observe small brown patches of spores which are often mistaken for seeds, and, when ripe, these spores (as in the case of fungi) fall to the damp soil developing not into ferns, but into a small green heart-shaped "plant" or "prothallus." On the prothallus there develop the male and female sex-organs, which, in time, produce the gametes or sex-cells, and the male gametes swim over the damp surface of the prothallus to fertilise the ova from which the adult fern develops. This method of reproduction is interesting, as is the sexual cycle of amphibia, in illustrating how these animals and plants which were the first to colonise the dry land, had, and still have, to compromise with their old way of life

As the result of his experiments Mendel deduced that all characters are transmitted from parent to offspring as separate units which are arranged in pairs of contrasting factors or allelomorphs. The gametes or sex cells can each carry only one of such pairs: tallness or dwarfness, green or yellow seed-colour, wrinkled or round, but never both of the contrasting factors together. Although Mendel did not know this at the time, these factors are carried on the genes strung along the bodies known as chromosomes within the nucleus of each cell. Every cell in the animal or plant body (with few exceptions such as the human blood-cell) has a nucleus, which when it is about to divide to give rise to another cell, breaks up into the chromosomes, which are tiny rod, comma, or globular-shaped bodies composed of many separate genes. In the ordinary cell-division by which the cells of the body multiply or replace each other, each chromosome divides down the middle, so that each daughter cell gets the same genes—that is to say, the same hereditary



material. But, since sexual reproduction implies the union of two sex-cells from separate individuals, the number of chromosomes (which is constant for any one species) would always be doubling when male and female sex-cells meet if there were not some method by which this could be avoided. When, therefore, the sex-cells are formed, the chromosomes do not divide down the middle into two equal halves; instead, half of the chromosomes go to one cell and half to another, so that each sex-cell contains only half the number contained in the body-cells. The pure-bred tall peas carried in each body-cell two factors for tallness, so that when division for the sex-cells occurred each sex-cell had one factor for tallness, and the same applied to the pure-bred dwarf peas. Hybrids, on the other hand, had in their body-cells one factor for tallness and one for dwarfness, and when division for the sex-cells occurred, some gametes were left with a unit for tallness and others with a unit for dwarfness. So, if two hybrids were crossed, the possibilities for the offspring were: tall unites with tall, tall unites with dwarf, dwarf unites with tall, and dwarf unites with dwarf. According to the laws of probability, these various possibilities will occur in the statistical order 1:2:1, or, in other words, there will be one tall and one dwarf to every two hybrids. But the hybrid offspring will always look tall, for tallness is dominant to dwarfness, which is what is known as a recessive character.

Therefore, in the F2 generation, there appeared to be three tall peas to one dwarf, although of these only one was a pure line. Of any pair of allelomorphs, according to Mendel's theory, one must be dominant and the other recessive—that is to say, when the two facts are mixed the dominant one is the one which influences the immediate result. In human beings, for example, brown eyes are always dominant to blue, and therefore two blue-eyed parents cannot have a brown-eyed child.

As we have elsewhere seen, some writers believe that evolution cannot be explained purely in terms of natural selection, which, says Professor Neville George, is a passive filter eliminating the "unfit" and then showing a bias in favour of those surviving, "... but it cannot induce structural novelties for future selection, and thus cannot initiate evolutionary lines." Novelties, according to de Vries and most modern biologists, can only arise by mutation—that is, by the drastic modifying of the genes, which occurs either spontaneously or by outside interference. It is now possible to produce mutations by means of drugs, X-rays, and so on, and some authorities have suggested that the supposedly spontaneous mutations are produced by "cosmic rays" reaching the earth from outside space. These rays have great penetrating-power, and it is quite possible that they might produce such effects upon the sex-cells of animals or plants.

### III. THE ORIGINS OF MIND AND HUMAN SOCIETY.

#### PREHISTORIC MAN.

In the last section we brought our study of life upon earth down to the period known as the Pleistocene and the four Ice Ages. It was during these ages that man, or rather his early semi-human ancestors, first appeared upon the face of the globe—somewhere about a million years ago. Now, a million years is not a long time by the standards of the universe, which are those we have so far considered, but they are a very long time relative to the time of recorded history. In order to adjust our time scale let us think for a moment in terms of millennia or thousands of years beginning with the discovery of America by Columbus half a millennium (500) years ago. From this event we should have to go farther back to one millennium, or one thousand years ago, when Alfred was King of England and the Normans had not as yet landed. Two millennia take us beyond the bounds of British history altogether; for the existence of the British Isles was known only by rumour and travellers' tales to a few educated Romans. Three millennia ago there was not even a Roman Empire, since Rome the city had not been founded; Solomon was king in Palestine, and the only literate people in the world were in Egypt. Finally, five millennia take us right back to the beginnings of written history in Babylonia and Egypt, and earlier than this no written records exist; yet this is only a two-hundredth part of the period we are considering.

Without written records we are left to deduce the record of prehistoric man from his bones, his tools, and, less frequently, from such relics of his workmanship as paintings in caves, remains of prehistoric villages, and stone circles. Of course, the earliest men built no villages, had only the simplest stone tools, and their bones have in most cases been destroyed by weather and the pressure of overlying soil, so the first traces to be found in the record of the rocks are very primitive stone tools—the so-called "eoliths" or dawn stones. Eoliths are found in many places all over the world, but some of the oldest dating from the warm Pliocene period are found in the counties of Suffolk and Norfolk. The earliest skeletal remains—those of Java and Peking man—appear to belong to the first interglacial period, the interval between the first and second Ice Ages of the Pleistocene.

In 1891 there was discovered in Java the skull and thigh-bone of a very primitive ape-man now known to science as *Pithecanthropus*. The skull is about half the size of that of a modern man with overhanging brow ridges, broad flat nose, and protruding jaws, and its owner must have looked

rather like a gorilla. Nevertheless, there can be little doubt that *Pithecanthropus* was of pre-human stock. Another relic of prehuman man was discovered about 1923 near Peking in China in the shape of several brain-cases (the upper part of the skull containing the brain) and several fragments of jaws. Peking man, or *Sinanthropus*, appears in many respects to be the most primitive, and is thought to resemble man's earliest ancestors of Pliocene days.

The original home of the human race is unknown, although it was at one time thought that India or Central Asia was a likely area, because some species of rather human-looking apes have left fossil traces there. On the other hand, Dr. Leakey has recently found traces of "ape-men" in Africa, and this is therefore another possible homeland of early man. Although, as we have seen, neither of the species we have so far mentioned was in the direct line of human descent, there is good reason for believing from a study of their skulls that *Pithecanthropus* and *Sinanthropus* could both speak.

In the second Interglacial period we find a new type of prehuman man existing in Europe who is known only by a jawbone found near Heidelberg in Germany. But although this jaw is the only skeletal relic of Heidelberg man, many of his stone tools have been found all over Europe, Africa, and India. Archaeologists identify prehistoric man for the most part by his cultural traces, his tools and weapons; such implements are known by the names of the places where they were first found, and hence we find anthropologists speaking of Chellean, Acheulean, Mousterian, Solutrean, and other cultures. (It must, of course, be remembered that, strictly speaking, such terms as the Old Stone Age, the New Stone Age, or the Bronze Age are not to be thought of as absolute periods of time like those used by geologists. On the contrary, in such places as Central Australia or parts of Alaska the Old Stone Age exists today. But, says Professor Gordon Childe, "in any one locality—say Southern England or Egypt—each age does indeed occupy a definite period of historical time. And in all regions the several ages follow one another in the same order.") Heidelberg man belonged to a culture known as Chellean, and probably lived in the open throughout the flint-bearing areas (for it was from flint that most of his tools were made), moving from place to place in small family groups as the flint supply or the herds of bison or deer became exhausted.

At some time during the third Interglacial

Period, men of the so-called Acheulian culture discovered the use of fire, and it was about this time, too, that a new type of prehuman species known as Neanderthal man—the first race of which really plentiful skeletal traces have been found—arrived in Europe. These primitive and rather brutish creatures must have been saved from the worst rigours of the Fourth Ice Age only by their fires, their skin clothing made from hides, and their ability as hunters. Neanderthal man belonged to the Mousterian culture, and must have been the first near-human species to bury the dead ceremonially. Skeletons have been found lying in shallow graves, with flint weapons and food by their side to stay their hunger should they awake. Did Neanderthal man confuse death with sleep, or did he believe in an after-life? Nobody knows.

**Homo Sapiens.**—When Neanderthal man disappeared from the face of the earth, a significant chapter in pre-history came to a close; for the new types of men who succeeded him were vastly different—they were, in fact, the first true men, the first holders of the name *homo sapiens*. Whereas the Neanderthals were heavy slouching ape-like dwarfs, the new races the Cro-Magnon and Grimaldi peoples, were clearly human. The former somewhat resembled the modern North American Indians in physical type, while the latter were negroid like the modern African Bushman. It is possible that the Cro-Magnon men came into Europe from the East and North, whilst the Grimaldi people came from Africa or somewhere in the South, but, however this may be, they first appear in the record of pre-history about thirty thousand years ago. This earliest truly human culture is known as the Aurignacian, and it is here that we find the first beginnings of art; for in caves in the Pyrenees there still exist paintings of bison, deer, and horses so modern in appearance that their discoverer was accused of forging them himself when they were first observed in the early years of this century. Little statuettes of bone or stone were also found, and it is probable that these first manifestations of art were utilised in magical ceremonies for producing success in the hunt or fertility in women.

It would take too long to discuss the Eskimo-like culture of the Magdalenians with their bone harpoons, who probably lived mostly upon fish; the beautiful flint tools of the Solutreans; or the relatively degenerate cultures of the Azilians and Tardenoisians. (These, it must be remembered, are not the names of different human species, but merely different cultures of the same species.) All belong to what we now describe as the Old Stone Age or Paleolithic Age of pre-history—a period during which wood and stone were the basic materials for weapon and tool-making. Indeed, for 98% of man's history stone has been his main source of material—in addition, of course, to wood, bone, horn, and ivory. Then, about 10,000 years ago, a revolution took place which is described as the New Stone Age or Neolithic Age; for it was at this period that some men began to cultivate wheat and other plants and to breed sheep and cattle. Whereas the Paleolithic period was a time when men lived entirely on hunting, fishing, and gathering wild berries or roots or shellfish, in the Neolithic Age they began to give up wandering about in search of food supply and settled down to cultivate it for themselves. These early communities settled down for preference in the river valleys, where cultivation was easiest, and it was in the two great valleys of the Nile and the Euphrates that the first civilisations arose complete with social classes, priests, and walled cities. Civilisation as we know it spread from these areas to Europe, India, China, and finally across the Pacific to the Americas, where no traces of early man have been found. With the commencement of the Bronze Age in Egypt (about 4000 B.C.) and the later Iron Age (about 1200 B.C.) we enter the historical period.

#### THE MIND OF EARLY MAN.

Opinions differ as to how civilisation has spread; for some authorities believe that important inventions have risen spontaneously at different times in various parts of the world, whereas others (the

Diffusionists) believe that all civilisation has spread across the world from the early cultures of Egypt and Babylon. Perhaps the most reasonable supposition is that both theories are true—that civilisation as we know it is essentially derived from Egypt and Babylon, whereas many of the more primitive peoples still in existence today have evolved simpler ways of life in relative independence of the major trend.

**Intelligence.**—At this point we must clear up some misunderstandings concerning early man and primitive modern men. It is quite wrong to suppose, as many people do, that primitive people are "backward" because they are stupid in comparison with ourselves. On the contrary, mental tests have shown that there is not the slightest reason to suppose that any existing tribe or people is inherently intellectually or physically superior to any other, and, so far as prehistoric men are concerned, there is good reason to believe that from Cro-Magnon man onwards all races of mankind have been in no way inferior mentally to ourselves (in fact, the brain capacity of some was rather greater than that of most modern men). Psychologists have shown that intelligence is inherited, that some people are born potentially more or less clever than others, but it is necessary to remember that even the highest intelligence can develop only when it is given adequate stimulus to do so, and, that no one race or tribe has a monopoly of clever or stupid people. For example, negroes in the Southern States of America show a lower average intelligence on testing than those in the North, for the simple reason that the Southern Negroes do not have the same opportunity of developing their intelligence as those in the North. Incidentally, one of the highest intelligence-quotients ever recorded was found in a Negro girl in one of the Northern States of America.) Whether a tribe or people or race show a "high degree of culture" depends hardly at all upon biological or racial factors, but (a) upon the natural materials available to them for building up a culture, and (b) upon the extent to which they have been able to borrow from others. Let us consider these factors briefly.

#### PHYSICAL ENVIRONMENT.

It is clear that no people could enter a Bronze or Iron Age unless bronze and iron were, in fact, available in their environment. Hence the Eskimos, who have no metals available to make into weapons or ornaments, still use stone, ivory (from walrus tusks), and bone. In short, their environment does not permit a higher degree of culture. Africans and the Australian aborigines do not wear many clothes, not because they are stupid, but because in the places where they live it is more comfortable to live without clothes—indeed, the supposedly backward aborigines have kinship and religious systems so complex that the poor white man's head reels at the attempt to comprehend them. The primitive races or "backward" peoples have evolved ways of life which are often well adapted to the environments in which they live, and, after all, it is by no means self-evident that a civilisation which has devised atomic warfare, a high degree of economic frustration, and concentration camps, is a "superior" one, however we choose to define superiority. The second point, again an obvious one which is almost invariably forgotten, is that great advances are only made upon the foundations erected by others. The scientists of ancient Greece, Newton, or Copernicus could not possibly have evolved Relativity Theory, not because they were less intelligent than Einstein, but because every innovator can only progress a little beyond what he has received from his predecessors in many different lands and times. The house of science is not built top floor first, but slowly upon the bases laid by earlier thinkers. In the spheres of art, literature, and religion we can hardly speak of progress at all. The great Greek dramatists are still great, and the work of the Aurignacian painters of thousands of years ago is still lovely today. Who was the great religious genius who, extending the concept of "neighbour" beyond the mere confines of the tribe, wrote in the Book of Leviticus: "... the stranger that dwelleth with



you shall be unto you as one born among you, and thou shalt love him as thyself; for we do not know. Nor do we know who it was who first pictured a tolerant, loving, and understanding God who could take pity upon the wicked city of Nineveh and ask himself: "Should not I spare Nineveh, that great city, wherein are more than sixscore thousand persons that cannot discern between their right hand and their left hand; and also much cattle?" There are many "primitive" tribes in existence today who cannot imagine anyone beating a child; some in which suicide is unknown; and a few who have never waged war. "Civilisation" is not such a simple concept as we once supposed, and technological advance does not necessarily imply high moral standards. However, the fundamental point is that all scientists are agreed that there are no significant intellectual differences between any of the races in existence today, and that the reason why some peoples are relatively backward is either because the raw materials necessary for technological advance have been lacking in their environment, or because by a historical accident their country has been out of contact with the general flow of civilisation, so that the spread of new ideas did not reach within their boundaries. Those who are inclined to look down on the so-called backward races should remember that it is not so long ago since the British looked just as backward to the Romans as other peoples do to us today. It was Cicero who, in the first century B.C., wrote to a friend: "Do not obtain your slaves from Britain, because they are so stupid and so utterly incapable of being taught that they are not fit to form a part of your household."

Since all races and peoples are equal in potentialities, what about the problem of intermarriage between races? Is there any evidence that race mixture is bad? Briefly, the answer is that no such evidence exists; for although there may be social reasons why intermarriage is inadvisable for individuals (for example, it may be that in the existing state of society the offspring of such marriages are likely to be discriminated against), there are no biological reasons against it whatsoever. In such countries as Brazil, where Europeans, Jews, Negroes, and the native Indian population have intermarried freely for several hundred years, no untoward results have followed. "In South America," writes Dr. Oliveira Lima, "our experience of centuries has taught us that there is no real understanding except the one that comes through the fusion of races." Dr. W. E. Castle, a leading American anthropologist sums up as follows: "The sociologist who is satisfied with human society as now constituted may reasonably decry race crossing. But let him do so on social grounds only. He will wait in vain, if he waits to see mixed races vanish from any biological unfitness."

#### PATTERNS OF CULTURE.

But if inherent biological differences such as race are incapable of explaining the observed differences between, say, a Frenchman, an Englishman, and a Japanese, how can such quite real differences be explained? Or, to come nearer home, what of the differences between English, Scots, Irish, and Welsh which undoubtedly exist? What of the Celtic, Saxon, or Norman blood in which some people take such pride? Well, to begin with, the English are such a mixed "race" that it is quite impossible to pick out any pure strains; we are all mongrels, as Daniel Defoe realised when he wrote:

"Thus from a mixture of all kinds began  
That heterogeneous thing, an Englishman."

For the matter of that, we do not have to go very far back in history to see that the English character has changed a great deal. In Elizabethan times, for example, England was the most musical nation in Europe, whereas in Victorian days the Englishman's lack of musical sensitivity was a universal joke in other countries. Today many foreigners laugh at our sentimental fondness for animals, but in the seventeenth and eighteenth centuries, bull-baiting, cock-fighting, and so on were universal sports. In Elizabethan times, again, the ideal man was

gay, fond of play-going, amorous, passionate, and quarrelsome—can we recognise in this the Englishman of today? It would be wrong to suppose that no continuity of tradition exists, and doubtless there are many ways in which the Englishman of Elizabethan times, or even of Norman times, resembles the contemporary Englishman. But equally there can be no doubt that there have been fundamental changes. Why this should be so will be considered later.

Anthropologists, then, are agreed that, although it may be quite correct to speak of "national character," we cannot explain this in terms of race or heredity. The true explanation is that such traits are cultural rather than biological in origin, and, since the "culture concept" is immensely important in modern social science, we must first of all define our terms:

A *society* is a group of people who live and work together, regarding themselves as members of the group, and feeling towards it an emotion best described as "belonging."

A *culture* is the way of life followed by such a group—that is to say, its written or unwritten laws, its religious beliefs, its ideals, its art, technology, and even its pots and pans.

At an earlier stage we noted that prehistoric men are generally classified according to the cultures to which they belonged—Azilian, Magdalenian, Chellean, and so on—and here the archaeologist, who knows very little of the ideals and religious beliefs or laws of these bygone peoples is generally thinking in terms of their *material* culture. The material culture, as we have seen, includes such objects found during excavations as pots and pans, knives, weapons, needles, and ornaments. But when we talk of culture in relation to present-day peoples, although such objects are included in our definitions, we are more often thinking of the way of life of the group—its ideals, incentives, and unwritten laws. Culture is what has been described as the "cake of custom," and its importance lies in the fact that it is the cement which binds the members of a group into a living organism.

**Sub-cultures.**—It should not be thought that the word "group" necessarily refers to the national and tribal groups with which we have so far been concerned. Any semi-permanent collection of people within which the members have a sense of belonging together and possessing common beliefs and customs is a "group." All of us are members, not of one group only, but of many, and each group, however small, has a culture of its own, a way of life to which we must conform if we wish to retain group membership or, at any rate, the respect of the other members. As an example, let us take an imaginary individual with the name of George Campbell, who happens to be a Lowland Scot, a Presbyterian, a Socialist, a coal-miner working at the coal-face in a particular pit, a pigeon-fancier, and a follower of Newcastle United football team. The interesting thing is that, knowing these facts, we already know a great deal about Mr. Campbell; for we can be sure that his membership of these groups (national, religious, political, sporting, and so on) will strongly influence his behaviour. One of the serious defects of classical psychology and of much popular thought is that it failed to notice how much of the individual's day-to-day behaviour arises, not from the depths of his unconscious or from what is ordinarily described as his "character," but simply from his need to conform to the, often unwritten, rules of his membership groups. If anyone suggested to our Mr. Campbell that he was not an entirely free agent, that he was not as independent as he prides himself on being, he would, no doubt, be very annoyed. Nevertheless, this is merely a commonplace statement of fact. Campbell has all the prejudices of the Lowland Scot—he thinks that education is a "grand thing," that Roman Catholics are a dangerous and superstitious sect, that the English are a somewhat inferior nation over the Border who regrettably lack stamina and intelligence, and that money, although the root of all evil, is a good thing to have and be careful about. But, had he been born in the South of

Italy, he would have regarded education as the exclusive possession of wealthy landowners, Catholicism as the only true religion, the English would have meant little to him at all (until the last war), and his goods would be exchanged by barter rather than money. Mr. Campbell enjoys his morning porridge and bacon and eggs, but his enjoyment of them is only a prejudice learned in childhood and his opposite numbers in Africa and France enjoy locusts, frog's legs, and snails, which it has never struck him to regard as "food" at all. His grandfather might have worn a beard, but if Campbell came to work wearing one, he might find himself in difficulties; this is one of the many quite innocuous things which are "not done" in certain groups. Campbell might, on special occasions, wear a kilt, but Mr. Smith over the Border would find himself under considerable social pressure to stop doing so if he ever had the temerity to start. There is no law saying that Scots or Englishmen may not strip to the waist in a hot cinema or theatre, but they do not do so, although a miner may do so at work and other people at the seaside. In short, Mr. Campbell, like the rest of us, is for the most part a creature of custom.

**Personality and Culture.**—The influence of culture upon the members of a society is not restricted to the sort of things we have mentioned above: to food, clothing, and etiquette. It is now certain that human personality itself results in large measure from the interaction between biological inheritance and the particular culture into which the individual happens to have been born; personality is the subjective aspect of culture. Psychologists are all in agreement, whatever the nature of their other differences, that the personality is created in the first five years of life as the result of parental training, and this training, it is clear, is strongly influenced by the attitudes which society impresses upon the parents. If we take the usual analogy of the clay, the potter, and the design, then it will be seen that the newborn child (the clay) is modelled by the parents (the potter), not at random, but according to the approved pattern of a particular society (the design). Everyone, into whatever society he is born, is brought up to have specific attitudes to women or men, to sexual relations, to cleanliness, to aggressiveness, and to competition, and these attitudes are unique to each society at any given time. Most middle-class Englishmen feel that they ought to "get on" and have ambitions, that one should not strike a woman, that one ought to have a daily bath, and that it is rude to argue in public with shopkeepers, waiters, and public servants. Frenchmen and Italians have no such ambitions about arguing in public, and Americans have a much stronger desire to succeed. Such differences in national or class character may often cause difficulties through misunderstanding. For example, the average British worker attaches more importance to sticking together with his mates than to getting on, and he rather despises the middle-class attitude that one must succeed at all costs, regardless of whom one has to overcome in order to get there. Then the average American is brought up to feel that when he has made more money than someone else, he should be proud of his achievement and make no secret of his opulence, however temporary, while on the other hand the Englishman feels that it is impolite to discuss money or speak of one's achievements. Therefore to the American the Englishman is a queer, reticent, and "stodgy" individual; to the Englishman the American is noisy and boastful. Neither accusation is true—both are judging each other in terms of how they have been taught people ought to behave. Dr. Margaret Mead, investigating the problems arising from the relationships between American Servicemen and English girls during the last war, pointed out that American men are brought up to be assertive in their attitude to women, to ask for more than they expect to receive—an attitude which is perfectly understood by American women, but not by the English, who, used to a more cautious approach, take it as indicating more than was actually intended. Both sides were equally shocked at the "immorality" of the other, the Americans at the readiness of English

girls to yield, the English at the assertiveness of the Americans in sexual matters.

Although we have so far spoken of the national character of such large groups as the British, American, French, and Italians, it is obvious that when dealing with groups of this size composed of many subgroups, the resulting picture will be far from clear. Our Mr. Campbell is, to the foreigner, simply "British," but he is, as we have seen, also a Scot, a Protestant, a member of the working-class, and a miner. So, although he shows many traits which are "British" in the widest sense, he differs in obvious ways from another Britisher who was born in London, is of the middle-class, belongs to the Church of England, and works as an accountant. It is not only national, but also regional, religious, class, and occupational groups which influence personality, and there are other factors also at work which we must shortly discuss. Before doing so, however, we must mention some important researches into the relationship between personality and culture in more primitive peoples, where the picture, for various reasons, is much clearer. Primitive peoples are more suited to anthropological studies, because, in the first place, they can be separated into small tribal communities which are, for the most part, not subdivided into regional, class, or religious subgroups. Secondly, they are much less subject to social change (for reasons which will later be made clear), and have remained closely integrated, undivided, and in varying degrees static for considerable periods of time. The people belonging to these groups are not nearly so individual in their outlook as most of the people we are accustomed to; for the strongly individualist character is typically a product of the large society with many subgroups. The member of a tribal community is more at the mercy of public opinion than the member of a large industrial nation with its many subgroups within which the eccentric, the brilliant, or the perverse can find themselves at home. In the small community (and this applies even in this country to the small village community) conformity to the rules is much more strictly enforced, and, as Professor Harding has pointed out, it is the multi-group modern society which is the basis for personal freedom. As we have suggested, this is because the non-conformist in the small homogenous community is at a serious disadvantage in that he lacks the support of minority groups and courts disapproval which, in such circumstances, may be a real threat to livelihood and happiness.

**Primitive Tribes.**—Ruth Benedict and Margaret Mead carried out anthropological surveys of many primitive tribes in the South Sea Islands, New Guinea, and Central America, with results which are of the first importance to anyone who wishes to understand human nature. They show, in particular, the immense influence of cultural factors in moulding personality, and demonstrate clearly how many traits which Europeans all too readily assume to be part of basic human nature are not "natural" at all. In Samoa, for example, young girls pass through adolescence without any of the "storm and stress" accepted as inevitable in the West. In New Guinea, amongst tribes living in neighbouring areas and belonging to identical racial groups, Dr. Mead found that characteristics of men and women believed to be fundamental in Europe were often radically altered. In the Arapesh tribe, both men and women are mild and gentle; in the Mundugumor, both sexes are violent and aggressive; and amongst the third tribe, the Tchambuli, the "normal" sex-attitudes are completely reversed. Tchambuli women are dominant, managing, and impersonal, whilst the men are "flighty," less responsible, and emotionally dependent. There can be little doubt that many of the traits believed by Europeans and Americans to be definitely feminine or masculine are not biologically but culturally determined. Amongst the Zuni Indians of New Mexico, Ruth Benedict found a people who were gentle, non-aggressive, and non-competitive to a degree quite unknown in industrialised countries. The Zuni try to lose races, try not to be superior to others, have nothing but contempt for those who wish



power and authority, and would have no chiefs at all were it not that certain individuals are compelled to assume chieftanship under threat of imprisonment. On the other hand, the Mundugumor of New Guinea far outdo the industrial West in competitive spirit, aggressiveness, and in their dominant attitude of "each man for himself and devil take the hindmost." The Kwakiutl Indians of Puget Sound, unlike ourselves, spend all their time giving away wealth instead of accumulating it; at their ceremonial feasts or *pottlaches* they tear up money and compete with each other as to who can burn or otherwise destroy most of their riches. The Dobu, another New Guinea tribe, are so suspicious that, were a Dobuan transported to England, he would probably be certified as suffering from persecution mania—yet this trait is "normal" within that community. In Bali, the "normal" attitude, says Dr. Roheim, is one which elsewhere would be regarded as schizophrenic; for there, "we have that unthinkable thing, a schizophrenic culture." Yet every one of these traits is acquired by the individual during childhood—and, indeed, Dr. Mead has shown how varying methods of child-rearing lead to the results observed in the adults of a culture. "Systems of child-training," writes Erik Erikson, "represent unconscious attempts at creating out of human raw material that configuration of attitudes which is (or once was) the optimum under the tribe's particular natural conditions and economic-historic necessities."

**Summary.**—From these recent observations and researches we may make the following deductions:

(1) That the culture of any society represents an attempt to adjust to a particular environment, using the word in the widest sense to imply not only the physical environment, its raw materials, and climate, but also the past traditions of the society, its technology, and so on. We can see, for example, how American history, with its background of an expanding frontier and its awareness of having escaped from the old traditionalist societies of Europe, has strongly influenced American national character. Similarly, the glorification of "free enterprise" amongst the English middle classes, and the equal and opposite insistence upon collective action amongst the working classes, are both the result of historical necessities. In the processes of bringing up families parents hand on these attitudes to their children.

(2) Human nature is more adaptable than has hitherto been thought. It is *not* "natural" to want money, to compete, to have ambitions, to be warlike, nor for that matter, to be gentle, non-aggressive, and non-competitive. Women are not naturally "feminine," maternal, and dependent, nor men "masculine," assertive, and independent. All these traits are acquired by learning and growing up in a particular culture. There is, in short, no such thing as a "fundamental human nature."

(3) Human beings have no "instincts" as is the case with animals: all one finds in the infant at birth are certain *drives or needs*—the need to eat, to drink, to excrete, to be protected from the rigours of climate, the beginnings of sexual needs, and so on. One need, however, although not strictly speaking innate, is universal because of the inevitable fact of dependency in childhood: this is the need for approval or, in the widest sense, love. As Ruth Benedict has said: "Man is a highly gregarious animal and he always wants the approval of his fellows. First, of course, he has to get the means of keeping alive, but after that he will try to get approval in forms which his society recognises. His society may recognise conquest, and he will engage in conquest; it may recognise wealth, and he will measure success by dollars and cents; it may recognise caste, and he will behave in all things according to the position to which he was born."

(4) Without socialisation, without parental upbringing, human beings could not become anything at all. There is no such thing as the "natural" individual, the "noble savage"

of Rousseau. In the few reported cases where a child has survived without any sort of attention other than receiving food and drink it has not been appreciably different from one of the higher apes. One child of eight years born of a deaf and dumb mother and reared in an attic in complete seclusion from other people, could not even appreciate sound. It had been accustomed by its mother's deafness to ignore noises, and even the loudest sound produced no reaction, although the ears were quite normal.

Most of a person's actions, therefore, are carried out either to satisfy the innate biological drives mentioned above, or to satisfy the deep-seated, universal, although probably not innate need for emotional security and approval. Men seek wealth, position, knowledge, and so on, not out of a primary desire for these things, but because they are the roads to approval within the framework of a given society.

**Individual Differences.**—Now, as we can readily observe, individuals differ quite considerably from each other, even within the same social group, so we must now consider what factors give rise to the individual variations upon the theme set by culture; several, in fact, have already been mentioned. These are, the subgroups to which the individual belongs, his status and role, and his particular upbringing and inheritance. Social change, too, gradually brings about changes in the "basic personality type" of a society, as, for example, the changes in attitude which took place between Elizabethan and Victorian times and have already been mentioned.

1. *The Influence of Subgroups* in bringing about particular attitudes in the individual has already been discussed, and need not be further elaborated here.

2. *Status and Role.*—An individual's status is his position in society, not only in respect of social class, but also in occupational, marital, professional, and other spheres. His role is the behaviour which is associated in that society with a given status. Perhaps these concepts are most simply explained if we regard social life as a sort of stage-play in which each individual is an actor in particular roles: a parson has to act as a parson, a doctor as a doctor, a father as a father, and a manager as a manager. Parsons are expected to talk and dress in a particular manner, fathers to behave in a certain way (which differs in each society), and although every parson or father is an individual in his own right, many of his acts can be understood only when we realise that he is acting in the way society expects of parsons and fathers. When people break these unwritten rules, difficulties may arise. There is no law which says that a parson may not play the saxophone, but one who did would be looked on somewhat askance by his parishioners, and, although patients sometimes complain that their physician puts on an exaggerated "bed-side manner," they are often even more distressed when he does not. Gordon Rattray Taylor tells of a factory manager who went about in a shabby old car, and who, far from being thought endearing and democratic for doing so, was regarded with disapproval by his employees, who felt that he was "letting down the side" by not behaving in a manner appropriate to his position. This is what is described as "*formal status*," since managers, parsons, fathers, and so on occupy formal positions recognised by society as at present constituted. There is also *informal status*—that is to say, the type of status allotted to individuals in a small and intimate group such as the working group in the factory. For example, we have George, who is the one who defies management and takes the lead when complaints are to be made; Alf, the one who tells dubious funny stories; Bill, the one who knows all about First Aid; and Harry, the amiable idiot who is always teased by group members but protected from the jibes of the members of other groups. All these individuals have been allotted a certain informal status, and are supposed to act "in character," although each man in another group may play a quite different role. Alf, the joker, may be henpecked at home—a sad little man; Bill, the knowledgeable First Aider, may be a very in-

significant member of the local St. John's Ambulance Brigade, to whom he may be the "silly ass"; George, the resentful, may be the kindly father. But within each group their roles are fixed and difficult to evade. Status and role, therefore, have a powerful influence upon behaviour.

3. *Differences due to Upbringing and Heredity.*—Although we have already indicated that the influence of heredity, so far as personality is concerned, has been grossly exaggerated, it does indeed play some part. What is inherited, however, is not specific behaviour but temperament, and temperamental differences, being based on glandular and structural nervous factors, are fairly permanent features of the personality. By and large, upbringing determines *what* we do, temperament *how* we do it. Hippocrates, the ancient Greek "Father of Medicine," suggested that temperaments could be divided into the choleric, the phlegmatic, the sanguine, and the melancholic, and at least one modern psychologist uses the same terminology, so we may fairly safely assume that whether a person is quick and passionate, slow and phlegmatic, quiet and pessimistic, or cheerful and hopeful in his actions these are temperamental traits which, however much they may be modified by training, are basically inherited.

But clearly the most important differences between one individual and another in the same culture arise from the vagaries of upbringing; for, even apart from such accidents of fate as the loss of one or both parents, illness in childhood, and natural calamities, the obvious fact is that no parents ever pass on the cultural design to their children without many individual variations. If we picture the cultural design as a rough mould which supplies the main outlines of the pattern, we can also picture the parents as adding individual touches of their own (whether knowingly or otherwise) to a material which already varies for biological reasons. At this point it is necessary to say something of the work of Freud, for it is he who has given us some of our closest insights into what one might describe as the microscopic anatomy of the individual personality. Unfortunately to do so is by no means easy because Freudian theory is extremely complex, and has, furthermore, been considerably modified by later writers of the psycho-analytic school. What is given here must be taken only as a very rough outline of what Freud and later psycho-analysts have been trying to say.

### FREUDIAN THEORY.

The newborn child is a young animal, with no morals or sense of reality and no "instincts" as we understand the term in the lower animals. It has only two great drives which Freud takes to be fundamental—sex and aggression. Although Freud described sex and aggression as "instincts," the word is nowadays reserved for a particular form of behaviour which, if it exists at all in man, is certainly a dying category—it should be used solely for behaviour which is inborn, relatively fixed, and automatic. Ants, bees, and wasps, for example, carry out the most detailed acts: nest-building, caring for the grubs, or food-collecting and storing; but there can be no doubt at all that none of these acts are in any way intelligent. They are based on the insect's nervous structure, and could not occur otherwise than they do. Amongst the higher animals, the birds and mammals, such instinctual behaviour comes to be increasingly modified by intelligence, but it is only in man that intelligence assumes its full significance, and all behaviour is modifiable and no longer automatic. The drives of sex and aggression in man do not involve any elaborate type of fixed behaviour pattern; they are simply the raw material of action, to be modified in many different ways as the child learns from its parents and others. Briefly, all animals in varying degrees (more so in the lower animals, less so amongst the higher) are like tram-cars moving upon fixed rails, and however complex the route they take, it is largely what has been laid down from the beginning. Human beings, on the other hand, are like motor cars, which, although making use of the same source of energy as the animals, can utilise it to drive where they please.

Freud used the word sex in a rather specialised sense to apply, not only to sexual behaviour in the ordinary meaning of the word, but also to such behaviour as eating and drinking, excretion, and, at a higher level to love and friendship. It might almost be said that in Freudian terminology sex and aggression are words used to describe the two poles of desire, positive (love, lust, hunger, longing, wanting) and negative (hating, fearing, avoiding, killing, getting rid of things).

The problem of society is to modify this primitive creature which can only need and desire, hate or fear, want pleasure and avoid pain, into a civilised being, and this is the problem it delegates to the parents, who, in the long run, utilise the child's need for security or protection and care to compel it to act in approved ways. The baby learns by imitation, by trial and error, by punishment or the threat of punishment, by love or fear of the loss of love, to conform more or less to social standards. The primitive aspect of the mind, which includes not only the innate drives of sex and aggression but also all those thoughts and emotions which, in the course of development, the individual comes to accept as forbidden, is described as the Id, and just because it contains this sort of material, thoughts and emotions within it become or remain unconscious. When the infant is born, its mind is all Id, but sooner or later the child is confronted by stern reality when it comes to realise that desires are not satisfied automatically. Sometimes it is hungry and food is not forthcoming, sometimes it is wet and uncomfortable and has to wait to be "changed"—all these events occur even to the most fortunate baby. So a part of the mind comes to be separated off from the primitive Id, whose function it is to deal with reality, and this part is known as the Ego—the conscious mind as we know it in adult life. The basic function of the Ego is to deal with life as it really is, not as we should like it to be. Still later, perhaps about the age of three or four, the child is faced by another problem; for it has to start conforming to the ethical dictates of society, to what is ordinarily described as the moral code. It has to learn what is done and what must not be done, and so a further division in the mind takes place and part of the mind begins to specialise in moral control. This part is known as the Superego. The Superego arises in two distinct stages—firstly, the child comes to realise that, under penalty of punishment or disapproval, it must obey its parents; at this stage, then, compulsion comes from outside. Later, however, the child by a process of what Freud describes as "introjection" takes the parental standards within itself. One part of the mind, as it were, plays the role of the moral parent in relation to the rest. This is the fully-fledged Superego.

An individual's character is the result of a three-cornered struggle between the primitive biological drives (represented by the Id), the hard facts of reality (represented by the Ego), and the moral dictates of society (represented by the Superego). The Superego is the censor which forbids thoughts or actions not allowed by society or, more accurately, thoughts or actions which were forbidden by the parents in early childhood. As one writer says, the Superego is a sort of psychological gyroscope which places control within the mind and avoids, in varying degrees, the need for outward compulsion. When the dictates of the Superego are transgressed the individual has a sense of guilt and feels himself, more or less a social outcast.

But the primitive drives are very powerful and cannot be totally repressed—they demand some sort of outlet, and are given it on condition that they are suitably modified or appear in socially acceptable forms or at least at socially acceptable times. Most societies, for example, permit the expression of primitive emotion at certain periods or under certain conditions; the sexual drive is permitted expression in marriage, and naked aggression in warfare. But more often the drives have to be modified by one or other of two fundamental mechanisms known as reaction formation and sublimation. In the case of reaction formation the energy of the forbidden impulse is utilised in emphasising its opposite; it is as if the individual were saying: "Of course I don't have such wicked desires—you can see I



am quite another sort of person." Perhaps this mechanism will become clearer if we give some examples.

(1) Even the layman is aware that people who are excessively puritanical are frequently by their very puritanism demonstrating quite the contrary aspects of their character. We laugh at the elderly lady who is afraid of finding a man under her bed precisely because we are aware, consciously or unconsciously, that she would not have the fear if she did not also have the hope. Similarly, when we read in the papers of a gentleman who so disapproves of obscene books or magazines that he buys hundreds of them to find out whether they are suitable or not for others to read, we may suspect that his own motives are not entirely devoid of suspicion. In short, the character-trait of puritanism is sometimes a reaction formation against strong sexual desires; the individual is fighting in the outer world the very problem he is unable to deal with in his own mind.

(2) The above examples are fairly obvious to the normal individual, who has little difficulty in observing them in his own surroundings, but it is less often realised that aggression may be modified in the same way. Some people, in other words, are compulsively gentle, non-assertive, and disposed to hate cruelty precisely because they are so full of aggression themselves. (This does not mean to imply that there are no genuinely pure or gentle people, but merely that many supposedly pure and gentle people are really quite the opposite.) When, for example, someone tells us that he would flog a man who illtreats a horse, it is obvious that, whatever else he may be, he is not basically gentle. This is an extremely important problem; for if gentleness and kindness sometimes arise, not from a genuine love of all living things, but from fear of one's own aggressiveness, then sooner or later the real motive will become evident.

The second method of dealing with primitive impulses is by sublimation—that is to say, by making them socially useful. A butcher, a surgeon, or a prize-fighter are all expressing in modified form their latent sadism, but in a way which is recognised by society. Women who have wanted children and failed to have them may become teachers, helpers in nursery schools, and so on in a valuable attempt to satisfy a frustrated need. If Freud is correct, the frustrated sexual curiosity of childhood may later take the form of a desire to know, causing the individual to become a scientist or a bookworm. Art, sculpture, and painting may all be sublimations of the infant's natural dirtiness and pleasure in messing about with mud, water, or even its own excretions. The reader may or may not accept these latter assumptions, but it is only fair to say that those who are in a position to know have found a great deal to support Freud's theories.

**Mental Mechanisms.**—Even in adult life the individual's adjustment to reality—the "hard facts of life"—and to moral problems is never complete, and self-deception is common. In this connection Freud described various mental mechanisms which even those who do not accept the Freudian theory in its entirety have found valuable in understanding human behaviour. We will conclude, therefore, by describing some of these forms of self-deception here and giving examples of their influence upon human behaviour.

1. **Displacement.**—An emotion, when conditions do not permit its being directed towards a particular object, may be directed against another which originally had nothing to do with it. "Love on the rebound" is an example of this in which, when the original object of love has disappeared, another is quickly found, not because of any real qualities possessed by the new object, but rather because the emotion demands some outlet. Aggression, too, is very often displaced; for instance, an employee, angered by his foreman or boss, but unable for obvious reasons to retort in kind, may quarrel with his wife over some triviality when he gets home. In Nazi Germany Hitler permitted the displacement of economic and other resentments felt by the Germans after the Treaty of Versailles on to the Jews and Communists, who were thus made scapegoats for the convenience of the Nazi party. It is important

to understand that this is one of the commonest types of mental mechanism which is universally, although unconsciously, used by us all.

2. **Projection.**—This is an example of a mechanism which has already been demonstrated. In brief, it means the tendency to project the objectionable qualities we refuse to recognise in ourselves upon others. "It is not I but he who is thinking and doing these wicked things." Thus, as we have seen, people who will not admit to their own impure thoughts accuse others of possessing them; those who are aggressive believe that everybody else but themselves are aggressive; the greedy accuse others of greed, and so on. Carried to an extreme degree, this is the mechanism behind persecution mania or paranoia, as the psychiatrist calls it. Projection is another very important trick of the mind, and its social effects are often all too evident.

3. **Compensation.**—Alfred Adler, one of Freud's pupils who later founded a separate system of psychology, was the first to draw attention to this important mechanism. Briefly, Adler pointed out that those who suffer from a deep-seated sense of inferiority (whether due to physical or mental defects or to lack of affection in childhood) have a strong tendency to compensate for this either by overcoming the actual defect or by becoming superior in some other field. Wherever we look we can see examples of this mechanism; Sandow the strong man and many other athletes have been puny and weak in childhood, many individuals with speech defects have made themselves into great orators, many musicians or composers (Beethoven, for example) have been deaf, and many famous painters have had defective eyesight. These forms of compensation are harmless and even useful, but it is quite otherwise in those cases where inferior individuals try to obtain superiority by gaining power over others. It is significant that Hitler, Mussolini, Napoleon, and many other delinquent types who have made a nuisance of themselves to a long-suffering world, were all men of below normal stature who felt their inferiority keenly. Another interesting observation is the fact that many of those who have attained eminence in a particular nation have not been members of the nation they aspired to rule or fight for, but were members of what was regarded as an inferior national group. Napoleon was, of course, an Italian born in Corsica; Hitler, an Austrian born at Braunau near the German frontier; Stalin, a Georgian; a large number of English generals, Irish or Scots; de Valera, an American, and so on. The significant thing about power-seekers is that they naturally tend to go where power rests; hence we find many of them becoming turncoats in a crisis. William Joyce, better known as "Lord Haw-haw," was an Irishman whose early passion in youth was to be a loyal Englishman and an officer in the British Army; when he felt himself rejected he turned to the Germans, who were ready to accept his services as a traitor. Not a few working-class politicians have, as they progressed up the social tree, become more and more conservative in their outlook; Saul the persecutor of Christians became Paul the Christian leader, and Mussolini the socialist, a fascist. In a free society one of the problems we have seriously to consider is the possibility that those who win in the scramble for power tend to be those unbalanced people who need it because of their power-loving drive based upon an inferiority complex.

4. **Rationalisation.**—This, as Bradley said of philosophy, is "the giving of bad reasons for what we do upon impulse." Nowadays, for example, nobody ever goes to war in order to kill a lot of people or take their country from them; they go to war for the other nation's own good—because they want to help them. Criminals are hanged, not because we as citizens are at a primitive stage of development which still demands "an eye for an eye and a tooth for a tooth," but because "hanging prevents further crimes" (of course, there is excellent evidence to show that it does not). Rationalisation is too familiar to most of us to need further discussion.

5. **Conversion.**—This is the mechanism which most people find it least easy to understand. Whereas the other mechanisms are, in their milder forms at least, almost normal, conversion

is always abnormal, and implies more or less serious disturbance of the mind. There are two types of conversion: hysterical and psychosomatic. In the first case, a state of mental conflict produces symptoms of physical disorder which, however, are not due to any underlying physical disease. Such cases may show symptoms of blindness, deafness, complete or partial paralysis of the limbs, double personality, or loss of memory, all of which can be shown to be purely psychological in origin, and, in fact, occur because the individual in some sense does not want to be able to walk, see, hear, or remember. In short, the symptom occurs because it gets the individual out of some difficulty which he is facing at that particular period. A very simple example of this is the so-called "writer's cramp," in which someone whose job depends upon his ability to write, suddenly finds that he cannot write at all; whenever he attempts to do so, his hand muscles go into a state of spasm. An actual case of this sort which shows the underlying mechanism may be quoted from Dr. J. A. C. Brown's *The Distressed Mind*: "A spoilt 'mother's darling' of a man was working as a clerk in a recruiting office before the war. He had got the job with difficulty and was the only support of his mother. In the office were several N.C.O.s who shocked him constantly by their obscenity. He hated the work, and yet felt that it would be unfair to his mother to give it up. One day he found that his hand would not work and whenever he tried to write, it went into painful cramp and the muscles became rigid. He had solved his conflict by falling ill, as he could then evade his work and, at the same time, feel he had done his duty to his mother. He was, of course, unaware of the cause of his trouble." Such cases are (although this is somewhat of an over-simplification) a sort of unconscious malingerer in which the individual solves a mental conflict by developing symptoms which remove him from the difficulty, at least temporarily. Again, a neglected wife who feels herself starved of affection may develop a vague and unspecified sickness which takes her to bed, there to be fussed over and given the attention which she had lacked when behaving normally. Such people, of course, really feel the symptoms they complain of, and their blindness, lameness, and so on are just as much "there" as they would be in a hypnotised person; in fact, it is not incorrect to say that such people are self-hypnotised. They certainly require psychological treatment.

6. *Psychosomatic Conversion*.—Psychosomatic conversion is a very different state of affairs; for, whereas the cases we have so far discussed have been those who had lost the will, and thus the ability, to carry out certain physical or mental functions, people with psychosomatic disorders suffer from actual physical disease as a direct result of mental stress. Within their bodies actual physical damage has resulted from prolonged exposure to emotional tensions. Elsewhere something has been said about the autonomic nervous system which prepares the organism for relaxation or emergency, and we saw that, when one of the higher vertebrates finds itself in a threatening situation the sympathetic division of the autonomic nervous system is stimulated, producing changes which are useful in flight or fight. For example, extra sugar secreted into the blood-stream from the stores in the liver is necessary for the fighting or escaping animal as emergency fuel; removal of blood from the internal organs to the muscles, a rise in blood-pressure, and cessation of digestion are similarly useful; and dilated pupils, erect hair on the back of the neck (in dogs and cats, for instance), or tense muscles all serve various functions in aiding clear vision, scaring the enemy, and preparing for blows or for running. But human beings differ from animals, (a) in that they are scared or made angry by things which are no real danger to life but only to self-respect (e.g., sitting an examination, snubs, or imagined insults), and (b) in that, unlike animals for whom out of sight is out of mind, man is cursed with imagination and memory which keep his emotions alive for long periods of time. In this way it happens that bodily changes produced by sympathetic stimulation in a time of crisis may continue, not for minutes, but for years. The frustrated worker, hating his job and resenting his boss, has the

raised blood-pressure normal to the angry animal; but it continues day in and day out until his arteries become thickened and the pressure can no longer return to normal. The ambitious business-man, mentally on the attack for years at a time perpetuates the associated physical changes normal to an attitude of attack; his stomach-wall is drained of proper blood-supply and the digestive juices, ordinarily neutralised by anti-enzymes in the blood, digest the lining of the stomach itself, causing an ulcer. Chronic states of anxiety or excitement may cause the thyroid gland perpetually to overact, leading to exophthalmic goitre. Muscle tensions appropriate to aggressive attitudes when prolonged may in others lead to fibrositis and rheumatoid arthritis. The changes produced by emotional states in the skin may cause skin disease, and migraine, asthma, angina pectoris, and coronary thrombosis are other diseases of varying degrees of severity due basically to fear, insecurity, and hate. Of course, what has been said here is inevitably over-simplified; for no disease is due to a single cause, nor is it at all clear why one patient gets one type of psychosomatic disease and a second another. But there can be no doubt that the outlook in medicine has become revolutionised by these discoveries, and can never return to the old mechanistic views of the nineteenth century. In summary, this is how views have altered:

(a) To a considerable extent we must discard the old view that sickness is always something that happens to an unsuspecting individual, like being hit on the head by a falling slate. Patients usually go to a doctor in much the same frame of mind as they would go to a watch-maker—"Here, there's something wrong with this watch—what are you going to do about it?" But from now on it has to be realised that the patient and the illness are one, that it is because he is the sort of person he is that he has become ill in a particular way. It is quite literally true that today we are entering a stage in the development of medicine which will look on crime as social or mental sickness and much disease as the result of the individual's wrong attitude to life.

(b) There are, of course, diseases in which psychological factors are at a minimum so far as causation is concerned, although psychological factors always play a major part in determining the course of the disease. Smallpox, malaria, cholera, natural calamities (like the slate falling on our unsuspecting head), and diseases due to malnutrition (where food has not been available) are examples of such conditions. These are the diseases which are serious problems in the more backward areas of the world, and are, on the whole, less important in the civilised areas. Psychosomatic factors, however, play a considerable part, in the case of the less-virulent infectious diseases, in determining whether the patient succumbs to the infection or not. For example, Dr. Wittkower has shown that psychological factors play a large part in determining resistance to tuberculosis and the subsequent course of the disease. Sir William Osler, the great physician, used to say of tuberculosis that what the patient has in his head is more important than what he has in his chest. The psychosomatic diseases already mentioned and the neuroses are, of course, examples in which the psychological factor is at a maximum.

(c) Fear and hate or anxiety not only cause unhappiness but also sickness and death. Hate and fear can kill.

(d) The psychosomatic diseases and the mental disorders generally are social diseases. They are strongly influenced by the stress of modern life and are on the increase. The present position is that, as Dr. J. L. Halliday has shown in his *Psychosocial Medicine*, although such diseases as smallpox, typhoid, rickets, the conditions due to dirt, faulty hygiene, and malnutrition, are well on the way to disappearing in the more advanced communities, in these very same communities the rate of neurosis, gastric and duodenal ulcer, heart disease, glandular diseases, high blood-pressure, suicide, infertility, and delinquency is going rapidly up. It is not only going up, but the diseases are attacking younger and younger people in each generation. As an example showing the relationship between social stress and psychosomatic disease, we might point to high blood-pressure, which is even more frequent amongst the Negro population of the



United States than amongst the Whites (who have probably the highest rate in the world), whereas primitive Negro tribes in Africa do not suffer from this condition at all.

(e) Finally, mention must be made of the body-mind problem which these observations bring to the fore. Ultimately, of course, this problem is a philosophical one which cannot be decided by observation or experiment, but today psychologists and doctors are inclined to make use of the working hypothesis that body and mind are one—that "mind" is only a useful word to refer to certain processes occurring in the body. Curiously enough, it was the mechanistic outlook of science which necessitated the hypothesis of a separate mind; for, if we begin by assuming that the body is a machine (which it is not), then we require some explanation for the fact that it sometimes acts as if it were something else. It must be realised that living things are not dead matter *plus* something else—they are simply living things with their own laws which cannot be described in the same terminology as those of physics and chemistry. Each of the spheres we have discussed—the inorganic, the biological, and the social, have their own laws, and one cannot be fully described in terms of the other. Scientists have discarded the mechanistic view, which implied that the whole was nothing but the sum of its parts and that we could best know the whole by studying each of the parts separately and then adding up our impressions, but they have not necessarily discarded materialism. This, however, will be discussed at a later stage.

### SOCIAL CHANGE.

We have already seen that the culture of a society—that is to say, its way of life—results from the interaction of many different influences. The physical environment obviously plays a considerable part and when we consider the differences between tribes living in hot, and those living in cold, climates, it is evident that, to some extent, their way of life is a form of adaptation to the physical surroundings. A second factor is the past traditions of the tribe; as we saw in the case of the New Guinea tribes, societies can live in the same surroundings and be of the same stock biologically, and yet differ widely in their usages. What is different is the past history and traditions of the tribes. Similarly, we can see that many industrialised countries at the same level of material culture and living in very similar environmental conditions, can vary considerably in their outlook on life. But here we have to ask ourselves the important question: what brings about cultural change? Why, for instance, did the Englishmen of mediaeval times differ so greatly in their culture from the Victorian or present-day ones? Many sociologists believe that new technical developments (inventions) have played a major part in initiating social change, and in the case of Europe perhaps the most important factor has been the discovery of the steam-engine.

**Mediaeval Culture.**—Society in the Middle Ages in Europe was relatively static, so that there was less change in two centuries than in twenty years in our own times. People lived in small village communities, and in their whole lives might never move more than five or ten miles from the place where they were born. They lived on the land, and their main sources of power were wind and water. Under such circumstances, industry, for the most part, was on a very small scale, and was carried out in the home of the craftsman, who was aided by his apprentices. Society was arranged in a hierarchy, with the king at the top, then the barons and lords, then the priests, the merchants, the soldiers, and the commoners; each individual was born into a certain level of society, and there he was destined to stay (although in the priesthood some promotion did occur). Learning was something one acquired from the books of the great writers of the past, and especially the great Greek and Roman writers and the Fathers of the Church; astronomy, medicine, and biology, not to mention philosophy and theology, were learned from these authorities, and nobody ever thought of studying nature itself to verify the conclusions reached by Plato and Aristotle 1,500 years earlier. Yet within this hierarchy there was a certain spirit

of democracy—for men were regarded as equal in the eyes of God, and the usual analogy by which the state was described was that of the human body, in which each part has a function to play in relation to the whole. In economic affairs usury was forbidden (i.e., the lending of money for interest), and the price of goods was determined by what was known as the "just price"—that is to say, a price which seemed to bear some relation to the intrinsic value of the goods. Poverty was regarded as inevitable, but, so far from feeling that the poor should be ashamed of their state, it was thought that the poor were especially close to God. It should not be supposed that the Middle Ages were as ideal as some writers, such as Belloc and Chesterton, have made out—there was dirt, malnutrition, plagues, and discomfort; but there was also great literature, great architecture, and great philosophy. Above all, people living in these small communities could feel that sense of belonging which we have seen to be so important. Families were large, grandparents lived as an integral part of the household, and illegitimate children (then more kindly called "natural" children) were looked after along with the rest. The Church and those who were better-off took care of the poorer, for charity was a religious duty. There was, in fact, during the early Middle Ages, no such thing as a Poor Law—partly, at least, because it was unnecessary.

**The Influence of the Steam-engine in England.**—The steam-engine has really quite a long history, beginning with the very elementary type devised by Hero of Alexandria several hundred years B.C. But in a form which was capable of being put to practical use, it dates from Watt's invention in the middle of the eighteenth century. To begin with, the use of the steam-engine as a source of power had five implications: (1) that the use of manpower was increasingly superseded by the use of steam power, and, of course, water and wind-power were gradually given up; (2) that wood was no longer used as a fuel, and less and less as a construction material; (3) that industry tended to congregate where there was an adequate coal supply, namely, in the North and West of England; (4) that goods began to be produced in ever-increasing quantities; (5) that men and women were required to tend the machines and to do work in which craftsmanship was of little importance, and large numbers of workers were needed. A steam-engine and the rest of the equipment necessary to start a factory were expensive both to buy and to run, and individual ownership had to give way to joint-stock companies managing large amounts of capital. In these ways there arose the "dark satanic mills" situated mainly in the coal-bearing North, and craftsmen and agricultural workers from the "deserted villages," such as the one described by Goldsmith, flocked to the new towns, there to live under conditions of incredible filth, disease, and misery. This, of course, was the beginning of what we now know as the Industrial Revolution.

**Psychological Changes.**—The vast majority of sociologists have taken the view that social change in the psychological and moral spheres is based upon changes in the material culture due to inventions and discoveries which alter the character of the powers of production. These inventions may reach a society by spread from another culture or by the scientific discoveries of its own men of science. What, in effect, this theory implies is the following: (1) the most important thing to a society is its means of livelihood and its methods of production; (2) it will, therefore, tend to organise its social structure around its means of production, and its most important men will be those expert in that field; (3) it will also tend to organise its thoughts and even its religion and philosophy and science with a bias in favour of the outlook of its most important men—those who own the means of production.

Wherever modern industry goes, it modifies the existing institutions of a society and brings about social change, just as it did in our own country. In China the large peasant family is gradually disappearing as industry spreads, in India the caste system is breaking down (since one cannot bother about caste differences at a factory bench), the other-worldly religions like Buddhism come to mean less, the birth-rate gradually (if too slowly)

goes down, the growing cities resulting from industrial expansion necessitate the giving-up of traditional attitudes in many things, notably in the field of hygiene and public health. It is, therefore, primarily invention and the spread of inventions that brings about social change.

**The Theory of Cultural Lag.**—Dr. W. F. Ogburn of the University of Chicago has made a special study of the technological basis of social change and has pointed out two facts which are of primary importance in understanding modern problems. First, there is the fact that, once social change has begun, it goes on at an ever-accelerating rate; each generation learns more, and invents more, than the preceding one because they have more facts and discoveries to work on. A Greek in the third century B.C. could have dreamed of making steam do work, and as we have seen, Hero of Alexandria invented a very simple engine but in order to make an engine that would really work he would have had to invent by himself: the wheel, the piston, the blast-furnace to produce the temperature necessary for melting and casting iron, the water-wheel to produce the mechanical blast, and so on. All modern discoveries and inventions depend upon pre-existing inventions and discoveries, and therefore the more inventions a society possesses, the more it can make in the future. This is why progress in the technical field goes on at an ever-increasing speed.

Now we have noted that social change occurs in three stages: (1) men produce new inventions; (2) these inventions influence human behaviour; and (3) finally, social institutions and beliefs are changed to allow for the new inventions. Recently, for example, a sociologist has shown how in Italy the production at a reasonable price of the "motor-scooter" devised during the war to be dropped in parachute landings has revolutionised the life of the peasants in the areas distant from the large cities. The scooters are cheap enough for the peasants to buy (as motor-cars are not) so that they can now easily travel into the towns from which they were formerly isolated, where they come into contact with city life with the cinema, books, modern "comics" and so on—new ideas which shatter their once simple beliefs. Similarly, the motor car in other countries brought distant places close, revolutionised sexual morals, produced ribbon development, brought about the spread of housing estates beyond the original boundaries of the large cities, led to an entirely new problem as mounting casualty lists resulted from the use of a new machine upon old roads intended for horse traffic. Dr. Ogburn points out that there is always a "cultural lag" between stages (1) and (3), and that this is the cause of many of our modern difficulties. We have vehicles travelling at fifty or more miles an hour on roads intended for horse-traffic, and the daily papers talking of the importance of "private enterprise" and free competition when these have long ago become an impossibility—not because of the spread of "socialism," but because businessmen found "private enterprise" and unrestricted competition so unpleasant that they began to form combines and trusts precisely in order to avoid it. In short, the old ways of thinking tend to persist long after the situation which was their justification has changed.

#### SOCIAL AND PSYCHOLOGICAL PROBLEMS OF MODERN LIFE.

**1. Insecurity.**—The principal reasons for the psychological insecurity felt by many people today (and also, of course, for the current emphasis upon economic security) arise essentially out of the way of life which displaced the peasant society in mediæval times. Mediæval society was, as we have seen, closely integrated; each man knew how he should behave and what were his duties and obligations. The earth was the centre of the universe, heaven was above and hell beneath, and through the medium of the Church he knew exactly what he had to do—the world, in a word, was *comprehensible*. In relation to his fellow-men things were equally clear: "Not only civil authority, but God in heaven, had ordained that one be a butcher, a baker, a candlestick-maker, or a villain or serf. From the earliest days of life the individual knew where he stood; he had the security of firm group membership. His father and mother, brothers and sisters, would

move neither up, nor down, nor away from him, and the bottom could not drop out of his own world. He had many obligations, but his own rights were likewise well defined. But with vertical mobility came the opportunity not only to rise but to fall, the dispersion of families to seek new adventures in other parts of the world, the loss of group-membership status, and the uncertain compensation offered by a chance to make an individual name for oneself" (Gardner Murphy, *Personality*). By basing its structure upon competition, or, at any rate, upon unrestricted competition, the new way of life cut the individual off from society and set him upon his own two feet; he was now fighting for himself and had to regard the rest of mankind as potential enemies or competitors. The rise of capitalism led to the rise of the isolated individual.

**2. Loss of Social Control.**—Modern industry demands greater mobility of labour, and modern inventions have made transport cheap and speedy. The small permanent village community of people bound together by primary relationships (whether of love or friendship, resentment or dislike) is therefore broken up, and people become increasingly "rootless." It is as easy for a West Indian worker to come to Britain as it once was for a Scot to move to London. Now, an individual's moral behaviour is controlled: (a) by the Superego or conscience acquired in childhood, which is not always effective, partly because it is concerned only with the more fundamental matters, and also because of parental defects in upbringing; (b) by the social control of the groups to which the individual belongs—in short, by fear of the opinions or ridicule of others. Amongst the vast majority of people (b) is much more important than (a) in controlling behaviour. But when people are scattered far and wide, living amongst strangers, the small face-to-face group no longer influences their actions, and their conduct tends to deteriorate; in fact, not only morals but also mental health is strongly influenced by membership of small groups, and in the absence of such membership neurosis becomes more probable. This is why groups of immigrants from other countries present a social problem quite other than the superficial ones which usually cause concern; torn between the old standards which they are rapidly losing, and not yet indoctrinated with the ways of their adopted country, such people are likely to find themselves in difficulties.

**3. Social Conflicts.**—Society itself, so far from being all of a piece, is riddled with irreconcilable conflicts. One government will encourage "private enterprise," and the succeeding one cheerfully announce that people who engage in private enterprise are scoundrels. We are taught by religion (in the case of America it is stated in the constitution) that "all men are equal," and yet we persecute Negroes and Jews. We are told to "love one another" and in the same voice to "never give a sucker an even break." We stimulate ambition and yet live in a state of affairs in which promotion is increasingly improbable; for example, about thirty years ago it was quite possible (if not as common as might be supposed) for an employee to work his way from the shop-floor to the board of directors. Now, such jobs are increasingly filled by university graduates who have had little to do with manual work. Even in America, once the land of hope, the social classes are tending to become fixed and promotion less likely than before. The cinema depicts people living lives of luxury as a natural state of affairs, and yet we expect people to be uninfluenced by such experiences. An eminent sociologist has pointed out that gambling is the result of stimulating people's desires to achieve wealth whilst failing to devise legitimate means of obtaining it. It is almost always forgotten that frustration is a relative concept—that people are frustrated, not in some absolute sense, but in relation to what they have been led to expect. Thus, miserable as is the lot of many peasants in Asia and elsewhere, they may be much happier than the senior factory manager who expected to be taken on to the board and was passed over. Material goods are important aids to happiness, but in themselves they are not enough; for almost everyone is unhappy, no matter what his possessions, if he feels that what he had is not in



accord with what he is entitled to. But what is he entitled to? The plain fact is that in spite of much talk of "fair shares" or a "fair wage," we have no idea what a man is entitled to because it is nothing but a social convention that a doctor should be paid more than a miner, and the old social conventions of this sort, good or bad, have disintegrated.

4. **Racial Conflicts.**—It need hardly be pointed out that this is an increasingly difficult problem which cannot be solved by asserting, no matter how often, that there are no superior races or nations. The real dilemma of such a country as South Africa should not be underestimated, however it may be oversimplified on both sides of the fence; for the fact is that in such a country there are only two possibilities, both of which would lead to equally unpleasant results for the White minority in power. Either (1) they hold the Black peoples down, in which case there will sooner or later be bloody rebellion, or (2) they give the Black peoples equal parliamentary rights, in which case, since the Blacks vastly outnumber the Whites, the ruling minority automatically hand over control to the Blacks. In justice to the White minority, it is only fair to remember that no group in history has ever willingly surrendered power, and that the problem is vastly more difficult than most people realise.

5. **The Problem of War.**—Psycho-analytic writers have always asserted that aggression is an innate drive in man, and therefore that war is inevitable. To this attitude there are three answers: (1) that, if this is so, the human race is irrevocably doomed—for with modern weapons it would be difficult to survive one war, let alone an indefinite series; (2) that it is by no means certain that aggression is innate—most modern psychologists other than psycho-analysts state that aggression is the result of frustration, from which supposition it follows that, although aggression could never be entirely removed, it can be very considerably reduced by removing frustrations as far as possible; (3) that the problem of war has really nothing to do at all with whether aggression is, or is not, innate—what matters is not *whether* we are aggressive, but what we do with our aggression, and war is not at all the most obvious means of getting rid of aggression.

At one time it was thought natural for Scotland to fight England, or, at an even earlier stage, for the various kingdoms into which England was divided, to fight each other. Now such an idea would appear fantastic—not because the Scots learned to love the English, not because morals have improved, but simply because the countries concerned became one world economically and administratively. There can be no doubt that modern discoveries and technology have made it essential for the whole earth to become one economically and administratively—not only essential but inevitable. And, given time, this will quite certainly happen, whether we are willing or not, provided, of course, that we do not blow ourselves up first. When that day comes, we need not bother about the problem of aggression, for, as we have already seen, there are more than enough evils to fight and more than enough problems to tax the best brains for centuries to come, and when we have dealt with these we shall probably find that we have grown up.

6. **Religion and Science.**—In the nineteenth century religion took a good beating from science because it had rashly chosen to discuss matters of scientific fact, such as the theory of evolution. The war between religion and science is over—not, as many people seem to suppose, because one side or the other has won, nor because the new scientific theories support religious beliefs (for they certainly do not)—but rather because each has come to realise that their respective spheres of influence are largely separate. The scientist as scientist looks at the universe without emotion and as objectively as possible whereas in the sphere of religion we are concerned about how we *feel* towards it. We look on it with awe, fear, or love, as in some sense our home. "Religion," said William James, "is a feeling of being at home in the universe."

No doubt religion is also a great deal more than this, but James' statement contains a fundamental truth, and in this sense we are all religious; for

there is nobody living who is capable of regarding the universe with complete impartiality except for relatively brief periods of time, as the scientist does when carrying out an experiment. As we have seen elsewhere, one of man's deepest needs is to have a feeling of emotional security, a sense of belonging, and the consciousness of understanding his relationship to his environment. Erich Fromm, a psychologist who has made a special study of religion, describes the need we have just mentioned as the need for a "frame of orientation and devotion." Whereas Freud considered religion to be a universal neurosis based upon the need to conciliate the father-figure God—a projection of the child's view of its family into the celestial sphere—Fromm reverses this statement and tells us that, on the contrary, neurosis is a private religion. Whereas religion is a public frame of orientation and devotion, each man's neurosis is a private one; or at least, one aspect of a neurosis is the development of a private set of attitudes to life which is in conflict with those of society as a whole. Franz Kafka's novel *The Castle* is a modern parable of the neurotic's isolation from society and life which explains more about the individual's need of a frame of orientation and devotion, and the results of the lack of it than many volumes of psychology.

**Summary.**—It should be pointed out that in psychology today there are two different points of view which here we have tried to reconcile: (a) the psychoanalytic view, which holds that personality is fixed, and is determined in the first four or five years of life, and (b) the sociological view that personality, although strongly influenced by these factors, is also influenced by the roles the individual has to play and the situations he has to face in adult life. The views are not necessarily contradictory; what we have to ask ourselves is not whether this view or that, but *how much* of each view, is true. Freud largely ignored the influence of culture, firstly, because all the people he was dealing with belonged to the same culture, and, secondly, because at the time he produced his theories it was assumed that "human nature" was the same all over the world.

Nevertheless, whatever we think of Freud, the one aspect of his work which is beyond doubt is that for most of their lives people are influenced by motives which are unconscious, and of which they are completely unaware. The individual has a picture in his mind of the sort of person he supposes himself to be, and uses the mental mechanisms we have described to maintain this picture: impulses which he cannot reconcile with his ego-ideal are simply rejected. The importance of this fact is evident—for it means that rational persuasion is not nearly so potent in influencing behaviour as has often been supposed.

## THE MODERN VIEW OF MAN AND SOCIETY.

There are three types of individual who are in rebellion against society: the neurotic, the criminal, and the genius. The differences between the three are that the neurotic rebels in secret or unconsciously, the criminal openly, and the genius by his creative work is able to sublimate his conflicts in art or literature or even to change society nearer to his heart's desire. (It will be understood that this is a very loose formulation of a very complex problem.)

Now it is the modern view that such conflicts are not private and individual as has hitherto been thought (notably by Freud); for it is the conflicts latent in a particular society which are fought out in sensitive minds. Briefly each society is now regarded as a sort of electromagnetic field in which the neurotic, the criminal, and the genius are areas of high tension—in them the conflicts suffered by the society as a whole are magnified to the point of breakdown. Whereas, as was realised long ago, such diseases as cholera, typhoid, or smallpox are due to material defects of society in respect of hygiene and the application of medical knowledge, the behaviour of neurotics, criminals, and those with psychosomatic disorders is due to cultural defects of the society in the psychological sphere.

Modern psychology and sociology are showing more clearly than ever before that, in the words of Donne, "no man is an island," and that for the misery or unhappiness or badness of the few we are all responsible.

## IV. RECENT DEVELOPMENTS AND DISCOVERIES.

### ASTRONOMY.

**The Size of the Universe.**—One of the puzzles of astronomy since the development of Hubble's theory of the expanding universe has been the embarrassing fact that, when the age of the universe is calculated from its present rate of expansion, a figure of about 2,000 million years is arrived at, whereas when the age of the Earth is calculated from the evidence of radioactivity a figure of between 2,000 and 3,500 millions of years is the result. Thus we have the obviously absurd implication that the Earth is older than the universe of which it is a part. This anomaly has now been resolved by the work of Dr. Baade of the Mount Wilson and Palomar Observatories. Dr. Baade made use of the 200-in. telescope on Palomar Mountain, California to demonstrate that the method of calculating distances based upon the stars known as Cepheid variables (the yardstick for astronomical distances) is by no means infallible and that, therefore, the previous estimate of distances outside our own galaxy was incorrect. But if the estimate of distances was wrong, our estimate of the size of the universe was also wrong, and from this it follows that estimates of the age of the universe based upon its rate of expansion and apparent size are no longer valid. Looking through the giant telescope, Dr. Baade found stars in the central region of the nebula of Andromeda to which the old generalisations did not apply; there are, therefore two types of variable stars with different brightnesses for the same period of variation (star populations I and II). These observations, confirmed in other observatories, double the distance of the Andromeda nebula to about 1½ million light years and extend the age of the universe from 2,000 million years to about 4,000 million years; hence the age of the Earth, calculated from the evidence of radioactivity, no longer appears absurd.

**Origins of the Universe.**—Basically there are two types of theory about the origins of the universe: the evolutionary theories which hold that it had a beginning in time—that it was created or came into being at a particular moment (no matter how long ago), and the "steady state" or continuous creation theories of Bondi, Gold, Hoyle, and some Soviet astronomers who hold that matter is constantly being created and that, therefore, there never was any beginning. For Christians—and particularly for Roman Catholics—the views of the evolutionists in cosmology are a matter of dogma: it is an essential part of most religious views of the universe to believe that it came into being by an act of creation at a particular moment of time. It may, therefore, be of interest to say something about recent work relating to this subject.

In a recent book entitled *Frontiers of Astronomy*, Fred Hoyle elaborates on his continuous creation theory which we have discussed briefly elsewhere (p. 154). Not only does he suggest that matter is continually created out of nothing, but he also disagrees radically with the older theories of the origin of the earth which have usually held that it arose from the condensation of a cloud of incandescent gas. According to Hoyle, the earth has been formed by the coming together of particles in a dust cloud which once surrounded the sun, particles consisting mainly of stone, iron, and ice. The stone and iron fragments formed the core of the earth, whilst the ice melted to form the primitive oceans. There may also have been droplets of oil within the primeval cloud which helped to form the earth's core, and gave rise to the petroleum pools beneath the surface of the globe. Hence the possibility exists (if Hoyle is right) of a further untapped ocean of petroleum deeper down in as yet unreached regions.

But is Hoyle right—or, at any rate, is his continuous creation theory of the universe consistent with the facts? According to many astronomers, there are both theoretical and practical reasons for doubting this. Firstly, Hoyle's mathematical

calculations do not readily fit in with Einstein's field theory of relativity, because they contradict the principle of conservation of energy accepted as fundamental by the physicist. Certainly, a few authorities have tried to reconcile the steady-state theory with relativity, but they have done so at the cost of making certain assumptions which most scientists are not prepared to make. Recently, too, certain results obtained from the use of radio interferometers seem to have thrown further doubt upon Hoyle's findings.

**The Radio Interferometer.**—The radio interferometer, popularly known as the radio telescope, is based upon quite simple principles. If a stream of water comes up against a barrier in which there are two slits some distance apart then the water will pass through the slits in the form of waves and, on arriving at the other side, will fan out once more. Farther away from the barrier, there will be a point (if the slits are not too far apart) where the two fan-shaped series of waves converge and overlap, and here an interesting phenomenon happens. Either the peaks of two waves meet simultaneously or else a peak and a trough happen to coincide. In the first case, the two augment each other, in the second, they cancel each other out. So we get a pattern composed of alternate larger waves and no waves. If light is used instead of water—and, as we know, light takes the form of waves—we will get a pattern of light and dark lines: the first where the waves from two sources have augmented each other, the second where they have cancelled each other out. In short, to be more technical for a moment, the beams will overlap and produce bright lines if they differ in phase by an integral number of wavelengths; they will produce darkness if they differ by an odd number of wavelengths. But ordinarily this difference in phase is produced by a difference in the length of path traversed by the beams, and so an examination of the pattern of interference, of the dark and bright lines, tells the expert the distance of the source of light. The principle of the interferometer was discovered a long time ago by Newton and was used by Michelson in his celebrated instrument (1890), but the stellar interferometer was not built until 1920 by Michelson and Pease. It has been used to study double stars, to calculate the diameter of distant stars, and to solve other problems. Its advantage in astronomy is that it doubles the resolving power of a telescope and makes it possible to measure stars twice as close together in the sky as the limit possible with the telescope alone. Essentially, an interferometer of the optical type we are considering at the moment consists of a beam—in the case of the 100-in. telescope at Mount Wilson, a 20-ft. beam—with a mirror at either end which catches the light from a star. The light is reflected from these mirrors to two other mirrors near the centre of the beam and thence down the telescope tube, in which, at the focal point, they form the pattern of interference from which so much information can be gleaned. For example, the light from opposite edges of a distant star is collected by the outer mirrors and the two rays combine in the telescope to form an interference pattern from which the diameter of the star may be calculated.

But light is only one form of what we now describe as electromagnetic radiation, most of which does not affect the human eye at all. At the short end of the scale are the ultra-violet waves, X-rays, and so on which can cause effects upon the human skin or take photographs, but remain invisible to sight; at the long end are the infra-red rays and wireless waves. All these waves follow the same laws as visible light, and it is therefore possible to create a radio interferometer which can be utilised for the same functions as the optical one, but in circumstances where the optical one is useless. Basically, these circumstances are two: (1) when the star is too faint or too small to utilise the optical interferometer; (2) when dealing with bodies in space which, like the dark clouds in interstellar space, give out no light at all.



In place of mirrors, the radio interferometer has two aerials, about 1350 ft. apart, connected to a reflector shaped rather like the bowl-shaped type of electric radiator, although the newest Cambridge instrument has a reflector shaped somewhat like the cylindrical type of electric radiator. The signals from East and West combine to form a sound pattern which, as the instrument is moved by the Earth's rotation, allows the observer to calculate the Right Ascension (celestial longitude) and the reflector when rotated to North or South gives the loudest signal at a point corresponding to the Declination (celestial latitude). Thus the position of a heavenly body may be pin-pointed in space. By this means almost 2000 "radio stars" have now been found (only about 100 were known in 1951). Some are visible when the 200-in. telescope at Palomar Observatory is pointed in the correct direction, but it appears that most are beyond the reach of human vision even when aided by the most powerful telescope. They are, in fact, outside our galaxy. But one of the most important findings relates to the distribution of stars in space beyond the vision of our most powerful telescopes. According to evolutionary theories of cosmology, the number of stars should become greater the farther out into space one moves—and this is exactly what one finds with the help of the interferometer. On Hoyle's theory, and those of Bondi, Gold, and others, the number of stars should become, if anything, less, rather than greater as distance is increased. So far, then, the latest evidence is not easily reconcilable with theories of continuous creation. Such is the judgment of astronomy's latest technique.

**Jodrell Bank Telescope.**—The largest radio telescope in the world will be the one at Jodrell Bank in Cheshire (*see* Telescope, p. 689), which is expected to be completed by the end of 1955. The cost of this huge instrument—by far the largest instrument ever made for the purpose of scientific research—is believed to be in the region of £500,000, borne equally by the Nuffield Foundation and the Department of Scientific and Industrial Research. With the telescope it will be possible to gain information about almost one thousand times more of the stars and other bodies scattered throughout space than can be seen through the largest visual telescope. This method of investigation has the additional advantage (particularly important in Britain) that smoke, bad weather, the glare from the sun, and other interferences to visual astronomy do not affect its efficiency. Even the dust clouds in distant space, which obscure almost 99% of the stars in the Milky Way, offer no barrier to the radio telescope.

Motion in azimuth (*i.e.*, the vertical arc of the sky from zenith to horizon) is guided by a railway track of 300 ft. in diameter which has to bear the actual instrument—about 1300 tons in weight and 170 ft. high. More graphically, the circular track would just fit into Trafalgar Square, and the 250-ft.-wide parabolic mirror, illustrated in the vignette on the jacket of this book, would easily dwarf Nelson's Column. In spite of the size and weight of the mirror, it will be possible to direct it to any part of the sky with an accuracy of about  $\frac{1}{4}$  of a degree. It can be used, as in the Cambridge instruments, for reception alone, or for combined transmission and reception in which messages sent out into space are reflected back to give information about bodies in space. The existing fixed telescope at Jodrell Bank has already been used in the latter way to give valuable information about meteors.

**The Nature of Cosmic Rays.**—In recent years considerable attention has been paid to two fundamental problems of physics and astronomy: the origin of cosmic rays, and the nature and significance of the interstellar material. These two subjects are more closely related to each other than might appear at first sight, because it is not inconceivable that the cosmic rays may arise predominantly from the interstellar material rather than from certain stars, as was originally supposed. The most striking feature of cosmic rays is the great energy possessed by individual particles; this energy is commonly more than a thousand times that of the alpha and beta rays emitted by radium and other elements, previously regarded as the most energetic atomic particles.

Some cosmic rays have vastly greater energy, up to ten million times the average, and the charge is nearly always a positive one. Since the bombardment of the Earth by such rays is almost constant by day and night, it is obvious that they cannot come from the Sun or from any ordinary kind of star. Therefore, the two possibilities are: (1) that they arise from an abnormal type of star, or (2) that they arise from, or at any rate are connected with, the interstellar material. We must seek, in short, for areas in the universe which contain electric fields of sufficient magnitude to accelerate particles to the immense energies observed in the rays. It is now generally believed that both these possibilities are valid—that cosmic rays may initially be produced by special stars (the magnetic stars, discovered by Babcock), and are subsequently accelerated by moving clouds of interstellar material which contain powerful magnetic fields.

The interstellar material seems to consist of gas and needle-shaped grains, and at a conference on Solid Particles in Astronomical Objects held at Liège in 1954, J. H. Oort attempted to explain the formation of stars in terms of the condensation of such clouds. A similar theory was put forward by Spizer and Whipple in 1940, who suggested that interstellar dust clouds are liable to collapse because the radiation pressure of the light falling upon them eventually drives the dust grains in them to the centre. The gas is then dragged along, and eventually the density of the whole mass becomes so great that it contracts to form a star. There are, however, many good reasons for not accepting such a theory of the origin of stars, and it is now doubtful if the interstellar material plays more than an indirect part in the creation of new stars.

#### ATOMIC PHYSICS.

**Basic Constituents of Matter.**—In atomic physics work on accelerators or "atom-smashers" becomes both more expensive and more complex. The new bevatron at Berkeley, California, produces nearly 6,000 times more energy than its forerunner the original cyclotron and cost over £3 million. Formerly, it was believed that the forces holding atomic nuclei together was the attraction between electrons and protons—or nucleons, to give them their common name—whereas neutrons exercised no such force; but, in 1935 the Japanese mathematician Yukawa upset much of this simple picture by predicting the existence of mesons. Yukawa argued that, just as the existence of electric forces implies the existence of electric waves (or photons), so the existence of nuclear forces implies the existence of nuclear waves, "heavy quanta," or mesons—particles about 300 times as heavy as electrons. Subsequently, mesons were found by analysing cosmic rays (those penetrating rays which enter our atmosphere from outer space). But then a further complexity arose: it was found that there were heavy mesons and lighter ones—the former were named pions, the latter muons.

Previously it was supposed that electrons could exist within the atomic nucleus, but there are good reasons for believing that this is impossible, so when a radioactive nucleus which is unstable breaks down, it is supposed that what occurs is that a neutron is spontaneously transformed into a proton, and an electron is ejected in the process. This electron is created in the process, just as a photon is created when an atom emits light. In fact, it is probable that in this process two particles are created—an electron and a neutrino. The neutrino, postulated by Pauli in 1931, has never been directly observed, but there is good reason for believing that it exists.

One of the major developments in atomic physics, which made the observation of such particles possible, was the invention by the Scottish physicist C. T. R. Wilson of the cloud chamber in 1911. This is based upon the principle that a chamber charged with water vapour produces tracks of condensation when atomic particles pass through it; the neutron, the meson, and the other particle known as the positron were first observed in this way. If, in addition, the chamber is placed between the poles of a large electromagnet, the deflection of the tracks will show whether the particle under observation is negatively or positively charged. In this way,

it was shown that particles exist which have the mass of an electron but are positively charged. These are the positrons. The present position, then, is that the photon is a unit of light—a tiny package of light waves; the meson (which comes in two sizes, light and heavy) is a package of nuclear energy—neither of these units exist within the atom—they are created when certain processes occur within the atom. The neutrino is a very light and neutral particle—colloquially one might describe it as a tiny neutron, and, even more colloquially, a positron might be described as a "positive electron." In 1955 the anti-proton or "negative proton" was discovered. Its existence had been predicted on theoretical grounds, but it occurs only at high energy, and until the construction of the Berkeley bevatron, which has been described as the world's greatest atom-smasher, it was not possible to create nuclear bombardments of sufficient energy to create it.

Some physicists have supposed that all these confusing particles may be broken down into simpler units, thus restoring the former simplicity of our picture of the atom, but Professor O. R. Frisch, of the Cavendish Laboratory in Cambridge, does not think this likely; there is, after all, no good reason why nature should be easy to understand just because we should prefer it.

**Atomic Physics in the Service of Man.**—The Conference on Atomic Energy held at Geneva during August 1955 gave an impressive demonstration of what the atom can do for peace and the material prosperity of the human race. Scientists from many different countries of the world came to Geneva to exchange information, and it soon became clear that the great "atomic" powers—Britain, America, France, and the Soviet Union—are all about equally advanced in atomic research, although naturally some of them are slightly more advanced than the others in specialised aspects of the subject.

Particularly interesting was an exhibition of equipment which included scale models of reactors—the French "atomic city" at Marcoule, the British Calder Hall reactor now nearing completion, and a small (5000-kW) reactor already in action, in the Soviet Union. The American exhibit in this field was a working "swimming-pool" research reactor, so called because of its glowing uranium plates immersed in a pool of water.

But the largest trade exhibit of atomic equipment and products was the British; for it is clear that Britain sets great hopes of future prosperity upon the prospect of becoming the world's atomic workshop. (We are, in fact, already producing nuclear power in this country at a cost which, while no cheaper, is at any rate no more expensive than the more conventional power sources.) There are three basic economic factors which determine Britain's atomic programme:

- (1) The need to save money on atomic fuel, most of which, in the form of uranium, has to be imported from the U.S.A.
- (2) The need to increase our exports by creating a market for atomic products—e.g., small reactors, atomic equipment, and radio-isotopes.
- (3) The need to replace our diminishing coal supply by atomic energy in the quickest possible time.

The first problem is being tackled along two different lines: the more efficient utilisation of what fuels we have or the use of new fuels, and the discovery of new methods of employing waste products. Thus thorium, a relatively cheap metal once used to coat gas mantles, may partly replace plutonium and uranium 235, and more efficient "breeder" reactors are being devised which are capable of creating more fuel in the very process of consumption. In the U.S.A. such breeder reactors have proved capable of producing one new neutron for every ten consumed, but Sir John Cockcroft has recently announced the completion of the Zephyr reactor, which actually produces one new neutron as fuel to replace each one consumed. The Zephyr reactor (i.e., Zero Energy Fast Reactor) is still at an experimental stage in which it develops little electric power, but it may at some future date prove of commercial value for producing cheap power for industry. Atomic

waste, formerly a considerable problem when methods had to be found for disposal of this dangerous material, is now being used in London hospitals for the treatment of cancer.

Britain's need for economy and a new fuel supply has led to plans to obtain at least 40% of our electricity from atomic sources by 1975. In order to do this as quickly as possible, it is likely that the design of reactors will be standardised at the present fairly simple level so that they may be got rapidly into production. Nuclear reactors already hold out the hope of cheap energy to countries without coal or hydro-electric sources of power, and one of the U.S. delegates to the conference predicted that in only ten years' time the building of any power-generating plant other than the atomic type will have become obsolete. The outlook for the future in a world utilising atomic energy (and remaining at peace) is full of hope: seas can be drained, mountains moved, deserts irrigated, diseases cured, and knowledge of the universe increased. The only "if" about this great programme lies in the mind of man, the ultimate source of most of our troubles. Shall we have the wisdom to use this great discovery to just and humane ends? All the world's scientists at Geneva were agreed about one thing—that for the human race today it is all or nothing.

**The Controlled Fusion Hydrogen Reactor.**—There have been rumours in the world Press of the possibility of creating a controlled fusion reactor which would make all other reactors out of date. As we have already seen (p. 162), the atomic bomb is a fission bomb which produces energy by the breakdown of complex elements—ordinarily uranium 235—into simpler fragments, and the principle of a fission reactor is to utilise this reaction whilst slowing it down by the use of so-called moderators such as heavy water or graphite. The ordinary fission reactor is, in fact, a very slowly exploding atomic bomb.

The hydrogen bomb, on the other hand, is a fusion bomb—i.e., one which produces its energy by the fusion of light elements (isotopes of hydrogen and possibly lithium) into heavier ones (helium)—and a fusion reactor would be one in which this reaction, suitably controlled, produced energy utilisable commercially as in the case of the fission type. Britain, the U.S.A., and the U.S.S.R. are all reported to be working along such lines, but so far as is known their efforts are still largely in the realm of theory. At the Geneva Conference, the Indian physicist H. J. Bhabha predicted that fusion reactors might be in use about 1975, so clearly they are a long-term project, and sensational accounts in the Press have been somewhat over-optimistic. However, it is more than likely that such reactors will be created sooner or later and therefore, perhaps, worth our while to discuss briefly their presumed nature and possible advantages.

First of all, a reactor utilising heavy hydrogen (deuterium) as fuel would not only tap sources of energy 1000 times greater than the fission type, but would do so much more cheaply. One pound of deuterium costs about £30-£40, whereas a pound of pure uranium costs something in the region of £3000. Secondly, the use of deuterium would produce no radioactive waste, the disposal of which has been such a serious problem in the case of ordinary fission reactors. Lastly, the reactor would contain less fuel, would be safer, and would not require such heavy shielding as the fission type—this means that it might be the answer to the problem of atomic power for aircraft or rockets.

How would such a reactor work? Since it has not yet been created, and we do not even know in detail how the hydrogen bomb works, only guesses are possible. It is presumed that the hydrogen bomb is a mechanism in which isotopes of hydrogen (deuterium) and perhaps other substances are made to release vast amounts of energy by fusing into helium. This, of course, is the reaction occurring within some stars and notably within the sun. But it can occur only in the presence of great heat, a heat so intense that on earth it has to be supplied by the exploding of a uranium fission bomb, and naturally this method could not be utilised in a reactor which is based upon the gradual release of energy—a slow explosion, in fact. What is needed for the production of a



hydrogen reactor, then, is (a) the fuel (deuterium), (b) a means of producing very intense heat (many millions of degrees), which is also safe, (c) a means of controlling the reaction once the fusion has begun (a moderator). The most frequently made suggestion for bringing about these conditions is that the fuel lithium-six deuteride (a chemical compound of one of the isotopes of lithium with deuterium) should be bombarded by a beam of electrons focused upon a minute spot of the fuel. This would raise the temperature of an area about one-thousandth of a millimetre in diameter to many million degrees. Under such conditions, it is believed, the bombarded area would turn into helium, with the release of vast amounts of energy. But the real question is, what would happen then? Would a chain reaction be started which would continue until the fuel was used up, or would the initial bombardment with the electron beam have to be continued? It is doubtful whether anyone knows, but it is perhaps along such lines as these that the problems of the fusion reactor may be solved.

#### AUTOMATION AND ELECTRONICS.

**Automatic Factories.**—What effect nuclear methods of producing power will have upon industry can only be guessed; but an even more revolutionary development, relating this time, not to atomic energy, but to the new science of cybernetics, will also become a reality in the near future. Cybernetics is the science of calculating machines, and already factories in the United States, Britain, and the Soviet Union are being run by calculating machines without workers—these factories, in short, are completely automatic. So certain is the spread of this technique, that a Conference under the chairmanship of Sir Walter Puckey was held in December 1954 to discuss the impact upon society of the automatic factory.

**Electronic Computers.**—A great deal of nonsense has been spoken about calculating machines; for example, it has been imagined that they may become more clever than man and develop a life of their own, that they can actually "think," and so on. Actually, calculating machines, or electronic computers, to give them their more correct title, are, by themselves, capable of doing nothing at all; they are merely devices for doing long and laborious calculations very rapidly. Nothing comes out of the machine except what has gone in in the form of "instructions" as to what the machine must do, and these instructions must ultimately come from some human being. The machine is a completely obedient and accurate slave, working with incredible speed but altogether without intelligence. If, for example, the instructions put into the machine (in the form of punched cards, punched paper tape, or magnetic tape) are incorrect, the results will be absurd; for the machine has no faculty of judgment. As Christopher Strachey, an expert in this field, has pointed out, a computer without a series of instructions from a human being is like a typewriter without a typist or a piano without a pianist. But having pointed out these restrictions upon what computers can do, what they are able to do is astonishing enough: they can, for example, play a game of draughts or write a (rather inadequate) love-letter. Thus the Manchester University computer was found to be capable of the following effort:

"Darling Sweetheart,

"You are my avid fellow feeling. My affection curiously clings to your passionate wish. My liking yearns to your heart. You are my wistful sympathy: my tender liking.

"Yours beautifully,  
"M.U.C."

Even this result might be regarded as impressive when typed out by a machine were it not that its mechanism of production is extremely simple. There are only, in fact, two basic types of sentence. The first is "My — (adjective) — (noun) — (adverb) — (verb) your — (adjective) — (noun)." The machine is fed with lists of suitable adjectives, nouns, verbs, and adverbs, from which the blanks are filled up at random. There is also the further possibility that the adjectives and adverbs may be left out altogether. The second type is, therefore: "You are my — (adjective) — (noun)." The most likely change in the immediate future is that clerical jobs in industry (which are mostly routine) will be increasingly taken over by electronic computers—a fair estimate seems to be that a million clerks will be displaced in the next ten years. Since almost one-tenth of the working population of Britain consists of clerical workers, the influence in this field alone in the next fifteen years or so will not be negligible. Even so, this will be as nothing compared to the developments when many factories become automatic—huge machines into which instructions are fed by one or two managers. Of one thing, however, we may be sure: that electronic computers will never replace human beings completely—for the only "brain" without which the computer is useless is that of the human being who works it.

#### MEDICINE.

**New Methods in Medicine.**—Medicine has been revolutionised in two quite different ways within the last fifteen or twenty years. First, the new drugs provided by science are of remarkable efficiency, and correspond to nothing that has ever been known before. During the nineteenth century the bacteriologist Ehrlich dreamed of producing drugs which would be "magic bullets" capable of singling out the invading germs while leaving the human body unharmed—a task which is not so simple as might be thought, for the material of human bodies and of bacterial bodies is not nearly so different as our pride might like us to believe. Ehrlich discovered Salvarsan, an arsenical compound which revolutionised the treatment of syphilis, and, of course, the nineteenth century also had quinine, which was discovered centuries before to be specific in the treatment of malaria; but beyond that medicine was mainly a matter of "wait and see." Now we have the sulphonamide drugs, first discovered by the German chemist Domagk in 1935 in the form of Prontosil, but now elaborated into many types for different diseases; the group of antibiotics, of which penicillin was the first (discovered by Fleming in 1928, and made a practical proposition by Florey and Chain and others who showed how to extract it commercially), now include many other substances such as streptomycin, terramycin, chloromycetin, and so on. We have also the vitamins to treat and prevent the vitamin-deficiency diseases such as scurvy, pellagra, rickets, and beri-beri and the hormones to cure cretinism, myxodema, Addison's disease, and some types of cancer.

**A New View of Personality.**—The other discovery in medicine which we make no apology for discussing here, although it might be thought to belong to the Medical Section, is the rediscovery of the patient. This is of importance because its significance extends far beyond the bounds of medicine into psychology, sociology, and all the social sciences. During the nineteenth and early twentieth centuries, medicine had become mechanistic in its outlook and increasingly specialised with the result that some physicians began to forget that they were treating a human being rather than a part of a machine. However, as we have seen, the new concept of psychosomatic medicine makes it clear: (a) that an individual's outlook on life may be causal in producing organic disease and even death; (b) that diseases due to mental stress are on the increase—that, in short, we have almost defeated the dragon of plague and pestilence, only to meet with a new problem created by the psychological stress of modern life in an industrial community.

This fact is intensely significant when we come to discuss the nature of man; for we can now see that in order to produce a better society it is not enough to produce sufficient food, clothing, and housing—we must also consider man's psychological needs, which, if unsatisfied, not only lead to unhappiness but also to psychosomatic disease and neurosis. Who, for example, could have a higher material standard of life than the American business executive? Yet nearly all large industrial concerns both here and in America have become alarmed within recent years at the number of their senior executives who die in comparatively early life from heart diseases recognised as due to over-stress.

**Radioisotopes.**—Radioisotopes were first produced in the 1930s in a cyclotron, the basic principle of which is that a beam of atomic particles is speeded up in a powerful magnetic field. Such a beam is then used to shoot at the nuclei of various elements which it is desired to smash, and by this means they may be broken up into other elements. However, the trouble about the cyclotron is that it can ordinarily produce only small amounts of radioisotopes, which are the substances most useful to man. An isotope is (to quote Gordon Dean of the U.S. Atomic Energy Commission) "something that is exactly like something else only it is different"; an isotope of gold is gold, but different in ways that can be discovered only by the most complicated laboratory equipment from ordinary gold. Basically, the difference between isotopes lies in the varying number of particles within the nucleus, and this is signified by a number following the name of the substance, hence uranium 233, 235, and 238, or oxygen 16, 17, or 18 (see p. 162). One type of isotope which is easily distinguished from its fellows is the radioisotope, because, although otherwise almost indistinguishable from the normal element, it can be identified by a Geiger counter, or other instrument used to detect nuclear radiations. When, during the Second World War, the chain reaction in uranium 235 was made possible, there also arose the possibility of producing radioisotopes in large quantities, many thousands of times greater than before, and at a very much lower cost. The atoms of a substance placed in what is known as a nuclear reactor or atomic pile are exposed to a bombardment of particles far more intense than that in a cyclotron, in which a relatively small number of particles is aimed at atomic nuclei, which, as we already know, are mostly empty space; in the latter circumstances the percentage of "direct hits" is not great. In a nuclear reactor, however, the bombardment from a mass of many tons of uranium and graphite is far more intense; for each square centimetre of the reactor carries a flow of as much as a million million neutrons every second. So, for example, when the radioisotope of carbon is being produced, one nuclear reactor can produce in a few weeks at a cost of about £3,000 as much radioactive carbon as a thousand cyclotrons could produce at a cost of £30,000,000.

Radioisotopes are produced by a reactor in three different ways: the neutrons of the reactor may be absorbed by the target element, producing heavy isotopes of the same element; or they may knock pieces off the target element, producing isotopes of a different element; finally, if the target element is uranium 235, these nuclei split into two pieces, each the radioisotope of a lighter element.

These substances open up entirely new prospects in many fields of scientific research. For example, it is now possible to "label" chemicals by making them radioactive, and such chemicals can be traced throughout their passage in living creatures. One of the results has been to show how the organism is much less stable and unchanging than used to be supposed: radioactive salt injected into a vein has been observed to pass through the wall of the blood-vessel, go to the sweat glands, become transformed into sweat, and be removed from the body in this form in less than one minute. We can now find out how proteins, carbohydrates, and fats are built up and broken down in the body, how cancer cells differ in their processes from normal cells, how drugs are utilised, and to what parts of the body they pass. Thus the drug digitalis is used in treating heart diseases and is, of course, obtained from the foxglove. When foxgloves are grown in an atmosphere of radioactive carbon dioxide the plants become impregnated with the radioactive carbon, and the drug can be traced throughout the body, so giving valuable knowledge about its method of action. The terrible disease of leukaemia, in which there is overproduction of the white blood-cells, often leading to the death of the patient, is now about to yield up its secrets: for patients fed with radioactive zinc (an element found in very minute quantities in the human body, but apparently necessary for its health) demonstrate that in leukaemia the white cells are deficient in this element.

In treatment, too, radioisotopes may revolutionise our outlook. Patients with disease of the thyroid gland now have their condition diagnosed

by giving them a "radioactive cocktail" of iodine (which is dealt with in the body by the thyroid). If the gland takes up too little of the iodine, the condition is probably cancer, if it takes up too much, the person is probably suffering from thyroid overactivity, or exophthalmic goitre. Later, if cancer has been diagnosed, larger doses of radioactive iodine may be given to destroy the cancer cells. Recently, a machine known as the gamma-ray scanner has been developed in the United States, which is used to trace areas in the body to which cancerous thyroid tissue has spread. After giving radioactive iodine, the scanning part of the machine is moved over the body and a photographic film records a pattern of dots over the malignant areas. Similarly, radio-phosphorus is used to locate brain tumours (which accumulate large quantities of this element), and the extent and situation of the tumour can then be traced. Radioactive boron, or Boron-10, is another substance which is accumulated by brain tumours, and a new technique is to inject this substance into the body, wait until it has passed through the blood-stream to the cancer, and then expose the patient's skull to a stream of neutrons from a nuclear reactor. Under the neutron bombardment the boron atoms are split into two parts, each of which is intensely radioactive and destroys the cancer cells whilst leaving the normal cells unharmed. Cobalt is even more important in the treatment of cancer; for, being highly radioactive, wafers impregnated with radiocobalt or even nylon thread treated in this way, smash cancer cells with greater efficacy than almost any other known source.

In agriculture, too, radioisotopes are being used. Thus the process of photosynthesis, by which plants create under the influence of sunlight carbohydrates, fats, and proteins, is now coming to be understood. Plant diseases, like human diseases, are yielding up their secrets: insecticides are becoming more effective; and it is even possible to study the migrations of flies and other insect pests by making the flies radioactive. Perhaps more incredible, it is possible to sterilise by radiation certain insect pests, release them in an area infested by them, and thus lead to their mating with females, who become unable to reproduce.

In technology and engineering radioisotopes are also showing their value. Invisible flaws can be detected in castings and forgings, leaks in pipes are easily traced, the course of underground oil or water pipes is shown up, and the thickness of materials can be measured with the greatest accuracy by placing a radioisotope on one side and measuring the intensity of radiations penetrating to the other. Impurities in drugs, foods, and metals which cannot be detected in any other way are demonstrated by this means, the efficacy of detergents is measured, and the degrees of wear upon machine tools can be found in less than half a minute, whereas previously such measurements of wear and tear took almost the whole life of the tool to estimate. Wear on pistons or gears is also readily discovered by measuring the amount of radioactive material transferred to the surrounding lubricating oil.

**The Polio Vaccine.**—There was a good deal of disappointment over the Salk vaccine made by Dr. Jonas Salk in America; for, although it has been administered without harmful results to many thousands of American schoolchildren, some batches were found to have serious and even fatal effects. Now, however, a new British vaccine has been prepared by a variant of the American method. In the vaccine a less-virulent strain replaces the highly virulent Type 1 (Mahony strain) used by Salk. The work has been carried out by two private firms, Glaxo and Messrs. Burroughs Wellcome in association with the Medical Research Council. Vaccination involves two injections with an interval of three weeks in between, is voluntary, and to begin with will be offered to all children born between 1947 and 1954. Parents who wish their children to be vaccinated should apply to the local health authority; they must, of course, give their written permission. The Minister of Health said at a press conference (19.1.56): "I am advised that it will be as safe as any vaccine could be. It will not guarantee that a person who is vaccinated will not in any circumstances



catch poliomyelitis, but it should afford a considerable measure of protection. We believe our own vaccine to be preferable to any made in other countries and it is not proposed to import vaccine from abroad." (At the time of writing (Feb., 1956) there is also a new oral vaccine which is taken in capsules by mouth. This has been produced in America and is being tested out on volunteers in Belfast.)

**New Discoveries in the Field of Virology.**—The work of Salk and his colleagues in relation to poliomyelitis has stimulated research which may prove to be of far-reaching importance in the field of virology (the study of virus diseases). Let us see what this research has so far produced.

Viruses differ from bacteria and other organisms causing disease in a number of important respects: most are small enough to pass through the finest filters; they are invisible, in many cases, even under powerful microscopes (although they can be photographed under an electron microscope); and they cannot, as bacteria can, live outside living cells. Practically speaking, this means that although viruses cause many serious illnesses—poliomyelitis, smallpox, measles, chicken-pox, yellow fever, influenza, amongst others—it is difficult to isolate, study, and grow them in the laboratory. Hence it is also difficult to discover methods of curing the diseases they produce. In a few virus infections (*e.g.*, yellow fever and smallpox) techniques of vaccination were discovered a considerable time ago; yet others respond to antibiotic drugs such as aureomycin, but the vast majority have so far evaded human attempts at control. For such diseases there are no specific cures.

The major problem to the virologist has been the fact, noted above, that viruses grow only upon living tissues, and the scientific study of any organism is dependent upon our ability to grow it outside the living body. Some viruses will grow upon live eggs kept in an incubator, but recent research in the U.S.A. has made use of tissue cultures—*i.e.*, living tissues grown in a sort of broth after removal from the animal in which they developed. The most common tissue used for this purpose is monkey kidney—hence the large imports of monkeys from India to America. But even the most bizarre materials have been utilised; for example, polio virus has been found to grow readily in a tissue culture of human cancer cells known as HeLa (from the first letters of the name of the negro woman who died from the cancer some years ago). Kept at body temperature, these cancer cells continue to grow and multiply when suitably fed in a liquid medium from which waste products are removed as soon as produced. They may grow indefinitely long after the individual from whose body they were removed has died, and polio virus thrives in them.

Of course, it would be unsafe to utilise vaccines grown on cancer cells for injection into human beings, so the search for more suitable tissues continued. A suitable tissue, it was decided, would be one which was easily obtainable, the cells of which would multiply rapidly, one which was safe, and in which viruses would readily grow. All these requirements seemed to be filled by a very common tissue—human adenoids, freshly removed during operation in the ordinary course of events in a general hospital. Adenoids, it was thought, would be perfect for the purpose. But here another complication arose; for of the specimens first tried out, about 60% when placed in tissue culture began to disintegrate even before they had been inoculated with virus. Moreover, the type of degeneration suggested very strongly that another type of virus had been present in the adenoids prior to removal. The original purpose of the research was left aside for the moment to investigate this phenomenon, and a hitherto unknown virus was discovered in the tissues. Further investigation of the human eyes, nose, throat, and tonsils led to the discovery of no fewer than eleven new types of virus which have since been shown to be responsible for a number of those mysterious infections which occupy so much time in the family doctor's surgery hours and cause so much minor misery: acute conjunctivitis, virus sore throat, pharyngitis and hoarseness, and even virus pneumonia (which is not a minor ailment and is no joke to the sufferer). This whole

group has been given the name of the A.P.C. virus diseases—short for adenoidal—pharyngeal—conjunctival. Strangely enough, one virus which did not turn up in this very thorough investigation was the one supposed to cause the common cold, and some of the leading authorities seriously doubt whether such a virus exists. They suggest that it is more than likely that the common cold is simply an allergic reaction (see Medical Section) to other types of virus—not that this is likely to be much consolation to sufferers. At the time of writing (September 1955), vaccines against the whole A.P.C. group have been prepared and are at present under trial in the U.S.A.

Quite apart from the A.P.C. group, the new method of tissue culture devised by Dr. Enders and his colleagues at the Boston Children's Hospital has been instrumental in discovering more than 356 new virus strains in the course of investigation into poliomyelitis. The importance of this work and its future possibilities may be summarised as follows:

(1) The discovery of the 356 viruses mentioned above, some of which may be harmless, others of which are now known to produce diseases the cause of which was previously unknown, and the remainder—the "viruses in search of a disease"—which in the future may be found to be responsible for a number of very serious illnesses not so far recognised as virus infections.

(2) The new methods of tissue culture make it likely that new vaccines for such diseases as measles, chickenpox, shingles, mumps, and German measles may soon be found (some are already under trial).

(3) There exists the even more fascinating possibility that many diseases of hitherto unknown cause, diseases which have never been suspected of being due to infection, may, in fact, be virus diseases. For example, diseases of the nervous system, such as disseminated sclerosis, may turn out to be produced in this way and therefore curable by vaccines.

Two yet more distant possibilities exist which may bring about a revolution in medicine as important as the discovery of antibiotics, anaesthetics, or antiseptics. Firstly, since it has been found that many viruses are particularly selective in their action (*e.g.*, the virus of shingles, which is really a chicken-pox virus with a taste for nerve cells), it is quite possible that at some time in the future we may be able to produce a virus strain selective to cancerous tissue. If this happens, we shall be able to inoculate cancer sufferers with a virus which will destroy tumours in the living body whilst leaving healthy tissue intact. Secondly, it may be possible to discover some material in viruses, common to all or to a large number of them, which can be given in childhood as a routine to prevent a large number of serious diseases—a sort of universal vaccine. This is not too improbable because the old controversy as to whether viruses are alive (see under Viruses in Medical Section), seems to have been settled by the theory that viruses outside living cells are not "alive," that they can live only by utilising the processes within living cells—in particular their enzyme systems. The virus *plus* something in living cells is alive and can multiply. If we could interfere with this process viruses could not exist.

#### Special Problems Relating to the Salk Vaccine.

There are two ways of producing a vaccine: either one endeavours to weaken the potency of the virus by growing it in an unnatural host (for example, the material used for smallpox vaccination is live small-pox virus weakened by growing it in cattle, when it takes the form of what used to be called "cow-pox"). Or else one makes use of a killed virus—killed, of course, in such a way as to preserve its property of stimulating the resistance of the body. Whichever method one uses, the vaccine must (a) be safe to use, and (b) be able to produce resistance just as if the patient had really had the disease.

Dr. Salk tried both methods in his research into polio, but finally decided to make use of the "killed" method. It will be understood that it is not easy to kill the virus in such a way as to leave unimpaired its resistance-stimulating properties, and the tragedies which caused so much

criticism in the U.S.A. were due to virulent particles persisting in a supposedly killed vaccine prepared by one firm. It is this which has led some authorities to believe that Salk's method of preparation is unsafe. There are tremendously complex problems to be solved in preparing a vaccine, but the main ones are these:

(1) *Selection*.—Each species of virus or other disease-producing organism has many sub-types varying both in virulence and ability to stimulate resistance. For instance, although there are three main types of polio virus, there are perhaps as many as 300 minor varieties or "strains." Here the problem is to select those strains which have the highest power to stimulate resistance and are, on the other hand, relatively non-virulent and capable of being rendered safe by the killing process.

(2) *Preparation*.—It is necessary to kill and preserve the virus with agents which maintain its power to stimulate resistance and are also harmless to human cells. For example, Dr. Salk, having found such an agent, was disappointed to find that the substance introduced as a preservative destroyed the efficacy of the vaccine after a period of time.

(3) *Spacing*.—This relates to the so-called "booster effect," which means that when an immunising substance has been injected into the body, a second injection given after an appropriate interval has a greatly enhanced power of stimulating further resistance. (That is why, most inoculations are given in a series of shots.) If the spacing, which varies from one type of vaccine to another, is not correctly determined results will be poor. Salk believes that when his vaccine is made safer and the correct spacing determined for the injections, the protection given will be lifelong.

**Vitamin B12.**—The specialist in blood diseases knows of many different types of anaemia, but basically these may be separated into two groups: the microcytic (small-celled) anaemias and the macrocytic (large-celled). In the first group, of which ordinary anaemia is an example, there may have been loss of blood from the body or lack of the iron which is so necessary to create new blood, and in this case, not only is the total number of red cells reduced but the existing cells become smaller. Treatment, of course, depends upon two principles: stopping the loss or destruction of blood, and giving the patient iron to build up new supplies. The macrocytic anaemias, however, cannot be so simply dealt with. The commonest blood disease in this group, pernicious anaemia, was described accurately by the British physician Addison about 100 years ago: he noted the increasing pallor of the skin, which develops a lemon tint, the gradually developing weakness, and the final death which in his days were the inevitable result of the disease. Iron, as Addison also noticed, had no effect whatever upon the course of the condition: the red cells, reduced in number, were increased in size. No hope for the sufferer existed until, in 1926, the American workers Minot and Murphy were able to show that the eating of raw liver, or lightly-cooked liver, was capable of alleviating the disease. There was no cure; for the patient had to go on eating up to  $\frac{1}{2}$  lb. of raw liver daily for the rest of his life—but so long as he did so he could expect to remain in good health. Still later, extracts of liver were used in place of this rather unpleasant and trying diet, and finally, it was found that, not only could these extracts be given by injection, but that when given in this way only one-fiftieth of the original dose would suffice to maintain health. It was observed, too, that dried hog's stomach had a similar effect in keeping the blood at its normal level. How, the physicians asked themselves, could these facts be explained?

It had been known for some time that the stomachs of sufferers from pernicious anaemia lacked the hydrochloric acid found in the normal stomach, and it became clear that something else was lacking too: an enzyme known as the intrinsic factor or the *Casile* factor after its discoverer. The intrinsic factor, produced in the normal stomach, acted upon another substance called the extrinsic factor, a sort of vitamin found in many foodstuffs, to produce the factor present in the liver (which acts as its storehouse). The

patient with pernicious anaemia may have ample supplies of the extrinsic factor, but lacking the intrinsic one, he is unable to build up the anti-pernicious anaemia substance; giving him hog's stomach adds once more the missing intrinsic element; giving him liver extract adds both intrinsic and extrinsic elements.

Research continued to discover the chemical nature of the anti-pernicious anaemia substance and to isolate it in pure form, and finally in 1948 British and American workers almost simultaneously were able to isolate what is now known as vitamin B12. Vitamin B12 occurs in the form of small, red, needle-shaped crystals, and is an extraordinarily potent substance—more powerful in high dilutions than any other known hormone or enzyme—indeed, it is only surpassed in this respect by certain almost unbelievably poisonous bacterial toxins.

Still more recently, Dr. Dorothy Hodgkin of Cambridge has been able with the aid of X-ray analysis of the crystals of vitamin B12 to discover its formula—in other words, to obtain a sort of picture of what its very complex molecular structure looks like. Specially significant (although this had been known for some time) is the presence of an atom of cobalt within the molecule, and also the similarity in structure between vitamin B12 and other biologically important substances such as bile pigments, haemoglobin, and chlorophyll. Cobalt is what is described as an essential trace element—that is to say, like manganese and other substances, it is essential to animal life in minute traces. On pastures low in cobalt sheep get "pining disease" or "coast sickness," in which the blood shows changes similar to those in human pernicious anaemia. So now we understand one of the purposes of cobalt—it is necessary to build up vitamin B12, without which red blood cells cannot be manufactured by the body. Vitamin B12, incidentally, is no longer produced from animal livers (it took about 100 tons of liver to produce 1 gram of the pure factor), but as a product of fermentation by moulds, one type of which is related to the mould which produces streptomycin.

Although research of the sort carried out by Dr. Hodgkin and her co-workers may seem highly academic and abstruse, it must be remembered that it is in such ways as these that we shall learn more of the secrets of body processes in health and disease.

## POPULATION AND FOOD.

There are round about 2,300 million people upon the earth, and this number is rapidly increasing, largely due to improved standards of public health and the dramatic advances in medical science. But we now have to face the appalling fact that two-thirds of the world's population is living under conditions in which birth-rates and death-rates are extremely high—in which, that is to say, many are born and many die young—and where the total food production is inadequate to provide enough food for everyone.

The only solution to this problem is: (a) food production increase, and (b) population limitation, but the one must move parallel with the other, and the principle of population limitation is opposed by two very different bodies: the Communists and those religious bodies who forbid contraception, mainly the Roman Catholic Church. But the problem is not merely that of preventing the standard of living of the backward areas from falling; for, with the increase of industrialisation and education, they are not asking merely for their previous standard of living not to be reduced—they demand that it shall be raised to that of the European countries. The present state of affairs is that the backward areas of the world: (a) are producing more mouths to feed than ever before, and (b) at the same time are asking for a higher standard of living than ever before.

A recent Report by PEP (*World Population and Resources*, published by Political and Economic Planning, 30s.) concludes with the words: "inequalities in population density, in health and happiness, in food and material supplies and in much else besides are likely to be greater 30 years hence than at the present time, unless the growth of population in the over-crowded countries can be restrained."



## AGRICULTURE.

**Weed Control.**—Weeds are a nuisance. But they are more than a mere nuisance to the agricultural economy of this country. One of the things noticed by the recent Soviet visitors to Britain was the amount of weeds in our crops and pastures, and so some discussion of weed control may not be out of place. Of all our food crops, at least 10% by area are weeds which waste something like £50 million every year, and it has been calculated that if weeds were got rid of, nearly 25% more corn could be grown without any other factors being changed. Weeds also carry insect pests over from one season to another, interfere with mechanical harvesting by getting entangled in the machines, and, when present in samples, may cause their rejection by the miller, maltster, or corn merchant. That is why the Ministry of Agriculture and other bodies have formed a "Weed Control Joint Committee" to deal with the problem. Removing such pests by hand may sound feasible, but hand removal may cost the farmer anything from £100 to £250 per acre per year.

About 70% of the space utilised directly or indirectly to supply human food in Britain is grassland—and 30% of that space is occupied by weeds. Some of them are harmless to animals, but have an unpleasant taste which prevents cattle from making full use of the grass which is mixed with the unpalatable stuff. Others, such as ragwort, are actively poisonous, and kill many cattle and horses yearly—although ragwort is harmless to sheep. What are we to do about this type of pest?

The three main methods of getting rid of weeds are, firstly, by the so-called selective or hormone weed-killers which destroy most ordinary plants whilst leaving grasses unharmed—and "grasses," of course, include all the corn crops: barley, rye, oats, wheat, and so on. (In scientific terms, these weed-killers destroy dicotyledonous plants and are innocuous to monocotyledonous ones: see p. 167 of this section.) The two main killers of this type used are known for short as "2:4-D" and "M.C.P.A." Unfortunately, they are useless against weeds of the grasses sort, such as wild oats and couch grass, because these belong to the same group as the crops themselves. Secondly, it is possible to use non-selective killers, such as sodium chlorate, which destroys everything growing; this is used after harvest, and the effect wears off by sowing-time the following spring. Other non-selective poisons can be used after sowing plants, but before the seedlings appear above ground: for example, the Forestry Commission sprays weeds on tree-beds with light mineral oil. Lastly, there are the older and more mechanical methods: pulling by hand, and the grazing by sheep to destroy ragwort (which as we have seen is harmless to them). A refinement of guile is the destruction of rushes by grazing with cattle; rushes are not very delectable to cows, but an old method is to spread salt on them to make them more palatable.

We have still a long way to go in research into weed-killers, but the figures quoted above will show how important such research can be to our national economy.

## PSYCHOLOGY AND PSYCHIATRY.

**The Nature of Instincts.**—A great deal of important work on the nature of instincts of animals has been carried out recently by K. Z. Lorenz and his collaborators in several European countries, and by N. Tinbergen of Cambridge University. This is too complex to summarise here, but what is becoming clear is that, in relation to man, the word "instinct" is inapplicable. S. A. Barnett, in *Science News*, writes in an article on "Instinct and Learning" that: "Man has no rigid 'innate' or 'instinctive' behaviour patterns. A child is not born with ready-made neural (nervous) mechanisms for social behaviour: his behaviour towards other people develops as a result of a learning process which is continually dependent upon his daily experiences in the particular circumstances in which he grows up. That is, it depends on the environment which the community provides for him." Elsewhere Barnett writes: "If... we are concerned with delinquent behaviour, there are two possible attitudes. One is to condemn the behaviour on moral grounds, and perhaps to punish it. The other is to use scientific methods to

seek its causes, with a view to curing or preventing it. In general, it is the second course which gives the better results." The two generalisations upon which modern psychology and psychiatry are based are the two implied above:

(1) That all human behaviour is learned from others—whether it be normal or abnormal—that is to say, it is social in origin.

(2) That the only *fundamental* way to change human behaviour is to seek its causes and deal with them.

**Juvenile Delinquency.**—For these reasons there has been a tremendous increase in interest in what is now called social psychiatry—that school of psychiatry which regards mental illness as largely social in origin and seeks to treat it on a group basis rather than purely individually. With an increase in mental illness has gone an increase in delinquency, and particularly juvenile delinquency, since, of course, neurosis and delinquency, as Freud pointed out long ago, are the opposite sides of the same penny, both implying rebellion against society.

Dr. Robert Lindner, a leading American expert on juvenile delinquency, makes the following points concerning this serious problem:

(1) "Our youth is no longer in rebellion (a common and natural feature of youth in all ages), but in a state of downright active and hostile mutiny. Within the memory of every living adult, a profound and terrifying change has overtaken adolescence."

(2) Although adolescence has always been regarded as a period of turmoil it was formerly characterised in sensitive individuals by the wish for solitude—as in the classical cases described by Shakespeare, Goethe, Tolstoy, Dostoevsky, Twain, James Joyce, Thomas Mann, and the rest—and also by "nameless hungers, as well as cosmic yearnings, strange thirsts, occult sensations, murderous rages, vengeful fantasies and imaginings that catalogue all of sin and crime." Today, it is characteristic of modern youth: (a) that they shun solitude (which was frequently creative) and go in gangs, they engage in "pack-running, predatory assemblies, great collectivities, that bury, if they do not destroy, individuality. Into these mindless associations the young flock like cattle," (b) they act out their phantasies.

(3) The delinquent is a rebel without a cause, hence in a chronic state of mutiny. "The youth of today is touched with madness, literally sick with an aberrant condition of mind formerly confined to a few distressed souls but now epidemic over the earth."

According to Dr. Lindner, the reason for this state of affairs is that all of us are living in sick societies. Man's basic need is for significance and individuality, and he is living in a mass society of huge nations, industrial giants, wars, and economic upheavals, in relation to which he feels lost, insecure, meaningless, nobody. The small community of the village, the workshop, the family, is breaking up, and modern society is a collectivity of anonymous people, shifting here and there, with no "home," no place where one belongs—in the words of an eminent anthropologist, society is "a lonely crowd."

Psychiatry, too, may not be blameless, since for many years the goal preached by psychiatrists has been that of "adjustment." Dr. Lindner says of education, social work, religion, and psychiatry, that "each is infused with the rot-producing idea that the salvation of the individual, and so of society, depends upon conformity and adjustment." Instead of trying to produce people with characters of their own, we are attempting to produce conformists, and our sole criterion of "normality" is whether an individual adjusts or not—this in relation to a society which is not itself "normal." The delinquents and neurotics are those who rebel against the conformity we have imposed upon them—"like all prisoners, they are mutineers in their hearts."

Whether or not Dr. Lindner's diagnosis is valid it deserves to be seriously considered, because there can be little doubt that the psychiatrist's goal of "adjustment" may be a dangerous one. If one "adjusts" to a totalitarian tyranny is one entitled to be called "normal"?

# Gazetteer of the World



Providing a complete index to the maps and  
describing the more important places throughout  
the world

## Appendices

The British Commonwealth of Nations	380-81	Cross section of a typical frontal depression	383
Chart of sea areas used in weather forecasts	382	Longest rivers, largest lakes, highest mountains, largest conurbations.	384



# Gazetteer of the World

This edition of the gazetteer has been revised from standard and authoritative sources. For the population figures the latest censuses have been used, where available, and where not available, the latest official estimates.

An endeavour has been made to include all the more important places throughout the world. The small scale of the maps included in the Cyclopædia does not enable all places included in the gazetteer to be named on the maps.

In regard to the spelling of place names, the general principle followed has been to adopt national spellings. For those countries where the Latin Alphabet is not used, the principles for transliteration laid down by the "Permanent Committee on Geographical Names" of the Royal Geographical Society have been followed. There may be a few instances where the spelling shown on the map does not conform to that used in the gazetteer.

## ABBREVIATIONS USED IN THE GAZETTEER

### GEOGRAPHICAL NAMES

*Ala.* = Alabama.  
*Ark.* = Arkansas.  
*A.S.S.R.* = Autonomous Soviet Socialist Republic.  
*Atl. Oc.* = Atlantic Ocean.  
*B.C.* = British Columbia.  
*Brit.* = British.  
*Cal.* = California.  
*Col.* = Colorado.  
*Conn.* = Connecticut.  
*Del.* = Delaware.  
*Eng.* = England.  
*E.R.* = East Riding.  
*Fla.* = Florida.  
*Fr.* = French.  
*Ill.* = Illinois.  
*Ind.* = Indiana.  
*Ga.* = Georgia.  
*Kan.* = Kansas.  
*Ky.* = Kentucky.  
*La.* = Louisiana.

*Manch.* = Manchuria.  
*Mass.* = Massachusetts.  
*Md.* = Maryland.  
*Mé.* = Maine.  
*Mich.* = Michigan.  
*Minn.* = Minnesota.  
*Miss.* = Mississippi.  
*Mo.* = Missouri.  
*Mont.* = Montana.  
*N.B.* = New Brunswick.  
*N.C.* = North Carolina.  
*N.D.* = North Dakota.  
*Neth.* = Netherlands.  
*N.H.* = New Hampshire.  
*N.J.* = New Jersey.  
*N.M.* = New Mexico.  
*N.R.* = North Riding.  
*N.Y.* = New York.  
*N.Z.* = New Zealand.  
*O.F.S.* = Orange Free State.  
*Okl.* = Oklahoma.

*Ore.* = Oregon.  
*Pac. Oc.* = Pacific Ocean.  
*Penns.* = Pennsylvania.  
*R.I.* = Rhode Island.  
*R.S.F.S.R.* = Russian Soviet Federal Socialist Republic.  
*S.C.* = South Carolina.  
*Scot.* = Scotland.  
*S.D.* = South Dakota.  
*S.S.R.* = Soviet Socialist Republic.  
*Tenn.* = Tennessee.  
*U.S.S.R.* = Union of Soviet Socialist Republics.  
*Va.* = Virginia.  
*Vt.* = Vermont.  
*W.I.* = West Indies.  
*W.R.* = West Riding.  
*Wyo.* = Wyoming.

Abbreviations of names of Counties in *Gt. Britain* and *Rep. of Ireland* are those recognised by the General Post Office.

### OTHER ABBREVIATIONS

*a.* = area.  
*agr.* = agriculture.  
*alt.* = altitude.  
*arch.* = archaeological.  
*approx.* = approximate.  
*ass.* = associated.  
*bdy.* = boundary.  
*bdg.* = building.  
*bor.* = borough.  
*C.* = cape.  
*c.* = city.  
*can.* = canton.  
*cap.* = capital.  
*cas.* = castle.  
*cath.* = cathedral.  
*ch.* = chief.  
*co.* = county.  
*co. bor.* = county borough.  
*col.* = colony.  
*colly.* = colliery.  
*comm.* = commercial.  
*coast.* = coast.  
*cty.* = country.  
*dep.* = department.  
*dist.* = district.  
*div.* = division.  
*E.* = east.  
*estd.* = estimated.

*F.* = firth.  
*fed.* = federal.  
*fortfd.* = fortified.  
*ft.* = feet.  
*G.* = gulf.  
*gd.* = good.  
*gr.* = great, group.  
*I.* = island.  
*impt.* = important.  
*inc.* = including.  
*industl.* = industrial.  
*Is.* = islands.  
*L.* = lake.  
*lge.* = large.  
*lgst.* = largest.  
*m.* = miles.  
*mftg.* = manufacturing.  
*mkt.* = market.  
*mnfs.* = manufactures.  
*mt.* = mount.  
*mtn.* = mountain.  
*mun.* = municipality.  
*mun. bor.* = municipal borough.  
*N.* = north.  
*nat.* = national.  
*nr.* = near.  
*p.* = population.  
*par.* = parish.

*parlt.* = parliament.  
*parly.* = parliamentary.  
*prot.* = protectorate.  
*prov.* = province.  
*pt.* = port.  
*R.* = river.  
*rep.* = republic.  
*residl.* = residential.  
*rly.* = railway.  
*rural dist.* = rural district.  
*S.* = south or southerly.  
*sm.* = small.  
*spt.* = seaport.  
*sq. m.* = square miles.  
*St.* = Saint.  
*st.* = state.  
*sta.* = station.  
*sub.* = suburb.  
*t.* = town.  
*terr.* = territory.  
*tr.* = trade.  
*trib.* = tributary.  
*univ.* = university.  
*urb. dist.* = urban district.  
*vil.* = village.  
*W.* = west.  
*wat. pl.* = watering place.  
*wks.* = works.

*Land* = administrative division of *W. Germany* approx. corresponding to "province".

## A

*Aabenraa, spt.*, S.E. Jutland, Denmark; at head of Aabenraa fjord; exports dairy products; mnfs. agr.-machinery, diesel engines; p. (1940) 10,816.

*Aachen, t., Land N. Rhine-Westphalia, Germany*; formerly Aix-la-Chapelle; one of the oldest cities in Germany, cath., famous baths; suffered badly from bombing in Second World War and was first large German town to be taken by the

Allied Forces in 1944; engineering, textiles, electrical equipment; spa; p. (1950) 129,311.  
*Aalborg, c., spt.*, Jutland, Denmark; shipbuilding, fishing; airport; p. (1950) 79,806.

*Aalst, see Alost.*

*Aar, R.*, Switzerland, flows through Brienz and Thun lakes, and thence into the Rhine, 181 m.; famous Aar gorges above Meiringen.

*Aarau, t.*, Aargau can., Switzerland; silk, precision tools, cotton, cement; p. 13,204.

*Aarburg, t.* on *R. Aar*, Switzerland.

- Aargau, can.,** N. Switzerland; a. 542 sq. m.; extensive vineyards; p. (1950) 300,782.
- Aarhus, c.,** principal spt. on E. coast of Jutland, Denmark; famous Gothic cath.; coal, iron, grain, engin., textile indus.; p. (1950) 116,167.
- Abaco, Gt.,** Bahama Is., W. Indies; p. (1943) 3,461.
- Abadan, t.,** Persia, oil refineries; exp. petroleum; p. (1945) c. 130,000.
- Abancay, t.,** Apurimac, Peru; sugar; p. (1947) 5,789.
- Abano, t.,** N. Italy; sulphur water and mud baths. Abbazia, see Opatija.
- Abbeville, mfg. c.,** on the R. Somme (N. France); woollens, velvets, cottons, linens, serges, hosiery, etc.; connected with Paris and Belgium by canals; p. (1946) 16,780.
- Abbeyleix, t.,** Laoighis, Ireland; quarries.
- Abbiatragrasso, t.,** Milano, N. Italy; mkt. and indusl. centre; p. 16,259.
- Abbotsbury, par.,** Dorset, Eng.; world-famous swannery.
- Abbots-Langley, vil.,** Herts, Eng., birthplace of Nicholas Breakspere (Adrian IV); the only Englishman ever raised to the Papacy; p. 4,200.
- Abokuta, t.,** Nigeria; palm oil, hardwoods; p. (1946) 56,600.
- Aberavon, t.,** Glamorgan, Wales; on R. Avon, 8 m. E. of Swansea; large coal and iron industries, tin works; good harbour, Port Talbot; p. 1,273.
- Abercorn, urb. dist.,** Monmouth, Eng.; coal and iron; p. (1951) 18,757.
- Aberchirder, burgh, Banff, Scot.;** p. (1951) 800.
- Abercorn, par.,** W. Lothian, Scot.; on the Forth; Roman wall built by Antoninus began here, and extended to Kirkpatrick on the Clyde; p. (1951) 806.
- Abercorn, t.,** Northern Rhodesia; trading station; p. 1,000.
- Aberdare, urb. dist.,** Glamorgan, Wales, on the R. Cynon; coal and iron industries; p. (1951) 40,916.
- Aberdeen, co.,** Scot.; mountainous; agriculture, oats, barley, turnips, cattle; fisheries; granite, brewing, distilling, paper; a. 1,970 sq. m.; p. (1951) 308,055.
- Aberdeen, c., burgh, Aberdeenshire, Scot.;** at mouth of R. Dee, 100 m. N.E. of Edinburgh; spt. esp. concerned with fishing and having variety of industries to supply its own region; granite-quarrying and polishing; p. (1951) 182,714.
- Aberdeen, t.,** S.D., U.S.A.; chemicals, foundry; p. (1950) 21,051.
- Aberdeen, spt.,** Wash., U.S.A.; lumbering, salmon canning; p. (1950) 19,653.
- Aberdour, par.,** Flfe, Scot.; sea-bathing noted; p. (1951) 1,939.
- Aberdovey, wat. pl.,** Merioneth, Wales, on estuary of R. Dovey.
- Aberfeldy, burgh, Perth, Scot.,** in Strath Tay, 4 m. below Loch Tay; mkt.; tourist centre; p. (1951), 1,523.
- Aberfoyle, par.,** Perth, Scot.; tourist resort; p. (1951), 1,133.
- Abergavenny, mun. bor., t.,** Monmouth, Eng., on R. Usk; coal, iron; p. (1951) 8,844.
- Abergele, urb. dist.,** Denbigh, Wales; small wat. pl.; p. (1951) 7,539.
- Aberlour, Charlestown of, burgh, Banff, Scot.;** on R. Spey, 12 m. S. of Elgin; p. (1951) 1,153.
- Abernethy, burgh, Perth, Scot.;** on R. Tay, once the cap. of the Pictish Kings; p. (1951) 675.
- Abersychan, par.,** Monmouth, Eng.; coal, iron, and steel; p. 25,748.
- Abertillery, urb. dist.,** Monmouth.; coal, tin works; p. (1951) 27,617.
- Aberystwyth, mun. bor., wat. pl.,** on Cardigan Bay at the mouth of the R. Ystwyth, Cardigan, Wales; univ. college; Nat. Library of Wales; p. (1951) 9,323.
- Abidian, cap.,** Ivory Coast, Fr. W. Africa; palm oil, cocoa, copra; p. (1948) 45,735.
- Abilene, t.,** Texas, U.S.A.; univ.; food products, oilseeds, oil refining; p. (1950) 45,570.
- Abingdon, mun. bor.,** Berks, Eng., on R. Thames; woollens, carpets; p. (1951) 10,176.
- Abingdon, t.,** Va., U.S.A.; lumbering, flour milling; mnfs, condensed milk, chemicals, tobacco; tourist resort; p. (1950) 4,709.
- Abington, t.,** Mass., U.S.A.; shoes, textiles, textile machinery; p. (1950) 7,152.
- Abitibi, R. and L.,** R. flows into James Bay, Ontario, Canada; gold dist.
- Abo, see** Turku, Finland.
- Abomey, old cap.,** Dahomey, Fr. W. Africa; former slave market; cotton; p. 12,000.
- Aboyne and Glentanner, par.,** Aberdeen, Scot.; holiday resort on R. Dee nr. Ballater; p. (1951) 1,651.
- Abraham, Plains of, nr. Quebec;** Wolfe's victory over French under Montcalm, 1759.
- Abram, urb. dist.,** Lancs, Eng.; coal, engineering, cotton mnfs.; p. (1951) 6,286.
- Abrantes, t.,** Portugal, on the Tagus R.; French won battle here in Napoleonic Wars, 1807; p. (1940) 11,339.
- Abud, t.,** Transylvania, Romania.
- Abruzzi and Molise, region of Italy** on the Adriatic, inc. provs. of Aquila, Chieti, and Campobasso, Teramo, a. 5,883 sq. m.; p. (1951) 1,682,808.
- Abu, mtn.,** N. Bombay, India, 5,653 ft.; Jain temples.
- Abukir or Aboukir, vil.** on Abukir Bay, Egypt; site of ancient Canopus; Battle of the Nile fought in the Bay, 1798.
- Abu Simbil, Egypt;** famous ancient temples cut out of solid rock by Rameses II.
- Abydos, ruined c.,** Upper Egypt, celebrated for its temple of Osiris.
- Abydos, ruined castled t.,** Anatolia on the Dardanelles, which desperately resisted Philip of Macedon, and famous for the love story of Leander and Hero.
- Abyssinia, see** Ethiopia.
- Acadia or Acadie, French name** applied to previous possessions S. of St. Lawrence R., inc. Nova Scotia and New Brunswick and part of Maine.
- Acacjutla, spt.,** Salvador, Central America; coffee.
- Acambaro, t.,** Mexico; rly. junction; p. 17,643.
- Acapulco, spt.,** Pacific coast Mexico; exports hides, cedar, fruit; p. 9,993.
- Acatlan de Osorio, t.,** Puebla st., central Mexico; p. 5,591.
- Acayucan, t.,** Veracruz st., Mexico; p. 5,143.
- Acra, spt.,** cap. of Gold Coast, W. Africa; exports cocoa; p. (1948) 125,456.
- Accrington, mun. bor., mfg. t.,** Lancs, Eng.; 20 m. N. of Manchester; cotton, dye works; p. (1951) 40,671.
- Acerra, t.,** S. Italy; destroyed by Hannibal 216 B.C.; restored 210 B.C.; olive oil, wine; p. 16,460.
- Achaia, prov.,** Greece; a. 2,000 sq. m.; with Elis prov. chief currant-producing dist.; spt., Patras; p. (1951) 228,274.
- Achill, i.,** Lead, off the W. Coast of Mayo, Ireland; p. 5,300.
- Acireale, spt.,** Sicily; sulphur baths; p. 36,871.
- Acklin, island,** Bahamas, W. Indies; p. (1948) 1,744.
- Acomita, vil.,** N.M., U.S.A.; on Acoma Indian Reservation; pottery making; p. 1,125.
- Aconagua, mtn.,** Andes, Argentine, S. America, highest peak of New World, alt. 22,835 ft.
- Aconagua, prov.,** Chile; a. 3,939 sq. m.; cap. San Felipe; alfalfa and Mediterranean fruits; p. (1952) 127,806.
- Aconquija, Sierra de, mtn. range,** N. Argentina, S. America; rises steeply from Chaco lowland to 18,000 ft.
- Acul, ancient walled t.,** N. Italy, prov. Alessandria; famous cath.; sulphur springs; p. 18,975.
- Acre (Akka), c., spt.,** Israel, famous for its sieges during Crusades and in 1799 withstanding Napoleon for 61 days; p. 14,000.
- Acre, terr.,** Brazil; a. 59,139 sq. m., cap. Rio Branco; rubber; p. (1947) 92,814.
- Acton, mun. bor.,** Middlesex, Eng.; residtl. and mfg. suburb of London; p. (1951) 87,424.
- Acushnet, t. Mass., U.S.A.,** 3 m. N. of New Bedford; p. (1950) 4,401.
- Ada, t.,** Oklahoma, U.S.A.; p. (1950) 15,995.
- Adamawa, prov.,** W. Africa, divided between Nigeria and the Cameroons; a. 70,000 sq. m.; ivory, groundnuts.
- Adams, mfg. t.,** Mass., U.S.A.; paper, cottons, woollens; p. (1950) 12,034.
- Adam's Bridge,** ridge of sand and coral reef, 30 m., between India and Ceylon. Proposed inter-dominion rly.
- Adam's Peak, sacred mtn.,** S. Ceylon, alt., 7,352 ft.
- Adana, t.,** Turkey; on R. Selhan; wool, cotton, grain; p. (1950) 117,799.



- Adapazari, t., Turkey;** rly junction: silk, linen: p. (1945) 29,386.
- Adda, R., N. Italy;** flows through L. Como to R. Po.
- Addis Ababa, cap. Ethiopia;** terminus of Jibuti rly.; p. (estd. 1953) 340,000
- Adelaide, c., *spt.*, cap., S. Australia;** on R. Torrens, which flows into G. of St. Vincent: transcontinental rly, connections and industries using wool, leather, iron: imports fuels, fertilisers: exports wheat, wool, wine, ores: p. (with suburbs) (1948) 300,000.
- Adelboden, t., Switzerland;** 19 m. S.W. of Interlaken: health resort, mineral springs.
- Adélie Land, Antarctica;** French terr. and dependency of Réunion.
- Adelsburg, t., Yugoslavia;** 20 m. N.E. of Trieste: extensive grotto and stalactite cavern.
- Aden, *spt.*, terr., Crown Col., S. Arabia;** t. stands on peninsula of Aden, is refuelling pt. and entrepôt for cotton, clothing, coffee, tobacco, etc.: Aden Terr. Inc. Perim I. and Kuria Muria Is., also administers Kamaran I.: a. 75 sq. m., p. (inc. Perim) (1946) 86,309.
- Aden Protectorate, S. Arabia;** comprises section of mainland stretching along G. of Aden and inland for about 100 m., also Sokatra I.: a. 112,080 sq. m.; p. (1952) 930,000.
- Aden, Gulf of, Arabian Sea;** length 480 m., breadth 180 m.
- Aderno, t., Sicily, Italy;** at base of Mt. Etna, ancient ruins.
- Adige, R. in N. Italy;** enters Adriatic N. of Po, length 240 m.
- Adigrat, t., Ethiopia;** near Eritrean border: p. 5,000.
- Adirondacks, mtns., N.Y., U.S.A.;** highest peak, Mt. Marcy, 5,345 ft.
- Adlington, urb. dist., Lancs., Eng.;** nr. Chorley: cotton: p. (1951) 3,998.
- Admiralty G., N.W. of Western Australia.**
- Admiralty I., off Alaska mainland;** belongs to U.S.A.; coal, copper, timber.
- Admiralty Is., S. Pacific Ocean, N.E. of New Guinea,** comprise some 40 small islands: coconuts, pearl fisheries: a. 663 sq. m.; p. 13,134.
- Adonara, I., one of Lesser Sunda Is., Indonesia;** p. (1930) approx. 25,000.
- Adoni, t., Madras, India;** cotton market.
- Adour, R., S.W. France;** rises in Pyrenees, enters Bay of Biscay below Bayonne: length 207 m.
- Adowa, t., cap., Tigre prov., N. Ethiopia;** alt. over 6000 ft., tr. and mkt. centre: p. (1945) 11,500.
- Adra, *spt.*, t., Almería, S. Spain;** sugar-cane works: nr. Guardia Vieja salt beds.
- Adramyti, t., Turkey;** on trade route to Bandirma: wine, olive oil.
- Adrano, t., Sicily, Italy;** at S.W. foot of Etna: agr. mkt.: p. (1936) 24,307.
- Adrar, oasis, Sahara Desert, Mauritania, Fr. W. Africa;** salt, dates, grain.
- Adria, mkt. t., prov. Rovigo, Italy;** formerly on coast, now 14 m. inland, old Etruscan c.: p. 31,025.
- Adrian, c., Michigan, U.S.A.;** 73 m. W. of Detroit: p. (1950) 18,393.
- Adrianople, see Edirne.**
- Adriatic Sea, branch of the Mediterranean,** between Italy and Balkan Peninsula: forms G. of Venice on the N.: chief trading ports, Venice, Trieste, and Ancona on the N., Brindisi and Durres on the S.: a. 52,000 sq. m., length 450 m.
- Adullam or Aidelma, former dist., Palestine;** S.E. Jerusalem. Site of Canaanite city: cave, David's hiding place from King Saul.
- Adwick le Street, urb. dist., W.R. Yorks., Eng.;** coal: p. (1951) 18,808.
- Adzhar, rep., U.S.S.R.;** grain, cotton, tobacco: chief town Batumi: p. 169,946.
- Aegades, group of rocky Is. off W. coast of Sicily;** ch. t. Favignana on I. of that name.
- Aegean Is., between Greece and Turkey;** called the Grecian Archipelago, inc. Crete, Cyclades, Sporades and Dodecanese: a. 1,506 sq. m.; p. (1951) 280,827.
- Aegean Sea, branch of the Mediterranean;** studded with Is., between Greece and Turkey: connected through the Dardanelles with Sea of Marmara and thence through the Bosphorus Strait with the Black Sea. fisheries.
- Aegina, I., Greece;** in G. of same name, sponge
- Aerø, I. in the Baltic off Denmark.**
- Aetolia and Acarnania, prov., N. Greece;** cap. Missolonghi: p. (1951) 220,208.
- Affric, Glen, Inverness, Scot.;** 30 m. S.W. of Inverness: hydro-electric scheme, opened 1952.
- Afghanistan, mountainous *cty.*, Asia;** monarchy: chief towns, Kabul, Herat, Kandahar: principal rivers, Kabul and Helmand; climate, intense summer heat, severe winter cold, scanty rainfall: races, Afghans, aboriginal hill-tribes: languages, official Persian, spoken Pushtu; religion, Islam: cereals, fruit, sheep, horses, camels: industries, carpets, woollens, silks: a. 245,000 sq. m.; p. (estd.) 11 to 12 million.
- Africa, second largest continent;** bounded on N. by Mediterranean, by Red Sea and Indian Ocean on E., by Atlantic Ocean on W.; adjoins Asia at Isthmus of Suez. Deserts in N., forests in centre, and lofty plateaux and veldts in S. Highest mtn., Kilimanjaro, 19,324 ft.; chief rivers, Nile, Congo, Niger, Zambesi: largest L., Victoria. Climate: hottest continent, rainfall heavy near Equator, almost rainless in Sahara and Kalahari, elsewhere moderate. All kinds of big game except tiger found. Races include Negro, Bantu, Arabs, Berbers, Hottentots, Bushmen. Agriculture: wine, olives, wheat, esparto grass in N.: cocoa, oil palm, groundnuts, coffee, cotton in centre; wheat, maize, wool in S. Minerals: gold, diamonds, copper. Politically, largely British, French, Belgian, Portuguese, Spanish; independent states, Egypt, Ethiopia, Liberia: a (approx.) 11,500,000 sq. m.; p. (estd.) 150,000,000.
- Afyon Karahisar, t., Turkey;** opium: p. 29,030.
- Agades, t., French W. Africa;** cattle, big game: p. 5,000.
- Agadir, *spt.*, S. coast of Morocco;** p. 12,438.
- Agamiyin, t., Egypt;** rice, cotton, fruit: p. 2,000.
- Agassiz, t., B.C.;** on Canadian Pac. Rly., Canada: 380 m. W. of Donald: p. 500. [10,166]
- Agawam, t., Mass., U.S.A.;** engineering: p. (1950)
- Agde, *spt.* t., Hérault, France;** p. (1946) 9,360.
- Agder, E. and W., two *dist.*, Norway;** (E.) a. 3,607 sq. m., p. (1950) 75,788: (W.) a. 2,794 sq. m.; p. (1950) 96,930. [p. 10,000]
- Agematsu, t., Japan;** textiles, light engineering;
- Agen, t., cap. Lot-et-Garonne, France;** 85 m. from Bordeaux: cath.: p. (1946) 33,397.
- Agincourt, vil., Pas-de-Calais, France;** famed for battle in 1415 between English, led by Henry V. and French under d'Albert. [15,172]
- Agira, t., Sicily, Italy;** marble quarries, fruit:
- Agordat, t., Western Province, Eritrea;** rly. terminus.
- Agra, prov., see United Provinces.**
- Agra, c., Uttar Pradesh, India;** on Jumna R., 115 m. S.E.E. of Delhi: formerly cap. of Mogul Empire; famous Taj Mahal mausoleum: p. (1951) 375,665.
- AgriENTO, t., S. est. Sicily, Italy;** grain, sulphur, salt: p. (1951) 40,353. AgriENTO (lately Girgenti, and formerly Agrigentum, Akragas,) is also famous for its Greek temples.
- Agrinion, t., Greece;** tobacco: p. 20,429.
- Aguaadilla, *spt.*, Puerto Rico, Central America;** exports coffee and sugar: p. 13,463.
- Aguaascalientes, st., Mexico;** cap. Aguascalientes: a. 2,499 sq. m.; p. (1950) 188,047.
- Aguascalientes, t., cap., Aguascalientes, Mexico;** alt. over 6000 ft.; 360 m. N.W. of Mexico City: wide range of local industries: hot springs: p. (1950) 117,409.
- Aguilar de Frontera, t., S. Spain;** wine, olives: Moorish castle, p. (1947) 15,000.
- Agullas, t. *spt.* Murcia, on E. est. of Spain;** exports esparto, iron ore: p. 246,462.
- Agulhas, C., 100 m. E. of C. of Good Hope,** most southerly point of Africa.
- Ahlen, t., Westphalia, Germany;** mnfs. tin, zinc, enamels, shoes: p. 25,700.
- Ahmadabad, c., *dist.*, Gujarat, India;** Jain temple, splendid mosques, pottery, silk, gold, cotton: p. (of c.) (1951) 788,333.
- Ahmadnagar, c., Deccan, India;** large trade in cotton and silk goods.
- Ahoskie, t., N.C., U.S.A.;** cotton, tobacco, groundnuts, lumbering, basket-making: p. (1950) 3,579.
- Ahuachapán, dep., Salvador;** cap. Ahuachapán: trade in coffee, sugar, tobacco, cereals: p. (1950) 94,646.
- Ahvenanmaa (Åland), dep., Finland,** a. 572 sq. m.: p. (1940) 27,676.
- Ahwai, t., Persia;** on R. Karun: oil pipe-line passes through to Abadan: p. (estd. 1942) 30,000.

- Aigion, t., Greece:** currants exported; p. 11,011.
- Algues-Mortes, t., Gard, France:** on R. Rhône delta; canal centre, once spt. now 3 m. from Mediterranean.
- Aigun, former treaty pt., Manchuria, China:** on bank of Amur R.; cattle, flour; centre of "Boxer" rising in 1900; p. (1931) 38,112.
- Ailsa Craig, rocky I., off Ayrshire coast, Scot., alt. 1,114 ft.**
- Ain, dep., France:** mainly agricultural, vines, grains, sheep, silk; a. 2,248 sq. m.; p. (1946) 306,778.
- Ain Sefra, terr., S. Algeria:** p. 193,347.
- Aintab, t., Syria, military centre in the Middle Ages:** many Armenians massacred there in 1895; hides, morocco leather; p. 70,000.
- Air or Ashen, oasis in Sudan, cap. Agades:** dates, indigo, senna.
- Air, mtns., Niger col., Fr. W. Africa:** ch. t. Agades.
- Airdrie, lge. burgh, mfg. t., N.E. Lanark, Scot.; 12 m. E. of Glasgow:** coal, iron, bricks; p. 30,645.
- Aire, R., W.R.\* Yorks, Eng.: trib. of Ouse:** length 70 m.
- Airlie, par., Angus, Scot.: seat of the Earls of Airlie:** p. (1951) 630.
- Aisne, dep., France:** agr., timber, sugar, brewing, textiles; cap. Laon; a. 2,866 sq. m.; p. (1946) 453,411.
- Aisne, R., in N.E. France:** trib. of R. Oise; length 150 m. p. 17,000.
- Aivali, spt., Turkey:** exports fish, wine, raisins.
- Aix, t., Bouches-du-Rhône, France:** 18 m. N. of Marseilles; old cap. of Provence; thermal springs.
- Aix-la-Chapelle, see Aachen.**
- Aix-les-Bains, health resort, Savoy, France.**
- Ajaccio, spt., cap. Corsica:** birthplace of Napoleon, 1769; shipbuilding, wines, wool, sardines.
- Ajmer, t., cap. Ajmer-Merwara st., India:** cotton, salt, opium; p. (1951) 196,633.
- Ajmer-Merwara, st., India:** a. 2,425 sq. m.; cotton, wheat, oil seeds; p. (1951) 692,506.
- Ak-Su, t., Sinkiang, China:** walled town, important trading centre on caravan route; copper, iron, leather; p. 30,000.
- Akaroa, t., S. I., New Zealand:** on Akaroa Harbour; scenic and historic interest; p. 556.
- Akassa, t., Nigeria:** groundnuts, palm oil.
- Akershus, dist., Norway:** a. 1,895 sq. m.; p. (1950) 183,011.
- Akhisar, t., Turkey:** carpets, opium, dyes, cotton; ancient Thyatira.
- Akhmim, t., Lower Egypt:** linen and cotton goods; limestone quarries; p. 28,000.
- Akhtyika, t., Ukraine, Russia:** beet-sugar, woollens.
- Akimiski I., I., James Bay, Canada.**
- Akita, t., Japan:** silk, gold, silver, lumbering; p. (1950) 126,074.
- Aklavik, t., N.W. Territories, Canada:** on Mackenzie R.
- Akmolinsk, t., Kazakhstan, U.S.S.R.:** nr. Karaganda coalfield, with rly. to Magnitogorsk.
- Akola, t., Madhya Pradesh, India:** cotton; p. 62,564.
- Akpatok I., I. in Ungava Bay, Labrador.**
- Akron, mfg. c., Ohio, U.S.A.:** largest rubber mfg. centre in the world; maize mills, woollens; p. (1950) 274,605.
- Aktyubinsk, t., N.W. Kazakhstan S.S.R., U.S.S.R.:** at S. end of Ural Mtns.; metal and fertiliser industries associated with local ores and phosphates; p. (1939) under 50,000.
- Akureyri, t., N. Iceland:** herring fishery; p. (1950) 7,439.
- Akyab, spt., Burma:** at mouth of Kaladan R.; exports rice; p. 38,094.
- Alabama, st., U.S.A.:** cap. Montgomery, ch. port Mobile; minerals, cotton, cereals, sugar, and mnfs.; a. 51,609 sq. m.; p. (1950) 3,061,743.
- Alagôas, maritime st., Brazil:** cap. Maceio; sugar, cotton, tobacco, rubber; a. 11,016 sq. m.; p. (1950) 1,106,454.
- Alajuela, prov., Costa Rica, Central America:** cap. Alajuela; coffee, sugar; p. (1950) 148,850.
- Alameda, spt., Cal., U.S.A.:** airport; light mnfs., shipbuilding, fish-canning, holiday resort; p. (1950) 64,430.
- Alamosa, t., Col., U.S.A.:** flour-milling, meat-packing, stockyards; p. (1950) 5,354.
- Åland Is. (Åhvenanmaa), group belonging to Finland at entrance of G. of Bothnia:** a. 572 sq. m.; p. (1940) 27,676.
- Alasehir, t., Turkey:** ancient Philadelphia; mineral springs, wheat, tobacco.
- Alaska, terr., U.S.A.:** in Arctic N. America; bought from Russia 1867; mountainous; furs, timber, salmon fishing, mining; ch. t. Juneau; a. 571,065 sq. m.; p. (1950) 128,643.
- Alatau, mtns., bdy. of W. Turkestan and Sinkiang, China:** group of 5 ranges, outliers of Tien-Shan; alt. up to 15,000 ft.; highest peak Khan Tengri, 22,800 ft.
- Alatri, t., Italy:** 45 m. S.E. of Rome; tapestry.
- Alatyr, t., Chuvash, U.S.S.R.:** on R. Sura; milling, brewing.
- Alava, Basque prov., N. Spain:** ch. t. Vitoria; viticulture; a. 1,175 sq. m.; p. (1950) 118,012.
- Alba, t., N. Italy:** in Tanaro valley; mkt. for silk, cattle, grain, wine; p. (1936) 11,072.
- Albacete, prov., S.E. Spain:** cereals, fruit, sheep; a. 5,739 sq. m.; p. (1950) 397,100.
- Albacete, t., cap., Albacete, Spain:** on plains of Alta Mancha; agr. mkt., wheat, sheep; p. (1951) 71,822.
- Alba-Julia, t., Romania:** on R. Mures, formerly Carlsburgh; union of Transylvania with Romania proclaimed here 1918; p. 15,216.
- Alban Hills, volcanic group, 10 m. S.E. of Rome, Italy:** circumference 35 m.; greatest alt. Monte Faete, 3,137 ft.; richly cultivated; densely peopled.
- Albania, rep., S. Europe:** lying along Adriatic, with Jugoslavia to N. and N.E. and Greece to S.E. and S.; maize, wheat, olive oil, cheese, tobacco, wool, hides, horses; cap. Tirane, abt. 20 m. inland from the port of Durrës; a. 10,629 sq. m.; p. (estd. 1951) 1,210,000.
- Albano Laziale, t., Italy:** S. of Rome; saline springs, mud baths; p. (1936) 9,414.
- Albany, st. cap., New York, U.S.A.:** on R. Hudson; iron, brass, chemicals, textiles, paper; p. (1950) 134,995.
- Albany, spt., t., W. Australia:** on King George Sound; agr. and pastoral; p. (1947) 4,761.
- Albay, t., Luzon I., Philippines:** hemp, sugar, copra.
- Albemarle I., largest of the Galapagos in Pacific Ocean:** alt. summit, 5,020 ft. above sea-level.
- Albemarle Sound, inlet, N. Carolina coast, U.S.A., 60 m.**
- Albert, t., Somme, France:** on R. Ancre; severe damage First World War; paper, linen.
- Albert L., Africa:** great reservoir of White Nile, extreme length 100 m., general breadth 20 m., alt. 2,100 ft.; greater part in Uganda Protectorate.
- Alberta, prov., W. Canada:** Rockies in W.; pre-eminent agr.; wheat, other grains, alfalfa, dairying, livestock; coal, gas, and oil; cap. Edmonton; a. 255,285 sq. m.; p. (1951) 939,501.
- Albertville, t., Belgian Congo:** on W. shore of L. Tanganyika; rly. to Kongola on L. Lualaba, trib. of R. Congo.
- Albi, cap. Tarn, France:** cath.; wheat, vines, fruit.
- Albia, t., Iowa, U.S.A.:** rly. junction; coal mining; p. (1950) 4,838.
- Albigois, sub-region, Basin of Aquitaine, France:** centred on Albi; rich farming, cereals and vines; sm. coalfield and associated industries.
- Albion, t., Mich., U.S.A.:** mnfs. iron goods; p. (1950) 10,406.
- Albunol, t., S. Spain:** 40 m. S.E. of Granada.
- Albuquerque, t., Spain:** 25 m. N. of Badajoz.
- Albuquerque, t., N. Mex., U.S.A.:** on Rio Grande; wool, hides, timber; univ.; p. (1940) 35,449.
- Albury, t., N.S.W., Australia:** on Murray R.; sheep farming, currants; p. (1947) 14,412.
- Alcala de Henares, t., Spain:** 20 m. E. of Madrid; p. 13,001.
- Alcala la Real, t., Andalusia, Spain:** p. 21,377.
- Alcamo, t., Sicily, Italy:** 24 m. S.W. of Palermo; olives, oranges, lemons, wines; Saracen cas.; p. 51,200.
- Alcantara, fortfd. t., W. Spain:** on Tagus R.
- Alcazar de San Juan, t. nr. Ciudad Real, Spain:** soap, gunpowder, wine.
- Alcazar-quivir (Al Kazral Kebir), c., Morocco, N. Africa:** 80 m. N.W. of Fez; p. (1945) 35,786.
- Alcester, t., Warwick, Eng.:** needles and fish-hooks; p. 13,110.
- Alcoy, t., Spain:** 25 m. N. of Alicante; farm implements, textiles.



- Alcudia**, *Roman walled t.*, Majorca I., Spain; 31 m. from Palma; site of Roman t. of Pollentia.
- Aldan**, *navigable R.*, Siberia, U.S.S.R.; length 300 m.
- Aldeburgh**, *mun. bor.*, *spt.*, E. Suffolk, Eng.; 30 m. from Ipswich; fisheries; headquarters of group of English writers and musicians; p. (1951) 2,684.
- Alderley Edge**, *urb. dist.*, Cheshire, Eng.; p. (1951) 3,689.
- Alderney**, most N. of the Channel Is., 55 m. off English coast, and 10 m. W. of C. de la Hague; early vegetables, cattle; a. 31 sq. m.; p. (1931) 1,521.
- Aldershot**, *mun. bor.*, Hants, Eng.; bricks; lge. military camp; p. (1951) 36,184.
- Aleksandrovsk**, *spt.*, Sakhalin, U.S.S.R.; trading centre for coal and petroleum; p. 18,000.
- Alentejo Alto and Baixo**, *prov.*, S. Portugal; caps. Evora and Beja; cereals, stock raising, copper, and iron; a. 9,219 sq. m.; p. (1940) 713,218.
- Alençon**, *t., cap.*, Orne, France; textiles.
- Aleppo**, *c.*, ch. tr. centre N. Syria; silks, cottons; p. (estd. 1950) 362,541.
- Alés**, *t.*, Gard, France; trades in raw silk produced in region; p. 41,385.
- Alessandria**, *c.*, N. Italy; cap. prov. of same name, 46 m. E. of Turin; linen, hats, macaroni; p. (1951) 82,178.
- Ålesund (Aalesund)**, *spt.*, W. coast Norway; fishing; p. 18,012.
- Aletsch glacier**, Bernese Oberland, Switzerland; lgst. in Europe; length exceeds 15 m.
- Alechhorn**, *mn.*, Bernese Alps, Valais canton, Switzerland; alt. 13,721 ft.
- Alentian Is. (U.S.A.)**, N. Pac. Oc., chain of Is. stretching out 1,200 m. from the most S.W. point of Alaska towards Kamchatka.
- Alexander City**, *t.*, Ala., U.S.A.; formerly Youngville; textiles; p. (1950) 6,430.
- Alexandretta**, *spt.*, S. Turkey; harbour served by rly. connections; p. (1940) 37,975.
- Alexandria**, *ch. port* Egypt, N.E. Africa; founded by Alexander the Great, 332 B.C.; floating dock; exports cotton, wheat, rice, gum; p. (1947) 925,081.
- Alexandria**, *t.*, Dumbartonshire, Scot.; on W. side of vale of Leven; has developed with increased communications; cotton printing, bleaching, dyeing.
- Alexandria**, *t.*, Louisiana, U.S.A.; rice, foundries; p. (1950) 34,913.
- Alexandria**, *c.*, *spt.*, N.E. Virginia, U.S.A.; on Chesapeake Bay; mnfs. foodstuffs, thread, cotton, leather goods; p. (1950) 61,733.
- Alexandrina L.**, inlet, S. Australia; nr. Encounter Bay.
- Alexandroupolis**, *spt.*, Thrace, Greece; oak timber tr., many antiquities; p. (1951) 18,453.
- Alexandrov**, *t.*, Poland; p. 4,491.
- Alford**, *urb. dist.*, Lindsey, Lincoln, Eng.; brewing and food-preserving indus.; p. (1951) 2,218.
- Alfreton**, *urb. dist.*, Derby, Eng.; coal, iron, stone; p. (1951) 23,388.
- Algarve**, *prov.*, Portugal, cap. Faro; fruit fishing; a. 2,023 sq. m.; p. (1940) 317,628.
- Algiciras**, *spt.*, Spain; fishing, oranges.
- Algeria**, N. African Government-General of France; comprises depts. of Algiers, Oran, Constantine, Southern Territories; fertile valleys, rugged mountains, barren plateaux; warm, moist winters, hot, dry summers; Berbers, Kabyles, Arabs, Taurégs; cap. Algiers; products: wine, fruit, olive oil, timber, tobacco, minerals; a. 851,077 sq. m.; p. (1948) 8, 31,785.
- Alghero**, *spt.*, on western coast of Sardinia; cath.; coral fisheries, fruit, wine.
- Algiers**, *dep.*, Algeria, Fr. N. Africa; cap. Algiers; p. (1948) 2,765,898.
- Algiers**, *cap.*, naval port, Algeria; strongly fortified; coaling stn.; exports wheat, wine, olives; p. (1948) 315,210.
- Algoa Bay**, about 425 m. E. of C. of Good Hope, S. Africa.
- Algonia**, *t.*, E. Wis., U.S.A.; mnfs. dairy products, plywood; p. (1950) 3,384.
- Algonquin Park**, Ontario, Canada; park, game reserve, tourist centre.
- Alhama**, *c.*, Granada, Spain; hot springs.
- Alhaurin el Grande**, *t.*, S. Spain; rly.; olive oil, marble quarries; p. 10,631.
- Alicante**, *prov.*, S.E. Spain; ch. t. Alicante; a. 2,267 sq. m.; p. (1950) 631,055.
- Alicante**, *spt.*, *t.*, E. Spain, noted for its wine, fruits, minerals; p. (1950) 104,099.
- Alice**, *t.*, C. of Good Hope, Union of S. Africa; health resort.
- Alice Springs**, *telegraph stn.*, N. Territory, Australia; midway between Adelaide and Darwin.
- Aligarh**, *t.*, India; univ.; wheat, cotton, gold and silver work; p. (1951) 141,618.
- Aliwal**, *t.*, Cape Province, S. Africa; sulphur springs, health resort; p. 8,754.
- Aljezur**, *spt.*, S. Portugal; N. of C. St. Vincent.
- Alkmaar**, *t.*, Netherlands; world cheese mkt.; salt; p. (1951) 40,054.
- Allahabad**, *t., cap.*, Uttar Pradesh, India; annual fair; Mohammedan pilgrim centre; p. (1951) 332,295.
- Allegan**, *t.*, Mich., U.S.A.; market for dairy and fruit products of the district; manufactures drugs; (1950) 4,801.
- Alleghany Mtns.**, U.S.A.; bold escarpment in the W. section of the Appalachian system stretching from Pennsylvania to W. Virginia.
- Allegheny**, *R.*, U.S.A.; joins the Ohio R., Pittsburgh, Penns.; length 350 m.
- Allen**, Bog of, *peat morass*, Ireland; a. 372 sq. m.
- Allen**, Lough, L., Ireland, length 5 m., breadth 3 m.; one source of R. Shannon.
- Allenstein (Olśztyn)**, *t.*, Poland; on R. Alle, 100 m. N.W. of Warsaw; industries dealing with metals, chemicals, foodstuffs, timber; pre-1945 cap. Ermland region, E. Prussia; p. (1946) 29,053.
- Allentown**, *t.*, Penn., U.S.A.; on Lehigh R., furniture, silk, tobacco; lorries; p. (1950) 106,756.
- Alleppey**, *t.*, Travancore, India; coffee; p. 116,278.
- Aller**, *t.*, N.W. Spain; agricultural market; coal, iron, lead mines; p. 23,600.
- Alliance**, *t.*, Ohio, U.S.A.; coal; p. (1950) 26,161.
- Allier**, *dep.*, France; coal- and iron-mining, mineral springs, wine, wheat; a. 2,848 sq. m.; p. (1946) 373,481.
- Allier**, *R.*, Central Massif, France; rises in Cevennes; trib. of R. Loire.
- Alloa**, *spt.*, burgh, Clackmannan, Scot.; on N. bank of R. Forth 5 m. E. of Stirling; shipbuilding, distilling, glass; p. (1951) 13,436.
- Alma**, *R.*, Crimea, U.S.S.R.; great victory over Russia by Allies, 1854.
- Alma-Ata**, *cap.*, Kazakh Rep., U.S.S.R.; cattle, fruits; p. (1959) 230,528.
- Almada**, *t.*, Portugal; on R. Tagus opposite Lisbon; founded by English Crusaders.
- Almaden**, *t.*, Sierra Morena, Spain; ancient Sisapon; quicksilver mines; p. (1940) 12,388.
- Almansa**, *t.*, Spain; textiles, leather, soap, brandy; p. 16,025.
- Almeida**, *t.*, Overijssel, Netherlands; 25m. S.E. of Zwolle; cotton textile mnfs.; p. (1951) 42,369.
- Almendralejo**, *t.*, Badajoz, Spain; wine, brandy.
- Almeria**, *prov.*, S. Spain; ch. t. Almeria; a. 3,333 sq. m.; p. (1950) 357,401.
- Almeria**, *spt.*, *t.*, S.E. Spain; cath; exports grapes, esparto grass, lead; p. (1950) 76,497.
- Almondbury**, *t.*, W.R. Yorks, Eng.; now joined to Huddersfield; woollen mfgt.
- Almuncar**, *spt.*, Spain, on Mediterranean.
- Aln**, *R.*, Northumberland, Eng.
- Alnwick**, *urb. dist.*, Northumberland, Eng.; cas.; brewing; p. (1951) 7,366.
- Alor**, *I.*, one of Lesser Sunda Is., Indonesia.
- Alor Star**, *t., cap.*, Kedah st., Fed. of Malaya; on main road and rly. N. Airport; p. 32,424.
- Alora**, *t.*, Spain, 25 m. N.W. of Malaga; oranges, lemons.
- Alost (Aalst)**, *t.*, Belgium; 14 m. N.W. of Brussels; rly.-junct.; weaving (linen, silk), brewing; p. (1948) 42,193.
- Alpena**, *c.*, Thunder Bay, Mich., U.S.A.; cement, paper, tanneries, sawmills; p. (1950) 13,135.
- Alpen on Rhine**, *t.*, Netherlands; on Old Rhine, 10 m. S.E. of Leyden; mkt. for dairy produce; p. (1946) 20,715.
- Alpes-Maritimes**, *dep.*, S.E. France; ceded by Italy in 1860; ch. t. Nice; olives, wines, fruit; a. 1,443 sq. m.; p. (1946) 443,973.
- Alps**, highest mtns. in Europe; 600 m. long from G. of Genoa to near Vienna; 130 m. broad in Tyrol; principal peaks: Mont Blanc (15,784 ft.), Mont Rosa (15,217 ft.), Matterhorn (14,775 ft.).
- Alps**, Apunian, limestone range near Viareggio, Italy; source of Carrara marble.
- Alps**, Australian, mtn. range between E. Victoria

- and N.S.W.; highest peak, Mt. Kosciuszko, 7,328 ft.
- Alps, Southern, mtn. ridge between Westland and Canterbury, New Zealand, highest pk. Mt. Cook 12,349 ft.
- Als, I., Denmark, in the Little Belt, a. 130 sq. m.
- Alsace-Lorraine, prov., France; industri. agr., wooded, minerals; total a. 5,601 sq. m. Taken from France in 1871, retroceded 1919; now divided into depts. of Bas-Rhin (1,848 sq. m. and p. (1946) 673,281; Haut-Rhin (1,354 sq. m. and p. (1946) 471,705); Moselle (2,403 sq. m. and p. (1946) 622,145).
- Alsager, urb. dist., Cheshire, Eng.; p. 5,526.
- Alsdorf, t., Land N. Rhine-Westphalia, Germany; 10 m. N.E. of Aachen; tar-distillation plant; p. (1933) 19,667.
- Alston, t., Cumberland, Eng., on S. Tyne R. in N. Pennines; p. 3,344.
- Altai, mtns., S. boundary of Siberia; extend from sources of Obi to Gobi Desert more than 2,500 m. Bieluka Peak, alt. 12,796 ft.
- Altamaha, R., Georgia, U.S.A.; flowing into Atlantic; length 150 m.
- Altamira, caves, N. Spain; prehistoric shelters, paintings of animals (Magdalenian).
- Altamura, t., Apulia, Italy; at foot of the Apennines; wines, wool.
- Aldorf, t., Switzerland; on R. Reuss; statue of William Tell in market-place.
- Altea, spt., Spain; on Mediterranean.
- Altena, t., Germany; site of ancient castle of Counts von der Marck; metals, wine; p. 16,167.
- Altenburg, t., Thuringia, Germany; horse fairs, woollen yarn; incorporated in 1901 with Essen.
- Alton, urb. dist., Hants, Eng.; breweries, paper; p. (1951) 8,636.
- Alton, t., Illinois, U.S.A.; machinery, glass, flour; p. (1950) 32,550.
- Altona, t., Land Hamburg, Germany; iron, textiles, breweries, glassworks, soap, leather, tobacco; p. (1933) 242,006.
- Altoona, c., Blair, Penns., U.S.A.; coal, rly. wks.; p. (1950) 71,177.
- Altrincham, mun. bor., Cheshire, Eng.; iron, sawmills; p. (1951) 39,787.
- Altus, t., Okla., U.S.A.; cotton, livestock, grain market; p. (1950) 9,735.
- Altyn Tagh, part of Kunlun mtns., Tibet, 14,000 ft.
- Alva, burgh, Clackmannan, Scot.; at S. foot of Ochil Hills, 3 m. N. of Alloa; woollens, bricks; p. (1951) 4,107.
- Alvah, par., Banff, Scot.; near the hill of Alva; p. (1951), 892.
- Alvin, t., Texas, U.S.A.; grain market, oil wells; p. (1950) 3,701.
- Älvsborg, co., Sweden; a. 4,919 sq. m.; p. (1950) 359,005.
- Alwar, t., cap. Alwar St., Rajputana, India; 100 m. S.W. of Delhi; centre of purely agr. a.; p. (1941) 64,143.
- Alyth, mto. burgh, Perth., Scot.; in Strathmore, 17 m. N.E. of Perth; p. (1951) 2,072.
- Amadeus, large salt L., N. Terr., Australia; 92 m. long.
- Amadjuak Lake, Baffin I., Canada.
- Amagasaki, t., Japan; sub. of Osaka; chemicals, iron and steel; p. (1950) 279,264.
- Amakusa Bay, inlet, Kyushu, Japan; on W. cst., E. of Nagasaki.
- Amakusa, I., Japan; kaolin.
- Amalfi, spt., Italy; on G. of Salerno; tourist resort; fisheries.
- Amalias, t., W. Greece; grapes, wine, currants; p. 12,365.
- Amapá, Fed. terr., Brazil; a. 53,059 sq. m.; cap. Macapá; p. (1947) 25,082.
- Amara, t., R. pt., Iraq; on left bank of R. Tigris 250 m. below Baghdad; Arab t. and agr. mkt. at R. crossing; p. 18,000.
- Amarillo, t., Texas, U.S.A.; oil refining, creameries; p. (1950) 74,246.
- Amasya, t., Turkey; on Yeshli-Irmak; fruit, salt, silk, wine.
- Amazon, R., S. America; largest basin and extent of water of any river in the world; rises among the Andes as the Alto Marañon, and flows 4,000 m. to the Atlantic. Ocean steamers penetrate to Iquitos, 1,935 m. from mouth. One of its affluents, the Madeira, is 1,800 m. long. Drains nearly three million sq. m.
- Amazonas, st., Brazil; rubber, timber; a. 616,148 sq. m.; cap. Manaus (q.v.); p. (1950) 530,920.
- Amazonas, dep., Peru; a. 13,943 sq. m.; cap. Chachapoyas; p. (1947) 99,060.
- Ambala, t., E. Punjab, India; cotton, flour.
- Ambarchik, spt., Yakut rep., U.S.S.R.; air base, gold mining; p. 10,000.
- Ambato, c., Ecuador, S. America; S. of Quito, on slope of Mt. Chimborazo; alt. 8,859 ft.
- Amberg, t., Bavaria, Germany; coal, iron.
- Ambert, t., Puy-de-Dôme, France; paper, cheese.
- Amble, urb. dist., Northumberland, Eng.; exports coal; p. (1951) 4,677.
- Amblecote, urb. dist., Staffs, Eng.; p. (1951) 3,165.
- Ambleside, sm. mkt. t., Westmorland, Eng.; in heart of Lake Dist., nr. L. Windermere; tourist centre, slates.
- Amboina, I., Moluccas, Indonesia; a. 75,820 sq. m.; spices; p. (1930) 400,642.
- Amboina, t., cap., residency, Molucca Is., Indonesia; pt. on S. cst. of Amboina I.; p. (1930) 17,334.
- Amboise, t., Indre-et-Loire, France; 15 m. E. of Tours; famous cas. and prison.
- Ambriz, spt., Angola; sugar-cane, coffee, copper.
- Ameland, I., W. Frisian Is., Netherlands; off cst. of Friesland.
- America, continent; a. 16½ million sq. m., p. 215,000,000. The two vast divs. of this continent are joined by the narrow Isthmus of Panama. The most N. point is over 9,000 m. distant from C. Horn, the extreme S. point. See also N. and S. America.
- Amersfoort, t., Netherlands; on R. Eem; textiles, leather, tobacco; p. (1951) 59,277.
- Amersham, t., Bucks, Eng.; 17th-century mkt. hall; p. (of rural dist.) (1951) 41,432.
- Ames, t., Iowa, U.S.A.; State College of Agriculture; p. (1950) 22,898.
- Amesbury, t., Mass., U.S.A.; 40 m. N. Boston; cotton; p. (1950) 9,711.
- Amesbury, t., rural dist., Wilts, Eng.; nr. ancient British monuments of Stonehenge.
- Amherst, t., Mass., U.S.A.; machinery; Univ. of Mass; p. (1950) 7,960.
- Amherst, spt., Nova Scotia, Canada; shipbuilding; p. (1951) 9,870.
- Amiens, c., Somme, N. France; on R. Somme; fine cath.; velvet, linen, woollens, silks; p. (1946) 84,774.
- Amirante Is., British group, Indian Ocean; S.W. of Seychelles.
- Amityville, t., N.Y., U.S.A.; Long I. sub. of New York; seaside resort; p. (1950) 6,164.
- Amlwch, urb. dist., wat. pl., Wales; N. coast of Anglesey; p. (1951) 2,700.
- Amman, cap., Jordan; very ancient c.; aerodrome; p. (estd. 1950) 170,000.
- Ammanford, urb. dist., Carmarthen, Wales; coal; p. (1951) 6,578.
- Ammer, R., Germany; joins Neckar nr. Tübingen.
- Ammergau, see Ober-Ammergau.
- Amorgos, I., Grecian Archipelago.
- Amoy (Hsiamen), t., former treaty-port, Fukien, China; exports tea, fruit, bricks; p. (estd. 1946) 214,580.
- Amphill, urb. dist., Beds, Eng.; p. (1951), 2,873.
- Amraoti, t., Berar dist. of Madhya Pradesh, India; textiles; p. (1941) 47,309.
- Amritsar, c., Punjab, India; holy city of the Sikhs; founded by Siri Guru Ram Das Sahib; beautiful Golden Temple and Sikh univ.; famous for shawls and carpets; p. (1951) 325,747.
- Amroha, t., Uttar Pradesh, India; pilgrimage centre; p. 55,957.
- Amrum, I., one of N. Frisian Is., Germany; off W. cst. of Schleswig.
- Amsterdam, spt., cap., Netherlands; at junction of R. Amstel and the IJ; built on 96 Is. joined by 300 bridges, harbour can hold 1,000 ships; two universities, Royal Palace, Bourse; extensive trade; exports dairy products, sugar, tobacco; shipbuilding, diamond polishing, aeronautical, marine, electrical mach.; p. (1951) 845,266.
- Amsterdam, t., N.Y., U.S.A.; woollens; p. (1950) 32,240.
- Amu Darya (Oxus), R., U.S.S.R.; flows from the Pamir Mtns. to Aral Sea, length 1,350 m.
- Amur, R., flows from Mongolia between Manchuria and E. Siberia into the Pacific, opposite Sakhalin I.; length 3,000 m.
- Ana, t., Iraq; on R. Euphrates; farming, fruit.
- Anaconda, t., Montana, U.S.A.; copper, zinc, manganese; p. (1950) 11,254.
- Anadolu (Anatolia), see Turkey.



- Anadyr, R., U.S.S.R.:** flows into Bering Sea.
- Anahuac, depression,** Mexican Plateau, Mexico: av. alt. approx. 7,000 ft.; surrounded by higher country inc. volcano Popocatepetl (17,887 ft.); contains Mexico City, a. approx. 1,500 sq. m.
- Anaiza, t., Nejd, Saudi Arabia:** p. 25,000.
- Anantapur, t., Madras, India:** cotton, oilseeds: p. 15,099.
- Anatolia (Anadolu) (formerly Asia Minor), the heart of Turkey:** see Turkey.
- Ancash, dep., Peru:** a. 14,700 sq. m.; ch. t. Huaraz; p. (1947) 512,383.
- Ancholme, R., Eng.:** rises in Lincolnshire and joins the Humber.
- Anchorage, t., Alaska, U.S.A.:** p. (1950) 11,060.
- Ancona, spt., Central Italy:** on the Adriatic Sea; founded by Dorians, 1500 B.C.; sugar refineries, shipbuilding; p. (1951) 85,223.
- Andalusia, old div., S. Spain:** citrus fruits, sherry, lead, copper.
- Andalusian Mtns. (Baetic Mtns.), S. Spain:** young Alpine fold mtns. stretching from Atl. Oc. (Cadiz) to Mediterranean (Alicante); inc. Sierra Nevada (highest peak 11,420 ft.); some minerals, esp. lead and silver.
- Andaman Is., group, Bay of Bengal:** under Indian administration; valuable timber products: a. 2,508 sq. m.; p. 18,939.
- Andenne, t., Namur, Belgium:** on the Meuse, mining.
- Anderlecht, sub. of Brussels, Belgium:** spinning, weaving, dyeing; p. 85,168.
- Andermatt, vil., Uri, Switzerland:** at foot of Mt. St. Gotthard; tourist centre, winter health resort. [N.W. of Coblenz.]
- Andernach, t., Germany:** on the Rhine, 10 m.
- Anderson, t., S.C., U.S.A.:** cotton, lumber; p. (1950) 19,770.
- Anderson, t., Indiana, U.S.A.:** p. (1950) 46,820.
- Anderson, R., N.W. Terr., Canada:** flows into Arctic Ocean.
- Andes, great mtn. system, S. America:** 4,500 m. long; from Panama to C. Horn, 40 m. broad; volcanic; several of the peaks are over 20,000 ft. high. Rich in minerals.
- Andhra, state, E. India:** formerly part of Madras with Telugu-speaking inhabitants; a. 67,284 sq. m.; p. 20,000,000.
- Andizhan, t., Uzbekistan, U.S.S.R.:** formerly residence of Khans of Khokan; p. (1939) 83,691.
- Andorra, independent rep., Pyrenees between France and Spain:** livestock, wines, tobacco; a. 191 sq. m.; p. 5,231.
- Andover, mun. bor., Hants, Eng.:** prehistoric earthworks; iron wks.; p. (1951) 14,661.
- Andover, t., Mass, U.S.A.:** on R. Merrimac; woollens, rubber; p. (1950) 12,437.
- Andria, t., Apulia, Italy:** cath.; almonds.
- Andros, largest I., Bahamas:** sponges, sisal hemp; p. (1943) 6,718.
- Andros, sm. spt., Andros I., Cyclades, Greek Archipelago:** on E. est.; p. (1940) 3,028.
- Andujar, t., Spain:** on Guadalquivir R.; mineral springs, pottery; p. (1940) 24,265.
- Angara, R., Siberia, U.S.S.R.:** trib. of Yenisei; navigable almost its entire length, rises nr. and flows through L. Baikal; length 1,300 m.
- Angerman, R., Sweden:** falls into G. of Bothnia.
- Angermansland, old div., Sweden:** now mainly in prov. of Västernorrland.
- Angermünde, t., E. Germany:** 40 m. N.E. Berlin.
- Angers, t., cap., Maine-et-Loire, France:** on R. Maine between confluences of Rs. Loire and Loir; mkt.t. for local produce, fruit, vegetables, wines; textiles; cath.; p. (1946) 94,408.
- Anglesey, I., co., N. Wales, separated from Caernarvon by Menai Straits:** cattle rearing, farming; a. 276 sq. m.; p. (1951) 50,637.
- Anglo-Egyptian Sudan, civ., N.E. Africa:** became *ind. rep.* of Sudan, Jan. 1, 1956; extends from Egyptian frontier to Uganda and Belgian Congo, and from Red Sea to confines of Wadia in Central Africa; cap. Khartoum. Fmr. British and Egyptian condominium; right of self govt. granted 1953, with self-determination after 3 years. Ch. prod.: gum arabic, cotton, gold, salt; traversed by R. Nile; hot, dry winter, rainy spring and summer; mainly Arabs in N., Negroes in S.; Mohammedan; a. 967,500 sq. m.; p. (estd. 1951) 8,764,000.
- Angol, t., Chile:** fruit, grain; p. 12,398.
- Angola (Port. W. Africa), Portuguese possession, W. Africa:** cap. Nova Lisboa; ch. products: palm oil, rubber, coffee, maize, sugar, wax, diamonds; a. 481,351 sq. m.; p. (1950) 4,111,796.
- Angoulême, mftg. t., Charente, France:** on R. Charente; cognac, paper; fine cath.; suffered during Huguenot wars; p. (1946) 44,244.
- Angra do Heroísmo, cap., Azores Is.:** exports wine, pineapples, flax; p. (1940) 78,109.
- Anguilla I., Leeward Is., W. Indies:** cap. A.; a. 50 sq. m.; p. (1946) 5,036.
- Angus, co., Scot., formerly Forfar; agr. and mftg.:** a. 875 sq. m.; p. (1951) 274,870.
- Anhalt, dist., Saxony-Anhalt, Germany:** former duchy; agr. and mining.
- Anholt, I., Kattegat, Denmark.**
- Anhwel, prov., China:** soya-beans, rice, tea, coal and iron; a. 54,319 sq. m.; cap. Hwaining; p. (estd. 1947), 22,705,000.
- Anjer, spt., Sunda Strait, Java:** destroyed by inundation caused by eruption of Krakatoa in 1883.
- Anjou, old div., France:** on both sides of R. Loire within the Paris Basin; ch. t. Angers.
- Anju, t., Korea:** coal-mining; market for agr. products; p. 18,234.
- Ankara, cap., Turkey:** on the Sakarya R.; grain and fruit centre; mohair cloth; p. (1950) 286,781.
- Anklam, t., Germany:** on Peene R.; foundries, soap, sugar, textiles; p. 19,900.
- Annam, eastern prov., Rep. of Viet-Nam:** within the Federation of Indo-China; rice, cotton, cinnamon, silk, tea, lacquer, minerals; a. about 56,973 sq. m.; cap. Hue; p. (1939) 211,228.
- Annan, burgh, Dumfries, Scot.:** on R. Annan, 2 m. from its mouth in Solway Firth; cotton, ropes; p. (1951) 4,631.
- Annapolis, cap., Maryland, U.S.A.:** seat of Naval Academy; p. (1950) 10,047.
- Annapolis, t., Nova Scotia, E. Canada:** on Bay of Fundy at mouth of sheltered Annapolis Valley; centre of impt. apple-growing dist.; p. (1941) 782.
- Ann Arbor, c., Michigan, U.S.A.:** on the Huron; University of Michigan; motor lorries, farm implements; p. (1950) 48,251.
- An Nasiriya, t., Iraq:** on Euphrates R.; p. (1950) 48,251.
- Anney, industrial t., France, dep. of Haute-Savoie:** p. (1946) 26,722. [p. 17,322.]
- Annen, t., Germany:** coal, steel, chemicals, glass.
- Annonay, t., Ardèche, France:** mnfs. paper, woollens, silk, leather goods; p. 15,462.
- Ansbach, t., Bavaria, Germany:** machinery, weaving; p. (1933) 23,045.
- Anshan, industri. c., Liaoning, N. China:** at foot of Changpai Shan, 60 m. S.W. of Shenyang (Mukden); centre of chief worked deposits of iron-ore in China; iron and steel industry, heavy engineering; p. (estd. 1952) 185,000.
- Ansonia, c., Conn., U.S.A.:** machinery, brass goods, cotton-braid industries; p. (1950) 18,706.
- Antakya (Antioch), ancient c., S. Turkey:** on R. Orontes; tobacco, olives, maize, soap, silk; p. (1945) 27,448.
- Antananarivo, c., cap. Madagascar:** inland city; centre of commerce and communications; industries concerned with foodstuffs, building materials, petroleum; p. (1946) 163,079.
- Antarctica, plateau continent within Antarctic Circle:** 7,000-10,000 ft. high; volcanoes and several islands; owned chiefly by Britain, Australia, New Zealand, France, Norway; penguins.
- Antarctic Ocean, lies approx. S. of 60° S.:** contains Antarctica; whaling.
- Antequera, t., Spain:** sugar, textiles; trade in olive oil, grain; p. (1940) 37,231.
- Antibes, spt., France:** Alpes-Maritimes; health resort, oranges, flowers for perfume mnfs.; p. (1946) 23,574.
- Anticosti, barren I., N. of R. St. Lawrence, Canada:** 140 m. by 28 m.; game preserve.
- Antigua, ch. I., Leeward group, W. Indies:** sugar, molasses, pineapples; a. 108 sq. m.; ch. t. St. Johns; p. (1952) 47,000.
- Anti-Lebanon, mtn. range, Syria:** E. of Lebanon; length 60 m.; alt. 6,000-8,000 ft.
- Antilles, Greater and Lesser, W. Indies, comprising the Archipelago enclosing the Caribbean Sea and G. of Mexico.**
- Antioquia, dep. Colombia, S. America:** cap. Medellín; a. 25,402 sq. m.; maize, coffee, sugar.

- gold, silver, panama hats; *p.* (estd. 1947) 1,405,500.
- Antipodes, Is.,** New Zealand; in S. Pacific, uninhabited.
- Antisana, volcano,** Central Ecuador, S. America.
- Antofagasta, prov.,** Chile; exports nitrates, copper; a. 47,502 sq. m.; *p.* (1952) 184,376.
- Antofagasta, spl.,** Chile; cap. of province; *p.* (1940) 51,107.
- Antrim, co.,** extreme N.E. of N. Ireland; co. t. Belfast; famous Giant's Causeway is on the N. coast; *p.* (1951) 231,099.
- Antrim, t.,** N. Ireland; on Six-Mile Water; linen; *p.* (1951) 1,660. [18,215]
- Antsirabé, t.,** Madagascar; thermal springs; *p.*
- Antung, prov.,** Manchuria; cap. Tunghwa; a. 22,468 sq. m.; *p.* (estd. 1947) 3,214,000.
- Antung, c.,** Antung, N. China; on R. Yalu, 15 m. from mouth; Chinese frontier stn. main rly. from China into N. Korea; mkt. for agr. produce; lumbering; *p.* (estd. 1946) 315,242.
- Antwerp, spl.,** Belgium; on R. Schelde; famous Gothic cath.; Franz Hals born here in 1580, and Vandyck in 1599; great trading port; shipbuilding, textiles, oil, tobacco, distilling, diamond cutting; *p.* (1947) 263,333.
- Antwerp, prov.,** Belgium; grain, flax; a. 1,104 sq. m.; *p.* (1947) 1,278,488.
- Anuradhapura, ch. t.,** N. Central prov., Ceylon.
- Anzhero-Sudzhensk, t.,** W. Siberia, U.S.S.R.; nr. Tomsk. *p.* (1939) 71,079.
- Anzin, t.,** Nord, France; chief coal-mining centre of France.
- Aomori, spl.,** Honshu, Japan; on bay of same name; salmon; *p.* (1950) 106,417.
- Aosta, t., cap.,** Val d'Aosta, N. Italy; in valley of Dora Baltea at node of trans-Alpine routes; iron industries; *p.* (1951) 24,181.
- Apalachee Bay, Fla.,** U.S.A.; receives Apalachee R.
- Apalachicola, t.,** Fla., U.S.A.; oyster beds, game, fishing; *p.* (1950) 3,222.
- Apapa, spl.,** sub. of Lagos, Nigeria; on mainland opposite I. on which Lagos is situated; modern pt. equipment, terminus of W. Nigerian rly. system; rly. workshops; exports palm oil and kernels, hides and skins, ground-nuts, cocoa, rubber; imports cotton piece goods, machinery; *p.* (1946) 176,000 (inc. Lagos).
- Apeldoorn, mfg. t., rly. junction,** Gelderland, Netherlands; *p.* (1951) 89,094.
- Apennines, mtn.** "backbone" of Italy; length 800 m., width 70-80 m.; highest part is in Gran Sasso, which see.
- Apia, spl. of Upolu, terr. of Western Samoa;** *p.* (1936) 5,300.
- Apiskigamish, L.,** Labrador, Canada.
- Apolda, t.,** Germany; hosiery; *p.* (1933) 27,834.
- Appalachian Mtns.,** series of parallel ranges between Atlantic and Mississippi, stretching from Maine to Alabama. Highest peak, Mt. Mitchell, 6,711 ft.
- Appenzel, canton,** N.E. Switzerland; comprises Inner and Ausser Rhoden; cap. Appenzell; a. 163 sq. m.; *p.* (1950) 61,365.
- Appenzell, t., cap.,** Appenzell, Switzerland; on R. Sitter, 7 m. N.W. of Herisau; linen tr.; *p.* (1941) 4,800.
- Appleby, mun. bor.,** Westmorland, Eng.; on R. Eden; cas.; malting; *p.* (1951) 1,704.
- Appleton, c.,** Wis., U.S.A.; paper; *p.* (1950) 34,010.
- Appomattox, R.,** Virginia, U.S.A.; joins James R.; at the vil. of same name General Lee surrendered to General Grant in 1865.
- Apsheron, peninsula** on W. side of the Caspian; noted for petroleum wells (nr. Baku) and mud volcanoes.
- Apulia, S.E. Region,** Italy; pastoral plain; grain, fruits, livestock; marble; a. 7,470 sq. m.; *p.* (1951) 3,214,854.
- Apurimac, dep.,** Peru, S. America; ch. t. Abancay; a. 8,187 sq. m.; sugar; *p.* (1947) 318,514.
- Apurimac, R.,** Peru; joins the Ucayali; length 500 m.
- Aqaba (Akaba), t.,** on border of Jordan, Saudi Arabia and Israel.
- Aqaba, G.,** between Sinai Peninsula and Saudi Arabia. N.E. arm of the Red Sea.
- Aquila Degli Abruzzi, t., cap.,** Abruzzi prov., Italy; on R. terrace of R. Aterno; mkt. and sm. industries associated with local farming; holiday resort; cath.; *p.* (1951) 54,778.
- Aquiles Serdán, t.,** Chihuahua, Mexico; *p.* 7,363.
- Aquitaine, Basin of,** geographical region, S.W. France; to W. and S.W. of Central Massif, to N. of Pyrenees, bordered on W. by Atl. Oc.; warm, wet, oceanic climate; rich agric. lowland, maize, wheat, vines, fruit; inc. Landes, reclaimed sandy area planted with pines; ch. ts. Bordeaux, Toulouse.
- Arabia, S.W. peninsula of Asia;** mainly desert plateau; nomadic Bedouins; coffee, dates, gums, horses, camels; petroleum; divided between Saudi Arabia (most imp.), Yemen, Oman, Kuwait, Bahrain, Trucial chiefs of the Oman cst. and Aden protectorates; a. about 1,000,000 sq. m.; *p.* (approx.) 3,000,000.
- Arabian Desert,** Egypt, N.E. Africa; between R. Nile and Red Sea; alt. approx. 1,200-6,000 ft.; a. approx. 80,000 sq. m.
- Arabian Sea, N.W. part of Indian Ocean,** between Horn of Africa and India.
- Aracajú, spl., cap.** Sergipe st., Brazil; sugar, soap; *p.* (estd. 1944) 63,500.
- Arad, t.,** Romania; on R. Maros, wine, corn, tobacco; *p.* 82,882.
- Arafura Sea, N. of Australia, S.W. of Papua,** and E. of Timor.
- Aragon, old prov.,** Spain; forests, coal, iron.
- Araguaia, R.,** Brazil; trib. of Tocantins; length 1,000 m.
- Ararish (Larais, Larache), spl.,** Spain, Morocco, N. Africa; on Atlantic cst., 45 m. S.W. of Tangier; tr. in grain and fruit; *p.* (1940) 36,132.
- Aral Sea, large salt L.,** Kazakhstan Rep. (U.S.S.R.); a. 26,166 sq.m.; receiving the Amu and Syr Darya Rs.; no outlet.
- Aran, Is.,** group in Galway Bay, Ireland; fishing.
- Aranjuez, t.,** Spain; on R. Tagus; market gardens.
- Ararat, mtn.,** Turkey; supposed resting place of Noah's Ark.
- Ararat, t.,** Victoria, Australia; on Hopteins R., 131 m. from Melbourne; *p.* 5,957.
- Aras R. (the ancient Araxes),** rising in Armenia, flows through Transcaucasia to the Kur, 500 m.
- Arauan, trading t.,** Sahara desert, N. Timbuktu, *p.* 5,250.
- Arauco, prov.,** S. Chile; a. 2,222 sq. m.; cereals, alfalfa, fruit; *p.* (1952) 72,247.
- Aravalli Mtns.,** Rajasthan, India; Mt. Abu, 5,650 ft.
- Araxes R.,** rises in Armenia, flows through Transcaucasia to Caspian Sea; bdy. between Persia and U.S.S.R.
- Arbroath, royal burgh,** Angus cst., Scot.; engin., textiles (flax, jute, cotton, woollens), fishing; hol. res. *p.* (1951) 19,503.
- Arcachon, t.,** Gironde, S.W. France; on S. side of Bassin d'Arcachon (Bay of Biscay); fishing pt.; health resort; *p.* (1946) 14,603.
- Arcadia, div. of Peloponnesus,** Greece; cap. Tripolis; *p.* (1951) 154,318.
- Archangel (Archangelsk), t., district centre,** U.S.S.R.; on E. side of Vlna estuary, White Sea; lge. harbour kept open in winter by ice-breakers; fishery headquarters; exports and industries connected with N. Russia's softwood resources; *p.* (1939) 281,100.
- Archbald, bor.,** Penns., U.S.A.; N.E. of Scranton; anthracite, silk mills; *p.* (1950) 6,304.
- Arcois, t.,** Cadiz, Spain; on R. Guadalete; famous Gothic church, ancient fortifications; *p.* (1940) 18,146.
- Arcot, t.,** India; 65 m. W. of Madras; taken by Clive 1751.
- Arctic Ocean,** seas in the N. polar area.
- Arceuil, sub.,** Paris, France; on both sides of Briève valley S. of Paris; varied light industries concerned with chemicals, clothing, foodstuffs; *p.* (1946) 16,340.
- Ardahan, t.,** N.E. Turkey, nr. Russian border.
- Ardebil, t.,** Azerbaijan, Persia; dried fruits, carpets; *p.* (estd. 1949) 86,000.
- Ardecho, dep.,** S. France; Cevenne Mtns.; olives, wine, silk, minerals; cap. Privas; a. 2,144 sq. m.; *p.* (1946) 254,598.
- Ardennes, dep.,** N.E. France; farming, woollens, iron; cap. Mézières; a. 2,027 sq. m.; *p.* (1946) 245,355.
- Ardennes, hilly wooded dist.,** Belgium, France, Luxembourg.
- Ardmore, t.,** Oklahoma, U.S.A.; coal, cotton, oil refineries; *p.* (1950) 17,890.
- Ardnacrusha, Clare, Ireland;** power sta. on R. Shannon three miles N. of Limerick.



- Ardnamurchan**, most westerly point of mainland of Scotland, Argyll.
- Ardrès**, *t.*, France; Pas de Calais; nr. site of "Field of the Cloth of Gold," where Henry VIII and Francis I met in 1520; p. 2,708.
- Ardishaig**, *t.*, Argyll, Scot.; on Loch Fyne; fishing, distilling.
- Ardrossan**, *burgh*, Ayr, Scot.; on Firth of Clyde, 25 m. S.W. of Glasgow; shipbuilding; exports coal; p. (1951) 8,799.
- Arecibo**, *c.*, *spt.*, N. coast of Puerto Rico; W. Indies; coffee, sugar; p. 78,304.
- Arendal**, *spt.*, Norway, on Skagerrak; wood pulp, aluminium; p. (1946) 11,273.
- Arequipa**, *dep.*, Peru; minerals, wool; cap. Arequipa; a. 21,947 sq. m.; p. (1947) 302,161.
- Arezzo**, *t.*, *cap.*, Arezzo prov., Tuscany, Central Italy; hill site in a basin within the Apennines at junction of valley routes; mkt. for silk, wine, olives; p. (1951) 66,345.
- Argentan**, *t.*, Orne, France; gloves, lace; p. (1946) 7,129.
- Argenteuil**, *t.*, N.W. Paris, France; industri.; p. (1946) 63,543.
- Argentina**, *rep.*, S. America, bounded by Atlantic, Andes, and Parana, Uruguay, Paraguay and Pilcomayo rivers; inc. Pampas and Patagonia; cap. Buenos Aires; agricultural and pastoral; exports meat, wool, wheat, maize; a. 1,079,965 sq. m.; p. (estd. 1950) 17,884,926.
- Argenton**, *t.*, Indre, France; gloves, linen, lace; p. (1946) 5,504.
- Argolis** and Corinthia, *prov.*, N.E. Morea, Greece; cap. Nauplion; p. (1940) 197,009.
- Argonne**, *hill ridge*, S.E. Paris Basin, France; composed of greensand; wooded; alt. 1,000 ft.; a. approx. 250 sq. m.
- Argos**, *t.*, Greece; leading Dorian city prior to the 7th century B.C.; ancient acropolis, theatre; p. (1940) 13,403.
- Argostolion**, *cap.*, Cephalonia I., Greece; shipbuilding; destroyed by earthquake 1053.
- Argun**, *R.*, forms boundary between Siberia and Manchuria; joins the Shilka to form the Amur; large portion navigable; length 1,000 m.
- Argyll**, *largest co.* W. Scotland; mountainous, deer forests, pastoral, fishing, distilling; a. 3,165 sq. m.; p. (1951) 63,270.
- Ariano Irpino**, *t.*, Italy; pottery; ancient Aequum Tuticum; p. 22,855.
- Arica**, *t.*, *spt.*, N. Chile; exports sulphur, copper, silver; p. 16,627.
- Arichat**, *spt.*, Madame I., off Cape Breton I., Nova Scotia, p. 675.
- Ariège**, *dep.*, S. France; livestock, fruit, iron, copper; cap. Foix; a. 1,892 sq. m.; p. (1946) 145,956.
- Arima**, *bor.*, Trinidad, W. Indies; nr. Port of Spain; centre cacao industry; p. (1946) 8,069.
- Arish**, *El*, *t.*, *cap.*, Sinai, Egypt; on Mediterranean at mouth of Wadi el Arish; p. (1947) 10,791.
- Arizona**, *st.*, U.S.A.; bordering on Mexico; agr.; stock-rearing, copper, silver; cap. Phoenix; a. 113,909 sq. m.; p. (1950) 749,587.
- Arjona**, *t.*, Colombia, S. America; p. 10,410.
- Arjona**, *t.*, Jaen, Spain; p. 11,112.
- Arkadelphia**, *t.*, S.W. Ark., U.S.A.; cotton, lumber, flour mills; p. 5,078.
- Arkansas**, *st.*, U.S.A.; state cap., Little Rock; agr.; bauxite; a. 53,102 sq. m.; p. (1950) 1,909,511.
- Arkansas**, *R.*, U.S.A.; navigable 650 m.; length 1,450 m.
- Arkansas City**, *t.*, Kan., U.S.A.; oil, flour mills, packing plant; p. (1950) 12,903.
- Arkhangelsk**, *see* Archangel.
- Arklow**, *urb. dist.*, *spt.*, Wicklow, Ireland; fisheries; p. (1946) 4,851.
- Arles**, *ancient Roman c.*, Bouches-de-Rhône, France; on the Rhône; corn, wine, hats, silk; p. (1946) 35,017.
- Arlington**, *t.*, Mass., U.S.A.; residtl. sub. of Boston; p. (1950) 44,353.
- Arlon**, *cap.*, Belgian Luxembourg; p. (1938) 11,768.
- Armadales**, *burgh*, West Lothian, Scot.; 10 m. S.W. of Linlithgow; coal, iron, limestone; p. (1951) 5,803.
- Armagh**, *co.*, Ulster, N. Ireland; a. 512 sq. m.; p. (1951) 114,226.
- Armagh**, *urb. dist.*, Armagh, N. Ireland; cath.; linen, whisky; p. (1951) 9,279.
- Armavir**, *old ruined cap.* of Armenia, U.S.S.R.; on the slope of the extinct volcano Alaghoz; p. (1939) 83,677.
- Armenia**, *Rep.* U.S.S.R., former area divided between Turkey, Russia, Iran; rich mineral deposits; agr., cattle rearing, forestry; cap. Yerevan; a. 11,906 sq. m.; p. (1939) 1,281,673.
- Armenia**, *t.*, Colombia, S. America; coffee; p. 29,673.
- Armentières**, *mftg. t.*, Nord, France; base of British operations against Lille in First World War; cloth, linen; p. (1946) 22,667.
- Armidale**, *t.*, N.S.W., Australia; centre of wool industry; p. 7,809.
- Arnhem**, *ch. t.*, cap. Gelderland, Netherlands; on right bank of Rhine; lge. tin smelter; light industries using rubber and rayon; p. (1951) 106,062.
- Arnhem Land**, N. part of N. Territory, Australia; with C. Arnhem.
- Arno**, *R.*, Central Italy; flows past Florence and Pisa into Mediterranean; Val d'Arno is the fruitful valley of the river; length 75 m.
- Arnold**, *urb. dist.*, Sherwood Forest, Nottingham, Eng.; lace, hosiery; p. (1951) 21,474.
- Arnsberg**, *t.*, Germany; rly. wks., paper, brewing.
- Arnstadt**, *t.*, Land Thuringia, Germany; on R. Unstrut, 10 m. S. of Erfurt; artificial silk, leather goods; p. (1933) 22,024.
- Arosa**, *t.*, Grisons, Switzerland; health and holiday resort.
- Arpino**, *t.*, Italy; textiles, paper, marble quarries; p. 10,564.
- Arrah**, *t.*, Bihar, India; famous in the Mutiny; p. 55,142.
- Arran**, *I.*, Bute, Scot.; in Firth of Clyde; contains many summer resorts; a. 165 sq. m.; p. 4,650.
- Arras**, *t.*, *cap.*, Pas-de-Calais, France; famous for tapestry; grain; dyeing, brewing; battle, First World War (1917); p. (1946) 33,345.
- Arroux**, *R.*, France; trib. of the Loire; flows past Autun; length 75 m.
- Arrow Lakes**, expansions of Columbia R., Brit. Columbia.
- Arta**, *prov.*, Epirus, Greece; on R. Arta; p. (1951) 72,738.
- Arta**, *t.*, *cap.*, Arta, S. Epirus, Greece; on left bank of R. Arta, 10 m. N. of G. of Arta; purely agr. interests; p. (1951) 14,329.
- Arta**, *G.*, between Albania and Greece; near which the battle of Acutim was fought, 29 a.c.
- Artemovsk**, *t.*, U.S.S.R.; rly. junction; salt, coal, iron, mercury; p. (1939) 55,165.
- Arth**, *t.*, Schwyz, Switzerland; starting point of rly. up the Rigi; p. 5,146.
- Arthabaskaville**, *t.*, S. Quebec, Canada; flour milling.
- Arthur's Pass**, pass running through the Southern Alps, S. Island, New Zealand, alt. 3,109 ft.
- Arthur's Seat**, famous hill, Edinburgh, Scot.; 822 ft.
- Artois**, *old div.*, France; now dept. Pas de Calais.
- Aru**, *Is.*, group, Indonesia, off coast New Guinea; pearl, tortoise-shell; a. 3,244 sq. m.; p. 18,139.
- Arun**, *R.*, Sussex, Eng.; flows into English Channel at Littlehampton; length 40 m.
- Arundel**, *mun. bor.*, *mkt. t.*, W. Sussex, Eng.; on the Arun; Arundel Castle, seat of Duke of Norfolk; p. (1951) 2,680.
- Aruppukkottai**, *t.*, Madras, India, 35 m. S. of Madurai; p. (1941) 31,579.
- Aruwimi**, *R.*, Central Africa; trib. of Congo; route of Stanley's famous forest march in 1887; length 1800 m.
- Arve**, *R.*, Haute-Savoie, France; falls into Rhône near Geneva; length 45 m.
- Arvida**, *t.*, S. Quebec, Canada; aluminium plant.
- Arzobispo**, *t.*, Spain; near R. Tagus, W. of Toledo.
- As**, *mftg. t.*, Western Bohemia, Czechoslovakia; 12 m. N.W. of Cheb; textile mnfs.; p. (1945) 24,534.
- Asaba**, *t.*, Southern Nigeria, Brit. W. Africa; former administrative centre of the Royal Niger Company, p. 7,500.
- Asahikawa**, *t.*, Japan; rice-growing centre; p. (1950) 123,238.
- Asansol**, *t.*, W. Bengal, India; coal mining, rly. junction.
- Asben**, *see* Air.
- Ascension**, *t.*, Mexico; 12 m. S. of U.S.A. border, p. 1,104.
- Ascension I.**, part of British colony of St. Helena,

- Atlantic Ocean; 700 m. N.W. of St. Helena; a. 34 sq. m.; p. (1952) 170.
- Aschaffenburg, *t.*, Bavaria, Germany; paper, chemicals; p. 45,400.
- Aschersleben, *t.*, Saxony, Germany; woollens, hardware; p. 31,700.
- Ascoli Piceno, *cath. c.*, Central Italy; cap. of prov. of same name; p. (1951) 44,541.
- Ascot, *par.*, Berks, Eng.; famous racecourse at Ascot Heath.
- Asenovgrad, *t.*, Bulgaria; S.E. of Plovdiv; p. 20,320.
- Asanti, British Protectorate and dependency of Gold Coast Colony, Brit. W. Africa; formerly powerful native state; timber, cocoa, gold mines; cap. Kumasi; a. 24,379 sq. m.; p. (1948) 823,672.
- Ashbourne, *urb. dist.*, Derby, Eng.; near Dovedale; p. (1951) 5,440.
- Ashburnham, *t.*, Mass., U.S.A.; chairmaking; p. (1950) 2,603.
- Ashburton, *urb. dist.*, Devon, Eng.; on E. margin of Dartmoor; p. (1951) 2,704.
- Ashburton, *t.*, S. Island, New Zealand; centre of great wheat-growing dist.; p. (1951) 8,287.
- Ashburton, *R.*, West Australia; flows into Indian Ocean at Onslow; length 400 m.
- Ashby-de-la-Zouch, *urb. dist.*, Leicester, Eng.; hosiery, ironstone, coal; ruined castle in which Mary Queen of Scots was imprisoned; p. (1951) 6,406.
- Ashby Woulds, *urb. dist.*, Leicester, Eng.; p. (1951) 3,418.
- Asheboro, *t.*, N.C., U.S.A.; chemicals, lumber, furniture, hosiery; p. (1950) 7,701.
- Asheville, *t.*, winter health resort, N. Carolina, U.S.A.; leather, textiles, furniture; p. (1950) 53,000.
- Ashford, *urb. dist., mkt. t.*, Kent, Eng.; rly. wks., leather; p. (1951) 24,777.
- Ashikaga, *t.*, Japan; weaving, cultural centre; p. (1947) 48,310.
- Ashington, *urb. dist.*, Northumberland, Eng.; coal; p. (1951) 28,723.
- Ashio, *t.*, Japan; 65 m. N. of Tokyo; copper, commerce; p. (1947) 20,397.
- Ashkhabad, *cap.*, Turkmenistan, U.S.S.R., on Trans-Caspian rly.; p. (1939) 26,580.
- Ashland, *t.*, Kentucky, U.S.A.; on R. Ohio; iron, steel, lumber, leather; p. (1950) 31,131.
- Ashland, *t.*, Penns., U.S.A.; coal-mining, knitwear, mine pumps; p. (1950) 6,192.
- Ashland, *t.*, Wisconsin, U.S.A.; iron, steel; p. (1950) 10,640.
- Ashtabula, *t.*, Ohio, U.S.A.; near L. Erie; farm implements, leather; p. (1950) 23,696.
- Ashton-in-Makerfield, *urb. dist.*, Lancs., Eng.; near Wigan; coal; p. (1951) 19,053.
- Ashton-under-Lyne, *mun. bor., mfg. t.*, Lancs., Eng.; nr. Manchester; cotton, engineering, coal; p. (1951) 46,490.
- Ashuapmucuan, *L.*, Quebec, Canada.
- Asia, *largest continent*, extends over nearly one-third of the land surface of the earth. Chief mtn. ranges: Himalayas, Kunlun, Tien Shan, Altai; Tibetan plateau; chief rivers: Ob, Yang-tze-Kiang, Yenisei, Lena, Amur, Hwang-ho; deserts: Arabia, Thar, Takla Makan, Gobi; some very fertile valleys and plains. Climate very varied, extreme in N., monsoonal in S. and E. Gold, coal, oil, iron, manganese, antimony, tin. Principal countries in Asia: Turkey, Arabia, Israel, Jordan, Persia, Afghanistan, India, Pakistan, Burma, China, Viet-Nam and associated states, Siam, Korea, Japan, and Asiatic U.S.S.R. Races: Indo-Aryan, Mongolian, Dravidian, Malayan; a. 17,600,000 sq. m. (one-third of land a. of world); p. (approximately) 1,165 millions.
- Asiago, *t.*, Vicenza, Italy; straw hats; site of Austro-Italian battle, 1916; p. 2,861.
- Asia Minor (Anatolia), W. portion of Asia, part of Asiatic Turkey; chief c. Izmir, important spt. of Levant.
- Asinara, *I.*, Mediterranean Sea; off N.W. coast Sardinia; 11 m. long; the ancient I. of Hercules.
- Asir, part of Saudi Arabia, S. Arabia; est. region between Yemen and Hejaz. [Ireland.]
- Askeaton, *t.*, on estuary of R. Shannon, Limerick.
- Asmara, *cap.*, former Italian colony of Eritrea, N.E. Africa; on rly. which connects Massawa and Agordat; p. (1948) 131,000.
- Asnières, *t.*, Seine, France; dyes, perfumery, regattas; p. (1946) 72,273.
- Asolo, *t.*, N.E. Italy; Roman remains.
- Aspatia, *t.*, Cumberland, Eng.; coal; p. (estd. 1947) 22,790.
- Aspropotamos, *R.*, Greece; longest R. in the country; length 115 m.
- Aspull, *urb. dist.*, Lancs., Eng.; near Wigan; coal, cotton; p. (1951) 6,522.
- Assam, *st.*, India; Brahmaputra R. flows through it; extensive tea plantations: rice, cotton, coal; cap. Shillong; a. 51,415 sq. m.; p. (1951) 9,043,707.
- Assen, *t.*, cap. Drenthe, Netherlands; p. (1951) 24,079.
- Assens, *t.*, I. of Fyne, Denmark, on the Little Belt; p. 4,326.
- Assiniboine, *R.*, Manitoba, Canada; joins Red R. at Winnipeg; length 1,500 m.
- Assisi, *t.*, Umbria, Central Italy; 15 m. S.E. of Perugia; birthplace of St. Francis; fine cath. and old cas.; p. 5,353.
- Assynt, *dist.*, L., Sutherland, Scot., 7 m.
- Assyria, *land of former empire*, N. plain of Mesopotamia, Iraq; drained by R. Tigris; now mainly pastoral farming a.; ruins of many ancient cs.; cap. Nineveh.
- Astara, *spt.* on the Caspian, at Persian N.W. frontier; important trading centre.
- Asterabad, *t.*, N. Iran (Persia); on S.E. shore of Caspian Sea; p. 28,000.
- Asti, *t.*, Alessandria, Italy; fine cath.; wines; silk, motor cycles; p. (1951) 52,733.
- Astipalaia, *I.*, Grecian Archipelago.
- Astorga, *t.*, Spain, nr. Leon; cath.; p. 14,523.
- Astoria, *t.*, Oregon, U.S.A.; salmon-canning; p. (1950) 12,331.
- Astoria, N.Y., U.S.A.; industr. and residtl.; part of Queen's bor., New York City; p. 10,349.
- Astrakhan, *t.*, U.S.S.R.; on delta of R. Volga; univ.; fish, caviare, astrakhan wool, fruits, wheat; p. (1939) 254,000.
- Astrida, *t.*, Ruanda-Urundi terr., E. Belgian Congo.
- Astrolabe Bay, on N.E. coast of New Guinea; arm of the Pacific Ocean.
- Asturias, *old prov.*, N. Spain; now Oviedo, on Bay of Biscay.
- Asunción, *cap.*, Paraguay; on junction of Rs. Paraguay and Pilcomayo; cath.; tobacco, sugar, leather; p. (1950) 205,605.
- Aswan, *administrative div.*, Upper Egypt, N.E. Africa; a. 337 sq. m.; p. (1947) 286,854.
- Aswan, *t.*, Upper Egypt; on Nile at 1st cataract, ancient name Syene; near famous ruins, temples, catacombs; tourist centre; p. (1947) 25,397.
- Aswan Dam, Aswan, Upper Egypt; built 1902 to control Nile flood in Egypt, subsequently heightened; rly. extended to Shellal, 2 m. above dam.
- Asyut (Assiut), *prov.*, Upper Egypt; cap. Asyut; a. 787 sq. m.; p. (1947) 1,378,904.
- Asyut, *t.*, Upper Egypt, N.E. Africa; pottery, ivory work; p. (1947) 90,378.
- Atacama, *prov.*, N. Chile; cap. Copiapo; rich in minerals, nitrates, borax, guano; a. 30,834 sq. m.; p. (1952) 79,881.
- Atacama Desert, Chile; arid coastal tract, rich in nitrates.
- Atami, *t.*, Japan; wat. pl. on Sagami Sea; p. 14,477.
- Atar, *t.*, French W. Africa; rly. terminus, chief inland town; p. 3,000.
- Atbara, *t.*, Anglo-Egyptian Sudan; at confluence of Atbara R. with Nile; rly. workshops; p. (estd. 1951) 36,100.
- Atbara R., or Black Nile, Ethiopia and Anglo-Egyptian Sudan; trib. of Nile; length 790 m.
- Ath, *t.*, Hainaut, Belgium; iron, linen; p. (1938) 10,600.
- Athabaska, *R.*, Alberta, Saskatchewan, Canada; navigable by steamers, save at Grand Rapids, near mouth of Clearwater R.; length 740 m.
- Athabaska, *L.*, Alberta, Saskatchewan, Canada; a. 3,085 sq. m.
- Athelney, hill formerly encircled by marsh near Taunton, Somerset, Eng.; between the Rs. Tone and Parret; King Alfred's hiding-place.
- Athenry, *mkt. t.*, Galway, Ireland; old Dominican monastery.
- Athens, *cap.*, Greece; most renowned c. in antiquity; ancient centre of Greek art and learning;



- Acropolis and many splendid temples; spinning, distilling, tanning, carpets; p. (1951) 559,250, of Greater Athens (inc. Piraeus) 1,368,142.
- Athens, *t.*, Georgia, U.S.A.; univ.; cotton goods, lumber; p. (1950) 28,180.
- Athens, *t.*, Ohio, U.S.A.; univ.; coal, light industries; p. (1950) 11,666.
- Atherstone, *t.*, rural dist., Warwick., Eng.; N. of Coventry; hats; p. (rural dist.) 21,3662.
- Atherton, *urb. dist.*, Lancs., Eng.; 13 m. N.W. Manchester; coal, cotton, iron foundries; p. (1951) 20,591.
- Athis, *t.*, Orne, France; 27 m. S. of Caen; p. 10,962.
- Athlone, *urb. dist.*, military stn., Westmeath, Ireland; on R. Shannon; p. (1946) 8,356.
- Atholl, *dist.*, N. Perth, Scot.; extensive deer forests and grouse moors; a. 450 sq. m.
- Athos, *mtn.*, Greece; on promontory of Chalkidike, known as the "Holy Mountain" and the "Monks' Peninsula"; self-governing monastic community; cap. Karyai; p. (1951) 3,100.
- Athy, *urb. dist.*, Kildare, Ireland; p. 3,635.
- Atikokan, *sm. t.*, Ontario, Canada; on Canadian National Rly., 110 m. W. of Fort William; nearest point on rly. to new (1937) Steep Rock iron-ore mines.
- Atiquizaya, *t.*, Ahuachapán, Salvador, Central America; p. 5,901.
- Atlanta, *cap.*, largest c., Georgia, U.S.A.; univ.; cotton, paper, farm implements; p. (1950) 331,314.
- Atlantic City, *summer resort*, N.J., U.S.A.; p. (1950) 61,657.
- Atlantic Ocean, the most important of the three great oceans, lies between the Old and New Worlds. It is 9,000 m. long and from 1,600 to 5,000 m. broad. Total area (estimated) 33,000,000 sq. m. Greatest depth yet found, 30,246 ft. in the Puerto Rico Deep.
- Atlaticco, *dep.*, Colombia, S. America; cap. Barranquilla; a. 1,340 sq. m.; p. (1947) 366,450.
- Atlas, *great mtn. range*, N.W. Africa; extending 1,500 m. through Morocco and Algeria to Tunis. Highest point, Tizi-n-Tamjurt, 14,500 ft.
- Atlit (Athlit) *t.*, Israel, S.W. Asia; S. of Haifa; site of Crusaders' port; p. 1,000.
- Atmore, *t.*, Ala., U.S.A.; 35 m. N.E. of Mobile Bay; p. (1950) 5,720.
- Atoka, *t.*, Okla., U.S.A.; flour, lumber mills; p. (1950) 2,653.
- Atrato, *R.*, Colombia, S. America; flowing to G. of Darien, length 275 m.
- Atrauli, *t.*, Uttar Pradesh, India; 16 m. from Aligarh.
- Atrak, *R.*, Persia; enters Caspian Sea; length 250 m.
- Attica and Boeotia, Greece dep.; separated from Boeotia by mtns. Together form modern prov.; olives, grapes, figs; p. (1951) 1,652,896.
- Attica, *t.*, New York, U.S.A.; p. (1950) 2,676.
- Attleboro, *c.*, Bristol, S.E. Mass., U.S.A.; p. (1950) 23,809.
- Attock, *t.*, Pakistan; between Peshawar and Islamabad; oil wells.
- Aube, *dep.*, N.E. France; cereals, fruit, livestock; cap. Troyes; a. 2,326 sq. m.; p. (1946) 235,237.
- Aube, *R.*, France; trib. Seine; length 1,255 m.
- Aubenas, *t.*, Ardèche, France; coal and iron, silk; p. (1946) 7,378.
- Aubervilliers, *t.*, France; 5 m. N. of Paris; industri.; p. (1946) 53,010.
- Aubigny, *t.*, Cher, France; p. 3,820.
- Aubin or Albin, *t.*, Aveyron, France; coal; p. (1946) 9,387.
- Aubrac, *mtns.*, Auvergne, France.
- Auburn, *t.*, Ind., U.S.A.; commercial centre for agr. area; light engineering; p. (1950) 5,879.
- Auburn, *t.*, Maine, U.S.A.; footwear; p. (1950) 23,134.
- Auburn, *t.*, N.Y., U.S.A.; shoes, woollens, farm implements; p. (1950) 36,722.
- Aubusson, *t.*, Creuse, France; carpets, tapestries; p. 6,324.
- Auch, *t.*, cap., Gers, France; cotton, woollens, poultry, wines; p. (1946) 15,253.
- Auchel, *t.*, Pas de Calais, France; coal; p. (1946) 14,168.
- Auchinleck, *par.*, Ayr., Scot.; coal; p. (1951) 6,808.
- Auchterarder, *burgh*, Scot.; 15 m. S.W. of Perth; wool-weaving; p. (1951) 2,434.
- Auchterderran, *par.*, Fife., Scot.; coal, iron, linen; p. (1951) 17,599.
- Auchtermuchty, *burgh*, Fife., Scot.; at S. foot of Ochil Hills, 25 m. N.E. of Alloa; distilling, cotton spinning; p. (1951), 1,330.
- Auckland, *prov.*, N.I., New Zealand; farming, gold, Kauri gum, coal; a. 25,400 sq. m.; p. (1951) 744,143.
- Auckland, *spt.*, N.I. New Zealand; seat of government from 1845 to 1864; extensive trade and shipping; univ.; sawmills, sugar refinery, shipbuilding, glass; p. (1951) 328,995.
- Auckland Is., uninhabited group in Southern Ocean; 200 m. off New Zealand, discovered by British in 1806.
- Aude, *maritime dep.*, S.E. France; grain, fruit, wine; slate, iron; cap. Carcassonne; a. 2,448 sq. m.; p. (1946) 268,889.
- Audenshaw, *urb. dist.*, Lancs., Eng.; cotton; p. (1951) 12,656.
- Audubon, *t.*, W. Iowa, U.S.A.; canneries; p. (1950), 2,808.
- Aue, *t.*, Saxony, Germany; nr. Zwickau; p. (1937) 25,836.
- Auerbach, *t.*, Saxony, Germany; textiles, carpets, embroidery; p. (1937) 19,597.
- Augsburg, *ancient c.*, Bavaria, Germany; founded by Emperor Augustus, 12 B.C.; famous in Middle Ages; univ.; textiles, machinery, beer; p. (1950) 185,183.
- Augusta, *t.*, Sicily, Italy; on sm. I. connected to E. est.; good harbour used as naval base; little commerce; fishing; p. (1936) 17,716.
- Augusta, *spt.*, S.W. coast, W. Australia.
- Augusta, *t.*, cap., Me., U.S.A.; on Kennebec R.; footwear, cotton goods, paper; p. (1950) 20,913.
- Augusta, *t.*, Ga., U.S.A.; on Savannah R.; cotton, cotton-seed oil, chemicals, foundries; p. (1950) 71,508.
- Augustow, *t.*, Poland; on Suwalki canal, p. 14,900.
- Aua El, *t.*, Israel, S.W. Asia; on Egyptian frontier; p. 2,000.
- Aulnay-sous-Bois, *t.*, Seine-et-Oise, dep., France; p. (1946) 23,356.
- Aumale, *t.*, Seine-Inférieure, France; cloth, steel, leather; p. 2,482.
- Aunjetitz, *t.*, Czechoslovakia; site of early Bronze Age culture.
- Aurangabad, *t.*, Hyderabad, India; textiles; p. (1941) 50,324.
- Auray, or Alrac, *t.*, Morbihan, Brittany, France; oysters, dairy produce.
- Aurès, *mtn. massif*, Algeria, N. Africa; Berber stronghold.
- Aurignac, *commune*, Haute-Garonne, France; caves, paleolithic remains; tanneries.
- Aurillac, *t.*, cap., Cantal, France; industri.; p. (1946) 22,174.
- Aurora, *t.*, Col., U.S.A.; residt. sub. 5 m. E. of Denver; p. (1950) 11,421.
- Aurora, *t.*, E. Ind., U.S.A.; lumber, mnfs. coffins, furniture; p. (1950) 4,780.
- Aurora, *riv. c. Ill.*, U.S.A.; textiles, foundries; p. (1950) 50,576.
- Aurora, *t.*, Mo., U.S.A.; mining region, p. (1950) 4,153.
- Au Sable, *R.*, New York, U.S.A.; flows from the Adirondack Mtns. to L. Champlain.
- Au Sable, *R.*, Mich., U.S.A., emptying into L. Huron.
- Aussig, *see* Usti.
- Austin, *t.*, Minn., U.S.A.; food products; p. (1950) 23,100.
- Austin, *c.*, cap., Texas, U.S.A.; on R. Colorado; st. univ.; farming centre; bricks, furniture; p. (1950) 132,459.
- Austral and Rapa Is., French group in Pacific Ocean; largest I. Rurutu; a. 115 sq. m.; p. (1946) 3,921.
- Australasia, div. of Oceania including Australia, Tasmania, New Zealand, New Guinea, and neighbouring archipelagos.
- Australia, Commonwealth of, largest I. in world; Cook took possession for Britain 1770; Commonwealth proclaimed 1901, federation of N.S.W., Victoria, Queensland, S. Australia, W. Australia and Tasmania; includes also federal cap. terr., N. Territory; cap. Canberra, (administered separately). Mtns. in E.; most salient feature great interior plains, mainly arid; chief rivers: Murray, Darling, Swan; saline lakes. Climate: interior extremely hot

- and dry, coast more moderate, N. coast tropical. Agr.: wheat, hay, cane-sugar, fruit; sheep, cattle, dairying; timber; minerals; gold, lead, silver, coal, copper; a. 2,974,581 sq. m.; p. (1953) 8,867,000.
- Australia, South, st. of the Australian Commonwealth:** mainly undulating, interior forms part of central plateau of continent, mtns. in S. and S.E., 3,000 ft.; wheat crops, stock-raising, dairying, fruit, olives; lead, iron; exports corn, wool, mutton; cap. Adelaide; a. 380,070 sq. m.; p. (1947) 646,216.
- Australia, Western, st. of the Australian Commonwealth:** formerly known as the Swan R. Settlement; occupies the entire W. part of Australia; from N. to S. 1,480 miles, and from E. to W. 1,000 miles; cap. Perth, on the Swan R.; chief products: gold, wool, fruit, wheat, coal, frozen meat; large stretches sandy desert; a. 975,920 sq. m.; p. (1947) 502,731.
- Australian Alps, see Alps, Australian.**
- Australian Antarctic territory, part of Antarctica:** between 45° E. and 160° E.; inc. Oates Land, King George V Land, Wilkes Land, Queen Mary Land, Kaiser Wilhelm II Land, Princess Elizabeth Land, MacRobertson Land, Kemp Land, Enderby Land; uninhabited.
- Australian Bight, Great, large indentation on Australian S. coast between C. Catastrophe and C. Arid (850 m.).**
- Australian Capital Territory, area surrounding Canberra, seat of Federal Government of Australia:** a. 939 sq. m.; p. (1947) 16,905.
- Austria, rep., Europe:** in 1938 forcibly incorporated in German Reich, liberated in 1945; mountainous, forested, drained by R. Danube; agr.; lignite, anthracite, iron, textiles, pianos, brewing; cap. Vienna; a. 32,393 sq. m.; p. (1951) 6,933,905.
- Austria, Lower, st., Austria:** cap. Vienna; a. (excluding Vienna) 7,098 sq. m.; p. (excluding Vienna) (1951) 1,250,494.
- Austria, Upper, st., Austria:** cap. Linz; a. 4,625 sq. m.; p. (1951) 1,108,720.
- Autlán de Navarro, t., Mexico:** S.W. Jalisco state; p. 10,915.
- Autun, c., Saône-et-Loire, France:** anc. Augustodunum; Roman remains; oil shale refinery, leather, furniture, brewing; p. 14,438.
- Auvergne, old French prov. forming the present depts. of Puy-de-Dôme, Cantal, and a small part of Haute-Loire.**
- Auvergne Mtns., mtns., Central France:** in N.W. of Central Plateau; highest peak, Mt. Dore, 6,188 ft.
- Aux Cayes, spl., Rep. of Haiti, W. Indies:** on S. est.; p. 25,000.
- Auxerre, industrial c., cap., Yonne, France:** cath.; vines, bricks, iron and steel; p. (1946) 24,052.
- Auxonne, fortified t., Côte d'Or, France:** on R. Saône; market gardening; p. 5,343.
- Ava, c., Burma:** on the Irrawaddy R.; former cap.; many pagodas, now ruins.
- Avalon, t., Yonne, France:** on Cousin R.; ancient church; p. 5,887.
- Avebury (Abury), par., vil., Wilts., near Marlborough, Eng.:** famous for its Megalithic remains.
- Aveiro, spl., t., Portugal:** wine-producing prov. of Beira Litoral; sardines, fruit; p. (1940) 11,247.
- Avellaneda, industr. sub. of Buenos Aires, Argentina:** p. 279,572.
- Avellino, t., cap., Avellino prov., Italy:** monastery; hazelnuts, linen, paper; p. (1951) 36,392.
- Averno, Alpine valley of Switzerland.**
- Aversa, garrison t., Italy:** W. of Caserta; wine, hemp, cotton, furniture; p. 35,003.
- Aves (Bird Is.), group in the Caribbean Sea, W. Indies, belonging to Venezuela.**
- Avesnes, t., Nord, France:** 11th-century cas.; p. 4,576.
- Avesta, t., Kopparberg, Sweden:** on Dal R., p. 6,325.
- Aveyron, dep., France:** on rim of Central Plateau, watered by Rs. Lot, Aveyron, Tarn; extensive forests; grain, dairying, sheep; coal; cap. Rodez; a. 3,385 sq. m.; p. (1946) 307,717.
- Aviemore, t., Inverness, Scot.:** on R. Spey, 12 m. S.W. of Grantown; rly. junction; tourist resort.
- Avigliano, t., Lucania, Italy:** 8 m. N.W. of Potenza; marble; p. 14,333.
- Avignon, ch. t., Vaucluse, S.E. France:** residence of Popes 1309-78, and anti-Popes 1378-1417; flour, soap, chemicals, leather; p. (1946) 60,053.
- Avila, t., cap., Avila prov., Spain:** univ., cath.; wool, pottery; p. (1949) 23,011.
- Aviles, spl., Oviedo, Spain:** exports coal; fishing; p. (1940) 18,037.
- Avoca, R., Ireland:** drains Wicklow Mtns.
- Avola, t., Syracuse, Italy:** honey, wine, almonds; p. (1936) 23,344.
- Avon, R., Somerset, Eng.:** enters Bristol Channel at Avonmouth; length 80 m.
- Avon, R., Warwick, Eng.:** flows past Stratford to Severn at Tewkesbury.
- Avon, R., Wilts and Hants, Eng.:** flows past Salisbury into English Channel at Christchurch; length 65 m.
- Avonmouth, spl., Gloucester, Eng.:** outport of Bristol; at mouth of R. Avon; docks.
- Avon Plains, agr. township, Victoria, Australia:** 175 m. N.W. of Melbourne.
- Avanches, t., Manche, France:** typical Normandy mkt. t. dealing in cider and dairy produce; p. (1946) 4,179.
- Awaji, I. at entry of Inland Sea, Japan:** a. 219 sq. m.; highest peak, Yurimbayama, 1,998 ft.
- Awe, Loch, Argyll, Scot.:** 8 m. W. of Inveraray bordered by Ben Cruachan (16 sq. m.); salmon and trout fishing.
- Axar, fiord, N. Iceland.**
- Axbridge, rural dist., Somerset, Eng.:** p. (1951) 26,523.
- Axe, R., Somerset, Eng.:** rising in Mendip hills and flowing to Severn.
- Axholme, I. of, N.W. Lincs, Eng.:** formed by R. Trent, Don, and Idle, and comprising seven parishes, including Epworth.
- Axim, t., on Gold Coast, Brit. W. Africa, p. 5,000.**
- Axminster, urb. dist., Devon, Eng.:** brushes; formerly famous for its carpets; p. (1951) 2,673.
- Axmouth, t., E. Devon:** nr. Beer and Seaton; fishing, holiday resort.
- Ay, t., Marne, France:** Ay wine; p. (1951) 7,267.
- Ayacuchto, t., Peru:** founded by Pizarro in 1539; univ.; cap. Ayacucho dept.; p. (estd. 1950) 22,339.
- Ayacuchto, dep., Peru, S. America:** a. 18,185 sq. m.; p. (1947) 461,414.
- Ayamonte, spl., Spain:** on Spanish-Portuguese frontier; p. (1936) 12,136.
- Avaviri, t., Puno, Peru:** N.W. of L. Titicaca; p. 6,586.
- Aycliffe, t., Durham, Eng.:** 6 m. N.W. of Darlington; coal-mining; one of "New Towns" designated 1946; p. (1951) 594.
- Aydin, t., Turkey:** ancient Tralles; rly.; cotton, grapes, olives; p. 18,488.
- Aylesbury, mun. bor., co. t., Bucks, Eng.:** printing, dairying; p. (1951) 21,054.
- Aylesford, t., Kent, Eng.:** scene of battle between Britons and Saxons 445, death of Horsa.
- Aylesham, t., Kent, Eng.:** N. of Dover; on Kent coastfield.
- Aylsham, mkt. t., Norfolk, Eng.**
- Ayr, burgh, spl., Ayr, Scot.:** on Firth of Clyde, 30 m. S.W. of Glasgow; Burns born near by, 1759; racecourse; carpets; p. (1951) 43,011.
- Ayrshire, co., S.W. Scot.:** dairy produce, early potatoes; coal, iron, woollens, cottons; a. 1,132 sq. m.; p. (1951) 321,184.
- Ayre, Point of, northernmost point, Isle of Man.**
- Aysen, prov., Chile:** a. 34,348 sq. m.; p. (1952) 25,476.
- Ayutthaya, t., Siam:** 42 m. N. of Bangkok; temples; former capital; rice; p. (1937) 326,123.
- Azamgarh, t., Uttar Pradesh, India:** metal work; p. 25,000.
- Azbest, t., Sverdlovsk dist., U.S.S.R.:** asbestos quarries; p. (1946) approx. 50,000.
- Azerbaijan, prov., N.W. Persia:** W. of Caspian Sea; a. 41,000 sq. m.; ch. product, wool.
- Azerbaijan, Transcaucasia, constituent rep. of the U.S.S.R.:** lmpt. oil industry; farming, cattle, fishing; cap. Baku; a. 33,460 sq. m.; p. (1939) 3,209,727.
- Azogues, t., cap. Canar prov., Ecuador:** straw hats; p. 15,068.
- Azores, Portuguese group of islands in mid-Atlantic:** abt. 900 m. W. of Lisbon; volcanic; fruit, wine; ch. seaports: Ponta Delgada on San Miguel I., Horta on Fayal I. and Angra do Heroísmo on Terceira I.; a. 922 sq. m.; p. (1941) 286,885.



Azov, *t., spl.*, U.S.S.R.; on R. Don; fisheries; p. 27,500.  
 Azov, *sea*, U.S.S.R.; joins Black Sea by Kerchen-ski Strait; fisheries, caviere.  
 Azpeitia, *t.*, N. Spain; nr. birthplace of St. Ignatius Loyola; mineral springs; p. 8,024.  
 Azuay, *S. prov.*, Ecuador, S. America; cap. Cuenca; Panama hats; a. 3,873 sq. m.; p. (1950) 250,975.  
 Azusa, *t., spl.*, Cal., U.S.A.; exports citrus fruit; p. (1950) 11,042.

## B

Baalbek, *c.*, Syria, S.W. Asia; old Heliopolis; ruins.  
 Baarn, *t.*, Netherlands; summer resort; p. (1948) 12,141.  
 Bab-el-Mandeb, *strait* connecting Red Sea and Indian Ocean, 20 m. wide.  
 Babul (Barfush), *spt.*, Persia; on Caspian Sea; fruits, cottons, silks; p. (estd. 1949) 38,000.  
 Babushkin, *t.*, U.S.S.R.; Moscow area.  
 Babuyan Is., group in Pac. Oc.; N. of Luzon in Philippines.  
 Babylon, *ancient cap.* of Babylonian Empire in Euphrates Valley about 60 m. S. of Baghdad, Iraq.  
 Bacacay, *t.*, Luzon, Philippines; hemp; p. 23,863.  
 Bacau, *t.*, E. Romania; on R. Moldava; oil; p. (1945) 33,123.  
 Back R., in N.W. Terr., Canada; falls into Arctic Ocean; length 360 m.  
 Bacoold, *t.*, cap. Negros I., Philippines; trade centre, sugar; p. (1948) 101,432.  
 Bacup, *mun. bor.*, *mfg. t.*, S.E. Lancs, Eng.; 20 m. Manchester; cotton, coal, stone; p. (1951) 18,374.  
 Badagri, *t.*, W. of Lagos, Nigeria, Brit. W. Africa; on the Bight of Benin, formerly a great slave port.  
 Badajoz, *prov.*, Spain; a. 8,349 sq. m.; p. (1950) 815,780.  
 Badajoz, *fortfd. t.*, Badajoz prov., Spain; on Guadiana R.; cath.; woollens, wax; p. (1950) 79,291.  
 Badakshan, *prov.*, Afghan; drained by Oxus and trib.; salt; cap. Faizabad.  
 Badalona, *t.*, Barcelona prov., Spain; p. (1950) 61,654.  
 Baden, *Land*, W. Germany; consisting of the southern part of the former st. Baden; cap. Freiburg; agr., grain, tobacco, hops, vines, beet-sugar; a. 3,842 sq. m.; p. (1950) 1,338,629.  
 Baden, *t.*, W. Germany; health resort; mineral springs, wood carving; p. 33,000.  
 Baden, *t.*, Switzerland; health resort, mineral springs; p. (1941) 11,177.  
 Baden-bei-Wien, *vat. pl.*, Austria; 14 m. S.W. of Vienna; p. (1948) 19,972.  
 Badenoch, *dist.*, Inverness, Scot.; mountainous, drained by Spey; deer forest.  
 Badenweiler, *vat. pl.*, Baden, W. Germany; W. part of Black Forest.  
 Bad Lands, S. Dakota, U.S.A.; stretches of infertile badly eroded soil.  
 Badminton, *vil.*, Gloucester, Eng.; rly. junction.  
 Badrinath, *mtn.* and *t.*, Uttar Pradesh, India; pilgrim shrine of Vishnu.  
 Badulla, *t.*, Ceylon; tea; p. 13,387.  
 Badwater, *salt pool*, California, U.S.A.; 280 ft. below sea level, lowest point in N. America.  
 Baena, *t.*, Spain; olive oil; horse-breeding; p. 24,830.  
 Baeza, *t.*, S. Spain; ancient Moorish city; olives, wine; p. 18,136.  
 Baffin Bay, Canada; W. of Greenland, joined to the Atlantic by Davis Strait and to Arctic Ocean by Smith Sound; open 4 months a year.  
 Baffin I., Canada; a. 236,000 sq. m.; inhabited by scattered Eskimos.  
 Bagamoyo, *spt.*, trading centre, Tanganyika Terr., Brit. E. Africa; p. 5,000.  
 Bagé, *t.*, S. Brazil; tr. centre; p. 31,763.  
 Bagenalstown, *t.*, Carlow, Ireland; milling, granite; p. (1946) 1,900.  
 Baghdad, *prov.* or *liwa*, Iraq; between Persia and Syrian Desert; includes some of the most fertile lands in the Tigris and Euphrates valleys; p. (1947) 805,293.  
 Baghdad, *cap.*, Iraq; on R. Tigris; airport, caravan centre; textiles, gum; p. (1947) 552,047.  
 Bagheria, *t.*, Sicily, Italy; p. 19,000.  
 Bagirmi, *dist.*, Fr. Equatorial Africa; S. of L. Chad; cap. Massenia.  
 Bagnacavallo, *t.*, prov. Ravenna, Italy; p. 3,676.  
 Bagnara, *t.*, prov. Reggio, Italy; wine, honey; p. (1936) 11,580.  
 Bagnères de Bigorre, *t.*, Pyrenees, France; mineral springs; p. (1946) 8,880.  
 Bagnères de Luchon, *t.*, Haute Garonne, France; thermal springs; p. 3,248.  
 Bagnes de Chable, *vat. pl.*, Valais, Switzerland.  
 Bagni di Lucca, *t.*, Italy; 13 m. N. of Lucca; warm springs; p. (1936) 12,064.  
 Bagni di San Giuliano, *t.*, Italy, nr. Pisa; warm, radioactive springs; p. (1936) 21,894.  
 Bagolino, *t.*, prov. Brescia, Italy; sulphur spring; p. 3,613.  
 Bagshot, *vil.*, Surrey, Eng., adjoining heath of same name.  
 Baguio, *summer cap.* of Philippine Is.; in mtn. prov.; p. 24,177.  
 Bahamas, *Is.*, Brit. W. Indies; first land in New World sighted by Columbus, extending 780 m. from Florida to Turk's Is.; collective cap., Nassau, New Providence; salt, tomatoes, crawfish, sponges, Bahama hemp; a. 4,404 sq. m.; p. (1952) 83,000.  
 Bahawalpur, *st.*, Pakistan; a. 15,918 sq. m.; p. (estd. 1951) 1,320,000.  
 Bahia, *spt.*, Ecuador, S. America; p. 10,320.  
 Bahia Blanca, *spt.*, Argentina; chief naval stn.; wool, wheat, maize; p. (1947) 93,122.  
 Bahia de Caraquez, *spt.*, Ecuador, S. America; p. 10,499.  
 Bahia Honda, *coaling stn.*, Cuba, W. Indies; W. of Havana.  
 Bahrain Is., sheikhdum gulf in Persian G.; famous pearl fisheries; oil-wells; cap. Manama; a. about 213 sq. m.; p. about 120,000.  
 Bahr El Benat Is., group in Persian G., off coast of Trucial Oman.  
 Bahr-el-Ghaza, *R.*, Anglo-Egyptian Sudan; trib. of White Nile R.  
 Bahr-el-Ghazal, *prov.*, Anglo-Egyptian Sudan, N.E. Africa; cap. Wau (g.v.); a. 77,820 sq. m.; p. (estd. 1951) 771,000.  
 Baia, *see* Salvador.  
 Baia, *st.*, Brazil; cap. Salvador; a. 217,670 sq. m.; p. (1950) 4,900,419.  
 Baia-Mare, *t.*, Romania; on Somes R.; gold, silver, copper mining; p. 13,822.  
 Baie-St. Paul, *t.*, Quebec, Canada; summer resort; hunting, fishing; p. 3,500.  
 Bail, *tl.*, on oil pipe-line, Iraq.  
 Baikalsk, *t.*, Siberia, U.S.S.R.; fresh-water; sixth largest in the world; frozen Nov.-May; skirted by Trans-Siberian Rly.; sturgeon, salmon; 40 m. wide; a. 13,700 sq. m.  
 Baildon, *urb. dist.*, W.R. Yorks, Eng.; nr. Bradford; p. (1951) 10,132.  
 Baile Atha Cliath, *see* Dublin.  
 Bailen, *t.*, Spain; lead, ore; p. 10,045.  
 Bailleur, *t.*, France; lace, linen.  
 Baillieston, *t.*, Lanark, Scot.; coal-mining.  
 Baird, *t.*, Texas, U.S.A.; rly. junction; cotton, oil, p. 1,810.  
 Bairnsdale, *t.*, Vic., Australia; on Mitchell R.; agr., pastoral, dairying; p. 3,858.  
 Baia, *t.*, Hungary; pigs, grain; p. 32,309.  
 Bakchisaray, *t.*, Crimea, U.S.S.R.; old cap. of Tartar Khans.  
 Baker I., Pacific Ocean.  
 Baker, *L.*, N.W. Terr., Canada.  
 Baker, *t.*, Ore., U.S.A.; gold, silver, lead, mineral springs; p. (1950) 9,471.  
 Bakersfield, *t.*, S. Cal., U.S.A.; centre of oil wells, refining; p. (1950) 34,474.  
 Bakewell, *urb. dist.*, Derby, Eng.; mining, woollens; p. (1951) 3,350.  
 Bakchisarai, *t.*, Crimea, U.S.S.R.; leather, copper; p. 10,800.  
 Bakony Wald, *mtns.*, forested, Hungary.  
 Baku, *cap.* Azerbaijan, U.S.S.R.; port of Caspian Sea; univ.; oil-wells; p. (1939) 809,347.  
 Bala, *urb. dist.*, N. Wales; nr. Denbigh, Merioneth, p. (1951) 1,508.  
 Bala, *L.*, Merioneth, N. Wales; drained by the Dee.  
 Balacava, *t.*, S. Australia; 67 m. from Adelaide; centre of agr. dist.; p. 1,232.  
 Balashov, *t.*, Saratov area, U.S.S.R.; on Khoper R.; p. 26,846.

- Balasnor**, former Gujarat st. now merged into Bombay st., India; a. 189 sq. m.; p. (1941) 61,151.
- Balasure**, *spt.*, Orissa, India; p. 10,000.
- Balaton**, *l.*, largest in Hungary; 50 m. S.W. of Budapest; 50 m. long, 2-7 m. wide.
- Balatra**, *t.*, Rajasthan, India, p. 10,000.
- Balayan**, *t.*, Luzon, Philippine Is.; at head of G. of Balayan; p. 15,224.
- Balboa**, *dist.*, S.E. Canal Zone, Central America; p. 31,502; *t.*, Pacific end of Panama Canal; p. (1950) 4,117.
- Balbriggan**, *spt.*, Dublin, Ireland; hosiery.
- Balclutha**, *t.*, S.I., N.Z.; nr. Dunedin; p. (1951) 2,621.
- Bald Head Peak**, Victoria, alt. 4,625 ft.; highest point in Dividing Range, Australia.
- Bald Mtn.**, peak in Front Range, Col., U.S.A.; alt. 12,000 ft.
- Baldock**, *urb. dist.*, Herts., Eng.; on N. edge of Chiltern Hills; hosiery, lingerie, corn milling, malt; p. (1951) 5,967.
- Baldwin**, *t.*, N.Y., U.S.A.; on S. Long I.; fisheries; p. (1950) 6,015.
- Baldwinsville**, *t.*, N.Y., U.S.A.; agr., livestock; natural gas; p. (1950) 4,495.
- Baleareic Is.**, Spain; include Majorca, Minorca, Ibiza, Formentera; cap. Palma; fruit, fish, pigs; a. 1,936 sq. m.; p. (1950) 422,089.
- Baleswar**, *R.*, one of the chief tributaries of the Ganges to Bay of Bengal.
- Balfour**, *par.*, Stirling, Scot.; cotton; p. (1951) 1,411.
- Bali**, off Java, Indonesia; mainly engaged in agr.; famous native dancers; a. (inc. Lombok) 3,973 sq. m.; p. (1930) (inc. Lombok) 1,802,683.
- Balikesir**, *t.*, Turkey; p. (1945) 33,894.
- Balikpapan**, *t.*, Borneo, Indonesia; oil; p. 29,843.
- Baliuag**, *t.*, Luzon, Philippine Is.; rice, bamboo hats, mkt.; p. 22,972.
- Balkan Mtns.**, Bulgaria; highest peak, 7,780 ft.; Shipka Pass.
- Balkan Peninsula**, the easternmost of the three great southern peninsulas of Europe, between the Adriatic and Ionian seas on the W., and the Black Sea, Sea of Marmara, and the Aegean Sea on the E., with an area of, roughly, 200,000 sq. m.; includes Jugoslavia, Bulgaria, Albania, Greece; chief mtns.: Rhodope, Pindus, Balkan; ch. rivers: Danube, Maritza, Vardar; ch. lakes: Scutari, Ohrida.
- Balkh**, *dist.*, Afghanistan; between the Kabul and the Oxus; corresponding to the ancient Bactria, rival of Nineveh and Babylon.
- Balkh**, *t.*, Afghanistan; associated with Zoroaster, called the "Mother of Cities"; destroyed by Jenghis Khan in 1221; silk; p. 12,466.
- Balkhash**, *L.*, U.S.S.R.; fresh water, nr. frontier of W. Mongolia; receives the Ili R., but has no outlet, length 450 m., width 30-50 m.
- Balachulish**, *vil.*, Argyll, Scot.; on S. shore of L. Leven, N.E. of Oban; slate quarries.
- Ballaghadorreen**, *t.*, Roscommon, Ireland; p. 1,316.
- Ballantrae**, *par.*, Ayr, Scot.; fishing, p. (1951) 886.
- Ballapali**, forest reserve, Madras, India.
- Ballarát**, *c.*, Victoria, Australia; 73 m. N.W. Melbourne, former gold-field dist.; farming centre; flour milling, wool; p. (1947) 40,181.
- Ballater**, *burgh*, Aberdeen, Scot.; on R. Dee, 37 m. S.W. of Aberdeen; tourist resort, mineral wells; nr. the royal Highland residence of Balmoral; p. (1951) 1,301.
- Ballenas Bay**, W. Coast, Lower California, Mexico.
- Ballynny Is.**, S. Ocean; volcanic isles.
- Ballina**, *urb. dist.*, *spt.*, Mayo, Ireland; brewing, salmon fishing; p. 6,058.
- Ballina**, *t.*, N.S.W., Australia; 530 m. from Sydney at mouth of Richmond R.; p. 3,201.
- Ballinasloe**, *urb. dist.*, Galway and Roscommon, Ireland; large cattle fair; p. 5,425.
- Ballingier**, *t.*, Texas, U.S.A.; grain, cattle, cottonseed oil, flour; p. (1950) 5,302.
- Ballinrobe**, *rural dist.*, Mayo, Ireland; E. of L. Mask; p. 16,219.
- Ballon d'Alsace**, *mtns.* (4,101 ft.), Vosges, France; highest peak Ballon de Guebwiller, 4,690 ft.
- Ballston Spa**, *wat. pl.*, Saratoga, N.Y., U.S.A., p. (1950) 4,937.
- Bally L.**, Roscommon, Ireland, nr. Castlereagh.
- Ballycastle**, *spt.*, *mkt. t.*, *urb. dist.*, Antrim, N. Ireland; abbey and castle ruins; p. (1951) 2,558.
- Ballyclare**, *urb. dist.*, Antrim, N. Ireland; paper, linen, dyeing; p. (1951) 3,982.
- Ballycotton Is.**, Ballycotton Bay, Cork, Ireland.
- Ballymena**, *mkt. t.*, *mun. bor.*, Antrim, N. Ireland; on the R. Braid; linen and dyeing; p. (1951) 14,165.
- Ballymoney**, *mkt. t.*, *urb. dist.*, Antrim, N. Ireland; 40 m. N.W. of Belfast; linen, dairying; p. (1951) 3,306.
- Ballyness Bay**, Donegal, Ireland.
- Ballyshannon**, *rural dist.*, *spt.*, Donegal, Ireland; at mouth of R. Erne; salmon fishery; p. (1946) 6,566.
- Balmain**, *t.*, N.S.W., Australia; industri. sub. of Sydney; foundries, chemicals, glass, shipbuilding, lumber; p. (1947) 28,268.
- Balmoral Cas.**, Aberdeen, Scot.; royal residence, on R. Dee, 8 m. W. of Ballater.
- Balquhider**, *par.*, Perth, Scot.; p. (1951) 671.
- Balanald**, *t.*, N.S.W., Australia; on R. Murrumbidgee, p. 1,249.
- Balsas**, *R.*, Mexico; flows S. to Pacific Ocean through impt. sugar-cane growing valley of Morelos; length approx 500 m.
- Balta I.**, Shetland Is., Scot.
- Balta**, *t.*, Moldavia, U.S.S.R.; wheat, horses, cattle; p. 25,000.
- Baltic Is.** (Fyn, Lolland, Nykobing, etc.); farming div. of Denmark; a. 5,123 sq. m.; p. 1,291,772.
- Baltic Sea**, an arm of the Atlantic, opens into North Sea by narrow channels between Denmark and Sweden; joined to White Sea and Arctic by White Sea Canal; surrounded by Sweden, Denmark, Germany, Finland and the Baltic Reps. of the U.S.S.R.; 900 m. long, greatest width 200 m., a. 160,000 sq. m.; partly frozen in winter.
- Baltic-White Sea Canal**, see Stalin Canal.
- Baltimore**, *c. spt.*, Maryland, U.S.A.; nr. head of Chesapeake Bay; fine harbour; extensive trade; clothing, machinery, shipbuilding, food canning; p. (1950) 949,703.
- Baltinglass**, *t.*, Wicklow, Ireland; p. 860.
- Baluchistan**, *prov.*, Pakistan; S. of Afghanistan; largely desert and rugged barren mountains; cap. Quetta; a. 52,900 sq. m.; cereals, potatoes, fruits, dates; p. (estd. 1951) 622,000.
- Baluchistan States**, consist of 4 States, Kalat, Las Bela, Kharan, and Mekran, all of which have acceded to the Dominion of Pakistan; p. (estd. 1951) 558,000.
- Bam**, *t.*, Persia; dates, henna; p. 10,000.
- Bamako**, *cap. c.*, French Sudan; p. (1946) 70,492.
- Bamangwato**, *tr. dist.*, Bechuanaland Protectorate, S. Africa. p. 74,733.
- Bamberg**, *c.*, Germany; cath.; cottons, tobacco; Bamberg, *t.*, S.C., U.S.A.; agr., lumbering, pine timber; p. (1950) 2,954.
- Bambuk** or **Bambouk**, Senegambia, W. Africa; gold and iron dist.
- Bamburgh**, *t.*, Northumberland, Eng.; birth-place of Grace Darling, cas.
- Bamian**, *t.*, Afghanistan, N.W. of Kabul; rock-cut caves, colossal Buddhist statues.
- Banam**, *t.*, Cambodia, Indo-China; on Mekong R.; rice, fish; p. 23,000.
- Banana**, *t.*, *port.*, Belgian Congo, Africa; nr. mouth of Congo R.; p. 1,000.
- Banana I.**, Brazil; length 220 m., width 50 m.
- Banana Is.**, sm. group nr. Sierra Leone.
- Banat**, *dist.*, Romania; N. of R. Danube and E. of R. Tisza; p. (1948) 948,596.
- Banbridge**, *t. urb. dist.*, Down, N. Ireland; on Bann R.; linen; p. (1951) 6,098.
- Banbury**, *mun. bor.*, Oxford, Eng.; 80 m. from London; cakes, leather, rope; p. (1951) 18,917.
- Banchory**, *burgh*, Kincardine, Scot.; on R. Dee, 17 m. S.W. of Aberdeen; p. (1951) 1,958.
- Banda**, *t.*, Uttar Pradesh, India; cotton; p. 29,070.
- Banda Is.**, group in Moluccas, in Banda Sea, Indonesia; produce; nutmegs and mace.
- Bandar Abbas**, *spt.*, Persia; dates, raisins, almonds, carpets; p. 10,000.
- Bandar Shah**, *spt.* on Caspian Sea, N. Persia.
- Bandar Shapur**, *spt.* Persia; on N. end Persian G.
- Bandawe**, *mission stn.* on L. Nyasa, Africa.
- Bandoeng** or **Bandung**, *t.*, W. Java; quinine, light industries; radio stn.; p. 166,815.
- Bandon**, *t.*, Cork, Ireland; on Bandon R.; distilling.



- Banff**, *burgh, cap.*, Banff, Scot.: on Moray Firth at mouth of R. Deveron; fisheries; p. (1951) 3,359.
- Banff, co.**, Scot.: oats, barley, slate, fisheries; a. 630 sq. m.; p. (1951) 50,135.
- Banff**, *t.*, Alberta, Canada; tourist centre in Rocky Mtns.; p. 2,000.
- Bangalore**, *c.*, Mysore st., India: former British military stn. and administrative H.Q.; silks, cottons, carpets, aircraft; p. (1951) 778,977.
- Bangka (Banka)**, *I.*, between Sumatra and Borneo, Indonesia; tin; a. 4,611 sq. m.; p. (1930) 205,363.
- Bangkok (Krung Thep)**, *spt., cap.*, Siam; on Menam R.; 20 m. from the sea; Royal Palace, univ.; rice, tea, teak; p. (1947) 1,178,881.
- Bangor**, *c., mun. bor.*, Caernarvon, Wales; on S. shore of Menai Strait; cath., univ., college; slate; p. (1951) 12,822.
- Bangor**, *wd. pl. mun. bor.*, Down, N. Ireland; on S. shore of Belfast Lough, 10 m. N.E. of Belfast; linen, fisheries; p. (1951) 20,615.
- Bangor**, *port*, Maine, U.S.A.; on Penobscot R., lumber, boots, shoes, clothing, paper; p. (1950) 31,558.
- Bangor**, *bor.*, E. Penns., U.S.A.; slate, agr., clothes; p. (1950) 6,050.
- Bangui**, *cap.* of Ubangi-Shari terr., Fr. Equatorial Africa; on R. Ubangi; p. 22,817.
- Bangweulu**, *L.*, N. Rhodesia; 150 m. long by 80 m. wide, contains three islands. Dr. Livingstone died at Illala, on S. shore of this L. in 1873.
- Banias**, *spt.*, Syria; terminus of oil pipeline from Kirkuk, opened 1952.
- Banja Luka**, *t.*, Bosnia and Herzegovina, Yugoslavia; hot springs; tobacco; p. (1948) 32,147.
- Benjerassin**, *t.*, Borneo, Indonesia; wax, resins; p. 65,698.
- Bangka**, see **Bangka**.
- Banks I.**, Canada, Arctic Ocean; separated by Banks Strait from Melville I.
- Banks Is.**, group of sm. ls. in S. Pacific; N.E. of New Hebrides.
- Banks Peninsula**, on E. coast of S. I., New Zealand.
- Banks Strait**, separating Furneaux Is. from Tasmania.
- Bankura**, *t.*, W. Bengal, India; on Hooghly R.; shellac, silk; p. (1941) 31,703.
- Bann**, Upper and Lower, R., N. Ireland; rises in co. Down, and flows through Lough Neagh to Atlantic nr. Coleraine; length 90 m.
- Bannockburn**, *vil.*, Stirling, Scot.; 3 m. S. of Stirling; Bruce's victory over Edward II, June 24th, 1314; woollens.
- Bannu**, *t.*, N.W. Frontier Prov., Pakistan; on Kurram R.; military stn.; p. 38,504.
- Baños**, *t.*, N. of Valladolid, Spain.
- Bansda**, *dist.*, Bombay st., India; a. 215 sq. m.; p. 64,764.
- Banska Stiavnica**, *t.*, Czechoslovakia; tr. centre, gold, silver products; p. 18,260.
- Banstead**, *urb. dist.*, Surrey, Eng.; p. (1951) 33,626.
- Bantam**, *dist.*, W. Java; suffered severely from fever and volcanic eruption.
- Bantry**, *rural dist.* and *spt.*, Cork, Ireland; at head of Bantry Bay; fishing, farming; p. 9,121.
- Banwy**, *R.*, Montgomery, Wales.
- Banzville**, *t.*, Belgian Congo; on R. Uele; p. 1,000.
- Ba'quba**, *t.*, Iraq; on Diyala R., 32 m. N.E. of Baghdad; agr., rly.; p. 10,000.
- Bar**, *spt.*, Dalmatian coast, Yugoslavia; p. 5,500.
- Bar Harbor**, *t.*, S.E. Me., U.S.A.; holiday resort; p. (1950) 2,572.
- Baraboo**, *t.*, Wis., U.S.A.; agr. tr. centre; p. (1950) 7,264.
- Baracaldo**, *t.*, Biscay, Spain; ironwks.; p. 36,165.
- Baracoa**, *spt.*, Cuba; bananas, coconuts; p. 10,395.
- Barada**, *R.*, Syria; in plain of Damascus.
- Barajas**, *vil.*, Madrid, Spain; airport; p. 1,800.
- Barbacena**, *t.*, E. Brazil; centre of agr. a.; sanatorium; p. 19,466.
- Barbados**, *I.*, most easterly of Brit. W. Indies; sugar, molasses, rum, cotton; cap. Bridgetown; a. 166 sq. m.; p. (1952) 216,000.
- Barbary**, *region*, N. Africa; includes Morocco, Algeria, Tunis, Tripoli, Barka, and Fezzan.
- Barbary Coast**, general name applied to Mediterranean est. of N. Africa between Strait of Gibraltar and C. Bon.
- Barbastro**, *t.*, Huesca, Spain; on the R. Cinca; p. 9,388.
- Barbenton**, *t.*, Transvaal, S. Africa; citrus fruits, gold, asbestos; p. 5,279.
- Barborton**, *t.*, Ohio, U.S.A.; p. (1950) 27,820.
- Barbuda and Redonda**, *Is.*, Leeward Is., W. Indies; dependencies of Antigua; sea-island cotton; a. 63 sq. m.; p. 1,000.
- Barcardine**, *t.*, Queensland, Australia; p. 2,042.
- Barcarrota**, *t.*, Spain; p. 3,020.
- Barcellona**, *t.*, Sicily, Italy; silks; p. 25,580.
- Barcelona**, *prov.*, N.E. Spain; cap. Barcelona; a. 2,942 sq. m.; p. (1950) 2,232,119.
- Barcelona**, *c., spt., cap.*, Barcelona prov., Spain; "Manchester of Spain"; cottons, paper, leather, glass, soap; exports olives, wines, cork; p. (1950) 1,280,179.
- Barcelona**, *t.*, N. Venezuela; cap. of Azoategui st.; agr. tr.; p. (1941) 12,910.
- Barcoo R.**, see **Cooper's Creek**.
- Bardejov**, *t.*, Czechoslovakia; hot springs; p. 7,606.
- Bardera**, *t.*, Somaliland; head of navigation on Juba R.; p. 1,500.
- Bardi**, *t.*, Piacenza, Italy; p. 7,850.
- Bardsey**, *I.*, Irish Sea; off coast of Wales, nr. N. point of Cardigan Bay; lighthouse.
- Bareilly**, *c.*, Uttar Pradesh, India; bamboo, furniture; p. (1951) 208,083.
- Barents Sea**, part of Arctic Ocean E. of Spitzbergen to N. Cape; cod, haddock.
- Barfurush**, see **Babul**.
- Barfleur**, *vil.*, France, E. of Cherbourg; fish.
- Barl**, *spt.*, S. Italy; on Adriatic, 69 m. N.W. of Brindisi; cath.; olive oil, wines, fruit, soap; p. (1951) 267,795.
- Baria**, *dist.*, Bombay st., India; a. 879 sq. m.; p. (1941) 202,055.
- Barisal**, *t.*, E. Bengal, Pakistan; nr. Tetulia at mouth of Ganges; river port; p. (1941) 61,316.
- Barka**, *dist.*, Libya, N. Africa.
- Barking**, *mun. bor.*, Essex, Eng.; on R. Roding; mfg., chemicals; p. (1951) 78,197.
- Barkly East**, *t.*, C. of Good Hope, S. Africa.
- Barkly Tableland**, N. Terr., Australia.
- Barkly West**, *t.*, C. of Good Hope, S. Africa; diamonds.
- Barkul**, *t.*, Shensi, W. China; p. 10,000.
- Bar le Duc**, *t., cap.*, Meuse, France; cotton, hosiery; p. (1946) 15,460.
- Barlee**, *L.*, W. Australia.
- Barletta**, *t., spt.*, Italy; wine; p. 62,057.
- Barlin**, *t.*, Pas de Calais, France; coal mines; p. 10,410.
- Barmen**, *t.*, Germany; adjoining Elberfeld, now incorporated in Wuppertal; mnfs. textiles.
- Barmouth**, *t., urb. dist.*, Merioneth, Wales; on est. of Cardigan Bay; p. (1951) 2,466.
- Barnack**, *rural dist.*, Soke of Peterborough, Eng.; p. (1951) 3,099.
- Barnard Castle**, *mkt. t., urb. dist.*, Durham, Eng.; health resort; woollens, penicillin; p. (1951) 4,433.
- Barnaul**, *t.*, W. Siberia, U.S.S.R.; mining, dairying; p. (1939) 148,129.
- Barnes**, *mun. bor.*, Surrey, Eng.; sub. of London, on R. Thames; p. (1951) 40,558.
- Barnesboro**, *bor.*, Penns., U.S.A.; soft coal, clothing; p. (1950) 3,442.
- Barnesville**, *t.*, Ga., U.S.A.; cotton mills; p. (1950) 4,155.
- Barnesville**, *t.*, Ohio, U.S.A.; coal, natural gas, glass, paper, evaporated milk; p. (1950) 4,665.
- Barnet**, *t., urb. dist.*, Herts, Eng.; 10 m. N.W. London; residtl.; p. (1951) 25,017.
- Barneveld**, *t.*, Gelderland, Netherlands; p. (1951) 20,058.
- Barnoldswick**, *urb. dist.*, W.R. Yorks, Eng.; p. (1951) 10,282.
- Barnsdall**, *t.*, N. Okla., U.S.A.; oil, gas, agr.; p. 1,831.
- Barnsley**, *mftg. t., co. bor.*, W.R. Yorks, Eng.; linen, iron, coal, brewing; p. (1951) 75,625.
- Barnstable**, *t.*, Mass., U.S.A.; summer resort; fisheries; p. (1950) 10,480.
- Barnstaple**, *mkt. t., mun. bor.*, Devon, Eng.; sea-side resort, lace; p. (1951) 16,302.
- Baroda**, *former st.*, India; one of the most imp. of former Indian sts., N. of Bombay; now part of Bombay st.; cereals, cotton, sugar, tobacco, opium; a. 8,235 sq. m.; p. (1941) 2,855,010.

- Baroda, *t.*, N. Bombay, India: palaces, Hindu temples; p. (1951) 211,407.
- Barop, *t.*, Westphalia, Germany: coal, mnfs., machinery.
- Barotse, *cty.*, N. Rhodesia, Africa.
- Barquisimeto, *t.*, W. Venezuela, S. America: sugar, sisal; p. (1950) 105,080.
- Barr, *t.*, France: at foot of Vosges; p. 4,185.
- Barra Is., southerly groups, Outer Hebrides, Scot.; a. 348 sq. m.; lighthouse on Barra Head; p. 2,250.
- Barraba, *t.*, Darling, N.S.W., Australia: pastoral; wool.
- Barrafranca, *t.*, Sicily, Italy: sulphur springs; mines.
- Barrage, *vil.*, Egypt, N.E. Africa: on Nile, 35 m. N. of Cairo.
- Barranca Bermeja, *t.*, Colombia, S. America: oil-field, oil refining, asphalt; p. 9,307.
- Barranqueras, *t.*, Chaco terr., N. Argentina; on Parana R.; exports hardwoods, cotton.
- Barranquilla, *port.*, Colombia, S. America, on left bank nr. mouth of R. Magdalena: rivals Cartagena as commercial centre of the Republic: coffee, bananas, cotton, platinum; p. (1951) 278,269.
- Barre, *c.*, Vermont, U.S.A.: granite; p. (1950) 10,922.
- Barren I., volcano in Bay of Bengal.
- Barren R., Ky. U.S.A.: length 120 m.
- Barrhead, *mfg. burgh.*, Renfrew, Scot.; 7 m. S.W. of Glasgow: iron and cotton; p. (1951) 12,971.
- Barrie, *t.*, Ontario, Canada: leather; p. 9,725.
- Barrier Ranges, *mtns.*, on boundary of S. Australia and N.S.W., Australia: alt. 2,000 ft.
- Barrier Reef, Great, coral reef, Pac. Oc.; extending for 1,200 m., 10 to 150 m. from coast of Australia.
- Barrington, *t.*, R.I., U.S.A.: shipbuilding, fish. residit. resort; p. (1950) 8,246. [p. 2,905.]
- Barron, *t.*, Wis., U.S.A.: dairy products, lumber;
- Barrow, *C.*, Mackenzie, Canada.
- Barrow Falls, nr. Keswick, Cumberland, Eng.
- Barrow, R., Leinster, Ireland: rises in Slieve Bloom Mtns., and flows to Waterford Harbour.
- Barrow-in-Furness, *spl. co. bor.*, N. Lancs, Eng.: iron and steel, paper, shipbuilding, engineering; p. (1951) 67,473.
- Barrow-on-Soar, *rural dist. and t.*, Leicester, Eng.; p. (rural dist. 1951) 47,376.
- Barrow Point, most northerly headland in Alaska, N. America.
- Barry, *mun. bor.*, Glamorgan, Wales: "outport" of Cardiff: exports coal; p. (1951) 40,979.
- Barsac, *t.*, Gironde, France: Sauterne wine; p. 2,514.
- Barsi, *t.*, India: cotton, oil seeds; p. 27,600.
- Barstow, *t.*, Cal., U.S.A.: early silver mining and frontier town; p. (1950) 6,135.
- Bar-sur-Aube, *t.*, Aube, France: wine, brandy; p. 4,313.
- Bar-sur-Seine, *t.*, Aube, France; p. 2,742.
- Bartan, *t.*, N. Turkey; p. 3,740.
- Barth, *spl.*, Germany; p. 11,700.
- Bartholomew Bayou, R., Arkansas, U.S.A., length 275 m.
- Bartlesville, *t.*, Oklahoma, U.S.A.; p. (1950) 19,228.
- Barton-upon-Humber, *urb. dist.*, Lindsey, Lincs, Eng.: pottery, bricks, malting; p. (1951) 6,235.
- Bartow, *t.*, Fla., U.S.A.: phosphates, citrus canneries, cigar-making; p. (1950) 8,694.
- Barvas, *par.*, Lewis, Scot.; p. 5,876.
- Basel, *can.*, Switzerland: a. 177 m.; farming, vines, forests; p. (1950) 304,047.
- Basel, *c. cap.*, Basel, Switzerland: head of barge navigation on Rhine; chemicals, ribbons; p. (1950) 183,543.
- Bashee R., C. of Good Hope, S. Africa.
- Bashi I., group in Pacific Ocean; N. of Luzon in the Philippines.
- Bashkir, *Rep.*, R.S.F.S.R., U.S.S.R.; farming, gold, copper, coal; cap. Ufa; p. 2,741,000.
- Basildon, *t.*, Essex, Eng.: in lower Thames valley, 8 m. S.E. of Brentwood: one of "New Towns" designated 1946 to relieve population congestion in London: incorporated S. part of Billericay urb. dist. and N. part of Thurrock urb. dist.; p. (1951) 24,566.
- Basilicata, *dep.*, Italy: wheat, maize, vines, olive oil; a. 3,855 sq. m.; p. (1951) 628,197.
- Basingstoke, *mfg. t., mun. bor.*, N. Hants, Eng.: 50 m. W. London: motor vehicles, farm implements; p. (1951) 16,979.
- Basle, *see* Basel.
- Basque Prov., Spain: comprising three provs., Alava, Guipuzcoa, Vizcaya, where Basque language is spoken and also N. of Pyrenees in France.
- Basra, *prov. or liwa* on Euphrates, Iraq: 60 m. from the sea; p. (1947) 352,039.
- Basra, *t.*, river port, Iraq: dates; p. 206,302.
- Bas-Rhin, *see* Rhin (Bas).
- Bass Rock, in Firth of Forth, opposite Tantallon Castle, E. Lothian, Scot.
- Bass Strait, between Victoria and Tasmania: length about 200 m., breadth about 140 m.
- Bassac, *t.*, Indo-China: on R. Mekong, p. 5,000.
- Bassano, *t.*, Italy: on R. Brenia; vines, olives; majolica; p. 20,527.
- Bassein, *t.*, Burma: on mouth of Irrawaddy R., exports rice; p. (1931) 45,662.
- Bassein, R. Burma.
- Bassenthwaite, *L.*, Cumberland, Eng.: length 4 m., breadth 1 m.; fishing.
- Basses-Alpes, *frontier dep.*, S.E. France: olives, wines; cap. Digne; a. 2,697 sq. m.; p. (1946) 83,354.
- Basses-Pyrénées, *dep.*, France: cattle, sheep, forest; cap. Pau; a. 2,977; p. (1946) 415,797.
- Basse-Terre, *ch. t.*, Guadeloupe, Fr. W. Indies; p. 13,638.
- Basseterre, *cap.*, St. Kitts I., Leeward group; p. 29,142.
- Båstad, *t.*, Sweden; p. 2,168.
- Bastia, *t., spl.*, Corsica, France; p. (1946) 49,327.
- Bastogne, *t.*, Belgium, nr. Luxembourg; p. 4,717.
- Bastrop, *t.*, N. La., U.S.A.: natural gas, paper mills; p. (1950) 12,769.
- Bastrop, *t.*, Texas, U.S.A.: on Colorado R.; lignite; p. 1,976.
- Basutoland, Brit. Terr., S. Africa: at head of Orange R., and enclosed on S. by the Drakensberg Mtns.; mountainous plateau, purely native territory; mainly agricultural, maize, wool, mohair; cap. Maseru; a. 11,716 sq. m.; p. (1946) 563,854 (1,689 Europeans).
- Bata, *ch. t.*, Spanish Guinea, W. Africa; p. 5,000.
- Bataan, *t.*, Philippine Is.
- Batabanó, *t.*, Cuba; p. 5,447.
- Batangas, *t.*, Philippine Is., coconuts.
- Batavia, (now Jakarta), *spl., cap.* of Fed. Govt., Indonesia: on N. est. of Java; commercial centre: coffee, rice sugar indigo, spices, rubber, petroleum; p. (estd. 1940) 533,000.
- Batavia, *c.*, N.Y., U.S.A.: farm implements; p. (1950) 17,799.
- Bataysk, *t.*, Rostov region, U.S.S.R.: rly. junction; grain and cattle; p. 22,825.
- Batesar, *t.*, Agra dist., India: on the R. Jumna: commercial centre.
- Batesville, *t.*, Ark., U.S.A.: marble, manganese; p. (1950) 6,414.
- Batesville, *t.*, Ind., U.S.A.: furniture; p. (1950) 3,194.
- Bath, *t.*, Maine, U.S.A.: on R. Kennebec; p. (1950) 10,644.
- Bath, *c., co. bor.*, Somerset, Eng.: Roman baths, hot springs, medicinal waters; fine Regency architecture; p. (1951) 79,275.
- Bathgate, *burgh.*, West Lothian, Scot.: 6 m. S. of Linlithgow: coal-mining and oil works; iron; p. (1951) 11,290.
- Bathurst, *I.*, off coast of N. Terr., Australia: 80 m. long.
- Bathurst, *t.*, C. of Good Hope, S. Africa.
- Bathurst, *t.*, N.S.W., Australia: gold-mining: centre of pastoral, agr., fruit district: brewing boots and shoes; p. (1947) 11,871.
- Bathurst, *spl., cap.*, Gambia colony, W. Africa: at mouth of Gambia R.: airport; groundnuts; p. (1944) 21,152.
- Bathurst, *t., spl.*, New Brunswick, Canada; p. 3,554.
- Bathurst Is., N.W. Terr., Canada.
- Batina, fertile coastal plain Muscat and Oman, Arabia: produces early-ripening dates famous for flavour.
- Batley, *indust. t., mun. bor.*, W. R. Yorks, Eng. woollens, shoddy; p. (1951) 40,192.
- Batna, *commune*, Algeria; N. Africa: rly. to Biskra; p. 10,622.
- Baton Rouge, *cap.*, Louisiana, U.S.A.: on Missis-



- issippi R.; cotton seed, oil-refining; p. (1950) 125,629.
- Battambang, Cambodia, Fr. Fed. Indo-China: 180 m. N.E. of Pnom-Penh; p. 15,000.
- Battam I., Malay Arch.; 20 m. S. of Singapore.
- Battersea, metropolitan bor., London, Eng.; p. (1951) 117,130.
- Batticaloa, t., cap., E. Prov., Ceylon; p. 12,984.
- Battle, t., rural dist., Sussex, Eng.; battle of Hastings fought here 1066; p. (rural dist. 1951) 30,400.
- Battle Creek, c., Michigan, U.S.A.; on Kalamazoo R.; engineering, cereal products; p. (1950) 48,666.
- Battleford, N., t., Canada; at junction of Battle R. with Saskatchewan R.; mixed farming; p. (1951) 7,489.
- Battle Harbour, nr. Strait of Belle I., Labrador.
- Battle Mountain, t., Nev., U.S.A.; copper mines.
- Batu Gajah, t., Malaya; in valley Kinta R.; tin mines; residtl.; p. 6,759.
- Batu, I., E. Indies, Indonesia.
- Batumi, t., *spt.*, U.S.S.R.; oil, silk, tea; p. (1939) 70,807.
- Baturite, t., Brazil; p. 5,320.
- Bauchi, t., central Nigeria; centre of impt. tin-mining a.; p. 10,000.
- Baud, t., Orissa, India; on R. Mahanadi.
- Bauld, O., northernmost part of Newfoundland, N. America.
- Baures, R., E. Bolivia; flowing from L. Guazumire to R. Guapore; length 300 m.
- Bau Stavanica, t., Czechoslovakia; on R. Hron.
- Bautzen, t., Germany; cath.; machinery, woollens; p. 41,900.
- Bauya, t., Sierra Leone, Brit. W. Africa; rly. junction.
- Bavaria, Land, Germany; hilly, forested; ch. rivers; Danube, Main, Inn, Rhine; ch. industries; agr., dairying, rye, oats, hops, sugar-beet, brewing, glass, sugar, toys, chemicals, jewellery; cap. Munich (q.v.); a. 27,112 sq. m.; p. (1950) 9,126,010.
- Bavarian Alps, *mnts.*, Germany.
- Bawdwin, t., Burma; wolfram, lead, zinc, silver, rubies.
- Bawtry, mkt. t., W.R. Yorks, Eng.; 8 m. S. of Doncaster.
- Baxley, t., S.E. Ga., U.S.A.; pecan nuts, tobacco; p. (1950) 3,234.
- Baxter Springs, t., S.E. Kan., U.S.A.; lead and zinc mines; p. (1950) 4,647.
- Bayamon, t., Puerto Rico, W. Indies; fruit, tobacco, sugar, coffee; p. 14,596.
- Baybay, t., Leyte, Philippine Is.; impt. commercial port; p. 42,526.
- Bayburt, t., Turkey; p. 9,473.
- Bay City, mfg. t., Mich., U.S.A.; on Saginaw R., 108 m. N.W. of Detroit; fishing, chemicals, beet-sugar; p. (1950) 52,523.
- Bay City, t., Texas, U.S.A.; sulphur, oil; p. (1950) 9,427.
- Bayeux, t., Calvados, France; cath., museum, Bayeux tapestry; p. (1946) 10,246.
- Bay Is., group G. of Honduras, Central America; largest, Ruatan.
- Bay of Islands, inlet and harbour on N.I., New Zealand.
- Bayombong, t., Philippine Is., p. 14,700.
- Bayonne, fort. t., Basses-Pyrénées, S.W. France; cath.; noted for fine hams, invention of bayonet; aircraft; p. (1946) 32,620.
- Bayonne, t., N.J., U.S.A.; 6 m. from New York; chemicals, oil-refining; p. (1950) 77,203.
- Bayport, t., Minn., U.S.A.; on St. Croix R.; state prison; p. (1950) 2,502.
- Bayreuth, c., Bavaria, S. Germany; home of Wagner; famous for musical festivals in magnificent national theatre; textiles; p. 55,612.
- Baytown, t., S.E. Texas, U.S.A.; oil wells, toluene factory; p. (1950) 22,983.
- Baza, t., S. Spain; W. of Lorca, p. 20,772.
- Beachy Head, 575 ft. high, on Sussex coast, loftiest headland in S. Eng.
- Beaconsfield, t., Tasmania, Australia; on W. of estuary of Tamar R.; tin mining.
- Beaconsfield, urb. dist., Bucks., Eng.; residtl.; p. (1951) 7,909.
- Beaconsfield, t., C. of Good Hope, S. Africa; diamonds.
- Bear I., Arctic Ocean; 315 m. S. of Spitzbergen.
- Bear L., on border of Idaho and Utah, U.S.A.
- Bear L., Great, N.W. Terr. Canada; outlet to Mackenzie R. through Great Bear R.; a. 14,000 sq. m.
- Bearn, old province, now Basses-Pyrénées, France.
- Beas (Bias) R., Punjab, Pakistan; trib. of Sutlej R.; one of the "five rivers."
- Beas de Segura, t., Spain; wine, oil, fruits, flax; p. 14,953.
- Beatrice, Neb., U.S.A.; health resort on Big Blue R.; p. (1950) 11,813.
- Beattock, pass, S. Uplands, Scot.; gives access from valley of R. Clyde to R. Annan; used by main W. est. rly. route from Carlisle to Glasgow and Edinburgh; alt. 1,014 ft.
- Beaucaire, t., Gard, France; noted fair; p. (1946) 10,059.
- Beauce, natural division ("pays"), Central France; low, level, plateau of limestone S.W. of Paris and R. Seine; arid, few surface streams; thin layer of loam (limon) permits agriculture; impt. wheat-growing area; population mainly grouped in lge. vills.
- Beaucourt, t., France; copper, iron, mnfs.; p. 4,259.
- Beaufort, t., S.C., U.S.A.; tourists, mkt. gardens, canneries, shrimps, oysters, phosphates; p. (1950) 5,081.
- Beaufort West, t., C. of Good Hope, S. Africa; sheep, karakul; p. 18,424.
- Beauharnois, t., Quebec, Canada; p. 3,550.
- Beaujolais, France; wine-growing dist.
- Beaulieu, par., Hants, Eng.; on Beaulieu R.; yachting.
- Beaulieu, t., Corrèze, France.
- Beaulieu, R., Inverness, Scot.; flows to Beaulie Loch.
- Beaulieu, t., Inverness, Scot.; on Beaulie R., p. 890.
- Beaumaris, mun. bor., wal. pl. cap. Anglesey, N. Wales; on Menai Strait; cas., ruins; p. (1951) 2,128.
- Beaumont, c., E. Texas, U.S.A.; lumbering, petroleum; p. (1950) 94,014.
- Beaune, t., Côte d'Or, France; wines, casks, farm implements; p. (1946) 11,990.
- Beauvais, t., cap., Oise, France; cath.; Gobelin tapestry; p. (1946) 23,156.
- Beaver, R., Penns., Ohio, U.S.A.; rises in Alleghany Plateau, flows N. towards L. Erie, turns S.E. into R. Ohio just below Pittsburgh; valley provides easiest route from Pittsburgh to L. Erie pts., contains many steel-making ts., Youngstown, Newcastle, Warren; length, 130 m.
- Beaver Dam, c., Wisconsin, U.S.A.; summer resort on L.; p. (1950) 11,867.
- Beaver Falls, t., Pennsylvania, U.S.A.; machinery, pottery, coal, natural gas; p. (1950) 17,375.
- Beaver Meadows, bor., E. Penns., U.S.A.; coal; p. 2,030.
- Beawar, t., India; cotton; p. 36,700.
- Bebington, mun. bor., Cheshire, Eng.; p. (1951) 47,742.
- Bebra, t., Hessen, Germany; on R. Fulda.
- Beccles, mun. bor., Suffolk, Eng.; p. (1951) 6,869.
- Bechuanaaland, Brit. Protectorate, S.W. Africa; stretches from Orange R. to Zambesi R., and merges westward into the Kalahari desert; comprises various tribes of which the ch. is the Bamangwato; cap. Serowe; cattle rearing. Administrative centre, Mafeking; a. approx. 275,000 sq. m.; p. (1946) 296,310 (2,379 Europeans).
- Beckenharn, mun. bor., Kent, Eng.; residtl. sub. of London; p. (1951) 74,834.
- Beckley, c., S.W. Va., U.S.A.; coal; p. (1950) 19,397.
- Beckum, t., Westphalia, Germany; mfg. c.; p. 10,660.
- Bedale, mkt. t., N.R. Yorks, Eng.; at N. end of Vale of York.
- Beddle, par., Caernarvon, Wales; resort; slate.
- Beddington and Wallington, mun. bor., Surrey, Eng., nr. Croydon; p. (1951) 32,751.
- Bedford, mun. bor., Beds, Eng.; on R. Ouse, 50 m. N. of London; mnfs. motor vehicles, light engineering products, farm implements; p. (1951) 53,065.
- Bedfordshire, S. Midland co., Eng.; a. 473 sq. m.; co. t. Bedford (q.v.); corn, market gardening, straw plaiting, lace, farm implements; a. 473 sq. m.; p. (1951) 311,844.
- Bedford, t., Indiana, U.S.A.; p. (1950) 12,562.
- Bedford, t., Ohio, U.S.A.; p. (1950) 9,105.

- Bedford Level, once over 400,000 acres of peat marsh in S. Fenland; first successful draining initiated by Earl of Bedford in 1634.
- Bedlington, *urb. dist.*, Northumberland, Eng.; iron, coal; *p.* (1951) 28,836.
- Bedloe's I., or Liberty I., N.Y. harbour, U.S.A.; on which statue of Liberty stands.
- Bedminster, *t.*, Somerset, Eng.; sub. of Bristol.
- Bedourie, *t.*, Queensland, Australia.
- Bedrashem, *t.*, Egypt, N.E. Africa; on R. Nile.
- Bedwas and Machen, *urb. dist.*, Monmouth, Eng.; *p.* (1951) 8,712.
- Bedwelly, *urb. dist.*, Welsh Border, Monmouth, Eng.; coal, iron; *p.* (1951) 28,826.
- Bedworth, *urb. dist.*, Warwick, Eng.; coal-mining; *p.* (1951) 24,366.
- Bedzin, *commune*, S. Poland; coal, iron, steel, sugar beet; *p.* 50,721.
- Beechworth, *t.*, Victoria, Australia; gold, pastoral and agr.
- Beechy Point, *C.*, N.E. coast Alaska, N. America.
- Beemanning Mtn., highest peak Blue Mtns., N.S.W., Australia; alt. 4,100 ft.
- Beenleigh, *t.*, Queensland, Australia; 24 m. S. Brisbane.
- Beerberg, *highest mtn.*, Thüringer Wald, Germany; alt. 3,266 ft.
- Beernem, *t.*, W. Flanders, Belgium.
- Beersheba, *t.*, Israel; centre for development of the Negev; *p.* (1953) over 20,000.
- Beeskow, *t.*, Germany; on R. Spree.
- Beeston and Stapleford, *urb. dist.*, Nottingham, Eng.; *p.* (1951) 49,849.
- Beeville, *c.*, Texas, U.S.A.; mnfs. oilfield equipment; oil wells; *p.* (1950) 9,348.
- Beg, *L.*, Antrim, N. Ireland.
- Bega, *t.*, N.S.W., Australia; butter, cheese, and maize; tourist resort; *p.* 2,856.
- Bega, *R.*, S. Hungary; canalised trib. to R. Tisza.
- Bègles, *t.*, Gironde, France; mftg.; *p.* (1946) 22,590.
- Beheira, *prov.*, Lower Egypt, N.E. Africa; in delta of Nile R.; cotton; a. 1,639 sq. m.; *p.* (1947) 1,245,943.
- Behistun, *t.*, Iraq; in ruins; monument of Darius the Great.
- Beilan, *t.*, *mtn. pass*, Syria-S.W. Asia; E. of G. of Iskenderun; ancient Amanus of "Syrian Gates."
- Beilngries, *t.*, Bavaria, Germany; on Ludwig's canal.
- Beilstein, *t.*, Germany; on R. Moselle.
- Beira, *spl., cap.*, *prov.* Manica and Sofala, Mozambique; airport; rly. runs inland to Salisbury (N. Rhodesia) and Blantyre (Nyasaland); exports sugar, maize, cotton; *p.* 13,970.
- Beira Alta, *prov.*, Portugal; a. 3,682 sq. m.; *p.* (1940) 662,616.
- Beira Baixa, *prov.*, Portugal; a. 2,897 sq. m.; *p.* (1940) 334,788.
- Beira Litoral, *prov.*, Portugal; a. 2,908 sq. m.; *p.* (1940) 896,719.
- Beirut, *cap.*, Lebanon, S.W. Asia; most impt. *spl.* Syria and Lebanon; ancient historic *t.*, now busy shipping and mercantile centre; silk, wool, fruits; *p.* (estd. 1950) 247,000.
- Beitbridge, *t.*, S. Rhodesia; on Limpopo R.
- Beit el Faki, *t.*, Yemen, Arabia; coffee.
- Beith, *par.*, N. Ayr, Scot.; industr.; *p.* (1951) 6,908.
- Beit Jala, *t.*, Jordan, S.W. Asia; *p.* 5,000.
- Beit Jibrin, *t.*, central Israel, S.W. Asia; *p.* 1,000.
- Beja, *dist.*, Portugal; pig-breeding dist.; olive oil, pottery; cath.; *p.* (1950) 288,411.
- Bejar, *t.*, Spain; cloth; *p.* 12,875.
- Bekes, *t.*, Hungary; wheat; *p.* 29,283.
- Békéscsaba, *t.*, Hungary; milling; rly. junction; *p.* 52,404.
- Bela, *t.*, Baluchistan, Pakistan; *p.* 4,000.
- Bela Crkva, *t.*, Yugoslavia; *p.* 9,373.
- Belalcázar, *t.*, Spain; woollen mnfs.; *p.* 9,471.
- Belaya Tserkov, *t.*, N. Ukraine, U.S.S.R.; agr. and commercial centre; *p.* (1939) 42,000.
- Belbeis, *t.*, Egypt, N.E. Africa; agr. centre on W. edge of cultivated Nile delta.
- Belcher Is., two sm. groups in Hudson Bay, N.W. Terr., Canada.
- Belding, *c.*, Mich., U.S.A.; silk mills; *p.* (1950) 4,436.
- Belem, *sub.* of Lisbon, Portugal; fine church, monastery.
- Belém, *cap.*, Pará st., Brazil; cath., bishop's palace; arsenal, museum; coaling stn., rubber, rice, sugar; *p.* (1950) 260,608.
- Belen, *t.*, Catamarca, Argentina.
- Bélep Arch., about 7 m. N.E. of New Caledonia.
- Belfast, *spl., co. bor.*, *cap.* N. Ireland; Antrim (and partly Down), at head of Belfast Lough; linen mnf., shipbuilding, distilling, aircraft; univ.; Houses of Parliament, Stormont Cas.; *p.* (1951) 443,670.
- Belfast, *t.*, Maine, U.S.A.; *p.* (1950) 5,960.
- Belfodio, *t.*, Ethiopia; nr. border with Sudan; *p.* 1,000.
- Belford, *rural dist.*, Northumberland, Eng.; *p.* (1951) 5,1580.
- Belfort, *t.*, Haut-Rhin, France; between Jura and the Vosges; strongly fortified; cotton, brewing machinery; *p.* (1946) 37,387.
- Belfort, *dep.*, France; *cht.*, Belfort; a. 235 sq. m.; *p.* (1946) 86,648.
- Belgaum, *t.*, Bombay, India; cotton; *p.* 61,051.
- Belgian Congo, *col.*, Central Africa; basin of Congo; climate, uniformly hot, heavy rains, tropical forests; races: Bantu origin; agr., palm oil, cotton, rice, copal, coffee, ivory, rubber; minerals: copper, gold, diamonds, tin, uranium; communications: mainly river, some rail; *cap.* Leopoldville; *ch. ts.*: Boma, Stanleyville, Elisabethville; a. (estd.) 904,757 sq. m.; *p.* (1947) 10,717,945 (Bantu origin), 43,408 (white).
- Belgium, *cty.*, W. Europe; climate, temperate; *ch. rivers*: Scheldt, Meuse; races: Flemish, Walloon; languages: Flemish, French; religion: Roman Catholic; *ch. industries*: agr., cereals, sugar-beet, potatoes, cattle, pigs, horses; minerals: coal; mnfs.: iron and steel machinery, engineering, metals, shipbuilding, textiles, brewing, distilling; exports mnf. goods; communications: rail, road, canal; *cap.* Brussels; *ch. port*, Antwerp; univ. at Brussels, Ghent, Liège, Louvain; a., 11,755 sq. m.; *p.* (1947) 8,512,195.
- Belgorod, *t.*, Kursk, U.S.S.R.; chalk, lumber, soap, leather; *p.* 26,000.
- Belgorod, Dnestrovski, *t.*, Ukraine, U.S.S.R.; mouth of Dniester R.; wine, wool, fruit.
- Belgrade (Beograd), *c. cap.*, Serbia, Yugoslavia; at junc. of Save and Danube; univ.; mnfs. tobacco, woollens, aircraft; *p.* (1948) 359,114.
- Belhaven, *t.*, N.C., U.S.A.; on Pamlico Sound; fishing, lumbering; *p.* 2,360.
- Belitong or Billiton, *I.* between Sumatra and Borneo, Indonesia; a. 1,866 sq. m.; *p.* (1930) 73,429.
- Belize, *t.*, *cap.*, British Honduras, Central America; mahogany, dyewoods, bananas; *p.* (1946) 21,886.
- Bell, *I.*, Newfoundland, E. Canada; in Conception Bay, 20 m. N.W. of St. John's; impt. Wabana iron-ore deposits outcrop on N.W. cst., smelted on Pictou coalfield, Nova Scotia; a. 12 sq. m.
- Bell, *R.*, Quebec, Canada; flows N. into James Bay.
- Bell, *t.*, Cal., U.S.A.; residtl. c. 5 m. S. of Los Angeles; *p.* (1950) 15,430.
- Bell Rock, Scot.; famous rock and lighthouse 12 m. S.E. of Arbroath.
- Bellagio, *t.*, Italy; on L. Como; resort.
- Bellaire, *mfw. t.*, Ohio, U.S.A.; *p.* (1950) 12,573.
- Bellary, *fort.*, *c.*, Madras, India; cotton; *p.* 56,148.
- Belleek, *par. and vil.*, Fermanagh, N. Ireland; on Erne R.; china; *p.* 1,300.
- Bellefontaine, *t.*, Ohio, U.S.A.; agr. centre, light mnfs.; holiday resort; *p.* (1950) 10,232.
- Bellefonte, *bor.*, Penns., U.S.A.; limestone quarries; *p.* (1950) 5,651.
- Belle Fourche, *t.*, S.D., U.S.A.; on Belle Fourche R.; beet sugar, flour, bricks, dairy produce; *p.* (1950) 3,540.
- Bellegarde, *fort* on Spanish frontier, France.
- Belle Ile, *I.* off S. coast of Brittany, France.
- Belle Isle Strait, N. America; between Newfoundland and Labrador, on N. shipping route to Canada from Europe.
- Belenden Ker Hills, *mtn. range*, N. Queensland, Australia. [*p.* 15,710.]
- Belleville, *t.*, Ontario, Canada; dairying, fruit.
- Belleville, *t.*, Ill., U.S.A.; brewing, iron founding, shoes, flour; *p.* (1950) 32,721.
- Belleville, *t.*, N.J., U.S.A.; *p.* (1950) 32,019.
- Bellevue, *t.*, Ohio, U.S.A.; limestone, farm implements, car parts; *p.* (1950) 6,906.
- Bellevue, *t.*, Penns., U.S.A.; *p.* (1950) 11,604.
- Bellevue, *t.*, Queensland, Australia; goldfields.



- Belley, *t.*, France; p. 4,739.
- Bellingham, *rural dist.*, Hexham, Northumberland, Eng.; coal; p. (1951) 5,350.
- Bellingham, *t., spt.*, Washington, U.S.A.; saw-mills, paper-mills, salmon canning; p. (1950) 34,112.
- Bellingshausen, S. Antarctica.
- Belinzona, *t.*, Switzerland; on R. Ticino nr. Lugano; p. (1941) 10,943.
- Bellet Strait, channel on Arctic coast, N. America; separates Boothia and N. Somerset.
- Bellows Falls, *t.*, Vt., U.S.A., on Connecticut, R.; paper, farm implements; p. (1950) 3,831.
- Bellshill, *t.*, Lanark, Scot.; mining.
- Belluno *c.*, Venetia, N. Italy; fine cath.; silk; p. (1951) 29,138.
- Belluno, *prov.*, Venetia, N. Italy; a. 1,278 sq. m.; p. (1951) 236,732.
- Belmar, *t.*, N.J., U.S.A.; seaside resort, fishing; p. (1950) 4,636.
- Belmez, *t.*, Córdoba prov., S. Spain; on N. flank of Sierra Morena, 33 m. N.W. of Córdoba; centre of sm. coalfield.
- Belmont, *t.*, C. of Good Hope, 56 m. S. of Kimberley, S. Africa.
- Belmont, *t.*, Mass., U.S.A.; p. (1950) 27,381.
- Belmont, *t.*, N.C., U.S.A.; p. (1950) 5,330.
- Belmonte, *spt.*, Brazil; N. of Porto Seguro; p. 6,413.
- Belmullet, *vil.*, Mayo, Ireland; fish.
- Belo Horizonte, *t., cap.*, Minas Gerais st., Brazil; gold, iron, manganese; diamond-cutting; p. (1950) 360,313.
- Beloit, *c.*, Wisconsin, U.S.A.; on Rock R., diesel engines, farm implements; p. (1950) 29,590.
- Beloit, *c.*, Kan., U.S.A.; on Solomon R.; tr. centre for agr. region; p. (1950) 4,035.
- Belomorsk, *spt.*, Karelia, U.S.S.R.; on White Sea; exports lumber.
- Belper, *urb. dist.*, Derby, Eng.; hosiery, lace; p. (1951) 15,716.
- Belt, Great, strait, Denmark; separates Fyn I. from Zealand I.; deep-water channel too winding for easy navigation; crossed by train ferry at its narrowest point (16 m.) between Nyborg and Korsør; approx. length 37 m.
- Belt, Little, strait, Denmark; separates Fyn I. from Jutland; too shallow for large ships; bridged by road-railway bridge nr. Fredericia; approx. length 30 m.
- Belterra, *dist.*, Para st., N.E. Brazil; on R. Tapajoz, 30 m. S. of confluence with R. Amazon at Santarém; experimental Ford rubber plantations; a. 950 sq. m.; p. (with Fordlandia) 12,000.
- Beltsy, *t.*, Moldavia, U.S.S.R.; on trib. of Dniester R.; p. (1939) 30,667.
- Belturbet, *t., urb. dist.*, Cavan, Ireland; on R. Erne; distilling; p. 1,179.
- Belvedere, *t.*, Marches, Italy; W. of Ancona; p. 3,190.
- Belvedere, *t.*, Italy; 32 m. N.W. of Cosenza; p. 7,550.
- Belvidere, *t.*, N.J., U.S.A.; p. 2,060.
- Belbridge, *vil.*, I. of Wight, Eng.; resort, yachting; p. 1,975 (par.).
- Bemidji, *t.*, Minn., U.S.A.; lumber, cement, bricks, woollen goods; resort; p. (1950) 10,001.
- Ben Alder, *mtn.*, Grampian Range, Scot.; nr. Loch Eriach; alt. 3,757 ft.
- Ben Arthur, *mtn.*, Argyll, Scot.; alt. 2,891 ft.
- Ben Attow, *mtn.*, Ross and Inverness, Scot.; alt. 3,383 ft.
- Ben Avon, *mtn.*, Aberdeen, Scot.; alt. 3,334 ft.
- Ben Cruachan, *mtn.*, Argyll, Scot.; nr. Oban, alt. 3,689 ft.
- Ben Doran, or Doireann, *mtn.*, Argyll, Scot.; alt. 3,523 ft.
- Ben Hope, *mtn.*, Sutherland, Scot.; alt. 3,040 ft.
- Ben Lawers, *mtn.*, Perth, Scot.; by Loch Tay; alt. 3,984 ft.
- Ben Ledi, *mtn.*, Perth, Scot.; N.W. of Callander; alt. 2,875 ft.
- Ben Lomond, *mtn.*, Stirling, Scot.; E. side of L. Lomond; alt. 3,192 ft.
- Ben Lomond, *mtn.*, New England range, N.S.W., Australia; alt. 5,000 ft.
- Ben Lomond, *mtn.*, Tasmania, Australia; alt. 5,010 ft.
- Ben Macdhui, *mtn.*, S.W. Aberdeen, Scot.; Cairngorm group; second highest peak in Brit. Is.; alt. 4,296 ft.
- Ben More, *mtn.*, S.W. Perth, Scot.; 10 m. W. of Loch Earn; alt. 3,843 ft.; also mtns. in Sutherland, the Hebrides, and the I. of Mull.
- Ben Nevis, *mtn.*, Inverness, Scot.; at Lochiel; highest peak in Brit. Isles, alt. 4,406 ft.
- Ben Nevis, *mtn.*, Otago, New Zealand; alt. 9,125 ft.
- Ben Nevis, *mtn.*, Cornwall, Tasmania, Australia; alt. 3,910 ft.
- Ben Venne, *mtn.*, nr. Loch Katrine, Perth, Scot.; alt. 2,393 ft.
- Ben Vorlich, *mtn.*, Perth, Scot.; alt. 3,224 ft.
- Ben Wyvis, *mtn.*, Ross, Scot.; nr. Dingwall; alt. 3,429 ft.
- Benalla, *t., dist.*, Victoria, Australia; pastoral and agr.; p. 3,965.
- Benares, *t.*, India; on Ganges, Hindu holy city; annual pilgrimage; temples, mosques, palaces; brocade, gold, silver, lacquer; p. (1951) 355,777.
- Benares, *st.*, on both sides of Ganges, India; a. 875 sq. m.; p. (1941) 391,165.
- Benbecula I., Outer Hebrides, Inverness, Scot.; a. 36 sq. m.
- Benbecula Sound, passage between the I. and S. Uist.
- Benét, *t.*, Oregon, U.S.A.; p. (1950) 11,409.
- Bendery, Moldavia, U.S.S.R.; timber, sawmills; p. 25,000.
- Bendigo, *c.*, Victoria, Australia; gold-mining dist., rich farming and wine-producing terr.; p. (1947) 30,779.
- Benevento, *prov.*, Italy; a. 819 sq. m., containing many Roman remains; p. (1951) 331,647.
- Benevento, *c.*, Italy; cath.; leather; p. (1951) 47,220.
- Benfleet, *urb. dist.*, Essex, Eng.; p. (1951) 19,831.
- Bengal, former prov., split into W. Bengal (India) (a. 29,476 sq. m.) and E. Bengal (Pakistan) (a. 54,501 sq. m.); Calcutta is the chief city, cap. of W.; Dacca is cap. of E. alluvial plain; ch. rivers: Ganges, Brahmaputra; ch. industries: agr., rice, jute, sugarcane, oil seeds; minerals: coal, iron; mnfs.: cottons, silks, gunny bags; p. (W. Bengal, 1951) 24,786,633; (E. Bengal, 1951) 42,119,000.
- Bengal, Bay of, part of Indian Ocean washing E. shores of India and W. shores of the Indo-Chinese Peninsula; receives waters of Rs. Krishna, Ganges, Brahmaputra, Irrawaddy.
- Benghazi, *spt.*, Libya, N. Africa; on the G. of Sidra; joint cap. with Tripoli; starting-point for caravans to Egypt and the interior; cereals; p. (estd. 1951) 62,300.
- Bengore Head, *c.*, Antrim, N. coast Ireland; E. of Giant's Causeway.
- Benguela, *cap. c.*, Angola, S.W. Africa; exports rubber; rly. runs inland to Katanga prov., Belgian Congo and N. Rhodesia; p. 17,696.
- Benha, *t.*, Egypt; *impt. mkt. t.*, rail and road centre in heart of cultivated a. of Nile delta.
- Benholm, *par.*, Kincardine, Scot.; ancient cas.; p. (1951) 1,028.
- Beni, *dep.*, N.E. Bolivia, S. America; cap. Trinidad; a. 93,354 sq. m.; p. (1950) 119,770.
- Benicarlo, *spt.*, Valencia, Spain; on Mediterranean cst. 80 m. N.E. of Valencia; wines; p. 9,598.
- Benin, former kingdom, Upper Guinea, W. Africa; traversed by Benue R.; up to 1897 under savage rule, but now incorporated in Nigeria, under British administration; ch. t. Benin.
- Benin, *t.*, Nigeria; Brit. W. Africa; palm oil, mahogany; p. 8,530.
- Benin, *Eight of*, part of G. of Guinea, W. Africa.
- Beni Suef, *t.*, Egypt; on Nile, 60 m. S. of Cairo; carpets, cotton; p. (1947) 57,464.
- Benkulen, *spt.*, Sumatra, Indonesia; p. 13,418.
- Benmore, *c.*, Antrim, north-east point of N. Ireland; alt. 636 ft.
- Bennettsville, *t.*, S.C., U.S.A.; yarn, tyre linings, lumber; p. (1950) 5,140.
- Bennington, *t.*, Vt., U.S.A.; p. (1950) 8,002.
- Benoni, *t.*, Transvaal, S. Africa; p. (1946) 76,925 (inc. 24,366 Europeans).
- Benrath, *t.*, Germany; on Rhine R.; r. pt. and industr. t.; p. 25,929.
- Bensberg, *t.*, Germany; 10 m. from Cologne; iron mining, foundries; p. 12,632.
- Bentang (Bintang) *t.*, Borneo, Indonesia.
- Bentley with Arksey, *urb. dist.*, W.R. Yorks, Eng.; p. (1951) 19,826.
- Benton, *t.*, Ark., U.S.A.; p. (1950) 6,277.
- Benton, *t.*, Ill., U.S.A.; p. (1950) 7,848.

- Benton, t., Ky., U.S.A.; tobacco, maize, straw-berries; p. 1,906.
- Benton Harbor, t., Michigan, U.S.A.; midway along E. cst. L. Michigan; p. (1950) 18,769.
- Benne, R., W. Africa; chief trib. of Niger.
- Benwell, t., Northumberland, Eng.; sub. of Newcastle.
- Ben-y-Gloe, mtn., Glen Tilt, Perth, Scot.; alt. 3,871 ft.
- Beograd, see Belgrade.
- Benar, see Madhya Pradesh.
- Berati, prefecture, Albania; p. (1930) 142,616.
- Berati, c., Albania; p. (1930) 10,403.
- Berbera, *spl., cap.*, Brit. Somaliland Protectorate, N.E. Africa; on G. of Aden; exports gum, raisins, skins; p. in hot season about 15,000, in cold season about 30,000.
- Berbice, co., Brit. Guiana, S. America; bauxite; p. (1946) 96,623.
- Berchem, commune, Belgium; sub. of Antwerp; p. 45,576.
- Berdichev, see Ossipevsk.
- Berck-sur-Mer, *wat. pl.*, France, on Eng. Channel.
- Berdiansk, see Osipenko.
- Berea, t., N. Ohio, U.S.A.; sandstone quarries, building blocks; p. (1950) 12,051.
- Bere Regis, *mkt. t.*, Dorset, Eng.
- Beresford, t., S.D., U.S.A.; dairy farms, cattle, poultry, wheat; p. 1,642.
- Berezina, R., U.S.S.R.; trib. Dnieper; French disaster on the retreat from Moscow; length 350 m.
- Berezni, t., Urals, U.S.S.R.; chemicals; p. (1939) 63,575.
- Berezov, t., U.S.S.R.; gold.
- Berga, t., Spain; medieval castle.
- Bergama, t., Turkey; ancient Pergamos, ruins; p. 16,351.
- Bergamo, c., Lombardy, Italy; 34 m. N.E. Milan; fine cath. and academy; silk industry; p. (1951) 103,164.
- Bergeford, t., Germany; on Elbe; glass, leather; p. 19,962.
- Bergen, *spl.*, W. coast Norway; most important commercial port in kingdom; shipping, fishing; p. (1950) 112,845.
- Bergensfield, t., N.J., U.S.A.; clothing, light mnfs., pianos; p. (1950) 17,647.
- Bergen-op-Zoom, t., Netherlands; sugar-beet; p. (1951) 30,326.
- Bergerac, t., Dordogne, France; on R. Dordogne; grain, wine; ancient Huguenot stronghold; p. (1946) 22,525.
- Berhampur, t., Orissa state, India; p. 25,000.
- Bering I., most W. of the Aleutian Is., N. America.
- Bering Sea, part of N. Pacific Ocean between Aleutian Is. and Bering Strait, upwards of 1,800 sq. m.; fishing.
- Bering Strait, narrow sea which separates Asia from N. America; 36 m. wide at narrowest part.
- Bering Current (Okhotsk Current, or Oyashio), ocean current, N. Pac. Oc.; flows through Bering Strait from Arctic, along E. cst. of Kamchatka and Japanese Is. Hokkaido, Honshu; relatively cold; moderate summer temperatures along cst. causes fogs.
- Berislav, t., Ukraine, U.S.S.R.; p. 10,000.
- Berja, t., Almeria, Spain; wine and fruit; p. 12,476.
- Berkeley, t., Gloucester, Eng.; nr. R. Severn, 2 m. S. of Sharpness; p. 670.
- Berkeley, c., California, U.S.A.; univ.; p. (1950) 113,805.
- Berkeley Canal, Gloucester, Eng.; connects Sharpness on S. side Severn estuary with Gloucester; navigable only for small coasting vessels; opened 1827; length 15 m., depth 11 ft.
- Berkhamstead (Berkhamsted), *urb. dist.*, Herts, Eng.; chemicals, wooden ware; p. (1951) 10,777.
- Berkley, t., Mich., U.S.A.; sub. of Detroit; p. (1950) 17,931.
- Berkshire, co., Eng.; downland including Inkpen Beacon, White Horse Hills, drained by Thames and tribs., Kennet, Cole, Pang; wooded; agr.; oats, dairying; biscuits; co. t. Reading; a. 725 sq. m.; p. (1951) 402,939.
- Berlad, t., Romania; candles, soap; horse fair; p. 25,000.
- Berlin, c., former cap. of Germany; on R. Spree; fourth c. on continent of Europe for population; at present under military control of United States, Great Britain, France and U.S.S.R.; total a. 890 sq. km.; mnfs.: textiles, machinery, pottery, beer; publishing and printing; p. (1950) 3,336,475. (of these more than two millions live in West Berlin).
- Berlin, t., New Hampshire, U.S.A.; p. (1950) 16,615.
- Berlin, t., Wisconsin, U.S.A.; p. (1950) 4,693.
- Bernejo, t., Tarija dep., Bolivia; oil.
- Bermejo R., trib. R. Parana, Argentina.
- Bermeo, *spl.*, Spain; nr. Bilbao, Bay of Biscay; p. 11,739.
- Bermondsey, *met. bor.*, London, Eng.; chiefly occupied by tanneries, wharves, wool stores, warehouses; p. (1951) 60,661.
- Bermuda, Brit. group coral islands (360 in number) N. Atlantic; about 600 miles E. of S. Carolina, U.S.A.; total area 21 sq. m.; Hamilton, on Long Island, is the ch. t.; British and U.S. air and naval stations; favourite winter resort for Americans; potatoes, onions, lily bulbs; bananas; p. (of group) (1952) 38,500, of whom two-thirds are coloured people.
- Bermudez, asphalt lake, Venezuela, S. America; a. 2 sq. m.
- Bernard, Great St., one of the Alps in the S. of the Valais, Switzerland; highest point 11,116 ft.; height of mtn. pass between Italy and Switzerland, 8,108 ft.; famous hospice for travellers in monastery on mtn.
- Bernard, Little St., one of Graian Alps, Savoy, S. of Mt. Blanc, France; pass traversed by Hannibal 218 B.C.
- Berna, t., Germany; p. 15,300.
- Bernay, t., Eure, France; horse fair; p. 7,587.
- Bernburg, t., Germany; chemicals, machinery; p. 42,000.
- Berne, c., *cap.*, Switzerland; on Aar R.; cath., univ.; textiles; p. (1950) 146,499.
- Berne, *can.*, Switzerland; fertile valleys, dairying; watches, wood carving; tourist district; a. 2,657 sq. m.; p. (1950) 801,943.
- Bernese Oberland, Switzerland; Alpine region; ch. peaks: Finsteraarhorn, Jungfrau; resorts: Interlaken, Grindelwald; summer and winter centres.
- Bernina, *pass and mtn.*, Switzerland; alt. 13,300 ft.
- Beroun, t., Bohemia, Czechoslovakia; textiles, sugar refining, brewing, cement; p. 12,345.
- Berry, t., N.S.W., Australia; dairying.
- Bertinoro, t., Forlì, Italy; famous wines.
- Berwick, maritime co., S.E. of Scot.; co. t., Duns; hilly; agr.; sheep, cattle; woollens, fishing, paper; a. 457 sq. m.; p. (1951) 25,060.
- Berwick-on-Tweed, *spl., mun. bor.*, Northumberland, Eng.; fishing; p. (including Tweed-mouth and Spittal) (1951) 12,550.
- Berwyn, t., Ill., U.S.A.; p. (1950) 51,280.
- Berwyn Mtns., range mid-Wales; alt. of highest peak 2,716 ft.
- Besaçon, t., Doubs, France; observatory; univ.; farm implements, textiles; watch- and clock-making; p. (1946) 63,803.
- Besikias, *dist. and sub.* of Istanbul, Turkey; p. 55,007.
- Beskids, W. and E., *mtn. range*, Poland, Czechoslovakia, E. Europe; northern range of Carpathian mtn. system, seldom exceeds alt. 4,000 ft., many passes; forested; length 200 m.
- Bessarabia, *terr.*, ceded to U.S.S.R. by Romania, 1940, and now part of Moldavian S.S.R.; agr. region.
- Bessbrooke, t., Armagh, N. Ireland; on Newry Canal; p. (1951) 2,886.
- Bessèges, t., Gard, France; coal-mining dist.; p. 7,962.
- Bessemer, t., Ala., U.S.A.; iron and steel; p. (1950) 28,445.
- Bessemer, t., Mich., U.S.A.; iron; p. (1950) 3,509.
- Besshi, see Niihama.
- Besuki, *mountainous prov.*, E. Java, Indonesia.
- Betanzos, t., Spain; p. 10,504.
- Bethany, *vil.* on Mt. of Olives 2 m. Jerusalem, now Elzariya.
- Bethany, *missionary stn.*, S.W. Africa; p. 554.
- Bethel, t., now Beitin (ruined), Israel, S.W. Asia; 10 m. N. Jerusalem.
- Bethel, t., C. of Good Hope, S. Africa.
- Bethelsdorp, t., C. of Good Hope, S. Africa.
- Bethesda, *urb. dist.*, Caernarvon, Wales; slate; p. (1951) 4,436.
- Bethlehem, t., Israel; 5½ m. S.W. Jerusalem; birthplace of Christ; p. 9,140.
- Bethlehem, t., Penn., U.S.A.; 50 m. N. of Philadelphia; iron-wks.; p. (1950) 66,340.



- Bethnal Green, *metropolitan bor.*, London, Eng.; p. (1951) 58,374.
- Bethphage, former vil. on Mt. of Olives, above Bethany, Israel, S.W. Asia.
- Bethsaida, ancient vil. on W. side of Sea of Galilee, Israel, S.W. Asia.
- Bethshemesh, t., Israel, S.W. Asia; 24 m. W. of Jerusalem; archaeological site.
- Bethune, t., Pas de Calais, France; oil, salt, coal; p. (1946) 22,081.
- Bettendorf, t., Iowa, U.S.A.; steel, oil burners; p. (1950) 5,132.
- Betteshanger, *mining vil.*, Kent, Eng.; on N. flank of N. Downs, 4 m. W. of Deal; on Kent Coalfield, coal despatched by overhead cable to Dover.
- Bettws-y-Coed, *urb. dist.*, Caernarvon, Wales; tourist and artists' resort; p. (1951) 776.
- Betul, t., Madhya Pradesh, India; p. 10,000.
- Betwa; R., of Bhopal, India, trib. of Jumna R.; length 360 m.
- Beuel, t., Germany; on Rhine R.; chemicals, cement; p. 17,543.
- Beuthen, *see* Bytom.
- Beuzeval, t., Calvados, France; on Eng. Channel; seaside resort.
- Beveland, I., S. Netherlands; between the old Maas and Hollands Diep.
- Beverley, *mkt. t.*, *mun. bor.*, E.R. Yorks, Eng.; fine minster; p. (1951) 15,499.
- Beverly, t., Mass., U.S.A.; boots, shoes, machinery; p. (1950) 28,884.
- Beverly Hills, t., California, U.S.A.; p. (1950) 29,032.
- Beverwyk, t., nr. Haarlem, N. Holland, Netherlands; p. (1951) 28,323.
- Bewdley, *mun. bor.*, Worcester, Eng.; p. (1951) 4,914.
- Bex, t., Vaud, Switzerland; on Rhône.
- Bexhill, *mun. bor.*, Sussex, Eng.; resort; p. (1951) 25,668.
- Bexley, *mun. bor.*, W. Kent, Eng.; 15 m. S.E. London; plastics; p. (1951) 38,767.
- Bexley, t., Ohio, U.S.A.; p. (1950) 12,378.
- Bezyk, t., Turkey; on Bosphorus Strait; p. (1945) 25,611.
- Beyoglu, *div.* of Istanbul, Turkey; residtl. quarter of Europeans; p. (1945) 234,750.
- Beyyapari, t., Turkey; 65 m. W. of Ankara; rice, fruit, cotton; p. 21,000.
- Beysheir, t., Turkey; p. 2,894.
- Beysehir, L., Turkey; 25 m. long; alt. 7,068 ft.
- Bezhtsa, t., Orel region, U.S.S.R.; on Desna R.; rly. rolling stock; p. 82,331.
- Béziers, t., Hérault, France; wines, brandy; chemicals; p. (1946) 64,561.
- Bezons, *sub.* of Paris, France; on Seine R.; light mfrs.; p. 13,964.
- Bezawada, t., Madras, India; rice; irrigation headquarters on Kistna R.; p. 86,214.
- Bhagalpur, t., Patna, Bihar, India; rice, maize; p. (1951) 114,530.
- Bhamo, t., Upper Burma; on R. Irrawaddy; ancient cap. of Shan State of Mammaw; teak; p. 8,611.
- Bhandara, *dist.*, Madhya Pradesh, India, a. 3,623 sq. m.; rice, oilseeds, wheat, bamboo, tobacco; p. 718,000.
- Bhandara, *cap.* of Bhandara dist., India; 30 m. E. of Nagpur; cotton cloth, brass mftg.; p. 14,000.
- Bharatpur, t., India; cloth; p. 25,000.
- Bhavnagar, *dist.*, Saurashtra, India; a. 3,740 sq. m.; p. 713,240.
- Bhavnagar, t., *spt.*, India; cotton; p. (1951) 137,951.
- Bhim-Gora, sacred pool, place of Hindu pilgrimage, Uttar Pradesh, India.
- Bhir, *dist.*, Hyderabad, India; a. 4,460 sq. m.; wheat, cotton, linseed, sugar; p. 400,000.
- cap. Bhir, 190 m. E. of Bombay.
- Bhiwani, t., India; cottons; p. 10,000.
- Bhopal, *st.*, India; a. 6,921 sq. m.; p. (1951) 838,107.
- Bhopal, c., *cap.*, Bhopal, India; p. (1951) 102,333.
- Bhor, *st.*, India; rice, chief t. Bhor; a. 910 sq. m.; p. 155,961.
- Bhuj, *ch. t.*, Kutch, Gujarat, Bombay, India; p. 26,331.
- Bhutan, *independent st.*, E. Himalayas; under British protection since 1864, and now in negotiation with Indian Union; cap. Punakha; ch. products; Indian corn, millet, lac, etc.; valuable forests; a. (approx.) 18,000 sq. m.; p. comparatively scanty, scattered and nomadic, (about) 300,000.
- Bhuwanesar, c., Bihar, India; pilgrim city, temple of Siva.
- Biafra, Bight of, W. Africa.
- Biala-Krakowska, *commune*, Krakow dep., Poland; agr., tr. centre, cattle, textiles; p. 30,337.
- Bialogard, c., N.W. Poland; formerly in Germany; industri. and transport centre; p. 14,801.
- Bialystok, *prov.*, E. Poland; cap. Bialystok; a. 9,021 sq. m.; p. (estd. 1950) 961,052.
- Bialystok, t., Poland; *cap.* of Bialystok prov.; nr. Grodno; leather and soap factories; woollens, boots, shoes; p. (1948) 91,331.
- Biancavilla, t., Sicily, Italy; oranges.
- Biarritz, t., Basses-Pyrénées, France; on Bay of Biscay; seaside resort; p. (1946) 22,022.
- Biba-el-Kubra, t., Egypt, N.E. Africa; on Nile; p. 1,000.
- Biberach, t., Germany; p. 11,400.
- Bibi Eibat, *locality*, Azerbaijan, U.S.S.R.; very rich oilfields.
- Bicester, *urb. dist.*, Oxford, Eng.; rly. junction; lace; p. (1951) 4,171.
- Bida, t., N. Nigeria, W. Africa; p. 10,000.
- Bidar, t., Hyderabad, India; metal mfr.; p. 15,198.
- Bidassoa, R., on Spanish-French frontier.
- Biddeford, c., Maine, U.S.A.; cotton mfr.; resort; p. (1950) 20,836.
- Biddulph, *urb. dist.*, Stafford, Eng.; nr. Leek; coal, iron; p. (1951) 10,898.
- Bideford, *mun. bor.*, N. Devon, Eng.; on R. Torridge; ropes, sails; p. (1951) 10,100.
- Biebrich, t., Germany; on Rhine; dyes; p. 19,504.
- Biel (Bienne), t., Berne, Switzerland; watches; p. (1950) 48,342.
- Bielawa, t., S. Poland; textiles; p. 20,116.
- Bielaya-Tserkov, t., Ukraine, U.S.S.R.; on trib. of Dnieper R.; fairs, tr. in cattle, beer, grain; p. 54,000.
- Bielefeld, t., North Rhine-Westphalia, Germany; ch. centre of linen industry; machinery; p. (1950) 153,613.
- Bielgorod, U.S.S.R.; on R. Doneta.
- Biella, t., Novara, Italy; textiles; p. 28,210.
- Bielopol, t., Ukraine, U.S.S.R.; brandy.
- Bielsko, t., Poland; woollens, linen, metal, chem.; p. 25,725.
- Bien-hoa, t., nr. Saigon, Indo-China; p. 5,000.
- Bienne, L., N.E. Neuchâtel, Switzerland.
- Bierley, *par.*, W. Riding, Yorks, Eng.; coal, iron; p. 16,000.
- Bies-Bosch, *marshy L.*, between N. Brabant and S. Holland, Netherlands.
- Big Black, R., trib. of Mississippi, U.S.A.
- Big Bone Lick, *locality*, N. Ky., U.S.A.; E. of Ohio R.; deposit of fossil mammoth.
- Biggar, *burgh*, Lanark, Scot.; in S. Uplands, 10 m. S.E. of Lanark; p. (1951) 1,437.
- Biggarsberg, *mins.*, Natal, S. Africa; branch of the Drakensberg, highest point, Indumeni, 7,200 ft.
- Biggleswade, *urb. dist.*, Beds, Eng.; in valley of R. Ouse, 9 m. S.E. of Bedford; centre of fruit-growing and mkt. gardening dist.; p. (1951) 7,280.
- Big Horn Mtns., Wyo. and Mont., U.S.A.; Rockies; highest alt., 12,000 ft.
- Big Horn, R., Wyo., U.S.A.; trib. of Yellowstone R.
- Bihac, t., Jugoslavia; on R. Una; p. 8,330.
- Bihar, *state*, Indian Union; a. 70,330 sq. m.; cap. Patna (q.v.); ch. river, Ganges; agr.: rice, wheat, maize, sugar-cane, tobacco, oilseeds; minerals; coal, iron, mica; industries; iron and steel; p. (1951) 40,225,947.
- Bihé, *dist.*, Angola (Port. W. Africa).
- Bihor Mtns., Romania.
- Biisk, c., Siberia, U.S.S.R.; p. (1939) 80,190.
- Bijapur, t., Bombay, India; cotton; ruins; p. 25,000.
- Bijawar, *st.*, central India; a. 973 sq. m.; lumber, barley, iron ore; p. 112,000.
- Bijawar, *cap.* of Bijawar st., India; p. 6,000.
- Bijeljina, t., Jugoslavia; p. 13,830.
- Bijnore, t., Uttar Pradesh, India; p. 27,900.
- Bikaner, *st.*, now part of Rajasthan Union, India; woollens, carpets; a. 23,181 sq. m.; p. (1941) 1,292,933.
- Bikaner, t., *cap.* of Bikaner St., India; p. (1951) 117,113.

- Bikini**, *atoll*, Pacific Ocean; scene of atomic-bomb tests.
- Bilaspur**, *t.*, India; silks, cottons; *p.* (1951) 126,099.
- Bilbao**, *spt.*, N. Spain; cap. Basque prov. of Vizcaya; formerly famous for rapier making; iron ore, smelting; *p.* (1951) 222,091.
- Bilecik**, *t.*, Turkey; *p.* 4,661.
- Bilina**, *c.*, Bohemia, Czechoslovakia; *wat. pl.* mineral springs; *p.* 10,698.
- Billabong**, *R.*, N.S.W., Australia.
- Billerica**, *mun. bor.*, Essex, Eng.; *p.* (1951) 43,352.
- Billinge and Winstanley**, *urb. dist.*, Lancs, Eng.; *p.* (1951) 6,157.
- Billingham**, *t.*, *urb. dist.*, Durham, Eng.; on N. of Tees estuary; chemicals; *p.* (1951) 23,944.
- Billings**, *t.*, Montana, U.S.A.; cattle-raising, wool; *p.* (1950) 31,334.
- Billingsgate**, London, Eng.; old river-gate and wharf, now chief fish mkt. of England.
- Billiton (Belitung) I.**, Indonesia; tin.
- Bilma**, *oasis*, Fr. W. Africa; *p.* 1,000.
- Biloxi**, *t.*, Missouri, U.S.A.; fishing.
- Bilsen**, *t.*, Belgium; *p.* 4,946.
- Bilston**, *mun. bor.*, Stafford, Eng.; coal and iron engineering; *p.* (1951) 33,464.
- Bima**, *t.*, Sumbawa, Indonesia.
- Bimlipatam**, *t.*, Madras, India.
- Binab**, *t.*, Azerbaijan, Persia; *nr.* L. Urmia.
- Binalagan**, *mun.*, Philippine Is.; sugar; *p.* 18,112.
- Binalonan**, *t.*, Luzon, Philippine Is.; road centre; *p.* 19,376.
- Binan**, *t.*, Luzon, Philippines; rice.
- Binangonan**, *t.*, Luzon, Philippine Is.; building stone; *p.* 16,583.
- Binche**, *t.*, Belgium; laces and other factories.
- Binderbango**, *t.*, Queensland, Australia.
- Bingara**, *t.*, N.S.W., Australia; wool, wheat, cattle.
- Bingen**, *t.*, Germany; on Rhine R.; at S. entrance to Rhine gorge; wine; beautiful scenery; *p.* 16,500.
- Bingerville**, *spt.*, Ivory Coast, Fr. W. Africa.
- Bingham Canyon**, *t.*, N. Utah, U.S.A.; copper, silver, gold, lead; *p.* (1950) 2,569.
- Binghamton**, N.Y., U.S.A.; on Susquehanna R.; boot factories; *p.* (1950) 80,674.
- Bingley**, *urb. dist.*, W.R. Yorks, Eng.; on R. Aire, 16 m. N.W. of Leeds; textiles; mkt. *t.*; *p.* (1951) 21,566.
- Bingol-dag**, *mtns.*, Turkey; S. of Erzurum; highest peak 12,310 ft.
- Binh-Dinh**, *t.*, Indo-China.
- Bintang I.**, largest island of the Riouw Archipelago, Indonesia; bauxite.
- Bio-Bio**, *R.*, Chile; rises in Andes, flows N.W. to Pac. Oc. at Talcahuano; length 300 m.
- Bio-Bio**, *prov.*, Chile; cap. Los Angeles; *a.* 4,342 sq. m.; *p.* (1952) 137,686.
- Birbhum**, *dist.*, India; cap. Suri; healthy climate; rice, sugar; mnfs. silk, cotton; *a.* 1,752 sq. m.; *p.* 847,000.
- Birchington**, *t.*, Kent, Eng.
- Birdsboro**, *bor.*, Penns., U.S.A.; on Schuylkill R.; coal, steel; *p.* (1950) 3,158.
- Birdum**, *t.*, N. Terr., Australia; on rly., 300 m. S. of Darwin; cattle.
- Birjand**, *t.*, Persia; *p.* 25,000.
- Birkenfeld**, *t.*, Germany; *p.* 2,325.
- Birkenhead**, *co. bor.*, Cheshire, Eng.; on R. Mersey, opp. Liverpool; docks, shipbuilding, machinery, flour milling; *p.* (1951) 142,392.
- Birket El Qarun**, "Lake of the Horns," Fayum, Egypt, N.E. Africa.
- Birmingham**, *co. bor.*, Warwick, Eng.; industr. cap. Midlands, second lgst. c. Gt. Britain; famous for its metal mnfs.; motors and cycles, plastics; univ., cath., town hall; *p.* (1951) 1,112,340.
- Birmingham**, *t.*, *cap.*, Alabama, U.S.A.; coal, iron, cotton; *p.* (1950) 326,037.
- Birmingham**, *t.*, Michigan, U.S.A.; *p.* 17,196.
- Birnam**, *vil.*, Perth, Scot.; location of Birnam Wood—Macbeth; former royal forest.
- Birni**, *t.*, Fr. W. Africa, Niger; *p.* 1,000.
- Birbidizhan**, *t.*, U.S.S.R.; *p.* 33,000.
- Birr**, *mkt. t.*, *urb. dist.*, Offaly, Ireland; on Little Brosna R.; farming; observatory; *p.* (1946) 3,225.
- Birsk**, *t.*, U.S.S.R., *p.* 10,000.
- Birtle**, *t.*, Manitoba, Canada; *p.* 677.
- Bisbee**, *t.*, Arizona, U.S.A.; very rich copper deposits, gold, silver, lead; *p.* (1950) 3,801.
- Biscay**, *see* Vizcaya.
- Biscay**, Bay of, stormy area of the Atlantic, W. of France and N. of Spain, extending from Ushant to Cape Ortegal; the Roman Sinus Aquitanicus; heavy seas.
- Bisceglie**, *t.*, *spt.*, Apulia, Italy; on E. cst. 22 m. N.W. of Bari; fishing; *p.* 31,477.
- Bischheim**, *t.*, Bas-Rhin, France; N.W. sub. of Strasbourg.
- Bischoff**, *Mt.*, *t.*, Tasmania, Australia; tin.
- Bischofswerda**, *t.*, E. Germany.
- Bischwiller**, *t.*, Bas-Rhin, France; hops; *p.* (1946) 8,142.
- Bishop**, *t.*, Cal., U.S.A.; cattle, tungsten, *p.* 1,490.
- Bishop Auckland**, *urb. dist.*, Durham, Eng.; contains palace of Bishop of Durham; coal, iron; *p.* (1951) 36,350.
- Bishop Rock**, *isolated rock, lighthouse*, Scilly Is., 36 m. S.W. of Land's End, Cornwall; recognised internationally as E. end of trans-Atlantic ocean crossing.
- Bishop's Castle**, *mun. bor.*, Salop, Eng.; *p.* (1951) 1,291.
- Bishop's Stortford**, *mkt. t.*, *urb. dist.*, Herts, Eng., on Stort R.; grain; *p.* (1951) 12,772.
- Bishop's Waltham**, *par.*, Hants, Eng.; bricks.
- Bishop Wearmouth**, *t.*, Durham; mnfs.
- Biskra**, *t.*, Algeria, N. Africa; olives, dates; winter resort; *p.* 36,347.
- Bisley**, *t.*, Gloucester, Eng.; *nr.* Stroud; source of R. Thames.
- Bismarck**, *cap. c.*, N. Dakota, U.S.A.; on Missouri R.; *p.* (1950) 18,640.
- Bismarck Arch.**, three large and several small islands off New Guinea, formerly German, now Australian Trust Terr.; total native *p.* (1941) 142,332.
- Bissagos Is.**, off W. Africa, Port Guinea; *ch. t.* Bolama.
- Bissao**, *t.*, *spt.*, Port Guinea; *p.* 5,000.
- Bistrita**, *t.*, Romania; *p.* 15,801.
- Bitburg**, *t.*, Germany; *p.* 6,200.
- Bitche**, *t.*, Alsace, France; *p.* 3,486.
- Bitetto**, *t.*, *sm. spt.*, Apulia, Italy; on E. cst. 5 m. N.W. of Bari; fishing.
- Bitlis**, *il.*, Turkey; *p.* (1945) 74,449.
- Bitlis**, *il.*, Turkey; minerals, Armenian massacre; *p.* 10,779.
- Bitolj (Monastir)**, *t.*, Macedonia, Yugoslavia; many mosques, military H.Q., great tr. in corn, grain, flour, hides and woollen stuffs; tanning, carpets; *p.* (1948) 31,310.
- Bitonto**, *t.*, Apulia, on E. cst. 7 m. N.W. of Bari; Italy; olive oil, wine; fine cath.; *p.* 29,731.
- Bitterfeld**, *t.*, Germany; mftg.; *p.* 24,000.
- Bitterfontein**, *t.*, C. of Good Hope, S. Africa.
- Bitter Lakes**, Isthmus of Suez, Egypt; utilised by Suez Canal.
- Bitterroot**, *mtns.*, U.S.A.; range of the Rockies, highest point Ajax Mtn., 10,900 ft.; rly. tunnel 2 m. long.
- Bitton**, *t.*, Gloucester, Eng.; mining.
- Biwa**, *L.*, Japan; *a.* 180 sq. m.; 330 ft. above sea-level; 300 ft. deep; connected by canal with Osaka.
- Biyala**, *t.*, Gharbiya prov.; Lower Egypt; N.E. Africa; rice, millet, cotton; *p.* 16,000.
- Bizerta**, *spt.*, Tunisia, N. Africa; the ancient Hippo Zaritus; fishing; *p.* (1946) 39,327, mainly Arabs.
- Bizot**, *commune*, N.E. Algeria; *p.* 10,845.
- Bjelovar**, *t.*, Yugoslavia; *p.* 13,147.
- Björnborg**, *see* Fori.
- Blaauw B. Mtns.**, Transvaal, S. Africa.
- Blaavands Huk**, Denmark; *nr.* Esbjerg.
- Black Belt**, area on coastlands of Miss. and Ala., U.S.A.; black soil prairie land, good for cotton.
- Black Bluff**, *mtn.*, N. Tasmania, Australia.
- Blackburn**, *co. bor.*, Lancs, Eng.; cotton mftg.; *p.* (1951) 111,217.
- Black Country**, Eng., Midlands; formerly impt. iron-working and coal-mining district round the Birmingham area.
- Blackdown Hills**, Devon, Eng.
- Black Forest**, *mtns.*, Germany; resort, forests, *a.* 1,844 sq. m.; highest peak Feldberg, alt. 4,696 ft.
- Black Gang Chine**, picturesque ravine on S. Coast, Isle of Wight, Eng.
- Black Hawk**, *mining t.*, Rocky Mtns., Colorado, U.S.A.
- Black Head**, *C.*, Galway Bay, Clare, Ireland.



- Blackhead, C.**, on N. entrance to Belfast Lough, N. Ireland; lighthouse.
- Blackheath, open common**, S.E. London, Eng.: a. 267 acres.
- Black Hills, mtns.**, between S.D. and Wyo., U.S.A.; highest, Horney Peak, alt. 7,240 ft.
- Black Isle, pen.**, between Cromarty and Beaulieu Firths, Ross and Cromarty, Scot.: agr., fisheries, quarrying; a. 240 sq. m.
- Black Lake, t.**, S. Quebec, Canada; asbestos mines; p. 2,270.
- Blackley, t.**, S.W. Lancs, Eng.: N. sub. of Manchester; dye wks.
- Black Mountain, t.**, N.C., U.S.A.; resort.
- Black Mtns.**, range of Appalachians, U.S.A.; Mt. Mitchell, alt. 6,684 ft.
- Black Mtns., range**, Brecknock, S. Wales; highest peak, Brecknock Van, alt. 2,631 ft.
- Blackpool, co. bor., seaside resort**, Lancs, Eng. on est. of Fylde dist.; p. (1951) 147,131.
- Black Prairie, region**, Texas, U.S.A.; extends 350 m. S.W. from Ouachita Mtns. to Austin; contains very fertile Black Waxy and Grande Prairie sub-regions devoted almost entirely to cotton growing; ch. ts., Dallas, Fort Worth, Austin; a. 30,000 sq. m.
- Black River Falls, t.**, Wis., U.S.A.; lumber, flour, dairying, poultry.
- Blackrock, t.**, Ireland; sub. 4 m. from Dublin.
- Blackrod, urb. dist.**, Lancs, Eng.: nr. Chorley; p. (1951) 3,151.
- Black Sea, inland sea** between Russia and Turkey; 740 m. long, 390 broad; receives waters of Danube, Dnieper, Dniester, Don, Bug, and other rivers; communicates with Mediterranean by Strait of Bosphorus, Sea of Marmara, and Dardanelles.
- Blacksd Bay, coast** of Mayo, Ireland.
- Blackstone, t.**, Mass., U.S.A.; textiles; p. (1950) 4,968.
- Blackstone, t.**, Va., U.S.A.; tobacco mkt.; p. (1950) 3,536.
- Black Volta, R.**, Fr. W. Africa and Gold Coast; rises in Futa Jallon Plateau, flows E. S. and E. into R. Volta; length, over 800 m.
- Black Warrior, R.**, Ala., U.S.A.; flows through coalfields; navigable; water power.
- Blackwater, R.**, Hants and Essex, Eng.
- Blackwater, R.**, Ireland; three of this name.
- Blackwater, R.**, U.S.A. (Mont., Fla., and Va.).
- Black Waxy, see** Black Prairie.
- Blackwell, c.**, Okla., U.S.A.; gas, oil, wells, refining, zinc smelting; meat packing; p. (1950) 9,199.
- Blaenavon, t.**, urb. dist., Monmouth, Eng.: mining; p. (1951) 9,777.
- Blagoveshchensk, t.**, Eastern Siberia, U.S.S.R.; on R. Amur; flour mills; cattle, wheat; p. (1939) 58,761.
- Blain, t.**, France p. 5,880.
- Blair Atholl, par.**, Perth, Scot.: tourist resort; p. (1951) 1,868.
- Blairgowrie and Rattray, burgh**, Perth, Scot.; at foot of Scot. Highlands, 18 m. N.E. of Perth; fruit; linen; p. (1951) 5,388.
- Blairmore, t.**, Alberta, W. Canada; on Canadian Pacific Rly., 160 m. S.W. of Medicine Hat, at approach to Crow's Nest Pass; coal-mining centre on Alberta Coalfield.
- Blairsville, t.**, Penns., U.S.A.; p. (1950) 5,002.
- Blakely, t.**, Ga., U.S.A.; peanuts, lumber, turpentine; p. (1950) 3,234.
- Blanc, Mt.**, France; highest peak of Alps; alt. 15,782 ft.
- Blanca Pk.**, Col., U.S.A.; alt. 14,390 ft.
- Blanche Bay**, on N.E. coast of New Britain, Bismark Arch.; inner part site of Rabaul.
- Blanchester, t.**, Ohio, U.S.A.; textiles, pumps; p. 1,785.
- Blanco, t.**, C. of Good Hope, S. Africa.
- Blandford, or Blandford Forum, mkt. t., mun. bor.**, Dorset, Eng.; p. (1951) 3,663.
- Blaneau Ffestiniog, see** Ffestiniog.
- Blanes, spt.**, Spain; N.E. of Barcelona.
- Blankenberghe, spt.**, N. Belgium; seaside resort; p. 8,344.
- Blankenheim, t.**, Germany; p. 5,000.
- Blantyre, t.**, Nyasaland, Brit. E. Africa; linked by rly. to Beira; p. (inc. 600 whites) 3,594.
- Blantyre, par.**, Lanark, Scot.; birthplace of Dr. Livingstone; coal; p. (1951) 17,766.
- Blarney, vil.**, 4 m. N.W. Cork, Ireland; castle and Blarney stone.
- Blaydon, urb. dist.**, Durham, Eng.; coal-mining; p. (1951) 30,791.
- Blekinge, co.**, Sweden; a. 1,173 sq. m.; p. (1950) 146,135.
- Blenheim, bor.**, S.I., New Zealand; fruit; p. (1951) 7,051.
- Blessington, mkt. t.**, Wicklow, Ireland.
- Bletchley, urb. dist.**, Bucks, Eng.; rly junction; p. (1951) 10,916.
- Blida, t.**, Algeria, N. Africa; flour, citrus fruits; p. (1948) 61,607.
- Bloemfontein, t., cap.**, O.F.S., S. Africa; cattle centre; p. (1951) 109,130.
- Blois, c.**, Loire-et-Cher, France; on Loire; 30 m. S.W. of Orleans; château; wines; p. (1946) 26,774.
- Blood R.**, Natal, S. Africa.
- Bloody-Foreland, C.**, Donegal, N.W. Ireland.
- Bloomfield, t.**, Ind., U.S.A.; grain, lumber, cattle; p. (1950) 49,307.
- Bloomfield, t.**, N.J., U.S.A.; p. (1950) 49,307.
- Bloomington, t.**, Ill., U.S.A.; coal, motor cars; p. (1950) 34,163.
- Bloomington, t.**, Ind., U.S.A.; furniture; p. (1950) 28,163.
- Bloomsburg, t.**, Pa., U.S.A.; iron; p. (1950) 10,633.
- Blorca, t.**, Java, Indonesia; teak; p. 18,451.
- Blossburg, t.**, N. Penns., U.S.A.; coal, iron; p. 1,955.
- Bludenz, t.**, Austria; p. 8,000.
- Bluefield, t.**, W. Va., U.S.A.; coal, iron, limestone, steel foundries, silica, lumber; p. (1950) 21,509.
- Bluefields, R.** in Nicaragua, Central America.
- Bluefields, t.**, Nicaragua; on E. est.; p. (1947) 20,278.
- Blue Grass, dist.**, Ky., U.S.A., area where blue grass abundant; horse breeding.
- Blue Mountains, chain** in N.S.W., Australia; highest peak 4,100 ft.
- Blue Mountains, t.**, N.S.W., Australia; tourist centre; p. (1947) 21,316.
- Blue Mountains, Jamaica, W. Indies.**
- Blue Nile (Bahr-el-Azrek), R.**, rising in tablelands of Ethiopia, joins the White Nile at Khartoum; its seasonal flooding provides the bulk of water for irrigation in Anglo-Egyptian Sudan and Egypt.
- Blue Nile, prov.**, Anglo-Egyptian Sudan; a. 54,577 sq. m.; cap. Wad Medani, (q.v.); p. (estd. 1951) 1,840,600.
- Blue Point, Long I.**, U.S.A.; oysters.
- Blue Ridge Mtns.**, U.S.A.; most E. ridge of Appalachian Mtns. in Virginia and N. Carolina.
- Bluff, t.**, S.I., New Zealand; p. (1951) 2,263.
- Bluff Harbour, S.I.**, New Zealand.
- Bluffton, t.**, Ind., U.S.A.; farm implements, lumber; p. (1950) 6,076.
- Blumenau, t.**, Brazil; butter, sugar; p. 88,000.
- Blumenthal, t.**, Hanover, Germany; on R. Weser; indust.; p. 12,764.
- Blyth, spt. mun. bor.**, Northumberland, Eng.; exports coal; shipbuilding; p. (1951) 34,742.
- Blytheville, t.**, Ark., U.S.A.; tr., centre for agr. region; p. (1950) 16,234.
- Blythwood, t.**, C. of Good Hope, S. Africa.
- Boa Vista, t., cap.**, Rio Branco terr., Brazil; p. 1,398.
- Bobadilla, t.**, S. Spain; N. of Malaga.
- Bobbili, t.**, India; p. 10,000.
- Bobo-Dioulasso, ch. t.**, Upper Volta, Ivory Coast, Fr. W. Africa; terminus Abidjan-Niger rly.; cotton, kapok, wax; p. 34,500.
- Bobrawa, R.**, Lower Silesia; W. Poland; trib. of R. Oder; length 158 m.
- Bobrek Karb, t.**, Poland; coal, coke, steel, ammonia; p. 22,095.
- Bobrinets, t.**, Ukraine, U.S.S.R.; tobacco factories; p. 10,000.
- Bobruisk, fortress, t.**, U.S.S.R.; on R. Berezina; flour; p. (1939) 84,107.
- Bocas del Toro, prov.**, Panama; cap. B. del T.; p. (1950) 22,392.
- Bochetta, La, pass**, Liguria, Italy; used by main routes across Ligurian Apennines from Genoa to Lombardy Plain.
- Bocholt, t.**, Germany; machinery, woollens; p. 33,441.
- Bochum, t.**, N. Rhine-Westphalia, Germany; 11 m. W. of Dortmund; centre of steel industry; coal and iron; p. (1950) 289,804.
- Bodaibo, t.**, Irkutsk region, U.S.S.R.; N.E. of L. Baikal; gold.

- Bodele, area**, French W. Africa: cotton, tobacco, forage grasses.
- Boden, t.**, Sweden; on Lulea R., p. 6,800.
- Boden See**, see Constance, L.
- Bodmin, mun. bor.**, co. t., Cornwall, Eng.; on S.W. flank of Bodmin Moor; p. (1951) 6,058.
- Bodmin Moor, upland**, N.E. Cornwall, Eng.; granite quarries, kaolin; lower slopes cultivated, higher slopes used for sheep pastures; average alt. 1,000 ft., highest point, Brown Willy, alt. 1,375 ft.
- Bodd, spt.**, Norway; within Arctic Circle at entrance to Salten Fjord; fishing; p. 6,174.
- Boeleleng, spt.**, Bali, Indonesia; rice; harbour unsafe during monsoon.
- Boeotia and Attica, prov.**, Greece: a. 2,481 sq. m.; p. (1951) 1,652,396.
- Bogalusa, t.**, Louisiana, U.S.A.; p. (1950) 17,798.
- Bogelfels, t.**, S.W. Africa; diamonds.
- Bognor Regis, t. urb. dist.**, Sussex, Eng.; seaside resort; p. (1951) 25,624.
- Bognor, t.**, Java, Indonesia; p. 65,431.
- Bogota, cap.**, Rep. of Colombia, S. America; cath., museum, univ.; mnfs. soap, cloth, cordage; p. (1951) 643,187.
- Bogovodsk, t.**, U.S.S.R.: 35 m. E. of Moscow; textiles, chemicals; p. 35,000.
- Bohain, t.**, France; p. 6,475.
- Bohemia, former W. prov. of Czechoslovakia**; abolished 1948; plateau girdled by mountains; drained by R. Elbe; agr.: wheat, rye, hops, flax, sugar beet; minerals: lignite, graphite; mnfs. textiles, sugar, pottery, machinery, boots; cap. Prague; a. 20,101 sq. m.; p. (1947) 5,627,181.
- Böhmer Wald (Bohemian Forest) Mtns.**, forested range between Czechoslovakia and Bavaria; 150 m. long; highest points: Aber, alt. 4,848 ft., Rachelberg, alt. 4,743 ft.
- Bohol, I.**, Philippines; 1,492 sq. m.
- Bohotle, t.**, Brit. Somaliland, Africa; p. 1,000.
- Boiro, commune**, La Coruña, Spain; cattle, fishing, sardine canning; p. 11,668.
- Boise City, t., cap.**, Idaho, U.S.A.; silver, hot springs; p. (1950) 34,393.
- Boise, R.**, Idaho, U.S.A.
- Boissevain, t.**, Manitoba, Canada; p. 836.
- Boissy, t.**, France; nr. Paris.
- Bojador, G.**, Rio de Oro, Africa.
- Bokhara, t.**, Uzbekistan, U.S.S.R.; trading centre; p. (1939) 50,382.
- Bokn Fjord**, Norway; N. of Stavanger, 35 m. long, 10-15 m. wide.
- Boksburg, t.**, Transvaal, S. Africa; gold, coal; p. (1948) (inc. 20,527 whites) 53,419.
- Bolama, spt.**, Port. Guinea; p. 4,000.
- Bolan Pass**, Baluchistan, Pakistan; pass from Pakistan to Afghanistan; summit 5,900 ft.
- Bolbec, t.**, Seine-Inf., France; 12 m. E. of Le Havre; p. 10,779.
- Boleslawiec (Bunzlau), t.**, Lower Silesia, Poland; on the Bobrawa R., p. 21,946.
- Bolgrad, t.**, U.S.S.R.; corn; p. 10,000.
- Bolivar, t.**, Argentina; p. 10,000.
- Bolivar, terr.**, Colombia, S. America. cap. Cartagena; a. 22,981 sq. m.; p. (1947) 968,280 (mainly whites).
- Bolivar, prov.**, Ecuador, S. America; cap. Guarando; a. 1,150 sq. m.; p. (1950) 109,305.
- Bolivar, st.**, Venezuela; ch.t., Cuidad Bolivar; a. 91,868 sq. m.; p. (1941) 94,523.
- Bolivia, inland rep.**, S. America, bounded by Brazil, Paraguay, Argentina, Chile and Peru; cap. nominally Sucre, actual administrative headquarters La Paz; plateau, mountains; Boliv. Andes; volcanoes; L. Titicaca, Poopoe, drained by tribs. of Amazon; climate varies with elevation; monkeys, jaguars; forests; savannahs; agr.: maize, wheat, cocoa, fruits, rubber; pastoral: sheep, cattle, alpaca, llama, vicuña; minerals: silver, tin, copper, zinc, lead; language Spanish; a. 514,155 sq. m.; p. (1950) 3,019,031.
- Bolkhov, t.**, U.S.S.R.; monastery; impt. industries; p. 10,000.
- Bollington, t.**, urb. dist., Cheshire, Eng.; nr. Macclesfield, silk; p. (1951) 5,313.
- Bolobo, t.**, Belg. Congo, Africa on R. Ubangi.
- Bologna, ancient c.**, Emilia, N. Italy; on N. flank of Apennines; impt. route centre commanding road (over Futa Pass) and rly. (through Apennine Tunnel) across Apennines to Florence; mnfs. sugar, macaroni; p. (1951) 339,195.
- Bologna, prov.**, Italy; a. 1,465 sq. m.; p. (1951) 762,726.
- Bologoye, t.**, U.S.S.R.; depot and impt. junction on the Leningrad and Moscow Rly; p. 10,000.
- Bolonchen, t.**, Campeche, Mexico.
- Bolsena, L.**, Latium region, Italy; occupies lge. extinct volcanic crater in S. of Tuscan Hills; a. (approx.) 50 sq. m.
- Bolson de Mapimi, t.**, Sierra Majada, Mexico.
- Bolsover, urb. dist.**, Derby, Eng.; limestone, coal; p. (1951) 10,815.
- Bolsward, t.**, Netherlands; cheese, butter; p. 6,331.
- Bolt Hd., headland**, Devon, Eng.; alt. 430 ft.
- Bolton, co. bor.**, Lancs, Eng.; cotton, iron, coal, chemicals; p. (1951) 167,162.
- Bolton Abbey, W.R. Yorks, Eng.**; famous ruined abbey.
- Bolu, t.**, Turkey; t. in Asia Minor; in ancient state of Bithynia; at Hija, S. of the t., are warm medicinal springs; p. (1945) 277,625.
- Bolus Head, C.**, Kerry, Ireland.
- Bolzano, t.**, Venetia Tridentina, Italy; on R. Isarco at S. approach to Brenner Pass; resort; p. (1951) 62,128.
- Boma, former cap.**, Belg. Congo, Africa, p. 10,839.
- Bombay, state**, India; ch. physical features: W. Ghats, Satpura Range; rivers: Indus, Nerbada, Tapi; agr.: cotton; industries: carpets, silks, brass; hydro-electric power. W. Ghats, a. 111,434 sq. m.; p. (1951) 35,956,150.
- Bombay, spt., cap.** state Bombay, India; harbour, docks, rly. centre; mnfs.: cottons, metals, dyeing, tanning; p. (1951) 2,339,270.
- Bommes, t.**, Gironde, France; wine.
- Bomnak, t.**, Chita Region, U.S.S.R.; on S. slopes of Stanovoi Mtns., in valley of R. Zeya; centre of alluvial gold workings.
- Bona, see Bône.**
- Bonaca I.**, Honduras, Central America; in Caribbean Sea.
- Bonaire I.**, Netherlands W. Indies; located off N. coast of Venezuela; goat rearing; scantily populated.
- Bonavista, t.**, Newfoundland, Canada; p. (1951) 3,781.
- Bonavista Bay**, Newfoundland, Canada.
- Bonduku, t.**, Fr. W. Africa; N. of Gold Coast; impt. trading stn.; p. 1,000.
- Bondy, commune**, France; N.E. sub. of Paris; brewing, chemicals; p. (1946) 20,539.
- Bône, spt.**, Algeria; 280 m. E. of Algiers; fertile plain; exports phosphates, sheep, esparto grass; p. (1948) 102,823.
- Bonness, spt., burgh**, W. Lothian, Scot.; on Firth of Forth, 4 m. E. of Grangemouth; shipping, iron, bricks; p. (1951) 9,949.
- Bonfim, t.**, Brazil, S. America; p. 7,269.
- Bonham, t.**, Texas, U.S.A.; cotton; p. (1950) 7,049.
- Bonhill, par.**, Dunbarton, Scot.; dyeing; p. (1951) 16,338.
- Bonifacio, spt. fort.**, Corsica, France; opposite Sardinia, on Strait of Bonifacio; cork-cutting industry, olive oil; p. 3,623.
- Bonin Is.**, Pacific Ocean; 20 islands, volcanic.
- Bonn, t.**, Germany; at confluence of Rs. Sieg and Rhine; univ.; stoneware; seat of W. German parliament; p. (1950) 115,394.
- Bonne Terre, c.**, E. Mo. U.S.A.; lead mines; p. 3,730.
- Bonneville Dam, Ore.**, Wash., U.S.A.; across R. Columbia 40 m. above Portland (Ore.); provides irrigation to valleys in Columbia-Snake Plateau; lge. hydro-electric power-station; locks permit navigation from Portland up middle courses of Columbia and Snake Rs.
- Bonneville Salt Flats**, Utah, U.S.A.; remains of ancient lake; world automobile speed tests, 1937-47.
- Bonny, t.**, S. Nigeria, Brit. W. Africa; at mouth of R. Bonny, Bight of Biafra.
- Bonnrygg and Lasswade, burgh**, Midlothian, Scot.; 7 m. S.E. of Edinburgh; paper, carpets; p. (1951) 5,434.
- Bonthe, t.**, Sierra Leone, Brit. W. Africa; p. 4,404.
- Boom, t.**, Belgium; bricks, tanning, brewing.
- Boonah, t.**, Queensland, Australia; dairying.
- Boone, t.**, Iowa, U.S.A.; coal; p. (1950) 12,164.
- Booneville, c.**, W. Ark., U.S.A.; lumber and cotton mills; tuberculosis sanatorium; p. 2,324.
- Boonton, t.**, N.J., U.S.A.; agr. and industr. centre; p. (1950) 7,163.



- Boothia, peninsula** (a. 13,100 sq. m.) and G. on Arctic coast; Franklin dist., Canada.
- Bootle, co. bor., Lancs, Eng.:** on E. side of entrance to Mersey estuary; iron founding, jute mills; p. (1951) 74,302.
- Boppard, t., Germany:** p. 6,500.
- Borås, t., S. Sweden:** on R. Wiske, nr. Göteborg; cotton spinning and weaving; p. (1951) 58,076.
- Bordeaux, spt., Gironde, France:** nr. mouth of R. Garonne; cath., univ.; exports wines, liqueurs, sugar, potatoes, pit props; p. (1946) 253,751.
- Bordentown, c., N.J., U.S.A.:** on Delaware R.; formerly impt. port; p. (1950) 5,497.
- Borðeyri, t., Iceland:** on Rumaftin inlet.
- Bordighera, t., Italy:** Riviera winter resort; p. 5,462.
- Bordon, Hants, Eng.:** military camp.
- Borga, t., Finland:** p. 7,684.
- Borger, c., N.W. Texas, U.S.A.:** gas and petroleum; p. (1950) 18,059.
- Borgerhout, E., sub. of Antwerp, Belgium:** candle and tobacco factories; p. (1947) 50,877.
- Borgholm, t., Sweden:** p. 2,025.
- Borgo, San Donnino, t., Italy:** cath.; p. 17,154.
- Borgo, San Lorenzo, t., Italy:** olives and wine.
- Borgosesia, commune, N.W. Italy:** on Sesia R.; textiles; p. 13,716.
- Borgo Val di Taro, commune, N. Italy:** lignite; p. 15,209.
- Borinage, dist. round Mons, Belgium:** coal.
- Borislav, c., W. Ukraine, U.S.S.R.:** formerly Polish; oilfield, natural gas; p. 45,037.
- Borisoglebsk, t., U.S.S.R.:** p. (1939) 52,055.
- Borisokova, t., Kursk, U.S.S.R.:** thriving trade.
- Borisov, t., Byelorussia, U.S.S.R.:** scene of defeat of Napoleon, 1812; p. 25,000.
- Borispol, t., U.S.S.R.:** p. 25,000.
- Borkum t., E. Frisian Is., Germany:** summer resort; p. 5,500.
- Borlänge, t., Sweden:** p. (1951) 21,614.
- Bormio, vil., Lombardy, Italy:** alpine resort; mineral springs; p. 1,910.
- Borna, t., Saxony, Germany:** lignite, mftg.; p. 10,978.
- Borneo, largest island Malay Arch.:** a. 285,000 sq. m., length 830 m., breadth 600 m.; Kribalu Range, alt. 13,700 ft.; forests, jungle, swamps; rice, sago, spices, coconuts, rubber, hardwood; politically divided into Dutch (cap. Banjarmasin) and British.
- Borneo, Dutch, Indonesia:** a. 208,286 sq. m.; p. (1930) 2,168,661.
- Borneo, N., col., Brit. Borneo, E. Indies:** tropical climate, intense heat, heavy rainfall; hardwoods, rubber, spices, sago, rattans; poor communications; cap. Jesselton; a. 29,387 sq. m.; p. (1952) 337,000.
- Bornholm, Danish I., Baltic:** a. 210 sq. m.; agr.; fishing; porcelain, clay; cap. Rønne.
- Bornu, city, Central Sudan, Africa:** S.W. Lake Chad; formerly a Negro kingdom, now partly under French domination and partly within Brit. Protectorate of Nigeria; a. 51,000 sq. m.; p. (estimated) 5,000,000.
- Borobodoer, Java, Indonesia:** gr. Buddhist temple, once ruined, now restored under government care.
- Boronga Is., in Bay of Bengal.**
- Borongan, t., Philippine Is.**
- Boroughbridge, par., W.R. Yorks, Eng.:** p. 850.
- Borovichl, t., U.S.S.R.:** p. 25,000.
- Borroolool, N. Terr., Australia:** sheep.
- Borromean Is., in L. Maggiore, Italy:** scenery resort.
- Borrowdale, valley, Cumberland, Eng.:** tourist resort; blacklead mines.
- Borthwick, par., Midlothian, Scot.:** with old castle; p. (1951) 3,133.
- Borzhom, wal, pl., Transcaucasia, U.S.S.R.:** hot mineral springs; p. 8,218.
- Boscaille, sm. spt., Cornwall, Eng.:** resort; pilchard fishing.
- Boscobel, t., Wis., U.S.A.:** agr. trade centre; p. 2,508.
- Bosham, vil., Sussex, Eng.:** 4 m. W. of Chichester; court of King Canute and Roman Emperor Vespasian; Saxon church; resort, yachting, fishing.
- Boshof, t., O.F.S., S. Africa:** woollens, health resort; p. 2,268.
- Boskoop, commune, Netherlands:** flowering shrub nurseries; p. 7,704.
- Bosnia and Hercegovino, federal unit, Yugoslavia:** formerly part of Austria; cap. Sarajevo; mountainous, forested, fertile valleys; agr.: tobacco, cereals, fruit; cattle, sheep, pigs; a. 19,768 sq. m.; p. (1948) 2,561,961.
- Bosporus or Strait of Constantinople, between Black Sea and Sea of Marmara.**
- Boston, t., mun. bor., Holland, Linco, Eng.:** on R. Witham, 4 m. from the Wash; fishing; sail-cloth; p. (1951) 24,453.
- Boston, spt., c., cap. Mass., U.S.A.:** univ., mus.; fine harbour; 2nd Atlantic port; industries: printing, textiles, boots; railway centre; p. (1950) 801,444.
- Bosworth or Market Bosworth, t., Leics., Eng.:** battle between Richard III and Henry VII, 1485.
- Botany Bay, N.S.W., Australia:** on E. cst., 10 m. S. of Sydney; resort; first settled by British in 1787; old penal colony.
- Bothnia, G. of, N. of Baltic:** between Finland and Sweden, breadth about 100 m.
- Bothwell, par., Lanark, Scot.:** coal, iron; p. (1951) 63,185.
- Botosani, t., N. Moldavia, Romania:** rich pastoral country; flour milling; p. (1941) 29,145.
- Botrop, t., Westphalia, Germany:** coal, coke; p. 77,315.
- Botucatu, t., Brazil:** p. 19,753.
- Botwood, t., Newfoundland, Canada:** on Notre Dame Bay; p. (1951) 3,421.
- Bouches-du-Rhône, prosperous dep., S. France:** cap. Marseilles; cereals, olives, vines; pottery, silk; a. 2,025 sq. m.; p. (1946) 971,935.
- Bougainville I., Solomon Is., Pac. Oc.:** a. 3,880 sq. m.; p. (1941) 50,206.
- Bougainville, C., jutting into Timor Sea, W. Australia.**
- Bougie, spt., dep. Constantine, Algeria:** impt. trade centre; exports wool, hides; p. (1948) 28,527.
- Bouillon, t., Ardennes, Belgium:** p. 2,835.
- Boulder, t., West Australia:** goldmining; p. (1947) 6,463.
- Boulder, t., Col., U.S.A.:** gold- and silvermining dist.; univ.; p. (1950) 19,999.
- Boulder City, t., Nevada, U.S.A.:** near Great Boulder Dam, great engineering project; p. (1950) 3,903.
- Boulogne-Billancourt, S.W. sub. of Paris, France:** p. (1946) 79,410.
- Boulogne-sur-Mer, spt., Pas de Calais, France:** resort; fishing; cement; chocolates; channel ferry; p. (1946) 34,885.
- Boundary, t., Yukon, Canada.**
- Bound Brook, bor., N.J., U.S.A.:** paints, chemicals, asbestos, clothing; p. (1950) 8,374.
- Bountiful, t., Utah, U.S.A.:** mkt. gardens, fruit, especially cherries; irrigation necessary; p. (1950) 6,004.
- Bounty I., New Zealand, S. Pac. Oc.**
- Bourbon l'Archambault, t., France.**
- Bourbonnais, old prov., France.**
- Bourbonne-es-Bains, t., France:** mineral springs; p. 2,881.
- Bourg-en-Bresse, t., cap., Ain dep., France:** copper goods, pottery; p. (1946) 25,944.
- Bourges, t., cap., Cher dep., France:** cath.; brewing, cutlery, machinery, aircraft; p. (1946) 51,040.
- Bourget, L., Savoy, France.**
- Bourg-Madame, vil., France:** on Franco-Spanish border; international bridge.
- Bourgoin, t., Isere, France:** industr.; p. 8,020.
- Bourke, t., N.S.W., Australia:** on R. Darling nr. head of intermittent navigation, terminus of rly. running inland from Sydney and Newcastle; collects wool from sheep farms and despatches by river to Adelaide (S. Australia) and by rail to Sydney.
- Bourne, urb. dist., Kesteven, Lincs, Eng.:** p. (1951) 5,100.
- Bournemouth, co. bor., Hants, Eng.:** on S. cst., E. of Poole Harbour; seaside resort; p. (1951) 144,726.
- Bournville, model industr. t., Eng.:** S.W. of Birmingham; initiated by Mr. Geo. Cadbury; chocolate and cocoa works.
- Bourlange, t., Netherlands:** nr. German frontier.
- Boussu, commune, Belgium:** coal, industr.; p. 13,159.
- Bouvet I., uninhabited island in South Atlantic** belonging to Norway, a. about 22 sq. m.

- Boves, *t.*, Sommes dep., France; S.E. Amiens.
- Bovino, *t.*, Apulia, Italy.
- Bow, *bor.*, E. London, Eng.; industri.; properly Stratford-at-Bow.
- Bow, *R.*, Alberta, N.W. Canada; head of Saskatchewan R.
- Bow Fell, Pennine range, W.R., Yorks, Eng.
- Bowen, *spt.*, N. Queensland; on Port Denison, 725 m. N.W. of Brisbane; in fine pastoral country; *p.* 3,274.
- Bowes, *t.*, W.R., Yorks, Eng.; on R. Greta S.W. of Barnards Castle; mkt. *t.* for Stainmore dist. of Pennines.
- Bowesdorp, *t.*, C. of Good Hope, S. Africa.
- Bowie, *t.*, N. Texas, U.S.A.; oil, gas, coal, clay mining; *p.* (1950) 4,544.
- Bowland, Forest of, hills, Lancs, Eng.; millstone grit moors; many reservoirs supply water to industri. S. Lancs.
- Bowling, *vil.*, Dumbarton, Scot.; on N. bank of R. Clyde, 10 m. N.W. of Glasgow; at W. entrance to Forth and Clyde Canal; large oil refinery.
- Bowling Green, *t.*, Ky., U.S.A.; tr. centre for agr. a.; limestone; *p.* (1950) 18,347.
- Bowmanville, *port*, L. Ontario, Canada; *p.* 4,200.
- Bowness, *t.*, Westmorland, Eng.; on L. Windermere; tourist centre.
- Bowness, *par.*, Cumberland, Eng.; *p.* 1,050.
- Box Hill, *nr.* Dorking, Surrey, Eng.; E. of R. Mole gap through N. Downs; chalk; wooded, fine views.
- Boxmeer, *t.*, Netherlands; *p.* 4,006.
- Boyaca, *dep.*, Colombia, S. America; cap. Tunja; a. 24,928 sq. m.; *p.* (1947) 777,460.
- Boyle, *mkt. t.*, Roscommon, Ireland; on R. Boyle; dairying; *p.* 2,069.
- Boyne, *R.*, Leinster, Ireland; length 80 m.
- Bozrah, *ancient c.*, S. Damascus, Syria, S.W. Asia; modern Busra; many archaeological remains.
- Bra, *t.*, Piedmont, Italy; 28 m. S. of Turin; *p.* 22,263.
- Brabant, *cent. prov.*, Belgium; fertile and wooded; many breweries; mnfs. linen, cloth, paper, lace; cap. Brussels (*q.v.*); a. 1,267 sq. m.; *p.* (1947) 1,792,983.
- Brabant, North, *prov.*, Netherlands; S. of Gelderland; N. half of former Duchy; cattle rearing; grain, hops, beetroot, etc.; cap. s'Hertogenbosch; a. 1920 sq. m.; *p.* (1947) 1,192,640.
- Brac, *I.*, Adriatic Sea, Jugoslavia.
- Bracadale, *vil.* and *L.*, Skye, Scotland.
- Bracebridge, *par.*, Kesteven, Lincs, Eng.; *p.* 4,472.
- Bracebridge, *t.*, Ontario, Canada; *p.* 2,500.
- Brackley, *t.*, Northants, Eng.; *p.* 2,545.
- Bracknell, *t.*, Berkshire, Eng.; on Thames Valley terrace, 8 m. S.W. of Windsor; one of "New Towns" designated 1946 to relieve population congestion in London; extends N. and W. of old vil. of Bracknell; *p.* (1951) 5,142.
- Brad, *t.*, Romania, on R. Muresul; *p.* 6,210.
- Braddock, *t.*, Pennsylvania, U.S.A.; iron and steel; *p.* (1950) 16,488.
- Bradford, *t.*, Ontario, Canada; *p.* 1,033.
- Bradford, *t.*, Pennsylvania, U.S.A.; oil; *p.* (1950) 17,354.
- Bradford, *co. bor.*, c., W.R. Yorks, Eng.; 9 m. W. of Leeds; worsted, woollen and silk mnfs.; coal, iron engineering; *p.* (1951) 292,394.
- Bradford-on-Avon, *t.*, *urb. dist.*, Wilts, Eng.; on R. Avon, 5 m. S.E. of Bath; rich in historical associations; *p.* (1951) 5,627.
- Brading, *par.*, Isle of Wight, Eng.; commands gap through central chalk ridge.
- Bradinch, *t.*, Devon, Eng.
- Brady, *t.*, Texas, U.S.A.; *p.* (1950) 5,944.
- Braemar, *par.*, in the Grampians, Aberdeen, Scot.; containing Balmoral estate; *p.* (1951 with Crathie) 1,291.
- Braeriach, *mtn.*, Scot.; Inverness and Aberdeen; alt. 4,243 ft.
- Braga, *c. cap.*, Minho, Portugal, nr. Oporto; cath.; wine-growing dist.; steel; *p.* (1950) 84,801.
- Bragança, *dist.*, Tras-os-Montes, Portugal; silk; *p.* (1950) 229,422.
- Bragança, *t.*, Portugal; mediæval cas.; *p.* (1940) 6,977.
- Brahmaputra, *R.*, India, Tsangpo in Tibet; length 1,800 m.
- Braich-y-Pwll, S.W. point of Caernarvon, Wales.
- Braila, *t.*, Romania; on Danube, nr. Galati; grain centre; *p.* (1945) 97,293.
- Braintree, *t.*, Massachusetts, U.S.A.; *p.* (1950) 23,161.
- Braintree and Bocking, *urb. dist.*, Essex, Eng.; on Blackwater; *p.* (1951) 17,480.
- Brakpan, *t.*, Transvaal, S. Africa; *p.* (1946) 83,071 (inc. 27,368 whites).
- Brampton, *par.*, Cumberland, Eng.; tweeds; *p.* 2,600.
- Brampton, *t.*, Ontario, Canada; dairying; *p.* 6,020.
- Brancaster, *par.*, Norfolk, Eng.; *p.* 900.
- Branco, *C.*, Brazil, Pernambuco st.
- Brandenburg, *Land*, Soviet Zone, Germany; prosperous mining and agr. prov.; flax, barley, coal; a. 26,976 sq. km.; *p.* (1946) 2,527,492.
- Brandenburg, *t.*, Brandenburg, Germany; cloth, paper, leather; *p.* (1946) 64,500.
- Brandon, *t.*, Manitoba, Canada; machinery; *p.* (1951) 20,598.
- Brandon and Byshottles, *urb. dist.*, Durham, Eng.; *p.* (1951) 19,751.
- Brandywine Creek, *R.*, Pa., U.S.A.; Americans defeated by British, 1777.
- Branford, *t.*, Conn., U.S.A.; light mnfs., fishing, oysters; resort; *p.* (1950) 2,552.
- Braniewo (former German Braunsberg), *t.*, Olsztyn, N.E. Poland; brewing; *p.* 3,482.
- Brantford, *t.*, Ontario, Canada; farm implements, cycles; *p.* (1946) 31,948.
- Brasov, *t.*, Romania; on R. Otrul at foot of Transylvanian Alps; cloth, leather; *p.* (1945) 85,192.
- Brass, *t.*, Nigeria, Brit. W. Africa; at mouth of Brass R.; trading settlement.
- Bratislava, *t.*, Czechoslovakia; on R. Danube 30 m. below Vienna; univ.; 2 palaces; rly. centre; beer, tobacco, cabinet-making; *p.* (1947) 172,664.
- Brattleboro, *t.*, Vermont, U.S.A.; *p.* (1950) 9,606.
- Brava, *spt.*, Italian Trust. Terr., Somalia; *p.* 4,000.
- Bray, *urb. dist.*, Wicklow, Ireland; on Irish Sea cst., 11 m. S. of Dublin; popular wat. pl.; *p.* (1946) 11,076.
- Bray Head, point on E. coast of Ireland, S. of Dublin.
- Brazil, *rep.* S. America; length 2,600 m.; greatest breadth 2,690 m.; in S. Plateau bounded on E. by mountains, in N. Amazon; mainly tropical climate, temperate on plateaus; vast forests; ch. river Amazon and tribs.; agr. coffee, maize, sugar-cane, cotton, rubber, fruits, hardwoods; cattle-raising; minerals; manganese, iron, gold, diamonds; mnfs. textiles, brewing; religion R.C.; administered through 20 sts., federal dist. and 4 terrs.; cap. Rio de Janeiro; a. 3,288,063 sq. m.; *p.* (1950) 52,645,479.
- Brazil, *t.*, Ind., U.S.A.; coal, clay, bricks, china; *p.* (1950) 8,434.
- Brazil Current, *Ocean current*; flows S. along E. cst. of Brazil; relatively warm.
- Brazos, *R.*, Texas, U.S.A.; length 950 m.
- Brazzaville, *cap.*, Middle Congo Terr., Fr. Equatorial Africa; connected by rly. with the Atlantic at Pointe-Noire; river port under construction; airport; *p.* (estd. 1950) 83,390.
- Breadalbane, *mountainous dist.*, W. Perth, Scot.
- Brechin, *par.*, Angus, Scot.; with ancient cath. on S. Esk; sail-cloth, linen, distilling; *p.* (1951) 7,264.
- Breckenridge, *t.*, N. Texas, U.S.A.; oil, gas wells; exports cattle, grain; *p.* (1950) 6,610.
- Breckland, *geographical region*, S.W. Norfolk, N.W. Suffolk, Eng.; chalk, overlain by sand, gives dry soils; much heathland; sm. fertile valleys cultivated, wheat, rye, sugar-beet; ch. ts. Brandon, Lakenheath; a. 200 sq. m.
- Brecknock, *co.*, Wales; mountainous; rivers, Wye, Usk; cereals, dairy produce; timber; coal, iron; a. 744 sq. m.; *p.* (1951) 56,484.
- Brecon (Brecknock), *mun. bor.*, Wales; lime, worsted; *p.* (1951) 6,468.
- Brecon Beacons, *mtns.*, S. Wales, 5 m. S. of Brecon; highest peak, 2,910 ft.
- Breda, *ancient t.*, Netherlands; fortress; rayon, linen, carpets, soap, brewing; *p.* (1951) 91,055.



- Bredasdorp, *t.*, C. of Good Hope, S. Africa; *p.* 3,112.
- Bredbury and Romiley, *urb. dist.*, Cheshire, Eng.; *p.* (1951) 17,810.
- Bregenz, *cap.*, Vorarlberg, Austria; at E. end of L. Constance; the Roman Brigantium; resort; *p.* (1948) 20,439.
- Breidha Fjord, large inlet, W. Coast, Iceland.
- Breisach, *t.*, Germany; *p.* 3,900.
- Bremen, *t.*, *spt.*, Germany; on Weser R. 40 m. from Sea; ocean liner pt.; cath.; woollens, cottons, iron, brewing; *p.* (1950) 444,549.
- Bremen, *Land*, W. Germany; cattle rearing, market gardening; a. 156 sq. m.; *p.* (1950) 558,619.
- Bremerhaven, *t.*, *spt.*, Germany; "outport" of Bremen at mouth of Weser R.; docks; *p.* (1950) 114,070.
- Bremersdorp, *t.*, Swaziland, S. Africa.
- Bremerton, *t.*, Wash., U.S.A.; on Puget Sound; naval dockyard; electrical equipment, machinery; *p.* (1950) 27,678.
- Brenham, *t.*, Texas, U.S.A.; oil, cotton, dairy produce; *p.* (1950) 6,941.
- Brenner Pass, Italy; famous pass leading from Italy into Austria, over Alps.
- Brentford and Chiswick, *mun. bor.*, Middx., Eng.; brewing, soap, coal gas; *p.* (1951) 59,354.
- Brentwood, *urb. dist.*, *mkt. t.*, Essex, Eng.; farming, brewing; *p.* (1951) 29,898.
- Brentwood, *sub. of* St. Louis, Mo., U.S.A.; residtl.; *p.* 4,383.
- Brescia, *t.*, Italy; cath.; palace; silks, woollens, iron and steel; *p.* (1951) 141,808.
- Breslau, see Wrocław.
- Bressanone, *t.*, N.E. Italy; ceded to Italy 1919 by Austria; cath., health resort; *p.* 9,503.
- Bressay I., Shetland Is., Scotland.
- Brest, *t.*, *spt.*, Finistère dep., N.W. France; naval st., arsenal; fishing, ropes, soap; *p.* (1946) 74,991.
- Brest (Brest Litovsk), *t.*, White Russia, U.S.S.R.; on Polish frontier; Treaty of Brest Litovsk March, 1918, annulled by Treaty of Versailles 1919; *p.* 25,000.
- Bretton Woods, N.H., U.S.A.; resort; site of U.N. Monetary and Financial Conference, 1944.
- Brevik, *t.*, *port*, Norway; *p.* 2,140.
- Brewer, *t.*, Me., U.S.A.; on Penobscot R.; wood pulp, paper, bricks; *p.* (1950) 6,862.
- Briançon, *t.*, France; *p.* 5,636.
- Briare, *t.*, France; *p.* 4,135.
- Bridgend, *urb. dist.*, *mkt. t.*, Glamorgan, S. Wales; indus. trading estate; iron, coal, stone; *p.* (1951) 13,646.
- Bridge of Allan, *burgh*, Stirling, Scot.; 2 m. N. of Stirling; mineral springs; *p.* (1951) 3,173.
- Bridgeport, *t.*, Connecticut, U.S.A.; sewing machines, typewriters, valves, hardware, machinery; *p.* (1950) 158,709.
- Bridgeport, *t.*, Ohio, U.S.A.; on Ohio R.; glass, tin, sheet metal, boat building; *p.* (1950) 4,309.
- Bridgeport, *bor.*, Penns., U.S.A.; iron and steel, woollens, quarrying; *p.* (1950) 5,327.
- Bridgeton, *t.*, N.J., U.S.A.; founded by Quakers; glassworks, packs and exports fruit; *p.* (1950) 18,378.
- Bridgetown, *cap.*, Barbados, West Indies; *p.* (1946) 13,123.
- Bridgewater, *mfg. t.*, Mass., U.S.A.; nr. Boston; *p.* (1950) 3,445.
- Bridgewater, *t.*, *spt.*, Nova Scotia, Canada; salmon; *p.* 3,445.
- Bridgewater Canal Manchester-Runcorn-Leigh; crosses ship canal by means of Barton swing bridge, length 38 m.
- Bridgnorth, *mun. bor.*, Salop, Eng.; castle; worsted, carpets; *p.* (1951) 6,244.
- Bridgwater, *mun. bor.*, *port*, Somerset, Eng.; on R. Parrett, 10 m. from Bristol Channel; resort; brewing, bricks; *p.* (1951) 22,221.
- Bridlington, *mun. bor.*, E. Riding, Yorks, Eng.; on Bridlington Bay, S. of Flamborough Head; important fishing; seaside resort; *p.* (1951) 24,767.
- Bridport, *mun. bor.*, *mkt. t.*, Dorset, Eng.; rope-making, sail-cloth; sm. seaside resort; *p.* (1951) 6,273.
- Brie, *natural division* ("pays"), Central France; low, level, plateau of limestones, and clays, S.E. of Paris; loam (limon) cover and plentiful water supply encourage agr.; grains, sugar-beet, fruit, dairy cattle; densely populated.
- Brieg, see Brzeg.
- Briel, *fortified spt.*, R. Maas., S. Holland, Netherlands; on Voorn I.
- Brienzt, *t.*, Switzerland; resort; wood carving; on L. Brienzt.
- Brierfield, *urb. dist.*, Lancs, Eng.; *p.* (1951) 7,005.
- Bricley Hill, *urb. dist.*, Staffs., Eng.; on R. Stour; cut glass; *p.* (1951) 48,943.
- Briey, *t.*, France; iron.
- Brigg, *mkt. t.*, *urb. dist.*, Lindsey, Lincs, Eng.; centre of agr. dist. between Lincoln Heights and Wolds; *p.* (1951) 4,508.
- Brigham, *t.*, Utah, U.S.A.; sugar beet, peaches, canning, woollens; *p.* (1950) 6,790.
- Brighouse, *indusl. t.*, *mun. bor.*, W.R., Yorkshire, Eng.; on R. Calder, 3 m. S.E. of Halifax; mnfs. woollens, cottons, silk, textile machinery; *p.* (1951) 30,587.
- Brightlingsea, *urb. dist.*, Essex, Eng.; on R. Colne; oysters; *p.* (1951) 4,501.
- Brighton, *co. bor.*, E. Sussex, Eng.; 50 m. S. of London; lge. seaside resort and residtl. t.; light industries; *p.* (1951) 156,440.
- Brighton, *t.*, Ontario, Canada; *p.* 1,651.
- Brindisi, *spt.*, Apulia, S. Italy; on Adriatic est. with sea and air connections to Middle East; cath.; cas.; wine, olive oil, silk; *p.* (1951) 58,220.
- Brinkley, *t.*, Ark., U.S.A.; cotton, lumber; *p.* (1950) 4,173.
- Brioude, *t.*, Haute-Loire, France; trade centre for agr. area; *p.* 5,039.
- Brisbane, *t.*, *pt. cap.*, Queensland, Australia; univ.; docks; meats, wool, hides and skins; *p.* (1947) 402,172.
- Bristol, *t.*, Conn., U.S.A.; foundries, ball bearings, clocks, bells; *p.* (1950) 35,961.
- Bristol, *c.*, *co. co. bor.*, *spt.*, Gloucester-Somerset border, Eng.; on R. Avon 9 m. from Bristol Channel; "outport" at Avonmouth; cath., univ.; docks; chocolate, cigarettes, aircraft; *p.* (1951) 442,281.
- Bristol, *t.*, Pa., U.S.A.; cottons, woollens; *p.* (1950) 12,710.
- Bristol, *c.*, Va., U.S.A.; dairy produce, tobacco; *p.* (1950) 15,954.
- Bristol, *t.*, R.I., U.S.A.; fish, textiles, rubber goods, shoes, wire, yacht works, yachting; *p.* (1950) 10,335.
- Bristol, *t.*, Tenn., U.S.A.; rayon, paper, leather goods, furniture, mining equipment, transport centre, especially for cattle; *p.* (1950) 16,771.
- Bristol Channel, arm of the Atlantic between S. est. of Wales and Somerset and Devon; noted tidal bores.
- British Columbia, *prov.*, Canada; mountainous, largely forested; principal rivers: Columbia, Fraser, Kootenay, Peace; climate: temperate, rainy on coast, drier interior; communications: railways; farming, dairying and livestock; fruit growing, canning, lumbering, salmon fisheries; minerals: coal, copper, gold, lead, silver; *cap.* Victoria; a. 355,855 sq. m.; *p.* (1951) 1,165,210.
- British East Africa, *extensive terr.* on E. est. of Africa, including Kenya Colony and Protectorate; Tanganyika Trust Terr., Uganda Protectorate, together with the islands of Zanzibar and Pemba, all dealt with under their respective headings.
- British Guiana, *crown col.*, S. America; flat, swampy coast, interior highlands; climate, very hot, heavy rainfall along coast; tropical forests; agriculture: sugar, rice, coffee; cattle; hardwoods; minerals: bauxite, diamonds, gold; poor communications; *cap.* Georgetown; a. 83,000 sq. m.; *p.* (1953) 458,780.
- British Honduras, *crown col.*, Central America; climate, heavy rainfall; tropical forests; mahogany, logwood, bananas; poor communications; *cap.* Belize; a. 8,866 sq. m.; *p.* (1952) 72,000.
- British Is., *archipelago*, N.W. Europe, comprising 2 large islands: Great Britain, Ireland; and 5,000 small islands; a. 121,633 sq. m.
- British Solomon Is., *prot.*, W. Pacific; coconuts, rubber, pineapples, bananas; a. 11,500 sq. m.; *p.* (1952) 99,000.
- British Somaliland, see Somaliland, British.
- British Virgin Islands, see Virgin Islands.

British West Africa, includes the Gambia, Sierra Leone, Gold Coast, and Nigeria: parts of Togoland and Cameroons are included as Trust Territories.

British West Indies, *see* Bahamas, Barbados, Jamaica, Leeward Is., Trinidad, Windward Is.

Briton Ferry, *t.*, *pt.*, Glam., S. Wales: at mouth of R. Neath: coal: blast furnaces.

Brittany, *prov.*, France: farming: fishing: a. 13,643 sq. m.; p. 3,000,000.

Brittle, *L.*, Skye, Scot.

Brive, *t.*, Corrèze dep., France: vegetables, wines: truffles, straw: p. (1946) 33,501.

Brixen, *t.*, Italy: resort: sericulture: wines.

Brixham, *urb. dist.*, S. Devon, Eng.: fishing: resort: p. (1951) 8,761.

Brixton, *dist.*, S.W. London, Eng.

Brno, *t.*, Czechoslovakia: brewing, cloth, engineering: cath., univ.: p. (1947) 273,127.

Broach, *t.*, India: cottons: p. (1941) 55,810.

Broad Law, *mtn.*, Peebles, Scot.

Broads, The, Norfolk, Eng.: yachting, fishing, and fowling centre.

Broadstairs, *urb. dist.*, Kent, Eng.: seaside resort: 3 m. N.E. of Ramsgate: p. (1951) 15,082.

Broadway, *par.*, Worcester, Eng.: tourist centre, Cotswolds: p. 1,860.

Brocken, Harz Mtns., Germany: highest point (3,745 ft.).

Brockport, *t.*, N.Y., U.S.A.: dairying, mkt. gardens: N.Y. St. Teachers' College: p. (1950) 4,743.

Brockton, *c.*, Mass., U.S.A.: shoes, machinery: p. (1950) 62,360.

Brockville, *t.*, Ontario, Canada: port of entry on R. St. Lawrence: farm implements: p. 11,342.

Brod, *t.*, Slavonia, Yugoslavia: nr. Save R.: p. 15,176.

Broken Hill, *c.*, N.S.W., Australia: silver, lead, zinc: centre wool-producing area: p. (1947) 27,054.

Broken Hill, Northern Rhodesia: commercial and mining centre: lead, zinc, vanadium: p. 8,601.

Bromberg, *see* Bydgoszcz.

Bromborough, *see* Bebington and Bromborough.

Bromley, *mun. bor.*, Kent, Eng.: residtl. sub. of London: p. (1951) 64,178.

Bromsgrove, *urb. dist.*, *old mkt. t.*, Worcester, Eng.: 13 m. S.W. of Birmingham: nails: p. (1951) 27,924.

Bromyard, *urb. dist.*, Hereford, Eng.: cider: p. (1951) 7,206.

Bronx, one of the five boroughs of N.Y. City, U.S.A.: and connected by bridges with bor. of Manhattan: p. (1950) 1,451,277.

Brookline, sub. of Boston, Mass., U.S.A.: residtl.: p. (1950) 57,589.

Brooklyn, *bor.*, N.Y. City, connected with Manhattan Bor. by the Brooklyn, Manhattan, and Williamsburgh Suspension Bridges across East R.: mainly residtl. with numerous mfg. and commercial interests: p. (1950) 2,738,175.

Broom, *loch* on N.W. coast of Ross and Cromarty, Scot.

Broome, *t.*, W. Australia: pearl fishing: p. 754.

Brora, *t.*, Sutherland, Scot.: on E. est., 12 m. N.E. of Dornoch Firth: centre of sm. coal-field: Harris Tweed industry.

Brosely, *mkt. t.*, Salop, Eng.

Brotton, *t.*, N.R. Yorks, Eng., nr. Guisborough.

Brough, *mkt. t.*, Westmorland, Eng.: in upper Vale of Eden, 4 m. N. of Kirkby-Stephen.

Broughshane, *vil.*, Antrim, N. Ireland.

Broughton, *par.*, Lancs, Eng.: iron and copper mines.

Broughty Ferry, *t.*, *wat. pl.*, Angus, Scot., on Firth of Tay.

Brownhills, *urb. dist.*, Staffs, coal-mining: p. 21,340.

Brownsville, *t.*, Texas, U.S.A.: livestock, sugar-cane: p. (1950) 36,066.

Brown Willy, *mtn.*, Cornwall, Eng.: alt. 1,375 feet.

Brownwood, *t.*, Texas, U.S.A.: exports cotton, grain, wool, poultry, dairy products: p. (1950) 20,181.

Broxbourne, *t.*, Hertford, Eng.: on gravel terrace to W. of R. Lea about 20 m. N.E. of London: centre of very intensively cultivated district, market-garden and glasshouse crops: light industries: "dormitory" t. linked with London.

Bruchsal, *t.*, Germany: tobacco, paper, machinery: p. 18,200.

Bruck, *t.*, Austria: p. 14,097.

Brue, *R.*, Somerset, Eng.

Bruges (Brugge), *t.*, *inland pt.*, Belgium: mkt.-hall with 13th century belfry: impt. mkt. for grain, cattle, horses, engin., glass, textiles, lace: p. (1947) 52,743.

Brühl, *c.*, Germany, 8 m. S. of Cologne: lignite, ironworks, sugar refining: p. 11,223.

Brunel, *Brit. protected state*, N. Borneo: oilfields: cutch, rubber, sago: a. 2,226 sq. m., p. (1952) 50,000.

Brünn, *see* Brno.

Brunsbüttelkoog, *t.*, mouth of Elbe, opposite Cuxhaven, Germany: p. 4,000.

Brunswick, *t.*, Lower Saxony, Germany: on R. Ocker: mediæval buildings, printing, jute, chemicals, machinery, sugar: p. (1950) 223,760.

Brunswick, *t.*, Me., U.S.A.: p. (1946) 7,342.

Brunswick, New, *see* New Brunswick.

Brussels, *c.*, *cap.*, Belgium: town hall, palace, parliament houses, univ., museum: mnfs., lace, carpets, silk, cottons, rayon: p. (1947) 920,380.

Brussels, *t.*, Ontario, Canada: p. 825.

Bryan, *t.*, Texas, U.S.A.: mkt. centre: cotton gins, compresses: oil mills: p. (1950) 18,102.

Bryansk, *t.*, U.S.S.R.: timber, flour, machinery: p. (1939) 87,473.

Brynawr, *urb. dist.*, Brecon, Wales: iron, coal: p. (1951) 6,524.

Brzeg (former German Brieg), *t.*, on R. Oder, Lower Silesia, Poland: p. 9,000.

Brzezany, *t.*, Galicia, Ukraine, U.S.S.R.: leather.

Bua, *t.*, Fiji Islands, Pacific.

Bucaramanga, *t.*, Santander, Colombia: coffee, tobacco: p. (1951) 104,179.

Buchan Ness, *C.*, nr. Peterhead, E. Scot.

Bucharest, *c.*, *cap.*, Romania: cath.: palace, univ.: textiles, grain: p. (1948) 1,041,807.

Buckfast, *S.*, Devon, Eng.: famous Abbey.

Buckfastleigh, *urb. dist.*, S. Devon, Eng.: p. (1951) 2,592.

Buckhannon, *t.*, W. Va., U.S.A.: agr. and pastoral centre: coal, gas, lumber, leather: p. (1950) 6,016.

Buckhaven, and Methil, *burgh*, Fife, Scot.: on N. side of Firth of Forth, 8 m. N.E. of Kirkcaldy: flax, coal: p. (1951) 20,154.

Buckie, *burgh*, Banff, Scot.: fisheries: p. (1951) 7705.

Buckingham, *co.*, England: wooded, beeches: includes Vale of Aylesbury: farming, dairy produce, ducks, sheep: mnfs., chairs, lace, paper: a. 743 sq. m.: p. (1951) 386,164.

Buckingham, *mun. bor.*, Bucks, Eng.: on Ouse R.: milk condensing: p. (1951) 3,944.

Buckley, *urb. dist.*, Flint, Wales: p. (1951) 7,699.

Bucyrus, *t.*, Ohio, U.S.A.: machine-mnfs.: p. (1950) 10,327.

Buczacz, *t.*, Ukraine, U.S.S.R.: agr., horse breeding, distilling, tapestries: p. 11,120.

Budaöc, *sub.* of Budapest, Hungary: p. 15,014.

Budapest, *twin-cap.*, Hungary: Buda on right bank and Pest on left bank of Danube: parliament, univ.: milling, tanning, brewing, leather: mineral springs: p. (1948) 1,058,288.

Budaun, *t.*, Uttar Pradesh, India: sugar-cane, rice: ruins.

Bude, *see* Stratton and Bude, Cornwall.

Budejovice, *t.*, Czechoslovakia: pencils, beet, porcelain.

Budge-Budge, *t.*, Bengal, India: hemp, rice: p. (1941) 24,183.

Budeigh Salterton, *urb. dist.*, E. Devon: resort: p. (1951), 3,953.

Buenaventura, *sp.*, Colombia, S. America: p. 14,515.

Buenaventura, *t.*, Mexico: p. 2,122.

Buenavista, *t.*, Mexico: on R. Yaqui: p. 140.

Buenos Aires, *c.*, *cap.*, Argentina: on R. La Plata, fine buildings, largest c. in S. hemisphere: trading centre: carpets, cloth, cigars, boots and shoes: univ.: p. (1947) 3,000,371.

Buenos Aires, *prov.*, Argentina: a. 118,467 sq. m.: treeless plain: sheep and cattle: cereals, fruit, tobacco: p. (1947) 4,408,373.

Buffalo, *c.*, *port*, N.Y., U.S.A.: on L. Erie: iron, steel, oil refining, meat packing, brewing, ship-building: p. (1950) 580,132.

Bug, *R.*, in Ukraine, flows into Black Sea: length 348 m.

Bug, *R.*, Poland: trib. of Vistula R.: since 1939 frontier between Poland and Ukraine S.S.R.



- Buga**, *c.*, Colombia, S. America; tr. centre for sugar, coffee, cacao; p. 19,595.
- Buganda**, *prov.*, Uganda Protectorate, Brit. E. Africa; located W. of L. Victoria largely at alt. between 4,500 and 6,000 ft.; recognised as a native kingdom subject to indirect Brit. rule; intensive cultivation, cotton (ch. commercial crop), plantains, millets; cap. Kampala.
- Builth Wells**, *urb. dist.*, N. Brecknock, Wales; on upper course, R. Wye; medicinal springs; p. (1951) 1,708.
- Buitenzorg**, *see* Bogor.
- Bujalance**, *c.*, Spain; 25 m. E. of Cordova; p. 15,728.
- Bukhara** (Bokhara), *t.*, Uzbek S.S.R., U.S.S.R.; in Amu Darya valley at W. foot of Tien Shan; mkt. for cotton, sunflower seed, wheat grown in irrigated Bukhara Oasis; impt. trading centre at W. terminus of ancient caravan route from China; linked by Trans-Caspian rly. to Krasnovodsk, by Turk-Sib. rly. to Novo Sibivsk; p. (1939) 50,382.
- Bukoba**, *t. pl.*, Tanganyika Terr., Brit. E. Africa; located midway along W. shore of L. Victoria; exports coffee, rice, plantains, and other foodstuffs to L. pts in Kenya and Uganda.
- Bukovina**, Northern, formerly Romania, ceded to U.S.S.R. in 1940; now forms part of Ukraine; area about 6,000 sq. km.; ch. t. Chernovitsy; Carpathian Mtns., forested; farming, cereals; cattle.
- Bulawayo**, *t.*, S. Rhodesia; commercial centre; gold; p. (1946) 52,737 (inc. 17,544 whites).
- Bulgaria**, *rep.*, Eastern Europe; mountainous; Balkan Mtns., R. Danube N. boundary; climate: hot summer, cold winter, milder in S.; heavy summer rainfall; religion: Greek Orthodox; communications: main rail from Central Europe passes through to Istanbul; cattle, pigs, farming, wheat, wine; cap. Sofia; a. 42,796 sq. m.; p. (1946) 7,022,206.
- Bulla**, *t.*, Bourke, Victoria, Australia.
- Bullawarra**, *t.*, Queensland, Australia.
- Bulle**, *t.*, Switzerland; p. 4,644.
- Bulli**, *t.*, N.S.W. Australia; on E. cst., 40 m. S. of Sydney; impt. coal-mining centre.
- Bulls**, *bor.*, N. I., New Zealand; p. (1951) 693.
- Bultfontein**, *t.*, C. of Good Hope, S. Africa; diamonds; p. 2,000.
- Bunbury**, *t. spt.*, W. Australia; on cst. 112 m. S. of Fremantle; port and commercial centre of large pastoral, agricultural fruit growing and timber dist., large co-operative butter factory; p. (1947) 6,204.
- Bunrana**, *urb. dist.*, Donegal, Ireland; salmon; p. 2,732.
- Bundaberg**, *t.*, Queensland, Australia; on Burnett R.; sugar factories, timber, dairying, mining; p. 15,921.
- Bungay**, *urb. dist.*, Suffolk, Eng.; on R. Waveney; printing; p. (1951) 3,531.
- Bunkers Hill**, Charlestown, now part of Boston, Mass., U.S.A.; battle between Americans and British, 1775.
- Buntingford**, *mkt. t.*, Herts, Eng.; on E. Anglian Heights, 10 m. N.W. of Bishop's Stortford.
- Buraida**, *t.*, Nejd, Saudi Arabia; p. 30,000.
- Burbank**, *c.*, Cal., U.S.A.; airport, aeroplanes; p. (1950) 78,577.
- Burdur**, *t.*, Turkey; p. 14,377.
- Bure**, *R.*, Norfolk, Eng.
- Burg**, *t.*, Germany; woollens, boots; p. 1,000.
- Burgas**, *spt.*, Bulgaria; on Black Sea; exports wheat, wool; p. (1947) 43,684.
- Burgenland**, *prov.*, Austria; a. 1,526 sq. m.; p. (1951) 276,136.
- Burgess Hill**, *urb. dist.*, Sussex, Eng.; bricks, tiles; p. (1951) 8,524.
- Burghhead**, *burgh*, Moray, Scot.; on Moray Firth, 7 m. N.W. of Elgin; fisheries; p. (1951) 1,367.
- Burgh-le-Marsh**, *mkt. t.*, Lincs, Eng.
- Burglen**, *vil.*, Altdorf, Uri, Switzerland; birth-place of William Tell.
- Burgos**, *t.*, Spain; cath.; hosiery, leather cloth; p. (1950) 74,677.
- Burgos**, *prov.*, Old Castile, Spain; ch. t., Burgos; a. 5,425 sq. m.; p. (1950) 397,048.
- Burgundy**, *old prov.*, N.E. France; composed largely of upper valley of R. Saône; famous vineyards; strategic position on route leading between plateau of Vosges and Jura Mtns. from Rhône valley to Rhine valley.
- Burhanpur**, *t.*, Madhya Pradesh, India; anc. walled Mogul city; textiles, brocades; p. 53,987.
- Burlington**, *c.*, Iowa, U.S.A.; on bluffs of Mississippi R.; machinery, furniture; p. (1950) 30,613.
- Burlington**, *pt.*, Vt., U.S.A.; E. side of L. Champlain; state univ.; timber; p. (1950) 33,155.
- Burma** (Union of), *rep.*, 1948; ch. mtns.: Arakan Yoma, Pegu Yoma; chief rivers: Irrawaddy, Salween; forested; agr.: rice, fruit, tobacco; timber, teak; minerals: petroleum, precious stones, rubies, sapphires; industries: carving, lacquer; cap. Rangoon; a. 261,757 sq. m.; p. (estd. 1951) 18,674,000.
- Burnham**, *par.*, nr. Maidenhead, Berks, Eng.; public woodland, "Burnham Beeches."
- Burnham**, *t. urb. dist.*, Somerset, Eng.; on Bridgewater Bay, 10 m. S. of Weston-super-Mare; resort; p. (1951) 9,136.
- Burnham-on-Crouch**, *urb. dist.*, Essex, Eng.; yacht sailing; p. (1951) 3,962.
- Burnie**, *t.*, Tasmania, Australia; pastoral and agricultural; p. 10,084.
- Burnley**, *indust. t.*, *co. bor.*, Lancs, Eng.; cotton, weaving, coal; p. (1951) 84,950.
- Burntisland**, *royal burgh*, East Fife, Scot.; on F. of Forth, nr. Kirkcaldy; p. (1951) 5,668.
- Burra**, *E. and W.*, two Shetland Is., Scot.
- Burray**, one of the Orkney Is., Scot.
- Burriana**, *t.*, *spt.*, Spain; oranges, wine; p. 18,437.
- Burrinjuck**, *t.*, N.S.W. Australia; on Murrumbidgee R., N. of Canberra; site of impt. dam providing irrigation in Riverina dist.
- Burry Port**, *urb. dist.*, Carmarthen, Wales; p. (1951) 5,927.
- Bursa**, *c.*, Turkey; 60 m. S. Istanbul; fruits, carpets, tapestry; cap. of Bithynia prior to the Christian Era, and later of the Ottoman Empire; p. (1950) 100,007.
- Burslem**, *t.*, part of Stoke-on-Trent, Staffs.
- Burton-on-Trent**, *indust. t.*, *co. bor.*, Staffs, Eng.; brewing, malting; p. (1951) 49,169.
- Buru**, *I.*, Indonesia; W. of Serang.
- Burjird**, *t.*, Persia; cotton, carpets.
- Bury**, *indust. t.*, *co. bor.*, S.E. Lancs.; on R. Irwell to S. of Rossendale Fells; cotton spinning and weaving, rayon, dyeing, machinery; p. (1951) 58,829.
- Bury St. Edmunds**, *mun. bor.*, W. Suffolk; monastic remains; farm implements; p. (1951) 20,045.
- Buryat-Mongolia**, *rep.*, R.S.F.S.R., U.S.S.R.; ch. t. Ulan Ude; a. 150,192 sq. m. p. (1939) 542,000.
- Busa**, *t.*, Nigeria, W. Africa; on Niger R.; p. 1,000.
- Bushire**, *spt.*, Iran; on Persian G.; exports carpets, hides, tobacco, fruit, nuts, drugs, cotton; p. (estd. 1949) 25,000.
- Buskerud**, *co.*, Norway; a. 5,738 sq. m.; p. (1950) 156,200.
- Busselton**, *t.*, *spt.*, W. Australia; 150 m. S. from Perth; pastoral, agr., and dairying district; p. 916.
- Buta**, *t.*, N. Belgian Congo; p. 9,153.
- Bute**, *I.*, *co.*, Firth of Clyde, Scotland; 16 m. long and 3-5 m. broad; ch. t., Rothesay; a. 218 sq. m.; p. (1951) 19,285.
- Bute**, *Kyles of*, strait, 6 m. between isle of Bute and Argyll.
- Buton**, *I.*, off coast of Celebes I., Indonesia.
- Butt** of Lewis, *promontory* with lighthouse; Lewis, Hebrides, Scot.
- Butte**, *c.*, Montana, U.S.A.; copper, lead, silver; p. (1950) 33,251.
- Buttermere**, *vil.*, Cumberland, Eng.; tourist resort.
- Buttermere**, *L.*, Cumberland, Eng.; 1½ m. long, ½ m. wide.
- Butterworth**, *t.*, C. of Good Hope, S. Africa.
- Buxton**, *mun. bor.*, Derby, Eng.; wat. pl. nr. High Peak dist.; p. (1951) 19,556.
- Buzau**, *t.*, Romania; rly. centre; cath.; wheat, timber, petroleum; p. 43,365.
- Bydgoszcz** (former German Bromberg), *t.*, Poland; on R. Ruda; rye, potatoes, flax, timber; p. (1950) 156,108.
- Byelorussia** (White Russia), *constituent rep.*, U.S.S.R.; cap. Minsk; a. 81,090 sq. m.; p. (1939) 5,567,976.
- Byron C., most easterly point of Australia, Pacific coast of N.S.W.**

Bytom (formerly Beuthen, Germany), *c.*, Upper Silesia, Poland: coal-mines; Medical High School; *p.* (estd. 1950) 112,336.

## C

Cabanatuan, *cap.*, Nueva Ecija prov., Luzon, Philippines; *tr.* centre; *p.* 46,626.

Cabeza, *sm. t.*, Spain; 86 m. E.S.E. of Badajoz; *p.* 11,762.

Cabo Juby, Spanish terr. on Atlantic coast, N. of Rio de Oro, N. Africa.

Cabot Strait, entrance of Gulf of St. Lawrence between C. Breton I. and Newfoundland.

Cabra, *t.*, Spain; 30 m. S.E. of Cordova; college; *p.* 20,779.

Cabrera I., Balearic Is.; in Mediterranean, 9 m. S. of Majorca; *a.* 8 sq. m.; penal settlement.

Cáceres, *prov.*, W. Spain; pastoral; *a.* 7,705 sq. m.; *p.* (1950) 549,077.

Cáceres, *t.*, Spain; largest bull-ring in Spain, ancient Castra Caecilia; *p.* (1949) 44,729.

Cachar, *dist.*, Assam, India; most flourishing centre of tea-growing in India; *a.* 3,654 sq. m.

Cachoeira, *t.*, *ur.* Salvador (Baía), Brazil; *p.* 10,431.

Cader Idris, *mtn.*, Merioneth, Wales; alt. 2,929 ft.

Cadillac, *t.*, Mich., U.S.A.; rubber tyres, wood, and metal products; *p.* (1950) 10,425.

Cádiz, *maritime prov.*, S. Spain; *cap.* Cádiz; *a.* 2,827 sq. m.; *p.* (1950) 700,396.

Cádiz, *t.*, *spt.*, Andalusia, S. Spain; exports sherry, cork, fruit, olive oil, tunny fish; *univ.*; *p.* (1950) 100,249.

Caen, *c. cap.*, Calvados, France; fine church and abbey, tomb of William the Conqueror; *univ.*; iron ore, lace, gloves exported; scene of fierce fighting in Second World War, when it was severely damaged; *p.* (1946) 51,445.

Caerleon, *urb. dist.*, Monmouth, Eng.; on R. Usk, 3 m. N.E. of Newport; Roman remains; *p.* (1951) 4,711.

Caernarvon, *t.*, *mun. bor.*, *cap.*, Caernarvonshire, N. Wales; on S. shore of Menai Strait; cas. where first Prince of Wales (Edward II) was christened; slate; *p.* (1951) 9,255.

Caernarvonshire, *mtinous. marit. co.*, N. Wales; slate and stone quarries, lead mines; oats, barley, sheep, cattle; highest peak, Snowdon (3,560 ft.); *a.* 569 sq. m.; *p.* (1951) 124,074.

Caerphilly, *t.*, *urb. dist.*, Glamorgan, S. Wales; cas.; busy coal and iron centre; malting; *p.* (1951) 35,194.

Caesarea, *t.*, on coast of Israel; once the official residence of the Herods and Roman Governors of Palestine.

Caesarea Mazaca, Turkey; once residence of Kings of Cappadocia; now trading centre.

Caeté, *t.*, Minas Geraes st., Brazil; at foot of Serra do Espinhaco, 50 m. E. of Belo Horizonte; lge. iron and steel works.

Cagayan, *prov.*, Luzon, Philippine Is.; *p.* 346,700.

Cagli, *t.*, *prov.* of Pesaro and Urbino, Italy; *p.* 12,145.

Cagliari, Italian *prov.*, comprising S. half of Sardinia; *a.* 5,179 sq. m.; *p.* (1951) 667,355.

Cagliari, *spt.*, *cap.*, Sardinia, S. end of I.; cath. and *univ.*; exports lead, zinc; *p.* (1951) 137,032.

Cagnes-sur-Mer, *t.*, Alpes-Maritimes dep., France; Riviera resort; *p.* 7,866.

Caha, *mtns.*, on boundary of Cork and Kerry, Ireland; cas.; highest pt. 2,249 ft.

Caher, *t.*, Tipperary, Ireland; on R. Suir; ancient cas. and abbey.

Cahiriveen, *t.*, Kerry, Ireland; on R. Valencia.

Cahors, *t.*, *cap.*, Lot, France; cath.; distilleries, shoe factories; *p.* (1946) 15,345.

Caibarien, *t.*, Cuba; sugar-shipping port.

Caicos Is., see Turks and Caicos Is.

Cairngorm, *mtn.*, Inverness and Banff, Scot.; alt. 4,084 ft.

Cairns, *spt.*, Queensland, Australia; on Trinity Bay; fine sugar, tropical fruit growing, dairying, and mining; *p.* (1947) 16,641.

Cairnroul, *mtn.*, Inverness and Aberdeen, Scot.; alt. 4,241 ft.

Cairo, *c. cap.*, Egypt; on R. bank of Nile at head of Nile delta; *univ.*; tourist centre; mnfs. cotton, paper, silk; *p.* (1947) 2,100,506.

Cairo, Ill., U.S.A.; confluence of Mississippi and Ohio; extensive traffic; *p.* (1950) 12,123.

Caister, *vil.*, N. of Yarmouth, Norfolk, Eng.; ruined cas.; holiday resort.

Caithness, *co.*, Scot.; most N. part of mainland; mountainous; herring fishery; poor agr.; quarrying; ch. ts. Wick, Thurso; *a.* 686 sq. m.; *p.* (1951) 22,705.

Caivano, *indust. t.*, Italy; N.E. of Naples.

Cajalco Reservoir, S. Cal., U.S.A.; hill-top location nr. Riverside, 55 m. S.E. of Los Angeles; stores water brought 242 m. by aqueduct from Parker Reservoir on R. Colorado, for distribution throughout Los Angeles plain.

Cajamarca, *dep.*, N. Peru; mining and agr.; *a.* 12,538 sq. m.; *p.* (1947) 639,942.

Cajamarca, *t.*, *cap.*, Cajamarca prov., Peru; cottons, woollens, silver; *p.* (1947) 18,324.

Calabar, *spt.*, S.E. Nigeria, Brit. W. Africa; exports palm oil, kernels, rubber, ivory; *p.* 16,653.

Calabozo, *t.*, N. Venezuela, S. America; cattle, agr., *tr.* centre; *p.* 7,123.

Calabria, *region.*, extreme S.W. Italy; mountainous and fertile; highest point Mt. Pollino 7,325 ft.; ch. R. Crati; cereals, wine, olives, fruit; copper, marble; tunny fish; *a.* 5,830 sq. m.; *p.* (1951) 2,042,690.

Calafat, *t.*, Romania; on Bulgarian frontier, opp. Vidin.

Calahorra, *t.*, Logrono, Spain; cath.; fruit, wine; on R. Ebro; *p.* 13,199.

Calais, *spt.*, Pas de Calais, N.E. France; cross-channel ferry pt. opposite to and 21 m. distant from Dover; lace, fishing; *p.* (1946) 50,048.

Calais Maine, *t.*, U.S.A.; sawmills and shipyards; *p.* (1950) 4,589.

Calama, *oasis.*, Autogagasta prov., N. Chile; in Atacama Desert at foot of Andean Cordillera, 130 m. N.E. of Autogagasta on main railway to La Paz; water from R. Loa supplies Autogagasta and used for irrigation locally; cotton, wheat, vegetables; *p.* 4,967.

Calamar, *t.*, Bolivar dep., Colombia; on R. Magdalena 60 m. from mouth, also connected by rail to *spt.* Cartagena; handles traffic between Cartagena and Magdalena valley.

Calamianes Is., Philippine Is.; between Mindoro and Palawan Is.

Calañas, *commune.*, S. Spain; pyrites, olives; *p.* 11,285.

Calaras, *t.*, S.E. Romania; on the Danube; commercial centre; *p.* 17,890.

Calasiao, *t.*, Luzon, Philippines; hats; *p.* 19,325.

Calatafimi, *commune.*, Sicily; Garibaldi defeated Neapolitans, May 1860; *p.* 11,484.

Calatayud, *t.*, Spain; 55 m. S.W. Saragossa; cas.; *p.* 18,419.

Calbayog, *t.*, Samar, Philippine Is.; hemp trade, fisheries.

Calcutta, *c. spt.*, W. Bengal, India; on R. Hoogli; vast trade from Ganges plain; *univ.*; jute-mills; exports jute, cotton, sugar-cane, rice, tea, silk, coal; *p.* (with suburbs) (1951) 2,548,677.

Caldas, *dep.*, Colombia, S. America; *cap.* Manizales; *a.* 5,160 sq. m.; *p.* (1947) 1,006,390.

Calder, *t.*, S.W. Midlothian; shale mines, oilwks.; *p.* 3,200.

Calder, R., Lancs, Eng.; joins the Ribble.

Calder, R., W.R. Yorks, Eng.; trib. of Aire R.

Caldera, *spt.*, Atacama, Chile; *p.* 1,525.

Caldwell, *t.*, Idaho, U.S.A.; *p.* (1950) 10,487.

Caldy I., off Pembroke coast, Wales; lighthouse; monastery.

Caledonian Canal, from Moray Firth to Loch Linnhe, Scot., connecting North Sea with Atlantic; 62½ m. long; opened in 1822.

Calera, *t.*, Chile; rly. junction; *p.* 8,426.

Calf of Man, *sm. I.*, S.W. I. of Man, Eng.; *a.* 620 acres.

Calgary, *prin. t.*, Alberta, Canada; centre of ranching country; lumber-mills, tanneries; *p.* (1951) 126,631.

Call, *t.*, *cap.*, Valle del Cauca, Colombia; on Cauca R.; coal, coffee, copper; *p.* (1951) 243,463.

Calicut, see Kozhikode.

California, most important of Pacific States, U.S.A.; mountainous and forested but fertile valleys; salubrious climate; rich in minerals, oil, natural gas, gold, silver, copper; oil refining; films; fruit; *cap.* Sacramento; chief port San Francisco, largest *c.* Los Angeles; has 279 incorporated cities; *a.* 158,693 sq. m.; *p.* (1950) 10,533,223.



- California Current. E. Pac. Oc.; flows N. to S. along cst. of Ore., and Cal., U.S.A.; relatively cold water; reduces summer temperatures and causes fog in cst. areas especially nr. San Francisco.
- California, G. of, Mexico; 700 m. long; inlet of Pacific Ocean.
- California, Lower, terr., Mexico; between Gulf of C. and Pacific; cap. La Paz; chiefly a sterile region; some mineral wealth; a. 55,654 sq. m.; p. 130,378.
- Calimere Point, most S. point of Coromandel Coast, India.
- Calistoga, t., Cal., U.S.A.; tr. centre, wine, grapes; hot springs; p. 1,124.
- Callan, rural dist., t., Kilkenny, Ireland; on the King's R.; p. 6,832.
- Callander, mkt. t., burgh, Perth, Scot.; on R. Teith, 15 m. N.W. of Stirling; "the gate of the Highlands," tourist resort; p. (1951) 1,727.
- Callao, dep., Peru; cap. C.; a. 14 sq. m.; p. (1947) 87,553.
- Callao, t., *spt.*, cap. Callao dep., Peru; linked by rly. to Lima; exports, sugar, cotton; p. (estd. 1950) 87,537.
- Calne, mkt. t., mun. bor., Wilts, Eng.; on Marlan R.; dairying, food processing; p. (1951) 5,552.
- Calonne-Ricourt, commune, Pas-de-Calais dep., France; coal; p. 11,497.
- Calota, gold-field dist., Colombia, S. America.
- Calstock, t., E. Cornwall, Eng.; on Tamar estuary.
- Caltagirone, c., Catania, Sicily; cath.; local mkt.; p. 38,178.
- Caltanissetta, t., cap., Caltanissetta prov., Sicily, Italy; cath.; sulphur; p. (1951) 60,303.
- Caluire-et-Clare, sub. of Lyons, France, on Saône, R.; coal; p. 16,126.
- Calumet, t., Mich., U.S.A.; on peninsula in L. Superior; copper mining; p. 1,460.
- Calvados, dep., N.W. France; cap. Caen; livestock, dairying, fisheries, textiles, liqueur brandy; a. 2,197 sq. m.; p. (1946) 404,900.
- Calvi, *spt.*, N.W. coast, Corsica; fishing; p. 2,536.
- Calvinia, t., C. of Good Hope, S. Africa; p. 3,627.
- Cam, R., Cambridge, Eng., trib. of Ouse; length 40 m.
- Camagüey, prov., Cuba, W. Indies; a. 10,169 sq. m.; p. (1943) 487,076.
- Camagüey, t., cap., Camagüey, Central Cuba; p. (1943) 155,827.
- Camagüey, t., Peru; sugar-cane; p. (1947) 155,827.
- Camajore, t., Central Italy; foot of Apuan Alps, in prov. of Lucca; old church.
- Camana, t., Peru; p. 2,253.
- Camargue, delta dist., Bouches-du-Rhône, France; at mouth of R. Rhône; a. 300 sq. m.
- Camarines Norte, prov., Luzon, Philippine Is.; mtns. and fertile land; agr., minerals; cap. Daet; a. 829 sq. m.; p. 98,324.
- Camas, t., Wash., U.S.A.; agr., pulp, paper, fruit canning; p. (1950) 4,725.
- Camby G., separates Kathiawar Peninsula from Bombay State, India.
- Camberwell, metropolitan bor., London, Eng.; p. (1951) 179,729.
- Cambodia, ind. state, Indo-China, formerly within the French Union, contains the great Tonlesap L.; cap. Phnompenh on Mekong R.; cattle breeding; fisheries; rice, coffee, pepper, rubber; 67,550 sq. m.; p. (1950) 4,150,000.
- Cambodia, C., extreme S. of Cambodia, Indo-China.
- Camborne, t., Cornwall, Eng.; 11 m. S.W. Truro; old tin and copper mines; p. (Camborne-Redruth urb. dist., 1951) 35,329.
- Cambral, t., Nord dep., France; on Schelde R.; linen, brewing, soap; p. (1946) 26,129.
- Cambridge, co., Eng.; flat, Fens in N.; Rs. Ouse, Nen, Cam; wheat, oats, potatoes, fruit, dairying; a. 877 sq. m.; p. (1951) 166,863.
- Cambridge, mun. bor., univ. c., co. t., Cambridge, Eng.; on Cam R.; univ.; radio and scientific instruments; p. (1951) 81,463.
- Cambridge, t., Maryland, U.S.A.; oysters; p. (1950) 10,351.
- Cambridge, c., Mass., U.S.A., 3 m. from Boston; seat of Harvard Univ.; p. (1950) 120,740.
- Cambridge, t., Ohio, U.S.A.; coal, iron, clay, oil; glassware, pottery; p. (1950) 14,739.
- Cambuslang, par., Lanark, Scot.; coal, iron, limestone; on Clyde R.; p. (1951) 26,861.
- Camden, mfg. and resid. c. N.J., U.S.A.; on Delaware R., suburban and opposite Philadelphia; iron foundries, chemicals, glass, wireless sets, shipbuilding; p. (1950) 134,555.
- Camden Town, industr. and resid. dist., London, Eng.; N.E. of Regent's Park.
- Camel, R., E. Cornwall, Eng.; length 30 m.
- Camertino, c., Macerata, Central Italy, in Apennines; the ancient Camerium annexed to Papal States in 16th century; univ. cath.
- Cameron, c., Texas, U.S.A.; p. (1950) 5,052.
- Cameron Bay, t., N.W. Terr., Canada; by Great Bear Lake; radium.
- Camerouns, region of W. Africa; between Bight of Biafra and L. Chad, administered as trust territories under the United Nations by Britain and France. The British portion has an a. of 34,081 sq. m.; p. (estd. 1952) 1,500,000; and is attached to Nigeria. The French portion autonomous territory; a. 166,489 sq. m.; cap. Yaoundé; palm oil, ivory, cocoa, tobacco; p. (estd. 1950) 2,997,200; range of mtns. close to shore, highest point Cameroon, 13,000 ft.
- Camiguin, I., Philippines; in Mindanao Sea; mtns.; sugar, rice, tobacco; a. 96 sq. m., p. 40,805.
- Campagna, Italy; malarial coastal plain round Rome; now being drained; new commune of Latina founded 1932.
- Campanha, t., Minas Geraes, Brazil; industr.
- Campania, region, S. Italy; ch. t. Naples; a. 5,250 sq. m.; p. (1951) 4,338,699.
- Campaspe, R., Victoria, Australia; rises in Grampian Mtns., flows N. into R. Murray at Echuca; supplies water for irrigated area between Rochester and Echuca; length, 140 m.
- Campbellford, t., Ontario, Canada; lumber, flour, wool, leather goods; p. 3,018.
- Campbellton, t., *spt.*, New Brunswick, Canada; lumbering, fishing; p. 6,748.
- Campbeltown, burgh, *spt.*, Argyll, Scot.; on Firth of Clyde est. of peninsula of Kintyre; distilling, fishing; p. (1951) 7,169.
- Campeche, st., Yucatan, Mexico; hot, flat and unhealthy; rice, cotton, logwood, chicle, sisal; a. 19,670 sq. m.; p. (1950) 122,093.
- Campeche, cap. t. of st., *spt.*, Mexico; on G. of Mexico; exports logwood, sisal, hemp; p. (1940) 28,895.
- Camperdown, t., Victoria, Australia; dairying dist.; p. 3,029.
- Camperdown, vil. on dunes, N. Holland, Netherlands; battle 1797.
- Campinas, t., Brazil; 55 m. N. of São Paulo; p. (1950) 101,746.
- Campine, or Kempenland, dist., provs. Limburg and Antwerp, Belgium; coalfield.
- Campo Belo, t., Minas Geraes st., Brazil; 200 m. by rail N.E. of Rio de Janeiro; impt. cattle centre.
- Campobasso, prov., Abruzzi and Molise, Italy; among the Apennines; a. 1,692 sq. m.; p. (1951) 406,476.
- Campobasso, *fortd.* t., 50 m. N.E. Naples, Italy; famous for cutlery and arms; p. (1951) 23,538.
- Campobello di Licata, t., Sicily; sulphur mines.
- Campobello di Massara, t., Sicily; quarrying.
- Campos, c., Rio de Janeiro, Brazil; coffee, sugar; p. 52,677.
- Campsie Fells, range of hills, Stirling, Scot.; highest point 1,894 ft.
- Campton, t., N.H., U.S.A.; resort; p. 1,130.
- Campulung, t., Muscel, Romania; N.W. of Bucharest; first cap. of Wallachia; summer resort; p. 18,500.
- Canada, Dominion of, N. America; dominion founded 1867, and now inc. all Brit. N. American Federation of ten provinces: Nova Scotia, New Brunswick, Prince Edward I., Quebec, Ontario, Manitoba, Saskatchewan, Alberta, Br. Columbia, Newfoundland with Labrador, and the terr. of Yukon and N.W. Territories (Franklin, Keewatin, Mackenzie); cap. Ottawa; Great Lakes; Rocky Mtns.; Great Plains; St. Lawrence, Saskatchewan, and Mackenzie Rs.; extreme climate, Pacific seaboard mild; coniferous forest belt except for Central grasslands, tundra in N.; agr.: wheat, oats, dairying; pulp, paper; coal, gold, copper, nickel; fisheries; furs; hydro-electric power; impt. port. mnfs.; a. 3,845,774 sq. m.; p. (1953) 14,692,000.
- Canadian Coast Range, mtns., B.C., W. Canada; extend N.W. to S.E. along cst.; penetrated by

- deep inlets (fjords) with very little est. plain; drained by short, swift rs., crossed only by R. Skeena in N., R. Fraser in S., which give access to interior; marked climatic barrier, to W. equable climate with heavy all-year rain, to E. more extreme semi-arid climate, especially on valley floors.
- Canadian R., trib.** (flowing from New Mexico) of Arkansas R., U.S.A.; length 900 m.
- Canajoharie, t., N.Y., U.S.A.:** agr., dairying; food packing; p. (1950) 2,761.
- Canal Du Centre, canal, Saône-et-Loire dep., France:** links Rhône-Saône valley at Chalon-sur-Saône with R. Loire at Digoin; serves Le Creusot Coalfield; length 60 m.
- Canal Zone, Panama:** strip of land leased to U.S.A. for Panama Canal; a. 648 sq. m. (276 sq. m. water); p. (1943) 47,462.
- Cañanea, spt., Brazil:** S. of Santos.
- Cananea, t., Mexico:** cattle, copper, silver, lead, zinc; p. 11,006.
- Cañar, prov., Ecuador:** cap. Azuques; Inca remains; agr., Panama hats; a. 1,521 sq. m.; p. (1950) 97,681.
- Canaries Current, ocean current:** flows S. along N.W. est. of Africa from Casablanca to C. Verde; relatively cold and has v. marked cooling effect on Saharan coastlands.
- Canary Is., or Canaries, N. Atl. Oc.:** group of 7 islands belonging to Spain, 12 m. off est. Africa and 700 m. S. of Gibraltar; compr. Tenerife I., the largest (cap. Santa Cruz), Gran Canaria (cap. Las Palmas), Palma, Gomera, Hierro, Fuerteventura, Lanzarote; tropical produce; ch. exports, bananas, oranges, tomatoes, vegetables and tobacco; wine, cochineal, a. 4,685 sq. m., p. (1948) 790,397.
- Canastota, t., N.Y., U.S.A.:** engineering, furniture, plastics; p. (1950) 4,458.
- Canberra, Australian Capital Territory, Australia:** in Gt. Dividing Range (alt. approx. 6,000 ft.) 200 m. S.W. of Sydney; seat of govt. of Commonwealth; 911 sq. m.; p. (of territory) (estd. 1953) 30,983.
- Cancale, t., Illes-et-Vilaine dep., N. France:** St. Michael's Bay; p. 6,340.
- Candia (Herakleion), cap., Crete:** midway along N. cst.; olive oil, raisins; p. (1951) 54,541.
- Candon, t., Luzon, Philippines.**
- Canea, see** Khania.
- Canelones, dep., Uruguay:** wine; a. 1,834 sq. m.; p. (1942) 200,308.
- Cañete, sma. spt., Lima dep., Peru, S. America:** 75 m. S.E. of Callao; exports cotton grown under irrigation in Cañete valley.
- Cangas de Onís, commune, Spain:** agr., cattle; coal, copper, tanning; p. 9,936.
- Cangas de Tineo, t., Oviedo, Spain:** nr. N. cts., 35 m. E. of Oviedo; woollens, linens; p. 24,000.
- Canicattì, t., Sicily:** sulphur; in fruit-growing dist.; p. 27,360.
- Canna, sm. I., Hebrides, Scot.:** basaltic pillars.
- Cannanore, t., Madras, India:** exports timber, coconuts; p. (1941) 27,700.
- Cannes, spt., dep. Alpes-Maritimes, France:** 20 m. S.W. Nice; famous winter resort; perfumes; p. (1946) 45,548.
- Cannock, urb. dist., Staffs, Eng.:** on S.W. flank of Cannock Chase, 7 m. N.E. of Wolverhampton; coal-mining; p. (1951) 40,927.
- Canonsburg, bor., Penns., U.S.A.:** coal, gas, oil; p. (1950) 12,072.
- Canopus, anc. c., Lower Egypt:** gr. temple to Serapis.
- Canosa, t., Apulia, S. Italy:** cath.; the Roman Canusium; centre of olive-growing dist.; p. 27,341.
- Canso, spt., Nova Scotia, Canada:** p. 1,418.
- Cantabrians, mtns., N. Spain,** from Pyrenees to Cape Finisterre, highest peak Peña Vieja, alt. 8,736 ft.
- Cantal, mountainous dep., Central France:** mineral springs, grain, dairying; coal, marble; cap. Aurillac; a. 2,229 sq. m.; p. (1946) 186,843.
- Canterbury, c., co. bor., Kent, Eng.:** at foot of N. Downs on R. Stour; famous cath. founded A.D. 597 by St. Augustine; shrine of the murdered Thomas à Becket, a place of pilgrimage for centuries; brewing; p. (1951) 27,778.
- Canterbury, prov. dist., S. I., New Zealand:** cap. Christchurch; a. 13,940 sq. m.; p. (1951) 280,215.
- Canterbury Plains, rich grazing and wheat-growing dist. S. I., New Zealand:** along E. cst., famous for "Canterbury Lamb"; ch. t. Canterbury; ch. pt. Lyttelton.
- Cantho, t., Indo-China:** on Mekong R.; rice, fish; tr. centre; p. 27,000.
- Canton, (Kuangchou) ch. c., former treaty port, Kwangtung, S. China:** 90 m. N.W. Hong Kong; exports silk, tea, matting; important trade centre; p. (estd. 1952) 1,496,000.
- Canton, t., Ill., U.S.A.:** mnfs.; p. (1950) 11,927.
- Canton, industr. and agr. t., Ohio, U.S.A.:** coal, farm machinery, engineering; p. (1950) 116,912.
- Canton R., see** Chukiang.
- Cap Haitien, spt., Rep. of Haiti:** on N. cst.; bombed by British 1865; est. p. 40,000.
- Capannori, t., Lucca, Italy:** silk industry; p. 39,527.
- Cape Breton I., Nova Scotia, E. Canada:** farming, timber, fishing; ch. t. Sydney; a. 3,120 sq. m.
- Cape Chidley, I. off N. point of Labrador.**
- Cape Coast, t., Gold Coast, Brit. W. Africa:** on cst. 60 m. S.W. of Accra; palm oil; p. (1948) 23,061.
- Cape Girardeau, t., Missouri, U.S.A.:** p. (1950) 21,578.
- C. of Good Hope, prov., Union of S. Africa:** physical features: Drakensberg Mtns., Orange and Caledon R., Gr. Karroo, Lit. Karroo; scanty rain except S. and E. cst.; maize, fruit; sheep, goats; minerals, diamonds; races: Dutch, British, Bantu; cap. Cape Town; p. of the Colony proper and E. Griqualand, Transkei, Tembuland, Pondoland, Bechuanaland; a. 277,137 sq. m. (inc. Walvis Bay); p. (1951) 4,417,330, of whom 935,674 are whites.
- C. of Good Hope, S. Africa:** famous headland, S. of Cape Town, 1,000 ft. high.
- Cape Town, c., spt., cap., of C. of Good Hope prov., and legislative cap., of Union of S. Africa:** on Table Bay, 30 m. N. of C. of Good Hope; communication by rail direct with Rhodesia, Transvaal, Orange, and Natal; docks; cath.; exports wool, gold, diamonds; p. (1951) 571,638 (inc. approx. 250,000 whites).
- C. Verde Islands, Portuguese Is., in Atlantic,** 350 m. W. of C. Verde, Africa; divided into two groups, Barlavento (Windward) and Sotavento (Leeward); 15 islands and islets; a. 1,557 sq. m.; agr., sugar, and fruit-growing; cap. Praia; São Vicente coaling st. for all navigation to S. America; p. (1950) 147,328.
- Capernaum (Tell Hum), ruins,** in time of Christ important place in Palestine, on the N. shore of the L. of Galilee.
- Capis, prov., Panay, Philippines,** mnfs.; p. 466,000.
- Capo d'Istria, spt., Trieste Free Terr.:** cath., old fort; Austro-Italian disputes over ownership since very early days; p. 11,995.
- Cappoquin, t., Waterford, Ireland:** on Blackwater R.
- Capraja, Italian I. in the Mediterranean,** 16 m. E. Corsica; anciently called Capraria.
- Caprera, Italian I. off N.E. Sardinia,** where Garibaldi lived.
- Caprese, commune, Tuscan, Italy:** birthplace of Michelangelo; p. 3,195.
- Capri, I. and t., in Bay of Naples:** tourist resort; residence of Augustus and Tiberius; the ancient Caprae; famous Blue Grotto; fine wines; p. (t.) 4,500; (I.) 8,050.
- Capua, ancient fort, c., Campania, Italy:** 20 m. N. of Naples; founded by the Etruscans, came under Roman rule, sacked by the Saracens; modern t. 2 m. N. of site of ancient Casilinum; fireworks-making; cath.; p. 14,375.
- Caracas, cap., Venezuela:** 8 m. inland from its port, La Guaira; alt. about 3,000 ft.; cath.; univ.; exports coffee, cacao; p. (1950) 487,903.
- Caracoles, t., Chile:** silver; p. 5,000.
- Caravaca, t., Murcia, Spain:** iron, tanning; p. 21,560.
- Carballo, t., Corunna, Spain:** industr.; p. 18,159.
- Carbon County, N. Utah, U.S.A.:** contains immense reserves of good coking coal suitable for blast furnaces; not yet developed.
- Carbondale, t., Penns., U.S.A.:** anthracite; p. (1950) 16,296.



- Carbonear, *spt.*, Conception Bay, Newfoundland, Canada; p. (1951) 3,351.
- Carbonia, *t.*, Sardinia; recently built; near coal; p. 12,000. [p. 36,308.]
- Carcar, *t.*, Cebu, Philippine Is.; sugar industry.
- Carcassonne, *t.*, Aude, France; on Aude R.; historic citadel guarding imp. routeway from Aquitaine to Rhône valley; farm implements; wines, cloth; p. (1946) 39,139.
- Carcagente, *t.*, W. of Cullera, Valencia, Spain; oranges; p. (1955) 18,002.
- Carchi, *prov.*, Ecuador; cap. Tulcan; a. 1,495 sq. m.; p. (1950) 76,595.
- Cardamon Hills, Travancore, S. India; forms extreme S.W. edge of Deccan plateau; drained W. by R. Periyar, E. by R. Vaigai; rainfall less seasonal than over most of India; "China" tea plantations on middle slopes; rise to over 8,000 ft. alt.
- Cardenas, *t.*, Matanzas, Cuba; sugar, tobacco; p. 37,144.
- Cardiff, *c.*, *spt.*, *co. bor.*, Glamorgan, S. Wales; cap. Wales; univ. coll.; docks, iron, tinplate wks., ship-building, chemicals; exports coal, machinery; suffered greatly from depression in inter-war years; p. (1951) 243,627.
- Cardigan, *mun. bor.*, *co. t.*, Cardigan, S. Wales; on Teifi R.; p. (1951) 3,497.
- Cardigan Bay, *lge. bay*, W. Wales, 70 m. extent N. and S.
- Cardiganshire, *maritime co.*, S. Wales; mountainous; mainly agr., mines, and quarries; a. 692 sq. m.; p. (1951) 53,267.
- Cardona, *t.*, Barcelona, Spain.
- Cardross, *indust. vil.*, Dunbarton, Scot.; on R. Clyde; death of King Robert Bruce.
- Cardwell, *t.*, Queensland, Australia; harbour; gold-mining dist.
- Carentan, *t.*, Manche dep., France; p. 3,656.
- Carey, *t.*, Ohio, U.S.A.; mkt. gardening; p. (1950) 3,260.
- Caribbean Sea, between W. Indies and Central and S. America; a. 7,500 sq. m.
- Caribou Range, *mtns.*, B.C., W. Canada; mass of ancient crystalline rocks inside the great bend of R. Fraser; widespread occurrence of lode and alluvial gold; mainly above 5,000 ft.
- Caribou, *t.*, Maine, U.S.A.; p. (1950) 9,923.
- Caribrod, *t.*, Jugoslavia; on Nisava R.; p. 4,000.
- Carinata I., off S.W. Borneo, Indonesia.
- Carinthia, *prov.*, Austria; cap. Klagenfurt; mountainous; mineral springs; rye, oats; lead, iron; a. 3,681 sq. m.; p. (1951) 474,764.
- Carisbrooke, *t.*, I. of Wight, Eng.; cas. prison of Charles I (1647-8); p. 4,700.
- Carlingford, *t.*, *spt.*, Louth, Ireland; on Carlingford Bay; oysters.
- Carlingford, Lough, *inlet* of sea between Down and Louth, Ireland.
- Carlinville, *t.*, Ill., U.S.A.; bricks and tiles, agr. machinery; p. (1950) 5,116.
- Carlisle, *c.*, *co. bor.*, Cumberland, Eng.; on Eden R.; 8 m. from Solway Firth; imp. route centre; ancient cas. and cath.; cottons, biscuits; p. (1951) 67,894.
- Carlisle, *bor.*, Penns., U.S.A.; boots and shoes; p. (1950) 16,812.
- Carloforte, *t.*, San Pietro I., Sardinia, Italy; tunny fishery; p. 7,825.
- Carlow, *co.*, Leinster, Ireland; *co. t.*, Carlow; a. 346 sq. m.; p. (1951) 34,168.
- Carlow, *t.*, Ireland; brewing, milling; p. 7,465.
- Carlsbad, *see* Karlovy Vary.
- Carlsbad Cavern, N.M., U.S.A.; gr. cave in limestone through which flows R. Pecos; stalactites, stalagmites; tourist attraction; length 4,000 ft., width 600 ft., height of roof 300 ft.
- Carlsruhe, *see* Karlsruhe.
- Carlstadt, *bor.*, N.J., U.S.A.; brass, marble; p. (1950) 5,591.
- Carlton, *urb. dist.*, Notts, Eng.; 2 m. N.E. of Nottingham; lace, hosiery; p. (1951) 34,243.
- Carlisle, *t.*, *par.*, Lanark, Scot.; engineering; p. (1951) 11,415.
- Carmagnola, *mftg. t.*, N. Italy; on Melba R.; p. 12,241.
- Carmarthen, *mun. bor.*, *co. t.*, Carmarthenshire, Wales; on Towy R.; tinplate; p. (1951) 12,121.
- Carmarthen Bay, Carmarthen, Wales; 18 m. across.
- Carmarthenshire, *co.*, S. Wales; *co. t.*, Carmar-
- then; mountainous; mining; mainly pastoral land; a. 920 sq. m.; p. (1951) 171,742.
- Carnaux, *t.*, Tarn, France; glass mftg.; p. (1946) 11,136.
- Carmel, *Mt.*, Israel; alt. 1,932 ft.
- Carmen de Bolivar, *spt.*, Campeche Bay, Mexico.
- Carmona, *t.*, Spain; olives, wine, fruit; p. 24,876.
- Carnac, *vil.*, Morbihan, N.W. France; S.E. of Lorient; prehistoric stone monuments and circles.
- Carnarvon, *t.*, W. Australia; on R. Gascoyne; p. 345.
- Carnatic, *dist.*, Madras, India; British conquest 1783.
- Carnegie, *bor.*, Penns., U.S.A.; steel, iron; p. (1950) 12,105.
- Carnegie, *L.*, W. Australia.
- Carnew, *t.*, Wicklow, Ireland; granite, slate.
- Carnforth, *t.*, *urb. dist.*, Lancs, Eng.; rly. centre; p. (1951) 3,388.
- Carnoustie, *burgh*, Angus, Scot., on N. Sea; 6 m. S.W. of Arbroath; summer resort; p. (1951) 5,195.
- Carnose Point, S. Wexford, Ireland.
- Cartogher Mtns., *range of mtns.*, Londonderry, N. Ireland.
- Carnwath, *vil.*, Lanark, Scot.; coal, shale, iron.
- Caro, *t.*, Mich., U.S.A.; sugar beet refining; p. (1950) 3,464.
- Carolina, *see* N. and S. Carolina.
- Caroline Is., *archipelago* in W. Pacific Oc.; about 549 in number, lying between the Philippines and the Marshall Group, former Japanese mandate now U.S.A. trust terr.; ch. export copra.
- Caroni R., Venezuela, S. America; trib. of Orinoco; 400 m.
- Carpathian Mtns., *range* separating Czechoslovakia and Hungary from Galicia, and Transylvania from Moldavia, 805 m. long; highest point, Tatra 8,740 ft.
- Carpentaria, *G.* of North Australia; between C. Arnhem and C. York.
- Carpentras, *c.*, Vaucluse, France; on R. Auzon; many antiquities; p. (1946) 14,222.
- Carpi, *indust. t.*, Modena, Central Italy; cath.; p. 33,000.
- Carranfuohill Mtn., Kerry, Ireland; loftiest in Magillcuddy's Reeks and all Ireland, alt. 3,414 ft.
- Carrara, *t.*, Massa-e-Carrara, Central Italy; famed for white marble; p. (1951) 50,192.
- Carreño, *commune*, Oviedo prov., Spain; cattle, fishing, sardine canning; p. 10,009.
- Carrikerfurg, *spt.*, *mun. bor.*, Antrim, N. Ireland; on N. shore of Belfast Lough; oysters; p. (1951) 8,650.
- Carrikmacross, *mkt. t.*, *urb. dist.*, Monaghan, Ireland; p. 2,114.
- Carriack-on-Shannon, *co. t.*, *rural dist.*, Leitrim, Ireland; p. (of dist.) 8,833.
- Carriack-on-Suir, *mkt. t.*, *urb. dist.*, Tipperary, Ireland; coal, timber; p. 4,851.
- Carrazal-Alto, *t.*, Atacama prov., Chile; copper mines.
- Carrizal-Bajo, *t.*, Atacama prov., Chile; port for Carrizal-Alto, 25 m. E.
- Carrollton, *t.*, Ga., U.S.A.; textiles; p. (1950) 7,753.
- Carron, *vil.*, Stirling, Scot.; nr. Falkirk; famous ironworks.
- Carron, Loch, *inlet*, W. cat., Ross and Cromarty, Scot.; followed by rly. from Dingwall to Kyle and Lochalsh.
- Carse of Gowrie, Perth, Scot.; fertile coastal dist. between Perth and Dundee, S. of Sidlaw Hills; sm. fruits especially raspberries.
- Carshalton, *urb. dist.*, Surrey, Eng.; nr. Croydon; p. (1951) 62,804.
- Carson City, *st. cap.*, Nevada, U.S.A.; silver and gold mining dist.; p. (1950) 3,082.
- Carstairs, *vil.*, Lanark, Scot., N.E. of Lanark t.
- Cartagena, *spt.*, *cap.*, dep. Bolivar, Colombia, S. America; shares with Barranquilla tr. brought down Magdalena R.; exports hides, gold; p. (1951) 110,504.
- Cartagena, *spt.*, Murcia, E. Spain; fine wharves and harbour; naval arsenal; cath.; exports hides, gold; p. (1950) 113,160.
- Cartago, *t.*, Cauca, Colombia, S. America; p. 14,750.
- Cartago, *prov.*, Costa Rica, Central America; cap. C.; coffee, fruits; p. (1950) 100,725.

- Carteret, *bor.*, N.J., U.S.A.; metal and oil refining, chemicals, tobacco; p. (1950) 13,031.
- Carter Fell, *mtn.*, Northumberland, Eng.; 1,815 ft.
- Carterton, *bor.*, Wellington, N.I., New Zealand.
- Carthage, *c.*, N.E. Tunis, N. Africa; with ruins of ancient Carthage, destroyed by the Romans 146 B.C.
- Carthage, *t.*, Missouri, U.S.A.; coal; p. (1950) 11,188.
- Cartmel, *par.*, Lancs, Eng.; near Ulverston.
- Carupana, *spt.*, Venezuela, S. America; near Cumana; p. 16,548.
- Casablanca, *largest t., spt.*, French zone, Morocco, N. Africa; p. (estd. 1947) 551,322.
- Casablanca, *t.*, Valparaiso, Chile.
- Casa Branca, *t.*, S.E. of Lisbon, Portugal.
- Casale, *t.*, Piedmont, Italy; cath.; cement; p. 37,703.
- Casalmaggiore, *t.*, Italy; on R. Po, near Parma; p. 15,012.
- Casas Grandes, *t.*, N.W. Chihuahua st., Mexico; Aztec ruins; p. 2,000.
- Cascade Range, N. America; extends N. and S. through Brit. Columbia, Washington, and Oregon between Rocky Mtns. and Pacific cst. Highest peak, Mt. Rainier, 14,440 ft.
- Cascade Tunnel, longest rly. tunnel in N. America, Wash., U.S.A.; carries trunk rly. from Spokane to Seattle through Cascade Mtns.; length 7½ m.
- Cascina, *t.*, Pisa, Italy; on R. Arno; silk mnfs.
- Caserta, *t.*, Italy; on N. edge of Plain of Naples; royal palace; cath.; silks; p. (1951) 44,340.
- Cashel, *c.*, *urb. dist.*, Tipperary, Ireland; cath. (ruined) on Rock of Cashel; p. 3,072.
- Casino, *t.*, N.S.W., Australia; p. 6,693.
- Casiquiare, *R.*, Venezuela, joins Orinoco to the Rio Negro, a trib. of the Amazon.
- Caspe, *t.*, Spain; on R. Guadalupe; p. 9,033.
- Casper, *t.*, Wyoming, U.S.A.; petroleum; p. (1950) 23,673.
- Caspian Sea, U.S.S.R.; 760 m. long, 270 m. wide, 170,000 sq. m., between Asia and Europe; largest inland sea in the world; surface 85 ft. below ocean; fisheries; ports: Astrakhan, Baku, Derbent.
- Casquets, *dangerous rocks*, 7 m. W. of Alderney, Channel Is.
- Cassaba (Kassaba), *t.*, Turkey; 85 m. E. of Izmir; cotton, melons; p. 31,000.
- Cassel, *t.*, Germany; on Fulda R.; museums, palace, library; machinery, textiles; p. 216,100.
- Cassel, *t.*, dep. Nord, France; p. 2,912.
- Cassilis, *t.*, N.S.W., Australia; 115 m. N.W. of Newcastle in impt. gap in Gr. Dividing Range between Hunter and Liverpool Ranges, giving access from Newcastle to interior.
- Cassino, *t.*, Campania, Italy; formerly San Germano; the ancient Casinum nr. famous monastery.
- Castelbuono, *t.*, Sicily; mineral springs.
- Castelflorentino, *t.*, Tuscany, nr. Florence, Italy.
- Castelfranco, *t.*, Bologna, Italy; p. 2,925.
- Castelfranco, *t.*, Treviso, Italy; fine church and paintings; silk; p. 4,240.
- Castellamare, *dockyard t.*, Italy; on Bay of Naples at foot of Vesuvius; mineral springs; wat. pl., p. 43,725.
- Castellamare del Golfo, *spt.*, N.W. Sicily; wat. pl., tuna fishing; p. 18,032.
- Castellon de la Plana, *prov.*, Spain; on Mediterranean, part of ancient Valencia, mainly mtns.; a. 2579 sq. m.; cap. Castellon; p. (1950) 325,091.
- Castellon de la Plana, *t.*, Spain; silk, porcelain; p. (1950) 53,331.
- Castelnaudary, *t.*, Aude, France, on Languedoc canal, burned by Black Prince, 1355; p. (1946) 7,891.
- Castelo Branco, *c.*, Portugal; cap. of dist. same name; p. 299,670.
- Castelvetro, *t.*, Sicily, Italy; industri.; wine; p. 24,746.
- Castiglione, *t.*, Sicily, Italy; near Catania; sulphur refining.
- Castiglione Fiorentino, *t.*, Italy; nr. Arezzo; sericulture.
- Castile, formerly a kingdom of Spain; now div. into Old and New Castile.
- Castine, *t.*, Me., U.S.A.; on Penobscot B.; resort; fishing.
- Castlebar, *urb. dist., cap.*, Mayo, Ireland; "Race of Castlebar" battle fought here in Rebellion of 1798; p. 4,939.
- Castleblayney, *urb. dist.*, Monaghan, Ireland; nr. Dundalk; p. 1,765.
- Castle Cary, *t.*, Somerset, Eng.; N.E. of Yeovil; p. 1,700.
- Castlecary, *vil.*, Stirlingshire, Scot.; stn. on Roman wall; silica, fire-clay deposits.
- Castlecomer, *rural dist.*, N. Kilkenny, Ireland; p. 8,069.
- Castle Donington, *t.*, *rural dist.*, Leics, Eng.; p. (of dist. 1951) 9,273.
- Castle Douglas, *burgh*, Kirkcudbright, Scot.; 15 m. S.W. of Dumfries; cattle fairs; p. (1951) 3,322.
- Castleford, *urb. dist.*, W.R. Yorks, Eng.; 10 m. S.E. of Leeds at confluence of Rs. Aire and Calder; glass, chemicals, coal; p. (1951) 43,116.
- Castleisland, *t.*, Kerry, Ireland; agr. centre; p. 1,300.
- Castlemaine, *t.*, Victoria, Australia; at foot of Gt. Dividing Range, 25 m. S. of Bendigo; fruit, wine; p. (1947) 5,809.
- Castlereagh, *rural dist.*, Roscommon, Ireland; p. (of dist.) 23,278.
- Castletown, *t.*, Isle of Man; former cap.; p. 1,898.
- Castletown Berehaven, *spt.*, Cork, Ireland; on Bantry Bay.
- Castres, *t.*, Tarn, France; on R. Agoût; former Huguenot stronghold; cath.; woollens, soap, earthenware; p. (1946) 30,781.
- Castries, *cap., spt.*, St. Lucia, Windward Is.; greatly damaged by fire June 1948; fine harbour; p. (1946) 7,146.
- Castro del Rio, *t.*, Andalusia, Spain; on R. Guadjo; industri.
- Castrogiovanni. See Enna.
- Castrop-Rauxel or Kastrop Rauxel, *t.*, Westphalia, Germany; industri.; coal, cement, tar products, tiles, brandy; p. 63,218.
- Castro Urdiales, *spt.*, Santander, N. Spain; sardines, iron ore; p. 11,800.
- Castrovillari, *hill t.*, S. Italy; built on cliff above R. Cosile; mkt. ctr. for local cereals, wine, oil and silkworms; p. (estd.) 10,000.
- Cat I (or Guanahani), Bahamas, W. Indies; a. 340 sq. m.; p. (1943) 3,820.
- Catacaos, *t.*, Piura dep., Peru; Panama hats.
- Catalonia, *old prov.*, N.E. Spain; mountainous; wooded; cereals; mnfs.; cottons, woollens, silks; rich in minerals; cap. Barcelona; a. 12,427 sq. m.
- Catamarca, *prov.*, N.W. Argentina; cap. C.; farming and mining; a. 40,942 sq. m.; p. (1947) 145,216.
- Catamarca, *t., cap.*, Catamarca prov., N.W. Argentina; located in Andean foot-hills 120 m. S. of Tucuman; centre of irrigated oasis producing vines, apricots, cherries.
- Catanduanes, *I.*, off Luzon, Philippines; hilly, fertile; rice, corn, cotton, hemp, coconuts; a. 552 sq. m.; p. 63,530.
- Catania, *prov.*, Sicily; ch. t., Catania; a. 1907 sq. m.; p. (1951) 797,024.
- Catania, *c.*, Sicily; on E. cst. at foot of Mt. Etna; city several times rebuilt in consequence of earthquakes; cath.; univ.; textiles, dyeing; p. (1951) 297,531.
- Catanzaro, *c.*, S. Italy; univ.; silks, velvets; p. (1951) 59,969.
- Catasauqua, *bor.*, Penns., U.S.A.; industri.; flour, cement, textiles; p. (1950) 4,923.
- Catastrophe, *C.*, S. extremity of Eyre Peninsula, S. Australia.
- Catawba, *R.*, N. Carolina, U.S.A.; rising in Blue Ridge Range; length 800 m.
- Caterham and Warringham, *urb. dist.*, Surrey, Eng.; on N. Downs; residtl.; p. (1951) 31,290.
- Cathay, ancient name for China and E. Tartary.
- Catoche, *C.*, N.E. point of Yucatan, Mexico.
- Catrine, *t.*, Ayr, Scot.; mftg.
- Catskill Mtns., N.Y., U.S.A.; group in Appalachians, W. of Hudson R.; holiday resort.
- Cattaro, see Kotor.
- Cauca, *R.*, Colombia; trib. of Magdalena; length 600 m.
- Cauca, *dep.*, Colombia Rep.; cap. Popayan; a. 11,657 sq. m.; p. (1947) 427,380.
- Caucasia, region between Black Sea and Caspian, divided by Caucasus Mtns. into N. or Cis-Caucasia and Trans-Caucasia.
- Caucasus, *lofty mtn. range* between Caspian and Black Sea; highest summits Mt. Elbruz (18,463 ft.) and Kasbek (16,546 ft.); length of



- system about 950 m. greatest width 120 m.; many lofty passages and lge. glaciers.
- Caudebec, *ancient t.*, Seine-Inf. France; p. 8,998.
- Cauderan, *commune*, Gironde, France; sub. of Bordeaux; p. 20,384.
- Caudete, *t.*, Albacete, Spain; p. 7,442.
- Caudry, *t.*, Nord, France; lace and tulle; p. 12,163.
- Cauquenas, *t.*, Chile; cap. of Maule prov.; p. 12,987.
- Causse, *Les*, *limestone plateau*, Aveyron, Tarn depts., S. France; on S.W. flank of Central Plateau; caverns, gorges of Rs. Lot and Tarn; sheep provide milk for Roquefort cheese; alt. 3,000-6,000 ft.
- Cauterets, *vil.*, dep. Hautes-Pyrénées, France; mineral springs.
- Cautin, *prov.*, S. Chile; cap. Temuco; a. 6,705 sq. m.; p. (1952) 361,862.
- Cauvery, *R.*, S. India; rises in the W. Ghats, flows into Bay of Bengal through Mysore and Madras; length 400 m.
- Cava or La Cava, *t.*, Salerno, Italy; summer resort; textiles; p. 26,700.
- Cavillon, *commune*, Vaucluse, France; cath.; p. 12,522.
- Cavan, *inland co.*, Ulster, Ireland; a. 746 sq. m.; agr.; distilling; p. (1951) 66,412.
- Cavan, *urb. dist.*, co. t., Cavan, Ireland; 72 m. S.W. Belfast; p. 3,479.
- Cavarzere, *t.*, Venice, N. Italy; on R. Adige; industri.; p. 22,821.
- Cavite, *spt.*, Luzon, Philippines; p. 43,310.
- Cavour Canal, *irrigation canal*, Piedmont and Lombardy regions, N. Italy; links R. Po nr. Chivassa with R. Ticino 10 m. N.E. of Novara; provides water for 250,000 acres of rice-fields and meadow-land; length 80 m.
- Cawnpore (Kanpur), *cap.*, Cawnpore dist., Uttar Pradesh, India; on the Ganges; 130 m. N.W. of Allahabad; grain, cotton, woollens; p. (1951) 705,383.
- Caxias, *t.*, Maranhão, Brazil; on Itapecuru R.; cotton, rice; p. 17,409.
- Cayambe, *mtn.*, Andes, Ecuador; alt. 19,535 ft.
- Cayenne, *spt.*, *cap.*, Fr. Guiana, S. America; famous for pepper; p. (1946) 11,704.
- Cayey, *t.*, S.E. Puerto Rico; tobacco, coffee, sugar; p. 5,622.
- Cayman Is., dependency of Jamaica; a. 100 sq. m.; p. 6,690; consists of Grand Cayman, p. 5,331, cap. Georgetown; Little Cayman, p. 63; and Cayman Brac, p. 1,296; turtle and shark fishing.
- Cazalla de la Sierra, S.W. Spain; iron and lead; p. 10,058.
- Ceará, *st.*, N. Brazil; sugar, cotton, coffee, rubber; cap. Fortaleza; a. 59,168 sq. m.; p. (1947) 2,433,027.
- Ceará, *see* Fortaleza.
- Cebu, *I.*, Philippines; mountainous, forested; coal; a. 1,707 sq. m.; p. 1,183,000.
- Cebu, *ch. t.*, Cebu I., Philippines; exports copra, tobacco, sugar; p. (1948) 167,503.
- Cedar or Red Cedar, R. Iowa, U.S.A.; trib. of Mississippi R.; length 400 m.
- Cedar Falls, *t.*, Iowa, U.S.A.; p. (1950) 14,334.
- Cedar Mountain, *hill*, Virginia, U.S.A.; here Stonewall Jackson defeated Banks 1862.
- Cedar Rapids, *c.*, Iowa, U.S.A.; rly. centre; farm machinery, lumber; p. (1950) 72,296.
- Cedartown, *t.*, Ga., U.S.A.; textiles, rubber tyres; cottonseed oil; p. (1950) 9,470.
- Cedros, *I.*, off W. coast, Lower California, Mexico.
- Ceduna, *spt.*, S. Australia; 250 m. W. of Pt. Augusta; p. 499.
- Cefalu, *spt.*, Palermo, N. Sicily; sardine fishing; p. 10,625.
- Ceglie, *c.*, Lecce, S. Italy; olive oil, building stone; p. 20,707.
- Cehégin, *t.*, Murcia, Spain; on R. Quipár; p. 17,316.
- Celaya, *t.*, Guanajuato, Mexico; silver, carpets; p. 45,712.
- Celebes, *I.*, Indonesia; mountainous, forested; copra, spices, waxes; chief towns Menado and Macassar; a. 73,160 sq. m.; p. 4,231,806.
- Celina, *t.*, W. Ohio, U.S.A.; resort; furniture, canning; p. (1950) 5,703.
- Celje, *t.*, Slovenia, Yugoslavia; p. (1948) 22,153.
- Celle, *mftg. t.*, Germany; on R. Aller; former residence of the Dukes of Brunswick-Lüneberg; printing; p. 37,800.
- Cenis, *Mont*, *see* Mont Cenis.
- Cento, *t.*, Ferrara, Italy; industri.; p. 4,942.
- Central America, between Mexico and S. America, from the Isthmus of Tehuantepec to that of Panama; includes Guatemala, Honduras, Nicaragua, Salvador, Costa Rica, Panama, Brit. Honduras; tropical climate; forests, savannahs.
- Central Asia, usually applied to regions between 30° and 40° N. lat. and 55° and 85° E. long.; Russian C.A. is the land between China and Afghanistan and the Caspian, now consisting of various Soviet Republics.
- Central Falls, *t.*, Rhode I., U.S.A.; nr. Pawtucket; cotton goods; p. (1950) 23,550.
- Central Greece and Euboea, *geographical div.*, Greece; contains the cap. Athens; a. 9,704 sq. m.; p. (1940) 2,032,618.
- Central India Agency, *former prov.* of India, now divided; W. states forming Madhya-Bharat and the E. states incorporated in United Provs. (now known as Uttar Pradesh).
- Central Provinces, *see* Madhya Pradesh.
- Centralia, *t.*, Ill., U.S.A.; p. (1950) 13,863.
- Centuripe, *commune*, Enna, Sicily; sulphur, marble; p. 10,802.
- Cephalonia, *see* Kephallenia.
- Ceram (Serang), *I.*, Moluccas, Indonesia; a. 6,621 sq. m.; tobacco, sago; p. 83,000.
- Ceres, *st.*, C. of Good Hope, S. Africa; on R. Hex; health resort.
- Cerignola, *t.*, Foggia, Italy; Spanish victory over French 1503; p. 38,522.
- Cerigo, *see* Kythera.
- Cernauti, *see* Chernovtsy.
- Cernavoda, *t.*, Dobrogea, Romania; on R. Danube, 70 m. S. of Braila; p. 6,100.
- Cerro de Pasco, *t.*, dep. Junín, Peru; silver, copper, coal, lead; copper smelting; p. (estd. 1950) 23,592.
- Cerro Rico, *mtn.*, Bolivia; in Andes, W. of Potosí; alt. 15,680 ft.; v. rich silver, tin, tungsten ores.
- Certaldo, *commune*, Firenze, Italy; anc. cas.; home of Boccaccio; p. 12,094.
- Cesena, *old industri. t.*, Forlì, Italy; cath.; antiquities; sulphur mines, wines; p. 63,793.
- Ceská Lipa, *t.*, Czechoslovakia; on R., Ploucnice N. of Prague; industri.; p. 12,959.
- Ceská Třebová, *old t.*, Czechoslovakia; W. of Pardubice.
- Ceské Budejovice, *t.*, Czechoslovakia; on R. Vltava 80 m. S. of Prague; pencils, porcelain, brewing; p. (1947) 38,194.
- Cesky Tesin, (Teschen), Silesia, Czechoslovakia; coal and ironworks; p. 34,000.
- Cessnock, *t.*, N.S.W., Australia; coal mining; dairying and farming; p. (1947) 13,029.
- Cetinje (Titograd), *cap.*, Montenegro, Jugoslavia; p. (1948) 12,206.
- Cette, *see* Sète.
- Ceuta, *spt.*, Spanish Morocco; opposite to and 16 m. from Gibraltar; cath.; the ancient Abyia, one of the Pillars of Hercules; p. (1950) 59,936.
- Cévennes, *mtns.*, S. France; separating basins of Rhône, Loire, and Tarn; highest-point Mt. Mézenc, alt. 5,794 ft.;
- Ceylon, *I.*, in Indian Ocean, S.E. of India; self-gov. Dom. of Brit. Com. since 1948; fertile plains, mountainous interior; principal products: rice, rubber, tea, coconuts, fruits, and spices; cap. and ch. spt. Colombo; a. 25,332 sq. m.; p. (1953) 8,103,648.
- Chablís, *t.*, Yonne, France; E. of Auxerre; famous wine country; p. 1,900.
- Chacaburo, *t.*, E. Argentina; agr. centre; p. 15,000.
- Chachapoyas, *t.*, cap. of Amazonas dep., N. Peru; agr., forest products; p. (1946) 5,494.
- Chaco, *terr.*, N. of Argentina; part of Gran Chaco; farming and prairie land; cap. Resistencia; a. 38,468 sq. m.; p. 403,897.
- Chad, *L.*, large sheet of water of N. Central Africa; a. 50,000 sq. m. when in flood, varies in extent with season, and is drying up, shallow, many islands, lies between the wooded region of the Sudan and the steppes leading to the Sahara desert.
- Chad, *terr.*, Fr. Equatorial Africa; cap. Fort Lamy; a. 461,202 sq. m.; p. (European) 1,061; (African) 2,010,000.
- Chadderton, *urb. dist.*, Lancs, Eng.; cotton and chemical mftg.; p. (1951) 31,114.
- Chagford, *par.*, Devon, Eng.; stone circles.

- Chagos, Is., Indian Ocean: administered from Mauritius; fine harbour in Diego Garcia.
- Chagres, *spt.*, Panama, S. America; on N. side of Isthmus of Panama; p. 1,300.
- Chahar, *prov.*, Mongolia, China; cap. Changchikow; a. 107,705 sq. m.; p. 2,034,000.
- Chalcis, *see* Chalkis.
- Chalcidice, *see* Chalkidiki.
- Chaleur Bay, Canada; between N. Brunswick and Gaspé Peninsula, Quebec.
- Chalfont St. Giles, *vil.*, Bucks., Eng.; residtl.; p. 2,100.
- Chalon-sur-Saône, *ancient industr. c.*, Saône-et-Loire, E. France; glass, iron; p. (1946) 32,683.
- Chalons-sur-Marne, *c.*, Marne, N.E. France; 20 m. E. of Epervay; cath.; military centre; brewery industry; p. (1946) 31,120.
- Chaman, *t.*, Baluchistan, Pakistan; on Afghan frontier; terminus of rly. through Quetta.
- Chamba, *t.*, Himachal Pradesh, India; 100 m. N.E. of Amritsar.
- Chambal, *R.*, forms boundary between Rajasthan and Madhya-Bharat, India; trib. of R. Jumna rising in Vindhya hills; length 650 m.
- Chambersburg, *bor.*, Penns., U.S.A.; foundries, brewing; p. (1950) 17,212.
- Chambéry, *t.*, *cap.*, Savoie, S.E. France; silk, leather; p. (1946) 29,975.
- Chambolle-Musigny, *commune*, Côte d'Or, France; wines.
- Chambon-Fegerolles, *t.*, Loire, France; coal, iron, steel mfg.; p. (1946) 15,106.
- Chamonix, *t.*, Haute-Savoie, France; at foot of Mont Blanc, in valley of R. Arve; winter sports centre; p. (1946) 3,811.
- Champagne, *old prov.*, N.E. France; famous for its wine; wheat, sheep; important trade fairs in Middle Ages.
- Champagne Humide, *national division* ("pays") Central France; clay vale, runs 100 m. N.E. from Auxerre to Bar-le-Duc; drained by Seine, Aube, Marne, Aisne and many tribs.; heavily wooded, marshy; where cleared and drained, grain cultivation.
- Champagne Pouilleuse, *natural division* ("pays"), Central France; barren chalk plateau, extends 80 m. N.E. from Sens to Reims; drained by Aisne, Vesle, Seine, Aube, Marne; dusty downland pastures; sheep; vine growing on S.-facing valley sides and S.E.-facing escarpment of Falaise de l'Île de France favours production of Champagne wines; ch. producing centres, Châlons, Reims, Epervay.
- Champaign, *t.*, Ill., U.S.A.; foundries; p. (1950) 39,563.
- Champerico, *spt.*, S.W. Guatemala; coffee; p. 2,000.
- Champigny-sur-Marne, *dep.*, Seine, France; embroidery; piano keys; p. (1946) 30,239.
- Champlain, *L.*, U.S.A.; N. frontier of N.Y. state; discharges by Richelieu R. into St. Lawrence; flanked by trunk route from New York to Montreal; a. 600 sq. m.
- Champlain Canal, N.Y., U.S.A.; follows gap between Adirondack Mtns. and Green Mtns. occupied by Hudson R.; links Albany with L. Champlain and allows through barge traffic between New York and St. Lawrence valley.
- Chanaral, *spt.*, N. Atacama, Chile; p. 2,980.
- Chancelade, *commune*, Dordogne, France; arch. type-site of Chancelade culture (late paleolithic).
- Chanda, *t.*, Nagpur, Madhya Pradesh, India; ancient temples; p. 25,000.
- Chanda, *dist.*, Madhya Pradesh, India; teak forests, coal, iron.
- Chandauli, *t.*, Uttar Pradesh, India; cotton, hemp; rly. centre; p. 25,000.
- Chandernagore, *t.*, W. Bengal, India; on Hooghly R.; French 1816-1949; cotton cloth; p. (1948) 44,786.
- Chandigarh, new cap. E. Punjab, India; situated on plateau at foot of Himalaya, S.W. of Simla; commenced 1951, inaugurated Oct. 1953, planned by Le Corbusier and others.
- Changchow (Wuchin), *c.*, Kiangsu, China; in Yangtze Kiang Valley, on Grand Canal 70 m. S.E. of Nanking; mkt. for intensively agr. dist.; silk; p. (estd. 1938) 125,000.
- Changchun, *t.*, *cap.*, Manchuria, China; rly. centre; p. (estd. 1946) 605,279.
- Changanacheri, *t.*, W. Travancore, Madras, S. India; tea, cotton spinning, silk; p. 24,201.
- Changpai Shan, *mtns.*, form bdy. between China and N. Korea; drained by Rs. Yalu, Ertao, Tumen; highest point, Pektusan, alt. 8,005 ft.
- Changsha, *t.*, *cap.*, Hunan prov., China; tea, rice, antimony; p. (estd. 1946) 421,616.
- Changshu, *c.*, Kiangsu, China; in Yangtze Kiang valley 65 m. N.W. of Shanghai; mkt. for local agricultural produce; p. (estd. 1935) 102,734.
- Channel Islands, group of self-governing islands belonging to the British Crown off N. coast France, of which the largest are Jersey, Guernsey, Alderney and Sark; part of the old Duchy of Normandy; fruit, vegetables; famous cattle herds; ch. t. St. Helier, Jersey; total a. 75 sq. m.; p. (1951) 102,776.
- Chantaburi, *t.*, *spt.*, Siam; rubies and other precious stones.
- Chantada, *commune*, N.W. Spain; cattle, leather, soap, bricks, linen; p. 15,127.
- Chantilly, *t.*, Oise, France; famous race-course; p. 5,767.
- Chanute, *mkt. t.*, Kan., U.S.A.; oil, gas; refineries, cement; p. (1950) 10,109.
- Chao-an (Chaochow), *c.*, Kwangtung, S. China; on Han Kiang 20 m. N. of Swatow; centre of intensively cultivated plain, rice, sugar, tea; linked to Swatow by rly.; p. (estd. 1935) 179,068.
- Chaoyang, *c.*, *fishng pt.*, Kwangtung, S. China; on est. 15 m. S.W. of Swatow; oyster fisheries; p. (estd. 1935) 127,714.
- Chapada Diamantina, *t.*, Matto Grosso, Brazil; diamond dist.
- Chapala, *L.*, Mexico; chiefly in Jalisco st.; a. 1,300 sq. m.
- Chapayev, *see* Gurev.
- Chapayevsk, *t.*, Kuibyshev Region, U.S.S.R.; agr. trade; p. (1939) 57,995.
- Chapel-en-le-Frith, *mkt. t.*, *rural dist.*, Derby, Eng.; p. (1951, rural dist.) 18,990.
- Chapelizod, *t.*, nr. Dublin, Ireland; on R. Liffey.
- Chapra, *t.*, Bihar, India; on Ganges R.; centre of saltpetre and indigo trade; p. 55,142.
- Chard, *mun. bor.*, Somerset, Eng.; lace and linen collar mfg.; p. (1951) 5,218.
- Chardzhou, *t.*, Turkmenistan, U.S.S.R.; on the Central Asia Rly.; p. 54,739.
- Charente, *dep.*, W. France; cap. Angoulême; centre of distilling trade, cognac; a. 2,305 sq. m.; p. (1946) 311,137.
- Charente, *R.*, W. France; flows into Bay of Biscay below Rochefort.
- Charente-Inférieure, *dep.*, S.W. France; cap. La Rochelle; wine, wheat; oysters, pilchards; a. 2,791 sq. m.; p. (1946) 416,187.
- Charenton-le-Pont, *commune*, Seine dep., France; N.E. sub. of Paris; boats, pottery, rubber; p. (1946) 20,946.
- Charleroi, *t.*, Hainaut, Belgium; on R. Sambre; coal-mining; glass; p. (1947) 25,894.
- Charleroi, *t.*, Penns., U.S.A.; steel, glass; p. (1950) 9,872.
- Charles City, *c.*, Iowa, U.S.A.; on Cedar R.; p. (1950) 10,309.
- Charleston, *t.*, Ill., U.S.A.; dairy produce, flour, shoes; p. (1950) 9,164.
- Charleston, *c.*, *spt.*, S. Carolina, U.S.A.; exports cotton; p. (1950) 70,174.
- Charleston, *t.*, *cap.*, W. Virginia, U.S.A.; on Kanawha R.; in bituminous coal dist.; salt, hardware; p. (1950) 73,501.
- Charlestown, *ch. t.*, Nevis I., Leeward Group; p. (1947) 11,887.
- Charleville, *see* Rathluire.
- Charleville, *t.*, Ardennes dep., N.E. France; on Meuse R. opposite Mézières; iron, bricks; p. (1946) 20,193.
- Charleville, *t.*, Queensland, Australia; on Warrego R., 400 m. W. of Brisbane; pastoral dist.; p. (1947) 3,548.
- Charlevoix, *port. t.*, L. Michigan, U.S.A.; p. 2,299.
- Charlotte, *c.*, N. Carolina, U.S.A.; key rly. junction; cotton, machinery, tobacco; p. (1950) 134,042.
- Charlotte, *t.*, S. Mich., U.S.A.; furniture, car parts; p. (1950) 6,606.
- Charlottenburg, *t.*, Germany; on R. Spree; sub. of Berlin; palace; china, beer, machinery.
- Charlottesville, *t.*, Virginia, U.S.A.; on Rivanna R.; univ.; Monticello—home of Thomas Jefferson; p. (1950) 25,963.



- Charlottetown, *spt.*, *cap.*, Prince Edward I., Canada; Parliament buildings; iron foundry, shipyards, fisheries; p. (1951) 15,639.
- Charlton Kings, *urb. dist.*, Gloucester, Eng.; at foot of Cotswolds nr. Cheltenham; p. (1951) 5,836.
- Charwood Forest, *upland district*, Leicester, Eng.; to W. of Soar valley, 12 m. N.W. of Leicester; composed of ancient rocks; stone-crushing; largely forests; used for recreation by industr. ts. of E. Midlands; alt. 600-900 ft.
- Charolais, *dist.*, France; S. of Burgundy.
- Charters Towers, *t.*, N. Queensland, Australia; 925 m. by rail from Brisbane; p. (1947) 7,567.
- Chartres, *c.*, *cap.*, *dep.* Eure-et-Loir, France; fine Gothic cath.; milling, brewing, distilling; p. (1946) 26,422.
- Chartreuse, La Grande, France, famous monastery near Grenoble.
- Chateaubriant, *t.*, Loire-Inférieure, France; rly. centre; p. 7,989.
- Château Gontier, *t.*, Mayenne, France; p. 6,280.
- Château Thierry, *t.*, Aisne, France; on E. Marne; p. 8,266.
- Châteaudun, *t.*, Eure-et-Loir, France; p. 6,558.
- Châteauroux, *t.*, Indre, France; 60 m. S.E. of Tours on R. Indre; woollens, machinery; p. (1946) 34,611.
- Chatelet, *t.*, Hainaut, Belgium; on R. Sambre; coal, pottery.
- Châtelleraut, *t.*, Vienne, France; 40 m. S. of Tours; cutlery, small arms; p. (1946) 22,809.
- Chatham, *mun. bor.*, *spt.*, *naval arsenal*, Kent, Eng.; on estuary of R. Medway; bricks, lime; p. (1951) 46,940.
- Chatham, *t.*, *spt.*, New Brunswick, Canada; lumbering, fish exporting; p. 4,082.
- Chatham, *t.*, Ontario, Canada; farming, fruit, machinery; p. (1941) 17,369.
- Chatham Is., New Zealand dependency; a. 372 sq. m.; largest I., Wharekauri; p. 503.
- Châtillon-sur-Seine, *t.*, Côte d'Or, France; on R. Seine, 45 m. S.E. of Troyes; p. (1946) 11,673.
- Chatsworth, *par.*, Derby, Eng.; on R. Derwent; seat of Duke of Devonshire.
- Chattanooga, *c.*, Tennessee, U.S.A.; on Tennessee R.; seat of Grant Univ.; rly. centre; cottons; iron, steel, chemicals; p. (1950) 131,041.
- Chatteris, *urb. dist.*, Isle of Ely, Cambridge, Eng.; mkt. *t.*; p. (1951) 5,528.
- Chaudière Falls, on Ottawa R., above Ottawa, Canada; hydro-electric power-stn.
- Chaumont, *t.*, Haute-Marne, France; gloves, leather; p. 16,876.
- Chaunty, *t.*, Aisne, France; on R. Oise; chemicals, glass; p. 9,207.
- Chautauqua, *L.*, N.Y. state, U.S.A.; summer resort.
- Chaux-de-Fonds, *La*, *t.*, *cap.*, Neuchâtel, Switzerland; centre of watchmaking industry; p. (1950) 33,300.
- Chaves, *commune*, N. Portugal; cath.; hot salt springs; linen, silk; p. 6,432.
- Cheadle, *rural dist.*, Staffs, Eng.; coal pits, metal mfrs.; p. (1951) 32,839.
- Cheadle and Gatley, *urb. dist.*, textile finishing and bleaching; Cheshire, Eng.; p. (1951) 31,508.
- Cheb, *t.*, Czechoslovakia; nr. Bavarian frontier; cloth, hat and brewing industries; formerly Eger; p. 32,264.
- Cheboksary, *t.*, *cap.*, Chuvash Rep., U.S.S.R.; trade, culture centre; fair; p. 12,008.
- Cheboygan, *t.*, Michigan, U.S.A.; on L. Huron; sawmills; p. (1950) 5,687.
- Checotah, *t.*, E. Okla., U.S.A.; agr., cattle, coal, clay; p. 2,126.
- Cheddar, *vill.*, Somerset, Eng.; famous limestone caves in Mendips; cheese, strawberries.
- Cheduba I., Bay of Bengal, Burma; fertile, well-wooded; a. 240 sq. m.
- Chefoo (Yental), *former treaty port*, Shantung, China; on N. est. of peninsula; p. (estd. 1934) 139,512.
- Chekliang, *maritime prov.*, China; cap. Hangchow; exports, silk cotton, etc.; a. 39,486 sq. m.; p. (estd. 1947) 21,776,000.
- Cheling Pass, on bdy. between Kwangtung, Hunan, S. China; historic route across Nanling mtns., now followed by Hankow to Canton trunk rly.; alt. 984 ft.
- Chelm, *t.*, E. Poland; nr. Lublin; cath.; 1944 Manifesto of Poland's Liberation issued here; p. 23,000.
- Chelmer, *R.*, Essex, Eng.; joins R. Blackwater at Maldon.
- Chelmno (Kulm), *t.*, Pomerania, Poland; on R. Vistula; ancient wells; large oil mills, impt. tr.; p. 12,000.
- Chelmsford, *co. t.*, *mun. bor.*, Essex, Eng.; 30 m. N.E. London; cath.; agr. mkt.; radio, electr. engin.; p. (1951) 37,888.
- Chelmza (Kulmsee), *t.*, Pomerania, Poland; N. of Torun; p. 11,000.
- Chelsea, *metropolitan bor.*, London, Eng.; p. (1951) 50,912.
- Chelsea, *t.*, Mass., U.S.A.; rubber goods, shoes, paper; p. (1950) 38,912.
- Cheltenham, *t.*, *mun. bor.*, Gloucester, Eng.; spa; educational centre; p. (1951) 62,823.
- Chelyabinsk, *dist.*, *t.*, U.S.S.R.; on Mijas R. at beginning of W. Siberian lowlands; metallurgy and machinery; p. (1939) 273,127.
- Chelyuskin C., most N. point of Asia.
- Chemnitz, *t.*, Germany; "the Manchester of Saxony"; cottons, woollens, locomotives; p. (1946) 250,183.
- Chemulpo, *see* Inchon.
- Chenab, *R.*, W. Punjab, Pakistan; one of "five rivers" of Punjab; rises in Himalayas, flows S.W. into R. Sutlej; dams at Merala and Khanki provide water for Upper and Lower Chenab Irrigation Canal Systems; length approx. 900 m.
- Chenghsien, *t.*, Honan, China; 15 m. S. of Hwang-Ho where it emerges on to N. China Plain; impt. route centre and rly. junction where Pekin (Peiping) to Hankow rly. crosses Changan to Tanghai rly.
- Chengtu, *c.*, *cap.*, Szechwan prov., China; silk, rice; p. (estd. 1946) 620,302.
- Chepstow, *mkt. t.*, *urb. dist.*, Monmouth, Eng.; on R. Wye 2 m. above confluence with R. Severn; fine ruined cas.; p. (1951) 5,235.
- Chequers, *seat*, Bucks, Eng.; official residence of Prime Minister.
- Cher, *central dep.*, France; cap. Bourges; grain, wines, iron, porcelain; a. 2,819 sq. m.; p. (1946) 236,070.
- Cher, *R.*, France, trib. of R. Loire, flowing from Auvergne Mtns.
- Cherbourg, *spt.*, Manche, France; N. coast of Continent Peninsula; opposite to and 80 m. dist. from Portsmouth; naval arsenal, shipbuilding; ropes, fishing; p. (1946) 40,042.
- Cheremkhovo, *t.*, U.S.S.R.; N.W. of Irkutsk; synthetic rubber; p. (1939) 65,907.
- Cherepovets, *c.*, Vologda Region, U.S.S.R.; distilleries, agr. implements; boots, lumber, fishing; p. 24,900.
- Cheribon, *spt.*, Java, Indonesia; on N. est. 120 m. E. of Jakarta; rice, tea, coffee; p. 54,079.
- Cherkassy, *t.*, U.S.S.R.; nr. Kiev, on Dnieper R.; tobacco, sugar; p. (1939) 51,693.
- Chernigov, *t.*, U.S.S.R.; on Desna, R.; cath.; flour; p. (1939) 67,356.
- Chernovtsy, *t.*, Bukovina, Ukraine, U.S.S.R.; univ.; Greek cath.; wheat, dairy produce; p. (1939) 112,427.
- Chernyakovsk (Insterburg), *t.*, U.S.S.R.; nr. Kaliningrad; iron foundries; p. 41,230.
- Cherokee, *t.*, Iowa, U.S.A.; p. (1950) 7,705.
- Cherrapunji, *t.*, Assam, India; in Khasi Hills; reputed wettest place in world, av. annual rainfall 500 in.
- Chertsey, *urb. dist.*, Surrey, Eng.; on S. bank of R. Thames, 4 m. below Staines; residtl.; p. (1951) 31,029.
- Cherwell, *R.*, trib. of Thames, nr. Oxford; length 30 m.
- Chesapeake Bay, *inlet* on Atlantic coast, U.S.A.; extending 200 m. from mouth of Susquehanna R. to C. Charles.
- Chesham, *residtl. t.*, *urb. dist.*, Bucks, Eng.; in heart of Chiltern Hills; boots, brushes; p. (1951) 11,428.
- Cheshire, *co.*, Eng.; cap. Chester; plain; Rs. Mersey and Dee; dairying, mkt. gardening; salt, coal; mfrs.; textiles, chemicals, shipbuilding; a. 1,056 sq. m.; p. (1951) 1,258,050.
- Cheshire, *t.*, Conn., U.S.A.; agr., formerly copper and barytes mined; p. (1950) 4,286.
- Cheshunt, *urb. dist.*, Herts, Eng.; in Lea valley.

- 7 m. S. of Hertford: bricks, mkt, gardening: p. (1951) 28,016.
- Chesil Bank, Dorset, Eng.: shingle ridge from Portland to Bridport.
- Chester, *c. co. bor.*, Cheshire, Eng.: at head of estuary of R. Dee; cath., ancient walls and old timbered houses: boots, gloves, iron: p. (1951) 48,229.
- Chester, *t.*, S.C., U.S.A.: cotton mnfs.: flour: granite: p. (1950) 6,893.
- Chester, *t.*, Penns., U.S.A.: large industries, textiles: p. (1950) 66,039.
- Chesterfield, *mkt. t.*, *mun. bor.*, colliery dist., Derby, Eng.: on Rother R.: 8 m. S. of Sheffield: weaving, heavy machinery: p. (1951) 68,540.
- Chesterfield Inlet, arm of Hudson Bay, Canada: 250 m. by 25 m.
- Chesterfield Is., *dep.*, New Caledonia, Pac. Oc.: French: about 342 m. W. of N.C.
- Chester-le-Street, *urb. dist.*, Durham, Eng.: on R. Wear: coal, iron: p. (1951) 18,539.
- Chesterton, *sub. of Cambridge*, Eng.: p. 35,920.
- Cheviot, *t.*, S.W. Ohio, U.S.A.: clothes, leather goods: flour: p. (1950) 9,944.
- Cheviot Hills, between Scot. and Northumberland, Britain: highest point The Cheviot, 2,676 ft.
- Cheyenne, *R.*, S. Dakota, U.S.A.: trib. of Missouri: length 500 m.
- Cheyenne, *cap.*, Wyoming, U.S.A.: cattle-ranching dist.: rly. centre: p. 22,474.
- Chiana, *Val de valley*, central Italy: longitudinal depression separating Tuscan Hills from Central Apennines: occupied by upper course of R. Arno, middle course of R. Tiber: followed by main route from Florence to Rome.
- Chiangmai, *prov.*, N.W. Siam: p. Chiangmai: a. 8,839 sq. m.: p. (estd.) 644,000.
- Chiangmai, *t.*, Chiangmai prov., N.W. Siam: on Ping R.: tr. centre, teak: p. 50,000.
- Chiangtu, *see* Yangchow.
- Chiapas, *Pacific st.*, Mexico: *cap.* Tuxtla-Gutierrez: mountainous, forested: coffee, tobacco, sugar and cocoa, cattle: a. 28,729 sq. m.: p. (1940) 679,885.
- Chiatura, *t.*, Georgia, U.S.S.R.: manganese.
- Chiavari, *t.*, Liguria, Italy: on the Riviera: shrine of the Madonna: p. 17,586.
- Chiavenna, *t.*, Lombardy, Italy: nr. L. of Como: famous for beer, wine, pottery: p. 5,150.
- Chiba, *cap. of Chiba prefecture*, Japan: on E. Tokyo B.: impt. tr. centre: p. (1950) 133,844.
- Chicago, *c.*, Ill., U.S.A.: at S.W. corner of L. Michigan: second c. in America: immense trade by rail and Great Lakes, flourishing univ.: grain mkt., pork, beef canning, tanneries, agr. implements, iron and steel, tinplate, machinery, clothing, furs: p. (1950) 3,620,962.
- Chichester, *c.*, *mun. bor.*, W. Sussex, Eng.: on S. est. plain, 10 m. W. of Arundel: fine cath.: p. (1951) 19,110.
- Chickamauga Creek, U.S.A.: branch of the Tennessee R. above Chattanooga: Civil War battles: site of National Park.
- Chickasha, *t.*, Oklahoma, U.S.A.: maize, cotton: p. (1950) 15,842.
- Chiclana, *mftg. t.*, Spain: nr. Cadiz: p. 17,047.
- Chiclayo, *ch. t.*, Lambayeque dep., Peru: p. 38,140.
- Chico, *t.*, N. Cal., U.S.A.: food processing, lumber, cement: p. (1950) 12,272.
- Chicopee, *t.*, Mass., U.S.A.: on Connecticut R.: hardware, carpets, cars: p. (1950) 49,211.
- Chicoutimi, *t.*, Quebec, Canada: on Chicoutimi R. (trib. of Saguenay R.): hydro-electric power-stn.: lumber, pulp, paper: p. 16,040.
- Chidambaram, *t.*, Madras, India: nr. Cuddalore: p. over 25,000.
- Chidley C., most N. point of Labrador, Hudson Strait, Canada.
- Chiem, *L.*, large lake nr. Munich, Germany, 1,500 ft. above sea-level.
- Chieri, *t.*, Piedmont, Italy: nr. Turin: was mediaeval republic: Gothic church: silks, cottons: p. 14,747.
- Chieti, *prov.*, S. Italy: a. 1,142 sq. m.: p. (1951) 400,366.
- Chieti, *t.*, *cap.*, prov. Chieti, S. Italy: the anc. Teate Marrucinorum: p. (1951) 40,688.
- Chignecto Bay, inlet of B. of Fundy, Canada.
- Chigwell, *urb. dist.*, Essex, Eng.: on borders of Epping Forest: residtl.: p. (1951) 51,775.
- Chihli, *see* Hoped.
- Chihli, *G. of*, *see* Pohai, Gulf of.
- Chihuahua, *st.*, Mexico: adjoining the U.S.A.: mining, stock-raising, and agr.: a. 94,822 sq. m.: p. (1950) 845,846.
- Chihuahua, *c.*, *cap.*, Chihuahua st., Mexico: fine cath.: on Mexican Central Rly.: silver, cottons, woollens: p. (1950) 110,779.
- Chikuho, *t.*, N. Kyushu, Japan: largest coal mines in the country.
- Chilas, *t.*, Kashmir, India: on Indus R., 50 m. below Bunji.
- Chilcoat, *R.*, *pass*, Alaska, leading into Yukon Valley.
- Chile, *rep.*, S. America, independent of Spain since 1818: Pacific coastal strip rising sharply to Andes: Atacama Desert in N., fertile valleys in centre, heavy rains in S.: Spanish language: Roman Catholic: forested in S.: dairying, sheep, wool: gr. nitrate output, copper, iron ore, coal, iodine: *cap.* Santiago: ch. port Valparaíso: length 2,660 m., breadth 69-270 m., a. 285,133 sq. m.: p. (1952) 5,885,083.
- Chilka, *L.*, *inlet*, E. coast, Orissa, India.
- Chillán, *cap.*, Nuble prov., Chile: fine squares and prosperous industries: destroyed by earthquake 1939: cattle, wheat: p. 61,535.
- Chillicothe, *t.*, Missouri, U.S.A.: p. (1950) 8,694.
- Chillicothe, *c.*, Ohio, U.S.A.: on Scioto R., mftg.: furniture, leather: p. (1950) 20,133.
- Chilliwack, *t.*, B.C., Canada: on Fraser R.: dairy produce, fruit, lumber: p. 3,675.
- Chilioe, *I.* and *S. prov.*, Chile: *cap.* San Carlos, destroyed by earthquake 1939, a. 9,058 sq. m.: p. (1952) 98,738.
- Chilpancingo, *c.*, *cap.*, Guerrero st., Mexico: p. 31,360.
- Chiltern Hills, *chalk hills*, Oxon., Bucks., Beds. and Herts., Eng.: highest point 904 ft. nr. Wendover.
- Chimborazo, *mtn.*, Ecuador, Andes: extinct volcano, alt. 20,610 feet.
- Chimborazo, *prov.*, Ecuador: *cap.* Riobamba: a. 2,089 sq. m.: p. (1950) 218,130.
- Chimbote, *spl.*, Peru: coal, iron, cotton: p. 4,243.
- Chimkent, *t.*, Kazakhstan, U.S.S.R.: health resort: cotton, tobacco: p. (1939) 74,185.
- China, *rep.*, Asia, consists of 36 provs. which inc. China Proper and the Outer territories of Manchuria, Sikkang, Chinghai, Sinkiang and Inner Mongolia. Total a. 3,380,692 sq. m.: mountainous in N. and W., fertile valleys and plains in E.: Rs.: Hwang-ho, Yangtze-kiang, Sikkang: climate, extreme in N.: monsoon in S.: religions: Confucianism, Buddhism, Taoism: poor communications: rice, silk, tea, soya-beans, wheat, millet, cotton, bamboo: enormous reserves of coal, iron, antimony, oil: densely populated, mnfs.: cotton, spinning, ironwks: p. (census 1954) 574 million.
- China Sea, part of W. Pacific between Korea and Philippines: divided by the narrow Formosa Strait into two areas: N. China Sea, including Yellow Sea, and S. China Sea.
- Chinamerica, *t.*, San Miguel dep., Salvador, Central America: coffee, sisal: p. 6,502.
- Chinandega, *t.*, Nicaragua, Central America: cotton, sugar, bananas: p. (1947) 25,538.
- Chincha Is., group off coast of Peru: p. (of ch. t.) 14,763.
- Chinchilla, *t.*, Albacete prov., Central Spain: p. 7,616.
- Chincoteague, *t.*, and *I.*, E. Va., U.S.A.: fisheries, poultry: p. 2,142.
- Chindwin, *R.*, Burma: ch. trib. of Irrawaddy: rising in Patkol Hills, navigable in rainy season.
- Chindwin, Upper and Lower, *provs.*, Burma: fertile plains and extensive teak forests, rice.
- Chingford, *mun. bor.*, Essex, Eng.: on S. fringe of Epping Forest: residtl.: p. (1951) 48,330.
- Chinghai, *prov.*, China: between Nan Shan and Kunlun mtns., *cap.* Si-ning: a. 269,187 sq. m.: p. (1947) 1,513,000.
- Chingleput, *t.*, India: S. of Madras: cotton weaving, salt mnfs.
- Chinju or Shinshu, *t.*, S. Korea: cotton: p. 30,269.
- Chinking (Chen-chiang), *t.*, *pt.*, Anhwei, China: former treaty port Yangtze-kiang, 48m. below Nanking: trading centre: p. (estd. 1937) 216,781.
- Chinon, *t.*, Indre-et-Loire, Central France: on R. Vienne, industri.: ruined cas., once a royal residency: p. (1946) 5,751.



- Chinook, *t.*, Mont., U.S.A.: cattle, sugar beet; p. 2,051.
- Chingquingira, *t.*, Boyaca, Colombia; emeralds; pilgrimage centre; p. 6,998.
- Chinwangtao, *spt.*, former treaty pt., Hopeh, N. China; on Yellow Sea (Hwang Hal) est., 150 m. N.E. of Tientsin; only good natural harbour on N. China est.; exports coal from Kailan mines (Kaiping); p. (estd. 1931) 20,020.
- Chioggia, *spt.*, *cath. c.*, N. Italy; on I. in G. of Venice; fishing; p. 38,925.
- Chios, see Khios.
- Chippenharn, *t.*, *mun. bor.*, Wilts, Eng.; on R. Avon; grain and cheese tr., cloth factories; p. (1951) 11,850.
- Chippewa Falls, *c.*, Wisconsin, U.S.A.: flour, lumber; p. (1950) 11,088.
- Chipping Campden, *vil.*, Gloucester, Eng.; in Cotswold Hills, on R. Stour; formerly imp. for woollens.
- Chipping Norton, *mun. bor.*, *mkt. t.*, Oxford, Eng., nr. Banbury; p. (1951) 3,879.
- Chipping Sodbury, *mkt. t.*, Gloucester, Eng.; 8 m. N.E. of Bristol.
- Chiriqui, *prov.*, Panama; cap. David; p. (1950) 138,136.
- Chirk, *t.*, Denbigh, Wales; on R. Cleriog. S. of Wrexham; slate, coal.
- Chisinau, see Kishinev.
- Chislehurst and Sidcup, *urb. dist.*, W. Kent, Eng.; residt. sub. of London; p. (1951) 83,837.
- Chiswick, see Brentford and Chiswick.
- Chita, *t.*, *rh. junction*, Siberia, U.S.S.R.; on upper Amur R., 400 m. E. of L. Baikal; furs and hides; p. (1939) 102,555.
- Chitral, *t.*, N.W. Frontier Prov., Pakistan; on the Kaskhar R.; p. 1,000.
- Chitral, *st.*, Pakistan; N.W. Frontier Provs.
- Chittagong, *div.*, E. Bengal, Pakistan; ch. t., Chittagong; p. (estd. 1951) 11,783,000.
- Chittagong, *c.*, *spt.*, E. Bengal, Pakistan; on E. est. of Bay of Bengal; exports jute, tea; imports foodstuffs (from W. Pakistan), clothing, machinery; p. (1951) 145,777.
- Chivilcoy, *t.*, Argentina; wheat, maize, cattle; p. 29,600. [172,925]
- Chkalov, *t.*, on Ural R., U.S.S.R.; p. (1939)
- Chobrum, see Godwin-Austen Mt.
- Choctawhatchee, *R.*, Alabama and Florida, U.S.A.; length 180 m.
- Choisy-sur-Seine, *t.*, S.E. of Paris, France; cloth factories.
- Cholet, *t.*, Maine-et-Loire, France; cotton, linen, flannel mnfs.; p. (1946) 26,086.
- Cholon, *t.*, Fr. Cochín-China; 10 m. S.W. of Saigon; rice; p. (estd. 1948) 480,000.
- Cholula, *anc. c.* of Puebla, prov., Mexico; Aztec temple, pyramid of Cholula, and other remains.
- Chomutov, *mfg. t.*, N.W. Bohemia, Czechoslovakia; p. 33,297.
- Chonos Archipelago, Chile, about 120 in number, on W. coast of Patagonia.
- Chorley, *indust. t.*, *mun. bor.*, N. Lancs., Eng.; on W. flank of Rossendale Fells, 7 m. S.E. of Preston; cotton spinning, engineering; p. (1951) 32,636.
- Chorley Wood, *urb. dist.*, Herts, Eng.; p. (1951) 4,432.
- Chorrillos Pass, Argentina; in E. cordillera of Andes at alt. 14,655 ft.; used by rly. from Tucuman to Antofagasta.
- Chorzow (Królewska Huta), *t.*, Upper Silesia, Poland; coal-mines, iron-wks.; p. (estd. 1950) 130,901.
- Chota Nagpur, *dist.*, Madhya Pradesh, Bihar; mountainous, forested; rice, coal.
- Chota Udaipur, *dist.*, Bombay state, India; a. 1,018 sq. m.; p. (1941) 175,412.
- Chouchiakou (Hwaiyang), *c.*, Honan, China; 70 m. S.E. of Kaifeng on N. China Plain; p. (estd. 1922) 200,000.
- Choukoutien, *vil.*, Hopeh prov., N.E. China; site of discovery of bones of extinct Pekin Man.
- Chowtsun, *t.*, treaty pt., Shantung, N.E. China; silk; rly.; p. 46,200.
- Christchurch *t.*, *mun. bor.*, Hants, Eng.; on S. est. 5 m. E. of Bournemouth; hosiery; yachting; p. (1951) 20,506.
- Christchurch, *cap.*, Canterbury, S.I., New Zealand; boots, farm implements; agr. dist.; p. (1951) 174,100.
- Christiansand, see Kristiansand.
- Christianshaab, Danish settlement on Disco B., W. Greenland; meteorological stn.
- Christianstad, see Kristianstad.
- Christiansund, see Kristiansund.
- Christmas I., in Indian O., part of Singapore Colony; a. 62 sq. m., healthy climate, phosphate of lime; p. (estd. 1953) 1,800.
- Christmas I., large coral atoll in Pacific, one of the Line Is.; discovered by Cook 1777; over 100 m. in circum., guano; p. 42.
- Chrudim, *t.*, Czechoslovakia; horse mkt.; mnfs.; p. 13,421.
- Chrzanow, *commune*, S. Poland; 27 m. from Krakow; agr., lead, coal; p. 20,540.
- Chu, R., Kazakh S.S.R., U.S.S.R.; rises in Tien Shan, flows N.W. for 500 m. into inland drainage basin; Chumysh Dam provides hydro-electricity and water for intensive cultivation under irrigation of cotton, sugar-beet, citrus fruits.
- Chu Kiang (Canton R. or Pearl R.), Kwangtung, S. China; drowned estuary of Si-Kiang below Canton; entrance controlled by Hong Kong (Brit.), Macao (Portugese); length 80 m.; maximum width 23 m.
- Chuanchow, *spt.*, Fukien, China; rice; p. over 200,000.
- Chubut, *terr.*, Argentine; cap. Rawson; a. 87,152 sq. m.; agr.; p. (1947) 53,936.
- Chudleigh, *mkt. t.*, Devon, Eng.; on R. Teign; p. 1,869.
- Chulucanas, *t.*, Piura dep., Peru; p. 14,874.
- Chungking, *t.*, former treaty pt., Szechwan, China; on R. Yangtze-Kiang; commercial centre, S.W. China; exports silk, soya-beans, sugar; p. (estd. 1952) 1,100,000.
- Chuquibamba, *t.*, Peru; nr. Arequipa; p. 2,480.
- Chuquibamba Mtns. (alt. 21,000 ft.), Peru.
- Chuquicamata, part of Calama commune, N. Chile; largest copper mines in the world; p. 19,202.
- Chuquisaca, *dep.*, Bolivia; cap. Sucre; a. 36,132 sq. m.; p. (1950) 252,980.
- Chur, *cap.*, Grisons can., Switzerland; Upper Rhine Valley, nr. Lucerne; *cath.*; p. (1941) 17,060.
- Church, *urb. dist.*, sub. to Accrington, Lancs., Eng.; cotton weaving; p. (1951) 5,199.
- Church Stretton, *urb. dist.*, Salop, Eng.; p. (1951) 2,580.
- Churchill, R., Canada; enters Hudson Bay at Churchill; 925 m.; fine harbour.
- Churchill, *t.*, Manitoba, Canada; terminus of Hudson Bay rly.; summer wheat route from prairie provs.; p. 160.
- Chusan I., off E. coast of China; cap. Tinghai; tea, rice.
- Chuvash, *rep.*, R.S.F.S.R., U.S.S.R.; a. 7,107 sq. m.; p. 900,000.
- Cibao, lowland area, Dominican Republic, Central America; extends along N. side of Cordillera de Cibao for approx. 100 m.; cacao, tobacco, maize; densely populated, ch. t. Santiago.
- Cicero, *t.*, Ill., U.S.A.; p. (1950) 67,544.
- Ciechanów, *commune*, Poland; 49 m. N.W. of Warsaw; agr. industries; p. 15,200.
- Cienaga, *spt.*, N. Colombia; exports cotton, bananas, cacao; p. 22,783.
- Cienfuegos, *t.*, *spt.*, Cuba; sugar, tobacco; p. (1943) 94,810.
- Cieza, *t.*, Murcia, Spain; in fertile raisin and orange-growing dist.; p. 23,499.
- Cilicia, ancient prov., S.E. Anatolia, Turkey.
- Cincinnati, *c.*, Ohio, U.S.A.; on Ohio R.; "the Queen City"; pork-packing, machinery, furniture, clothing; p. (1950) 503,983.
- Cinderford, *lge. vil.*, Gloucester, Eng.; in Forest of Dean, 12 m. S.W. of Gloucester; ch. mining centre on sm. F. of D. coalfield.
- Cinque Ports, five ancient English ports on coast of Kent and Sussex; Sandwich, Dover, Hythe, Romney, and Hastings.
- Cinto, *mtn.*, Corsica.
- Cintra, see Sintra.
- Circleville, *t.*, Ohio, U.S.A.; agr. centre, maize, wheat; p. (1950) 8,723.
- Cirencester, *t.*, *urb. dist.*, Gloucester, Eng.; the Roman Corinium; former wool trade; p. (1951) 11,188.
- Citlatépetl, *mtn.*, volcanic peak, Veracruz st., Mexico, highest point in Mexico; 18,700 ft.
- Cittadella, *t.*, Venetia, Italy; nr. Padua; mediæval walls and towers; p. 12,679.

- Cittanova, *t.*, Reggio, Italy: built on ruins of Casalinuovo; olive-oil industry.
- Citta Vecchia, *c.*, Central Malta: former cap.
- Ciudad Bolivar, *spt.*, Bolivar st., Venezuela: on R. Orinoco, in centre of Llanos plains: (formerly called Angostura), great commercial centre, coffee, cattle: p. (1941) 19,789.
- Ciudad Juarez, *t.*, Mexico: p. (1950) 128,782.
- Ciudad Real, *prov.*, S. Central Spain: grazing grounds, forest, and quicksilver mines; cap. Ciudad Real: a. 7,822 sq. m.: p. (1950) 567,027.
- Ciudad Rodrigo, *c.*, Salamanca, Spain: captured by French 1707 and 1710, by the English 1706, stormed by Wellington in 1812: fine cath.: p. 12,082.
- Ciudad Trujillo, *spt.*, cap., Santo Domingo; cath., pal.: p. (1948) 147,372.
- Cuidadela, *t.*, Balearic Is., Spain: W. coast of Minorca; cath.: ancient ruins; cheese mfrs.: p. 10,716.
- Civitavecchia, *spt.*, Latium, Italy: on W. est., 30 m. N. of mouth of R. Tiber; sulphur springs: p. 34,400.
- Clackmannan, *smallest co.*, Scot.: flat in Carse, and hilly elsewhere; coal, woollens, shipbuilding: a. 54½ sq. m.: p. (1951) 37,528.
- Clackmannan, *co. t.*, Clackmannan, Scot.: coal.
- Clacton-on-Sea, *t.*, *urb. dist.*, Essex, Eng.: on E. est., 12 m. S.E. of Colchester: seaside resort, residt.: p. (1951) 24,063.
- Clairton, *t.*, S.W. Penns., U.S.A.: coal, iron, steel, chemicals: p. (1950) 19,652.
- Clairvaux, *vil.*, Aube, France: famous Cistercian Abbey.
- Clanwilliam, *t.*, C. of Good Hope, Un. of S. Africa, on Oliphant R.: p. 1,468.
- Clare, *co.*, Munster, Ireland: co. t. Ennis: oats, potatoes; sheep, cattle; oysters, salmon: a. 1,294 sq. m.: p. (1951) 81,350.
- Clare, *t.*, S. Australia: on W. flank of Flinders Mtns., 70 m. N.E. of Adelaide; centre of wine-producing district.
- Clare I., Clew Bay, Mayo, Ireland.
- Clarence Strait, between Melville I. and P. Darwin, N. Terr., Australia.
- Clarence, *R.*, N.S.W., Australia: length 240 m.
- Clarksburg, *t.*, W. Virginia, U.S.A., machinery, glass, pottery: p. (1950) 32,014.
- Clarksdale, *t.*, Mississippi, U.S.A.: p. (1950) 16,539.
- Clarksville, *t.*, Tennessee, U.S.A.: on Cumberland R.: tobacco mart: p. (1950) 16,246.
- Clausthal-Zellerfeld, *t.*, Hanover, Germany: iron, lead, copper, silver, zinc; government mint: p. 12,418.
- Clay Cross, *urb. dist.*, Derby, Eng.: coal and iron: p. (1951) 8,552.
- Clayton-le-Moors, *urb. dist.*, Lancs. Eng.: nr. Blackburn; cotton, weaving: p. (1951) 6,323.
- Clear, C. (southernmost point of Ireland), Clear I., off S.W. coast.
- Clearwater, *t.*, Fla., U.S.A.: citrus fruit, flowers, fish; resort: p. (1950) 15,581.
- Cleator Moor, *colly. t.*, Cumberland, Eng.: p. 8,291.
- Cleburne, *t.*, Texas, U.S.A.: rly. wks., flour: p. (1950) 12,905.
- Cleckheaton, *mtfo. t.*, Yorks, Eng.: nr. Bradford: woollens, blankets.
- Clee Hills, Salop, Eng.: between Rs. Severn and Teme; alt. 1,800 ft.
- Cleethorpes, *t.*, *mun. bor.*, Lindsey, Lincs, Eng.: on E. est. 3 m. S. of Grimsby; wat. pl.: p. (1951) 29,558.
- Clent, *hills*, N.E. Worcester, Eng.: about 10 m. S.W. of Birmingham, on S. edge of S. Staffordshire coalfield, overlooking valley of R. Stour; well wooded; used for recreation by industr. ts. around Birmingham; maximum alt. 1,036 ft.
- Clerkenwell, *industl. dist.*, London, Eng.: immediately N. of the City.
- Clermont, *t.*, Queensland, Australia: in pastoral dist.: p. 1,861.
- Clermont-Ferrand, *t.*, Puy-de-Dôme, France: fine Gothic cath.: former cap. of Auvergne: rubber; chemicals; food industry: p. (1946) 108,090.
- Clevedon, *urb. dist.*, Somerset, Eng.: at mouth of R. Severn; seaside resort: p. (1951) 9,467.
- Cleveland, *hilly ironstone and agr. dist.*, N.E. Yorks, Eng.: between R. Tees and Whitby.
- Cleveland, *c.*, port, Ohio, U.S.A.: on L. Erie: rly. centre; steamboat mfrs.; machinery, iron foundries, lumber, coal, oil-refining, meat canning: p. (1950) 914,808.
- Clew Bay, Mayo, Ireland: 10 m. by 7 m.
- Clifton, *sub. Bristol*, Eng.: on R. Avon: mineral springs; famous suspension bridge.
- Clifton, *t.*, New Jersey, U.S.A.: nr. Passaic: p. (1950) 64,511.
- Clinton, *c.*, Iowa, U.S.A.: on Mississippi R.; iron and steel: p. (1950) 30,379.
- Clinton, *t.*, Massachusetts, U.S.A.: on Nashua R.: machinery, carpets: p. (1950) 12,287.
- Clinton Golden Lake, *L.*, Mackenzie, N.W. Terr., Canada.
- Clitheroe, *t.*, *mun. bor.*, Lancs., Eng.: on R. Ribble: cotton weaving: p. (1951) 12,057.
- Clogher, *t.*, Tyrone, N. Ireland: cath.
- Clonakilty, *urb. dist.*, Cork, Ireland: nr. Bandon; corn, farming.
- Cloncurry, *t.*, Queensland, Australia: in pastoral and large copper-producing dist. S. of the G. of Carpentaria: p. 1,827.
- Clones, *mkt. t.*, *urb. dist.*, nr. Dundalk, Monaghan, Ireland: rly. centre: p. 2,092.
- Clonfert, *c.*, Galway, Ireland: famous monastery with seven altars.
- Clonmel, *urb. dist.*, Tipperary, Ireland: on R. Suir: agr. centre; fairs: p. 9,391.
- Clovelly, *par.*, Devon, Eng.: seaside resort, picturesque fishing vil.
- Clovis, *t.*, N.M., U.S.A.: rly. junction, tr. centre, wheat and cattle: p. (1950) 17,318.
- Cloyne, *mkt. t.*, nr. Middleton, Cork, Ireland.
- Cluj, *c.*, Romania: textiles, paper, sugar, earthenware: p. (1948) 117,915.
- Clunes, *gold-mining t.*, Victoria, Australia, nr. Ballarat.
- Clutha R., S.I., New Zealand.
- Clywd, R., Denbigh, N. Wales: flows into Irish Sea at Rhyl; length 30 m.
- Clydach, *t.*, Glamorgan, Wales: on R. Tawe, 5 m. N.E. of Swansea: steel works, nickel refineries.
- Clyde, *R.*, Lanark, S.W. Scot.: navigable to Glasgow; greatest shipbuilding centre in world; length 96 m.
- Clyde, Firth of Scot.
- Clydebank, *burgh*, Dumbarton, Scot.: on the Clyde adjoining Glasgow: shipbuilding, sewing machinery, chemicals, distilling: p. (1951) 44,625.
- Clydesdale, *valley of R. Clyde*, S.W. Scot., agr.: fine horses.
- Coachella Valley, Cal., U.S.A.: part of old bottom of G. of Cal. which lies N.W. of Salton Sea; arid; dates and citrus fruits under irrigation from Imperial Valley irrigation system.
- Coahuila, *st.*, Mexico: cap. Saltillo; maize, cotton; silver, copper, coal, gold: a. 55,082 sq. m.: p. (1950) 719,328.
- Coalbrookdale, *vil.*, Salop, Eng.: old coal and iron mines.
- Coalville, *t.*, *urb. dist.*, Leics, Eng.: nr. Ashby-de-la-Zouch: p. (1951) 25,739.
- Coanza, *R.*, Angola: length 660 m.
- Coast Range, *mtns.*, U.S.A.: along Pacific coast.
- Coatbridge, *burgh*, Lanark, Scot.: 10 m. E. of Glasgow; coal, tin plates, iron furnaces: p. (1951) 47,538.
- Coatesville, *t.*, Penns., U.S.A.: iron, steel, brass, textiles: p. (1950) 13,826.
- Coats I., S. of Southampton I., Hudson Bay, Canada.
- Coatzacoalcas (Puerto Mexico), *spt.*, Mexico: on G. of Campeche; oil refinery: p. 13,740.
- Cobalt, *t.*, Ontario, Canada: silver, cobalt, arsenic, nickel: p. 2,376.
- Coban, *t.*, Guatemala, Central America: coffee and Peruvian bark trade: p. (1940) 26,774.
- Cobar, *t.*, N.S.W., Australia: copper: p. (1947) 2,044.
- Cobh (Queenstown), *spt.*, *urb. dist.*, Cork, Ireland: fine harbour and docks: p. (1948) 5,615.
- Cobija, cap. of Pando dep., N.W. Bolivia: rubber: p. (1950) 1,726.
- Coblenz, see Koblenz.
- Cobourg, *t.*, Ontario, Canada: on L. Ontario; dairying, fruit, woollens: p. 5,973.
- Coburg, *t.*, Bavaria, Germany: old cas.; cattle, machinery: p. 32,000.



- Cocanada, *t.*, *spt.*, Madras, India; rice-cleaning mills; exports cotton, oil seeds; p. (1941) 75,140.
- Cochabamba, *dep.*, Bolivia; a. 25,288 sq. m.; p. (1950) 490,475.
- Cochabamba, *t.*, *cap.*, *dep.* Cochabamba, Bolivia; fine cath.; cottons, woollens; p. (1950) 80,795.
- Cochin, *spt.*, Travancore-Cochin, India; Malabar coast; exports coconut oil, tea; p. (1941) 25,000.
- Cochin with Travancore, *st.*, S. India; rice, coconuts, teak, pepper; a. 1,493 sq. m.; p. 1,422,875.
- Cochin China, name formerly applied to the whole E. part of Indo-China, now limited to S.E. of the peninsula; since 1946 aut. rep. within Fr. Ass. State of Viet-Nam; rice, silk, coffee, rubber, maize, cotton; cap. Saigon; a. 26,476 sq. m.; p. 5,600,000.
- Cochrane, *t.*, Ontario, Canada; on Abitibi R.; p. 2,844.
- Cockburn Land, N. of Baffin I., Arctic Canada.
- Cockenzie and Port Seton, *burgh*, East Lothian, Scot.; on Firth of Forth, 9 m. E. of Edinburgh; p. (1951) 3,180.
- Cockermouth, *t.*, *urb. dist.*, Cumberland, Eng.; coal; p. (1951) 5,234.
- Cocle, *prov.*, Panama, Central America; cap. Penonomé; p. (1950) 73,103.
- Cocos or Keeling Is., *coral atoll*, Indian Oc.; Br. group of five Is. administered since 1951 by Australia; ch. product coconuts; strategic posn. S.E. of Ceylon, 530 m. W. of Christmas I., N.E. of Mauritius; radio and cable station; to be developed by Australia as civil airport on routes from Australia to S. Africa; German raider beached and destroyed on N. Keeling I. in 1914; a. 5 sq. m.; p. (1953) 600.
- Cod, C., S.E. point of Mass. Bay, U.S.A.
- Coesfeld, *c.*, Westphalia, Germany; iron, paper, furniture, textiles; p. 10,857.
- Coeur d'Alene, *t.*, Idaho, U.S.A.; lead, silver, lumber; p. (1950) 12,198.
- Coffeyville, *t.*, Kansas, U.S.A.; p. (1950) 17,133.
- Coggeshall, *t.*, Essex, Eng.; on Blackwater R.; silk; isinglass.
- Cognac, *t.*, Charente, France; cognac, bottles; p. 17,000.
- Cohoes, *c.*, N.Y., U.S.A.; on Hudson R. N. of Albany; hosiery, paper, foundries; p. (1950) 21,272.
- Coimbatore, *t.*, Madras, India; coffee, sugar, cotton spinning; p. (1951) 197,755.
- Colimbra, *c.*, *cap.*, Beira Litoral prov., Portugal; cath., univ.; wine-growing, earthenware mnf.; p. (1950) 98,883.
- Coln, *commune*, Malaga, Spain; soap, paper, textiles, oil, wine, marble; p. 17,348.
- Colac, *t.*, Victoria, Australia; nr. Melbourne; farming and dairying dist.; p. 6,381.
- Colchagua, *prov.*, Chile; cap. San Fernando; stock raising; a. 3,422 sq. m.; p. (1952) 138,008.
- Colchester, *mun. bor.*, Essex, Eng.; on R. Colne; light industries; oyster fisheries; p. (1951) 57,436.
- Cold Harbour, *vil.*, Virginia, U.S.A.; battles between Grant and Lee, 1864.
- Coldstream, *burgh*, Berwick, Scot.; on R. Tweed; p. (1951) 1,294.
- Coldwater, *t.*, Mich., U.S.A.; engineering; flour, cement, leather goods; p. (1950) 8,594.
- Coleford, *t.*, Gloucester, Eng.; in Forest of Dean; centre of sm. coal-mining dist.; p. 2,800.
- Colenso, *t.*, Natal, S. Africa; on R. Tugela; battle 1899; p. 1,800.
- Coleraine, *urb. dist.*, *spt.*, Londonderry, N. Ireland; on R. Bann, 4 m. from sea; linen, distilling; p. (1951) 10,743.
- Colesberg, *t.*, C. of Good Hope, S. Africa; nr. Orange R.; stock-raising; p. 3,133.
- Coleshill, *t.*, Warwick, Eng.; p. 3,177.
- Colima, *volcano* (30 m. N.E. of c.), Mexico, alt. 12,685 ft.
- Colima, *st.*, Mexico; on Pacific coast; cap. Colima; a. 2,009 sq. m.; p. (1950) 112,292.
- Colima, *c.*, Mexico; on Colima R. in fertile valley; p. (1940) 28,514.
- Coll, *I.*, off coast of Mull, Argyll, Scot.
- Colle di Val d'Elsa, *commune*, Siena, Italy; cath.; metal mfg.; p. 11,052.
- Collie, *t.*, Western Australia; p. (1947) 4,507.
- Collingswood, *t.*, New Jersey, U.S.A.; p. (1950) 15,300.
- Collingwood, *t.*, Ontario, Canada; on L. Huron; shipbuilding, steel; p. 6,270.
- Collinsville, *t.*, Ill., U.S.A.; coal, zinc smelting, canning; women's clothes; p. (1950) 11,862.
- Colmar, *t.*, *cap.* Haut-Rhin dep., France; vines, textiles, rayon, brewing; p. (1946) 46,124.
- Colmenar, *t.*, Spain; nr. Madrid; mnfs.; p. 7,951.
- Colme, *t.*, *mun. bor.*, E. Lancs, Eng.; cotton mnfs.; p. (1951) 20,674.
- Colne, *R.*, Essex, Eng.; oysters.
- Colne Valley, *urb. dist.*, W.R. Yorks; woollens; p. (1951) 22,184.
- Cologne, *c.*, *Land*, N. Rhine-Westphalia, Germany; on R. Rhine at N. end of Rhine gorge; cath.; cottons, woollens, eau-de-Cologne, electro-technical industry; p. (1950) 594,941.
- Colomb-Béchar, *t.*, N.W. Algeria; terminus of rly. through Oran dep.; p. 23,008.
- Colombes, *t.*, Seine, France; mfg. sub. of Paris; p. (1946) 61,047.
- Columbia, *rep.*, South America, mountainous in W. (Cordilleras), swampy, llanos in E.; climate mainly tropical. Rs.: Magdalena, Caneas and tribs. of Amazon; Spanish language; Roman Catholic; coffee, tobacco, cocoa, cattle; gold, platinum, oil, emeralds; cap. Bogota; a. 439,997 sq. m.; p. (1951) 11,266,075.
- Colombo, *cap.*, *port*, Ceylon; exports tea, rubber, coconuts; p. (1946) 362,000.
- Colon, *prov.*, Panama; p. (1950) 90,144.
- Colon, *spt.*, Panama, Central America; at Atlantic end of Panama Canal; p. (1940) 53,483.
- Colonía, *dep.*, Uruguay; cap. Colonia; a. 2,193 sq. m.; p. (1942) 130,325.
- Colonia, *t.*, Uruguay; on La Plata R.
- Colonsay, *I.*, the Inner Hebrides, Scot.; 8 m. long; ecclesiastical antiquities; p. (inc. Oronsay) 238.
- Colorado, *st.*, U.S.A.; in Rocky Mtns.; agr. with irrigation; pastoral; gold, copper, silver, coal; smelting, flour milling; cap. Denver (*q.v.*); a. 104,247 sq. m.; p. (1950) 1,325,089.
- Colorado, *R.*, W. of N. America, formed by union of Grand and Green Rs. (2,000 m. long, navigable for 600 m.), with cañon (6,000 ft. deep).
- Colorado, *R.*, Texas, U.S.A.; length 900 m.
- Colorado, *R.*, flows into Blanca Bay, Argentina.
- Colorado Springs, *wat. pl.*, health resort, Col., U.S.A.; 64 m. S. Denver; smelting; p. (1950) 45,472.
- Colton, *t.*, S.E. Cal., U.S.A.; fruit and vegetable canning; mkt. gardening; p. (1950) 14,465.
- Columbia, *c.*, Missouri, U.S.A.; St. Univ.; flour, lumber; p. (1950) 31,994.
- Columbia, *t.*, Penns., U.S.A.; mnfs.; p. (1950) 11,993.
- Columbia, *cap.*, S. Carolina, U.S.A.; burned 1865; univ.; cotton mills; ironwks.; p. (1950) 86,914.
- Columbia, *t.*, Tenn., U.S.A.; mfg.; livestock market; p. (1950) 10,911.
- Columbia, *R.*, on Pacific slope of N. America; rises in Brit. Columbia, flows through Wash., U.S.A.; salmon fishing; length 1,400 m.
- Columbia, *Dist. of*, U.S.A.; on left bank of Potomac R.; contains Washington, the federal cap. of U.S.A.; a. 89 sq. m.; p. (1950) 802,173.
- Columbia, *Mt.*, Alberta, Canada (alt. 12,294 ft.).
- Columbus, *st. cap.*, Ohio, U.S.A.; rly. centre; St. Univ.; machinery, shoes, soap; p. (1950) 375,901.
- Columbus, *t.*, Georgia, U.S.A.; cotton goods, machinery; p. (1950) 79,611.
- Columbus, *t.*, Ind., U.S.A.; engineering; leather goods; p. (1950) 18,370.
- Columbus, *t.*, Mississippi, U.S.A.; cotton, dairying; p. (1950) 17,172.
- Colwyn Bay, *t.*, *mun. bor.*, on est., 6 m. E. of Llandudno; Denbigh, N. Wales; seaside resort; p. (1951) 22,276.
- Comacchio, *c.*, Italy; nr. the Adriatic, 20 m. N. Ravenna; p. 12,609.
- Comayagua, *cap.*, Honduras Rep., Central America; formerly called Valledoid; p. 12,703.
- Combe Capelle, *rock shelter*, nr. Dordogne, France; discovery of race type of Aurignacian period, 1909.
- Combe Martin, *vil.*, Devon, Eng.; on N. est. 5 m. E. of Ilfracombe; popular seaside resort; p. (1931) 1,920.

- Comber, *t.*, Down, N. Ireland; distilleries, linen; p. (1951) 2,507.
- Comiso, *t.*, Sicily, Italy; medicinal spring, porcelain mfnfs.; p. 29,555.
- Commentary, *t.*, Allier, France; nr. Moulins; mining; p. (1946) 10,089.
- Como, *c.*, N. Italy; at foot of the Alps, on L. Como; silk industry; oranges, olives; p. (1951) 70,782.
- Como, *L.*, N. Italy (35 m. long), tourist resort.
- Comodoro Rivadavia, *spt.*, Chubut prov. Argentina; situated on San Jorge Gulf, 550 m. S.W. of Bahía Blanca; exports petroleum; p. (1941) c. 22,000.
- Comorin, *C.*, most S. point of India.
- Comoro Archipelago, French colony attached to Madagascar between N. Madagascar and African est.; cap. Dzaoudzi (Mayotte); total a. about 650 sq. m.; turtle fishing; sugar-cane, vanilla, copra, sisal, timber; p. 141,754.
- Compiègne, *t.*, Oise, France; sugar-mills, rope; Armistice signed between Allies and Germany 1918; French surrendered to Hitler in 1940; p. (1946) 18,218.
- Conakry, *cap.*, Fr. Guinea; p. 33,905.
- Concarneau, *t.*, Finistère, France; on I. nr. Quimper; salted fish and preserve trade; p. (1946) 10,519.
- Concepcion, *prov.*, Chile; cap. Concepcion; a. 2,201 sq. m.; p. (1952) 409,919.
- Concepcion, *t.*, Chile; flour, distilling, brewing; damaged in earthquake; p. (1940) 92,364.
- Concepción, *t.*, Paraguay; p. (1945) 16,487.
- Concepcion C., on coast of California, U.S.A.
- Conception Bay, Newfoundland, Canada; N.W. of St. Johns.
- Conchos, *R.*, Chihuahua prov., Mexico, Central America; flows N.E. from Sierra Tarahumare to Rio Grande; cotton under irrigation in upper valley.
- Concord, *t.*, Mass., U.S.A.; literary centre; textiles; p. (1950) 8,623.
- Concord, *t.*, N. Carolina, U.S.A.; cotton, textiles; p. (1950) 16,486.
- Concord, *t.*, *cap.*, New Hampshire, U.S.A.; on Merrimore R.; granite, machinery, textiles; p. (1950) 27,988.
- Concordia, *t.*, Argentina; on Uruguay R.; p. (1947) 42,303.
- Concordia, *t.*, N. Kan., U.S.A.; agr., dairying, bricks; p. (1950) 7,175.
- Condamine, *R.*, Queensland, Australia; trib. of R. Darling.
- Conde, *t.*, Normandy, France; nr. Caen; p. 4,937.
- Conde-sur-Noireau, *commune*, Calvados dep., N. France; cotton spinning, weaving; p. 4,852.
- Condobolin, *t.*, N.S.W., Australia; in pastoral and agr. dist.; p. 2,622.
- Condom, *t.*, Gers, France; nr. Auch; p. 6,355.
- Conegliano, *commune*, N. Italy; silks, wines, light mftg.; p. 15,434.
- Coney I., *t.*, N.Y., U.S.A.; on Long I., 5 m. long, comprises Manhattan Beach, Brighton Beach, W. Brighton, and W. End; seaside resort.
- Congleton, *t.*, *mun. bor.*, E. Cheshire, Eng.; on S.W. margin of Pennines; mfnfs. silks, ribbons; dairying; p. (1951) 15,492.
- Congo, *R.*, Belg. Congo, greatest R. in Africa, numerous tribs.; estimated length 3,000 m.; drains 1,500,000 sq. m., navigable from sea to Matadi for ocean steamers, from Matadi to Stanley Pool interrupted by rapids and falls, again navigable to Stanley Falls; estuary, 7-10 m. wide.
- Conisborough, *t.*, *urb. dist.*, W.R., Eng.; limestone, bricks, tiles; p. (1951) 16,412.
- Coniston, *t.*, Ontario, Canada; on rly. 8 m. E. of Sudbury; nickel smelting; town built by and for nickel-mining company.
- Coniston Old Man, *mtn.*, nr. L. Conistan, Lancs, Eng. (alt. 2,575 ft.).
- Coniston Water, *L.*, N. Lancs, Eng.; length 5½ m.; tourist resort.
- Conjeeveram (Kanchiverum), *t.*, Madras, S. India; pilgrimage centre; silk, cotton, weaving; p. 61,400.
- Connacht, *prov.*, Ireland; (includes cos. Galway, Mayo, Sligo, Leitrim, Roscommon); a kingdom till reign of Henry I.; mountainous in W.; farming, fishing; a. 6,863 sq. m.; p. (1951) 471,978.
- Connah's Quay, *urb. dist.*, Flint, Wales; p. (1951) 7,365.
- Connaught, *see* Connacht.
- Connacht Tunnel, B.C., W. Canada; carries Canadian Pacific Rly. under Selkirk Mtns. from Golden in upper Columbia valley to Revelstoke in middle Columbia valley; length 5 m.
- Connecticut, *st.*, New England, U.S.A.; cereals, tobacco, dairying; fishing, iron ore, tungsten, mfnfs.; textiles, machinery, rubber goods, watches; cap. Hartford; largest c. New Haven; a. 5,009 sq. m.; p. (1950) 2,007,280.
- Connecticut, *R.*, flows S. to Long I. Sound, U.S.A.; length 450 m.
- Connellsville, *t.*, Penns., U.S.A.; coke, machinery, motor cars; p. (1950) 13,293.
- Connemara, *mtns.*, *dist.*, W. of Ireland, Galway; many lakes and bogs; tourist resort.
- Conowingo Dam, Penns., U.S.A.; situated on lower Susquehanna R.; hydro-electric power-station supplies power to industries in Philadelphia.
- Conroe, *t.*, Texas, U.S.A.; oil, timber; p. (1950) 7,298.
- Consett, *urb. dist.*, Durham, Eng.; on edge of Pennines, 10 m. S.W. of Newcastle; colliery and ironworks; p. (1951) 39,456.
- Conshohocken, *bor.*, Penns., U.S.A.; iron, steel, surgical instruments, textiles; p. (1950) 10,922.
- Constance (Konstanz), *c.*, Baden, Germany; on L. Constance; cath.; textiles, machinery, chemicals.
- Constance, *L.*, or Boden See, between Switzerland and Germany; 45 m. long, 9 m. broad; a. 207 sq. m.; R. Rhine flows through.
- Constanta, *spt.*, Romania; on the Black Sea; exports petroleum, wheat; p. (1945) 79,716.
- Constantina, *t.*, Andalusia, Spain; p. 14,433.
- Constantine, *dep.*, N. Algeria; cap. Constantine; p. (1948) 3,108,165.
- Constantine, *t.*, N. Algeria; wheat, woollens, leather; stands 2,130 ft. high upon a rock; p. (1948) 118,774.
- Constantinople, *see* Istanbul.
- Conversano, *c.*, Bari, S. Italy; cath.; olives, citrus fruits; mfnfs.
- Conway, *t.*, S.C., U.S.A.; river port; cotton, tobacco, lumber; p. (1950) 6,073.
- Conway, *mun. bor.*, *spt.*, Caernarvon, N. Wales; at mouth of R. Conway; m. seaside resort; castle; p. (1951) 10,237.
- Cooch Behar, *dist.*, India; former st.; a. 1,318 sq. m.; rice, jute, tobacco; p. (1941) 665,000.
- Cooch Behar, *t.*, Cooch Behar, India; on Torsha R.; suffered severely from earthquake 1897; p. (1941) 25,000.
- Cook, *mtn.*, alt. 12,349 ft.; highest point in S. Alps, New Zealand.
- Cook Inlet, S. Coast, Alaska; U.S.A. (200 m. long).
- Cook Is., British group (Rarotonga, largest) in S. Pacific, annexed to New Zealand, 1901; bananas, oranges, copra; p. (1951) 15,079.
- Cook Strait, *channel* between N. and S. Is. of N.Z.; 15-18 m. wide.
- Cookham, *t.*, Berks, Eng.; on R. Thames nr. Maidenhead; p. 12,980.
- Cookstown, *mkt. t.*, Tyrone, Ireland; linen; p. 3,793.
- Cooktown, *spt.*, Queensland, Australia; at mouth of Endeavour R.; pearl fishery and mining dist.
- Coolgardie, *gold mining t.*, W. Australia; p. 650.
- Coolin Mtns., *see* Cuillin Hills.
- Coonoor, *t.*, Madras, India; sanatorium 6,000 ft. above sea-level; p. 18,783.
- Coopers Creek (Barcoo), *R.*, Central Australia; rises in Warrego Range, Gt. Dividing Range, flows S.W. into marshes of L. Eyre; flow is intermittent and seasonal, but provides water for livestock in this semi-arid region; length approx. 900 m.
- Coorg, *st.*, India; mountainous, forests; coffee, rice, rubber, tea; cap. Mercara; a. 1,593 sq. m.; p. (1951) 229,405.
- Coorong, *The*, S. Australia; lagoon and long tongue of land on coast.
- Coosa, *R.*, Alabama, U.S.A.; length 350 m.
- Cootamundra, *t.*, N.S.W., Australia; agr. and mftg.; p. (1947) 5,252.
- Cootehill, *mkt. t.*, *urb. dist.*, Cavan, Ireland; Bellamont forest; p. 1,566.
- Copeland Is., group off N.W. coast of Down, N. Ireland, at entrance to Belfast Lough.



- Copenhagen, *ch. spt., cap.*, Denmark; on E. coast of Zealand I.; royal palace, univ., library; naval stn.; shipbuilding, textiles, chemicals, machinery; p. (1950) 974,901.
- Copiapo, *spt., Atacama*, Chile; several times overwhelmed by earthquakes; copper smelting; p. 21,731.
- Copapo, *t.*, Chile; in Andes range, alt. 17,000 ft.; gold, silver, copper.
- Copparo, *commune*, Ferrara, N. Italy; drained agr. land, in R. Po delta; p. 23,777.
- Coppercliff, *t.*, E. Ontario, Canada; mining, nickel-copper smelting; p. 3,732.
- Coppermine, *R.*, N.W. Terr., Canada; flows N. into Arctic Ocean; length 300 m.
- Coquet I., off est. Northumberland, Eng.
- Couilhatville, *t.*, Belg. Congo; at confluence of Rs. Congo and Ruki; p. 10,435.
- Coquimbo, *prov.*, Chile, on Argentine border; copper-mining dist.; cap. Coquimbo; a. 15,397 sq. m.; p. (1952) 256,151.
- Coquimbo, *spt.*, Chile; cath.; copper; p. (1940) 18,863.
- Coracora, *t.*, S. Peru; mining; port Chala; p. 8,000.
- Coral Sea, Pacific Ocean, extending from the New Hebrides to Australia.
- Corapolis, *bor.*, S.W. Penns., U.S.A.; iron, steel, glass; p. (1950) 10,498.
- Corato, *t.*, Apulia, Italy; farming centre, olive oil, wine; p. 44,139.
- Corbeil, *t.*, Seine-et-Oise, France; on R. Seine, 12 m. S.E. of Paris; flour mills, printing, paper; p. (1946) 10,976.
- Corbridge, *t.*, Northumberland, Eng.; on R. Tyne, nr. Hexham; p. 2,415.
- Corby, *t.*, *urb. dist.*, Northants, Eng.; iron and steel working, shoemaking; p. (1951) 16,704.
- Corby, *t.*, Northampton, England; on Northampton Heights, 7 m. N. of Kettering; one of "New Towns" designated 1946; at present largely co-terminous with Corby urb. dist., will extend farther N.; p. (1951) 16,736.
- Cordell, *t.*, S.W. Ga., U.S.A.; tr. centre; peanuts, cotton mills, sawmills; p. (1950) 9,462.
- Cordell, *t.*, W. Okla., U.S.A.; gas, oil, cotton, maize, cattle; p. (1950) 2,920.
- Cordoba, *agr. prov.*, Argentina; cap. Cordoba; a. 65,195 sq. m.; p. (1947) 1,455,222.
- Cordoba, *c.*, Argentina; univ.; wheat, flour, wool, shoes; p. 287,598.
- Cordoba, *t.*, Veracruz, Mexico; cottons, woollens; p. 17,865.
- Cordoba, *prov.*, Andalusia, Spain; cap. Cordoba; agr., olives, vines, livestock; a. 5,299 sq. m.; p. (1950) 781,908.
- Cordoba, *t.*, Andalusia, Spain; cap. of C. prov.; on Guadalquivir R.; cath.—formerly a sacred mosque of Mohammedans; textiles, leather, distilling; p. (1950) 165,403.
- Corentyne, *R.*, forms bdy. between Brit. and Netherland Guiana; length 400 m.
- Corfe Castle, *par.*, Dorset, Eng.; cas. ruins; mkt., potter's clay.
- Corfu, *see* Kerkira.
- Corigliano, *indust. t.*, Cosenza, S. Italy; p. 15,926.
- Coringa, *t.*, Madras, India; at mouth of Godavari R.
- Corinth, *see* Corinto.
- Corinth, Isthmus of, divides the Saronic G. from G. of Corinth, Greece; cut across by Ship Canal.
- Corinth Canal, *ship canal*, S. Greece; traverses Isthmus of Corinth, links G. of Corinth and Ionian Sea with Saronic G. and Aegean Sea; opened 1893; length 3½ m., depth 26 ft.
- Corinto, *t.*, Brazil; p. 5,142.
- Corinto (Corinth), *c.*, Greece; at W. end of Isth. of Corinth; occupies a site 3 m. distant from the anc. classic c. destroyed by an earthquake in 1868; currants, olive oil, silk; p. (1951) 17,699.
- Corinto, *ch. spt.*, N.W. Nicaragua; exports hides, sugar, coffee; p. 2,500.
- Cork, *co.*, S. Ireland; largest and most S.; mtns.; dairying, brewing, agr., fisheries; cap. Cork; a. 2,890 sq. m.; p. (1951) 341,229.
- Cork, *spt., co. bor.*, Cork, Ireland; at mouth of R. Lee; woollens, butter, cattle; p. (1951) 74,577.
- Cork Harbour, port of call (Cobh) for Atlantic steamers.
- Corleone, *t.*, Palermo, Sicily, Italy; mineral springs; p. 13,704.
- Corlu, *t.*, Turkey in Europe; carpets; p. 12,394.
- Corner Brook, *t.*, W. Newfoundland; good harbour; pulp, paper; p. of E. and W. (1951) 10,266.
- Corning, *t.*, N.Y., U.S.A.; dairying, tobacco; p. (1950) 17,684.
- Cornwall, *co.*, S.W. Eng.; mkt. gardening, oats, cattle, fishing, minerals, kaolin, granite, tin; extreme point Land's End; co. t. Bodmin; a. 1,357 sq. m.; p. (1951) 345,612.
- Cornwall, *t.*, Ontario, Canada; on St. Lawrence R.; cottons, woollens, pulp, paper, flour; p. 14,117.
- Cornwallis Is., Arctic O., Brit. N. America.
- Coro, *t.*, Venezuela; oil; p. (1941) 22,053.
- Corocoro, *sm. t.*, La Paz dep., Bolivia; at alt. 13,000 ft. in Central Andes, 50 m. S. of La Paz; impt. copper-mining centre; p. (1946) 4,500.
- Coromandel Cst., cst. of S.E. Madras, India.
- Coronado, California, U.S.A.; fashionable sea-side resort; p. (1950) 12,700.
- Coronation Gulf, arm of Arctic Ocean; extreme point N. Canada; discovered by Franklin.
- Coronel, *spt.*, Chile; p. 28,027.
- Coronel Bogado, *t.*, S.E. Paraguay; cotton, cattle; p. (1945) 11,159.
- Coronel Oviedo, *t.*, Paraguay; p. (1945) 33,098.
- Corowa, *t.*, N.S.W., Australia; on R. Murray, 40 m. downstream from Albury; collecting centre for Riverina district, vines, fruit, wheat, red-gum timber; valuable new coal deposits.
- Corpus Christi, *t.*, Texas, U.S.A.; cotton; p. (1950) 108,287.
- Correggio, *t.*, Emilia, Italy; cheese and hats.
- Correze, *mountainous dep.*, S. Central France; cap. Tulle; cereals, wines, cattle rearing, timber, coal, granite, iron; a. 2,272 sq. m.; p. (1946) 254,601.
- Corrib, Lough, *I.*, Galway, and Mayo, Ireland, a. 68 sq. m.; R. Corrib flows from it into Atl.
- Corrientes, *prov.*, Argentina; cap. Corrientes; a. 34,325 sq. m.; p. (1947) 570,907.
- Corrientes, *t.*, Argentina; on Parana R.; exports cattle, sugar, rice, cotton; cap. of prov. of O.
- Corrientes, C. Mozambique, Port. E. Africa.
- Corry, *t.*, Penns., U.S.A.; oil, engineering, metal works, furniture; p. (1950) 7,911.
- Corsham, *mkt. t.*, Wilts, Eng.
- Corsica (Corse), French I. and dep. in Mediterranean; forested, mtns.; agr., olives, lemons, chestnuts, vine growing; cap. Ajaccio, birth-place of Napoleon; a. 3,367 sq. m.; p. (1946) 267,873.
- Corsicana, *t.*, Texas, U.S.A.; p. (1950) 19,211.
- Corso, C. N. point of Corsica.
- Cortland, *t.*, N.Y., U.S.A.; stoves, wine; p. (1950) 18,152.
- Cortona, *t.*, Tuscany, Italy; nr. Perugia; silk factories; p. 30,222.
- Coruh, *II*, N.E. Turkey, a. 3,408 sq. m.; p. 143,267; *spt.*, the cap. p. 13,861.
- Corum, *II*, N. Central Turkey in Asia, a. 4,339 sq. m., p. 313,559; *t.*, its cap. p. 20,170.
- Corumba, *port*, Mata Grosso, Brazil; on R. Paragua; p. 15,000.
- Coruña, *prov.*, N.W. Spain; cap. La Coruña (Corunna); a. 3,051 sq. m.; p. (1950) 955,772.
- Corunna, *see* La Coruña.
- Corvallis, Oregon, U.S.A.; rich farming section, canning, lumber; p. (1950) 16,207.
- Cosenza, *c.*, S. Italy; ctr. for figs, oranges, olive oil, wine, silk; cath., cas.; p. (estd.) 30,000.
- Cosenza, *prov.*, Calabria, Italy; a. 2,566 sq. m.; p. (1951) 635,572.
- Coshocton, *t.*, Ohio, U.S.A.; coal, gas, oil; pottery, enamelware; p. (1950) 11,675.
- Cosne, *t.*, Nièvre, France; on R. Loire; pottery; p. (1946) 7,035.
- Costa Rica, *rep.*, Central America; cap. San José; volcanic mtns.; agr., coffee, bananas, rubber, gold; a. 19,656 sq. m.; p. (1950) 300,375.
- Côte d'Or Mtns., N.E. part of Central Massif; max. alt. 1,968 ft.
- Côte d'Or, *dep.*, E. France; traversed R. Saône; cap. Dijon; wines, live-stock, iron and steel; a. 3,391 sq. m.; p. (1946) 335,602.
- Cotentin, *peninsula*, N. France; 50 m. long; Cherbourg, at its extremity, 80 m. from Portsmouth.
- Côtes-du-Nord, *agr. dep.*, Brittany, W. France; cap. St. Brieuc; wheat, flax, iron, slate, fishing, linen-making; a. 2,787 sq. m.; p. 526,955.

- Cotopaxi, *vol.*, (alt. 19,613 ft.) in the Andes of Ecuador, nr. Quito; loftiest active volcano in the world; recent eruptions have caused great damage to Ecuador.
- Cotopaxi, *prov.*, Ecuador, S. America; cap. Latacunga; a. 2,595 sq. m.; p. (1950) 165,602.
- Cotrone, *spl.*, Catanzaro, S. Italy; good trade in wine, olive oil, etc.; p. 21,496.
- Cotswold Hills, W. Eng., between Lower Severn and Upper Thames; highest point, Cleve Cloud, 1,031 ft.; fine sheep pastures.
- Coudekerque-Branche, S.E. sub. of Dunkerque, Nord dep., France; textiles; p. 11,867.
- Copsladon and Purley, *urb. dist.*, Surrey, Eng.; in dry valley of N. Downs, 4 m. S. of Croydon; residtl.; p. (1951) 63,770.
- Council Bluffs, c., Iowa, U.S.A.; on Missouri R.; rly. centre, farm implements, paper, machinery; p. (1950) 45,429.
- Coupar Angus, *mkt. burgh*, Perth, Scot.; in Strathmore, 16 m. S.W. of Forfar; p. (1951) 2,175.
- Courbevoie, t., *industl. sub.* of Paris, France; on R. Seine; p. 5,030.
- Courcelles, t., Hainaut, Belgium; coal, linen, factories.
- Courtlaar, *see* Kortrijk.
- Coutances, t., Manche, N. France; on Cotentin peninsula; cath.; black lace, woollens; p. 5,700.
- Contras, t., Gironde, France; E. of Bordeaux; p. 5,078.
- Cove and Kilcreggan, *burgh*, Dunbarton, Scot.; at junction of Loch Long and R. Clyde; p. (1951) 887.
- Coventry, *mfg. c.*, *co. bor.*, N. Warwick, Eng.; 16 m. S.E. of Birmingham; centre of cycle, motor-cycle, motor-car industry; tractors, aeroplane parts, rayon; p. (1951) 258,211.
- Covilha, t., Beira Baixa, Portugal; cloth factories; p. 19,213.
- Covington, *industl. c.*, Kentucky, U.S.A.; on R. Ohio, opp. Cincinnati; machinery, leather furniture; p. (1950) 64,452.
- Covington, t., Va., U.S.A.; X-ray equipment, paper, rayon, textiles; p. (1950) 5,860.
- Cowbridge, *mun. bor.*, Glamorgan, S. Wales; nr. Cardiff; p. (1951) 1,005.
- Cowdenbeath, *burgh*, Fife, Scot.; 5 m. N.E. of Dunfermline; coal; p. (1951) 13,163.
- Cowes, t., *urb. dist.*, I. of Wight, Eng.; on both sides of estuary of R. Medina; headquarters of Royal Yacht Club; regattas and yacht building; p. (1951) 17,154.
- Cowley, *sub.*, Oxford, Oxfordshire, Eng.; 3 m. S.E. of Oxford; mnfs. motor vehicles.
- Cowpen, t., Northumberland, Eng.; nr. Morpeth; coal.
- Cowra, t., N.S.W., Australia; famous wheat dist. and site of st. experimental farm; p. 5,474.
- Cozenza, t., *cap.*, prov. C., Italy; iron and steel; p. 40,032.
- Cozumel I., E. of Yucatan Peninsula; Mexico.
- Craców, *see* Kraków.
- Cradle, *Mt.*, *mun.*, Tasmania, alt. 5,069 ft.
- Craddock, t., C. of Good Hope; wool trade; p. 13,400.
- Crail, *burgh*, Fife, Scot.; p. (1951) 1,139.
- Craiova, *see* Krajova.
- Cranborne, t., N.E. Dorset, Eng.
- Cranbrook, *rural dist.*, *mkt. t.*, Kent, Eng.; hops and grain; p. (of dist. 1951) 13,788.
- Cranford, t., N.J., U.S.A.; iron, chemicals; p. (1950) 18,602.
- Cranston, t., Rhode I., U.S.A.; mnfs.; p. (1950) 55,060.
- Crater L., Oregon, U.S.A.; in National Park, is a great body of water 2,000 ft. deep and 6 m. across, set in a crater of an extinct gigantic volcano, 8,000 ft. high.
- Crathie and Braemar, *pars.*, Aberdeenshire, Scot.; adjoining Balmoral Castle and Abergeldie Castle estates; p. (1951) 1,291.
- Crato, t., Ceara st., Brazil; at foot of Chapados de Araripe, approx. 300 m. by rail S. of Fortaleza; centre of irrigated area producing cotton, sugar, rice; p. (1947) 11,233.
- Crau, *ls.*, region, Bouches-du-Rhône dep., S.E. France; dry, pebbly area E. of Rhône delta; winter pasture for sheep.
- Craven, *district*, Central Pennines, Eng.; relatively low limestone plateau, alt. mainly below 800 ft. except where capped by grits in N. Craven; typical limestone features, caves, stalactites and stalagmites, steep-sided valleys (dales); drained by R. Ribbles to S.W., R. Aire to S.E.; largely moorland, sheep rearing; in valleys, rearing of cattle for fattening elsewhere, cultivation of root and fodder crops; R. valleys give the only easy routes across Central Pennines, Leeds to Preston, Leeds to Carlisle; ch. mkt. ts. and route centres, Skipton, Settle.
- Crawley, t., Surrey, Sussex (E. and W.), Eng.; on N.W. flank of The Weald 9 m. S. of Reigate; one of "New Towns" designated 1946 to relieve population congestion in London; extends from vil. of Crawley N. towards Horley; p. (1951) 10,701.
- Crayford, *urb. dist.*, Kent, Eng.; p. (1951) 27,951.
- Credition, *mkt. t.*, *urb. dist.*, Devon, Eng.; shoes, farming; p. (1951) 3,992.
- Crefeld, *see* Krefeld-Uerdingen.
- Creil, t., Oise, France; on R. Oise, 30 m. N. of Paris; machinery manufacture; p. (1946) 10,024.
- Crema, *commune*, Cremona, N. Italy; cath.; wine, silk, linen, lace, hats; p. 25,163.
- Cremona, c., N. Italy; on R. Po; silk, cotton, musical instruments; p. (1951) 69,100.
- Crest, *commune*, Drôme dep., S.E. France; silks, woollens, paper; p. 5,379.
- Crete (Krete), I., E. Mediterranean; since the Balkan War part of Greece; 60 m. from nearest point in Greece; cap. Candia; exports fruit, oil, etc.; a. 3,235 sq. m.; p. (1951) 463,459.
- Creus, c., juts out into Mediterranean Sea, Spain, nr. French border.
- Creuse, *dep.*, Central France; agr., etc.; cap. Guéret; a. 2,164 sq. m.; p. (1948) 188,619.
- Creusot, Le, t., Saône-et-Loire, France; large ordnance works; p. (1946) 24,106.
- Creutzwald-la-Croix, t., Moselle dep., N.E. France; coal, iron foundries; p. (1946) 10,329.
- Creventille, t., Spain; wine, wheat, and fruit; p. 11,403.
- Crewe, t., *mun. bor.*, Cheshire, Eng.; 20 m. S.E. of Chester; lge. rly. wks.; impt. rly. junction; p. (1951) 52,415.
- Crewkerne, *mkt. t.*, *urb. dist.*, Somerset, Eng.; 8 m. S.W. of Yeovil; p. (1951) 3,838.
- Criccieth, t., *urb. dist.*, Caernarvon, N. Wales; on N. shore of Cardigan Bay; sm. seaside resort; p. (1951) 1,651.
- Crickhowell, *rural dist.*, *mkt. t.*, Brecon, S. Wales; on R. Usk; paper; p. (rural dist. 1951) 7,681.
- Cricklade, t., *rural dist.*, N. Wilts, Eng.; on R. Thames, 8 m. N.W. of Swindon; p. (rural dist. 1951) 15,693.
- Crieff, *burgh*, *summer resort*, Perth, Scot.; on R. Earn, 15 m. W. of Perth; cotton and woollens; p. (1951) 5,473.
- Crimea Peninsula, jutting into Black Sea, U.S.S.R.; wheat, tobacco, fruit; campaign 1854-55 between Russia and the Allied Force of Turkey, Britain, France, and Sardinia was chiefly fought out here (Alma, Balaklava, and Sevastopol).
- Crimmitschau, t., nr. Zwickau, Saxony, Germany; woollen-cloth factories; p. 27,200.
- Crinan Canal, across peninsula of Kintyre, S.W. Scot.; connecting Loch Gilp with the Atlantic; length 6 m.
- Crisfield, t., Md., U.S.A.; shipping point for oysters, crabs, fish; p. (1950) 3,683.
- Cristóbal, c., Panama Canal Zone, Central America; adjoins Colón at N. entrance to Panama Canal.
- Croaghpatrick, *mnfs.*, Mayo, Ireland, 2,510 ft.
- Croatia, *fed. unit*, Yugoslavia; formerly part of Austria; mnfs.; cereals, potatoes, tobacco, timber, pigs, sheep, cattle; cap. Zagreb; a. 16,418 sq. m.; p. (1948) 3,749,039.
- Crockett, t., E. Texas, U.S.A.; lumber, cottonseed oil, pecan nuts; p. (1950) 5,932.
- Crocodile R., *see* Limpopo.
- Croisic, Le, t., Loire-Inf., France; at mouth of R. Loire; p. 2,368.
- Cromarty, *burgh*, Ross and Cromarty, Scot.; on N.E. est. of Black Isle; p. (1951) 726.
- Cromer, t., *urb. dist.*, Norfolk, Eng.; on N. est. of E. Anglia; seaside resort; p. (1951) 4,658.
- Crompton, *mfg. t.*, *urb. dist.*, Lancs, Eng.; 2 m. S. of Rochdale; cotton, engineering; p. (1951) 12,558.



- Cronenberg, *t.*, Rhineland, Germany; iron, silk weaving; *p.* 14,051.
- Cronstadt, *see* Kronshadt.
- Crooked I., Bahama Is., W. Indies; *p.* 1,078.
- Crosby or Great Crosby, *mun. bor.*, S. Lancs., Eng.; on Liverpool Bay, 3 m. N. of Bootle; residit.; seaside resort; *p.* (1951) 58,362.
- Cross, R., S.E. Nigeria; rises in Cameroon Highlands, flows W. and S. into G. of Guinea at Calabar; useful inland waterway: length approx. 400 m.
- Cross Falls, *mtn.*, Cumberland, Eng.; on E. border of co.; alt. 2,930 ft.
- Crow Head, C., Kerry, Ireland.
- Crowle, *t.*, Lincoln, Eng.; nr. confluence of Rs. Don and Trent; *p.* 3,010.
- Crowley, *t.*, S. La., U.S.A.; rice mills, rice experiment stn.; *p.* (1950) 12,784.
- Crows Nest Pass, B.C., Alberta, Canada; southernmost pass across Canadian Rocky Mtns.; used by rly. from Medicine Hat to Spokane (U.S.A.); alt. summit 4,459 ft.
- Croydon, *residit. t., co. bor., airport*, Surrey, Eng.; 10 m. S. of London; *p.* (1951) 249,592.
- Crozet Is., mountainous uninhabited group in S. Indian Ocean; French.
- Cruzeiro, *t.*, S. Brazil, on trib. of Uruguay R.; coffee, tobacco; *p.* 11,863.
- Csongrad, *mkt. t., agr. dist.*, Hungary; at junction of Rs. Theiss and Koros; *p.* 25,594.
- Cuba, I., W. Indies; taken from Spain by the U.S.A., but later constituted an independent rep.; climate, insular tropical, plentiful rainfall; tropical forest; agr., sugar-cane, tobacco, maize, fruits, mahogany and cedar, hardwoods, iron, copper; cap. Havana; a. 44,206 sq. m.; *p.* 5,180,000.
- Cubango, R., S. Africa, enters L. Ngami.
- Cuckfield, *mkt. t., urb. dist.*, Sussex, Eng.; *p.* (1951) 16,481.
- Cuckmere, R., Sussex, Eng.; rises in High Weald and flows S. into English Channel 4 m. W. of Beachy Head; passes through S. Downs in very beautiful gap; length, 23 m.
- Cudahy, *t.*, Wisconsin, U.S.A.; *p.* (1950) 12,182.
- Cuddalore, *spt.*, on E. cst., India; nr. Pondicherry; exports oil-seeds, cottons; *p.* 60,632.
- Cuddapah, *t.*, Madras, India; cotton, cloth factories, millet, rice; *p.* 10,000.
- Cudillero, *commune*, Oviedo, N.W. Spain; manganese; *p.* 10,630.
- Cudworth, *urb. dist.*, W.E. Yorks, Eng.; *p.* (1951) 8,757.
- Cuenca, *c.*, Cuenca, Spain; on R. Jucar; *p.* (1949) 25,215.
- Cuenca, *agr. and mining prov.*, Central Spain; furniture, leather, paper; a. 6,588 sq. m.; *p.* (1950) 355,719.
- Cuenca, *cap.*, Azuay, Ecuador; univ.; sugar, pottery; *p.* (1938) 53,871.
- Cuernavaca, *cap.*, Morelos St., Mexico; ancient Indian *t.* captured by Cortes; *p.* (1940) 25,600.
- Cuesmes, *coal mining t.*, adjoining Mons, Belgium.
- Cuiabá, *indust. c., cap.*, Mato Grosso, Brazil; *p.* (1947) 62,104.
- Cullin Hills, I. of Skye, Scot.; highest point Sgurr-na-Gilleann; alt. 3,234 ft.
- Culebra, *valley and mtns.*, N. New Mexico.
- Culebra, *spt. and I.*, Puerto Rico; W. Indies.
- Culgoa, R. trib. of Darling R., Queensland and N.S.W., Australia.
- Culiacan, *cap.*, Sinaloa, Mexico; *p.* (1950) 144,550.
- Cullen, *burgh*, Banff, Scot.; between Buckie and Portsoy; *p.* (1951) 1,555.
- Cullera, *spt.*, Valentia, Spain; on R. Jucar; *p.* 15,005.
- Cullinan, *t.*, Transvaal, S. Africa; centre of diamond-mining industry.
- Culloden Moor, 6 m. E. of Inverness, Scot.; defeat of Bonnie Prince Charlie 1746.
- Cullompton (Cullumpton), *mkt. t.*, Devon, Eng.; paper, mfg.; *p.* 2,737.
- Culross, *burgh*, F. of Forth, Fife, Scot.; *p.* (1951) 578.
- Culver City, California, U.S.A.; large motion-picture plant; *p.* (1950) 19,720.
- Cumana, *spt., c.*, Sucre, Venezuela; coffee, sugar, tobacco; *p.* (1941) 29,833.
- Cumana, C., N. coast, Venezuela.
- Cumberland, *co., Eng.*; S.E. part of Lake District, ch. mtns.; Scaffell, Helvellyn, Skiddaw; ch. Ls.; Ullswater, Derwentwater, Thirlmere; oats, sheep rearing, dairying, fishing, coal, iron ore, iron and steel, shipbuilding; a. 1,516 sq. m.; *p.* (1951) 285,347.
- Cumberland, *indust. t.*, Maryland, U.S.A.; on Potomac R.; iron and steel; *p.* (1950) 37,679.
- Cumberland, *t.*, E.I., U.S.A.; iron, cotton, silk, granite; *p.* (1950) 12,842.
- Cumberland, R., Kentucky, U.S.A.; trib. of Ohio; length 700 m.
- Cumberland Gap, Ky., U.S.A.; ch. break in high E. wall of Cumberland Plateau; gives access from upper Tennessee valley to Cumberland and Ohio valleys; very impt. routeway in colonisation of Ky.
- Cumberland Is., off coast of Queensland, Australia.
- Cumberland Plateau, *mtn. region*, Ky., Tenn., Ala., U.S.A.; forms S.W. zone of Appalachian mtn. system terminating abruptly towards Tennessee valley to E., Cumberland valley to W.; drained W. by tribs. of Cumberland and Ohio Rs.; composed of horizontal sandstones overlying coal; thinly populated by backward farming communities except where mining ts. occur in valleys cut down to coal; mainly between 1,200 ft. and 3,000 ft.
- Cumbernauld, *par.*, Dunbarton, Scot.; quarries, mines, weaving; *p.* (1951) 5,282.
- Cumbrae, Is., in Firth of Clyde, off coast of Ayr, Scot.
- Cumbrian Mtns., Lake District, Cumberland, Westmorland, and Lancashire, Eng.
- Cumnock and Holmhead, *burgh, mining dist.*, Ayr, Scot.; *p.* 4,586.
- Cumra, *t.*, Turkey; *p.* 5,190.
- Cundinamarca, *dep.*, Colombia, S. America; contains the fed. cap. Bogota; a. 9,106 sq. m.; *p.* (1947) 1,390,200.
- Cuneo, *see* Kunene, R.
- Cuneo, *prov.*, Italy; a. 2,870 sq. m.; *p.* (1951) 580,424.
- Cuneo, *cap.*, Cuneo, *prov.*, Italy; cath.; cotton, paper; *p.* (1951) 39,730.
- Cunnamulla, *t.*, Queensland, Australia; on Warrego R.; *p.* 2,189.
- Cupar, *burgh*, Fife, Scot.; on R. Eden, 8 m. E. of St. Andrews; linen making; *p.* (1951) 5,530.
- Curacao, I. (Netherlands Antilles), in the Caribbean, off N. cst. of Venezuela; phosphates, salt, orange growing for liqueur; a. 210 sq. m.; *p.* 91,450.
- Curanilahua, *commune*, Aranco, Chile; coal-mining; *p.* 13,026.
- Curepipe, *t.*, Central Mauritius; health resort; *p.* 19,421.
- Curico, *prov.*, Chile; a. 2,214 sq. m.; *p.* (1952) 39,195.
- Curitiba, *cap.*, Parana St., Brazil; matches, porcelain, yerba maté; *p.* (1950) 183,863.
- Curtea de Arges, *t.*, Romania; on S. slopes of the Transylvanian Alps.
- Curwensville, *bor.*, Penns., U.S.A.; firebrick, leather, clay, clothing; *p.* (1950) 3,332.
- Curzola or Korcula, I., Dalmatia, Yugoslavia; in the Adriatic; fishing, seafaring, agr.
- Cushing, *t.*, Okla., U.S.A.; oil, gas, refineries, industr. centre; *p.* (1950) 8,414.
- Cutch, *see* Kutch.
- Cuthbert, *t.*, Ga., U.S.A.; cotton, lumber, canning; *p.* (1950) 4,025.
- Cuttack, *cap.*, Orissa state, India; on Mahanadi R.; rice, gold, and silver filigree; *p.* (1951) 102,505.
- Cuxhaven, *Land*, Hamburg, Germany; outpost of Hamburg at the mouth of R. Elbe; fine harbour, docks, fishing; *p.* 37,200.
- Cuyahoga, R., in N. Ohio, U.S.A., flowing into L. Erie at Cleveland; length 85 m.
- Cuyahoga Falls, *t.*, Ohio, U.S.A.; *p.* (1950) 29,195.
- Cuyapo, *municipality*, Luzon, Philippines; rice, sugar, tobacco, hemp; *p.* 24,570.
- Cuyuri, R., rises in Venezuela, enters sea in Brit. Guiana.
- Cuzco, *ancient t.*, Peru; in the Andes at alt. 11,400 ft. in valley of Urubamba R.; once capital of the Incas; temple and fortress; besieged and sacked by Manco Inca in 1536; cath.; cottons, woollens; *p.* (estd. 1350) 55,634.
- Cuzco, *dep.*, Peru; a. 55,716 sq. m.; *p.* (1947) 638,643.
- Cwmaman, *urb. dist.*, Carmarthen, Wales; on R. Loughor, 12 m. N.E. of Llanelli; *p.* (1951) 4,593.

Cwmbran, *t.*, *urb. dist.*, Monmouth, Eng.: in valley of Avon-Lwyd, 4 m. N. of Newport; iron and steel industry. heavy engineering; p. (1951) 13,162.

Cwmbran, *t.*, Monmouth, Eng.: in valley of Avon-Lwyd, 5 m. N. of Newport; one of "New Towns" designated 1946; comprises bulk of Cwmbran *urb. dist.* and extends N. towards Pontypool; p. (1951) 13,659.

Cyclades, group of about 220 *is.* Grecian arch.; ch. *t.* Hermoupolis (Syra.); a. 1,023 sq. m.; p. (1951) 121,256.

Cyprus, *i.*, Brit. col., E. Mediterranean; 40 m. from Anatolia, 60 m. from Syria; cap. Nicosia; salt, iron, copper, agr., sponge fishing; a. 3,572 sq. m.; p. (1953) 506,000.

Cyrenaica, *see* Libya.

Czechoslovakia, *cty.*, Central Europe; rep. comprising Bohemia, Moravia, Slovakia, Silesia; by decree December 21st, 1948, these provinces have been abolished; country divided into 19 regions; mtns.; fertile valleys; agr.; potatoes, sugar-beet, cereals, lumbering; coal, iron, granite, beer distilling, sugar, textiles, glass, stoneware, machinery, chemicals; cap. Praha (Prague); a. 49,355 sq. m.; p. (1947) 12,164,661.

Czeladz, *t.*, S.W. Poland; coal; p. 21,035.

Czernowitz, *see* Chernovitsy.

Czestochowa, *indust. t.*, Kielce, S. Poland; on Warta R.; old pilgrimage monastery; cottons, paper; p. (estd. 1950) 115,084.

Czirknitzer (Zirknitzer), *L.*, with island in Carniola, Yugoslavia, S. of Ljubljana, 6 m. long; extraordinary variations in depth.

Czortkow, *t.*, W. Ukraine, U.S.S.R.; agr., tobacco, brandy; p. (1939) 19,038.

## D

Daanbantayan, *mun.*, N. Cebu, Philippine Is.; rice, sugar; p. 24,198.

Dabhoi, *t.*, Madras st., India; architectural remains; p. 18,166.

Dabrowa, *t.*, Poland; 38 m. N.W. of Kraków; coal-mining.

Dacca, *c.*, *cap.*, E. Bengal, Pakistan; on Buriganga R., an old channel of the Ganges; jute, muslin; p. (1951) 276,033.

Dachstein, *mtn.*, Salzammergut, Austria; alt. 9,830 ft.

Dade City, *t.*, Fla., U.S.A.; centre of mkt. gardening and citrus region; kaolin; p. (1950) 3,806.

Dagenham, *t.*, *mun. bor.*, Essex, Eng.; on N. bank of R. Thames, 10 m. E. of London; motor cars; p. (1951) 114,588.

Dagestan, Caucasian prov. of R.S.F.S.R., U.S.S.R.; one of the most mountainous dists. in the world; cap. Makhachkala; cotton, orchards and vineyards; machinery, engineering; a. 13,124 sq. m.; p. (1950) 977,800.

Dago (Hiiumaa), *i.*, Estonia, at entrance G. of Finland.

Dagupan, *t.*, Pangasinan, Luzon, Philippines; on Lingayen Bay; p. 22,600.

Dahlak Archipelago, group of islands in Red Sea, nr. Massawa; pearl fishing.

Dahomey, *col.*, Guinea Coast, Fr. W. Africa; forests, palm-oil; cap. Porto Novo; a. 43,232 sq. m.; p. (1945) 1,458,000.

Daimiel, *t.*, Ciudad Real, Spain; p. 18,412.

Dairen, *c.*, on Liaotung Peninsula, China; former treaty port; built by Russia; p. (estd. 1946) 722,950; *see* Lüta.

Dakar, *fort. naval stn.*, Senegal, Fr. W. Africa; airport for S. America; a. (of Dakar and dependencies, of Gorée and Rufisque) 60 sq. m.; p. (1945) 175,000.

Dakhla, *oasis*, Libyan Desert, Egypt; 170 m. S.W. of Asyut; dates, olives; stage on caravan route from Cyrenaica to Upper Egypt.

Dakovica, *t.*, Yugoslavia; 80 m. E. of Cetinje; p. 8,000.

Dakota, *R.*, *trib.*, of Missouri R., U.S.A.

Dal, *R.*, S. Central Sweden; length 325 m.

Dalaguete, *t.*, Cebu, Philippines; sugar, maize; p. 30,000.

Dalbeattie, *burgh*, Kircudbright, Scot.; nr. Dumfries; granite; p. (1951) 3,288.

Dalby, *t.*, Queensland, Australia; pastoral, agr., dairying, cotton-growing, and timber dist.; p. 4,383.

Dalhousie, *health resort*, Chamba, Himachal Pradesh, India; 7,687 ft. above sea-level.

Dalhousie, *spt.*, N.B., Canada; lumber, lobsters, salmon; resort; p. 4,508.

Dalkeith, *burgh*, Midlothian, Scot.; 6 m. S.E. of Edinburgh; coal; ironwks.; p. (1951) 8,786.

Dalkey, *t.*, Wicklow, Ireland; on E. cst., 5 m. S.E. of Dublin; seaside resort; residtl.; p. (1946) 4,135.

Dallas, *c.*, Texas, U.S.A.; in cotton and grain-growing region; machinery, aeroplanes; p. (1950) 434,462.

Dalmatia, *dist.*, N.E. Adriatic coast, Yugoslavia; limestone (Karst) plateaux; olive oil, wine; a. 4,916 sq. m.; p. 622,000.

Dalmellington, *par.*, Ayr, Scot.; iron, coal; p. (1951) 7,094.

Dalmeny, *par.*, W. Lothian, Scot.; oil shale; p. (1951) 3,691.

Dalry, *par.*, Ayr, Scot.; 6 m. N.E. of Ardrossan; iron, woollens; p. (1951) 6,764.

Dalton, *t.*, N. Ga., U.S.A.; cotton and sawmills; p. (1950) 15,963.

Dalton-in-Furness, *t.*, *urb. dist.*, N. Lancs., Eng.; iron-ore mining, stone quarrying; abbey ruins; p. (1951) 10,394.

Daly, *R.*, N. Terr., Australia; flowing into Anson Bay.

Damanhur, *t.*, Egypt; on E. margin of Nile delta, 25 m. S.E. of Alexandria; mkt. for local agricultural produce; p. (1947) 84,983.

Damão, or Daman, *spt. and terr.*, W. India; 100 m. N. of Bombay; Portuguese; fishing, ship-building, cotton; p. 60,000.

Damaraland, formerly part of German S.W. Africa now administered by Union of S. Africa; only port, Walvis Bay; cattle rearing.

Damascus, *cap.*, Syria; 57 m. S.E. of its port, Beirut; claims to be oldest living city in world; metal-work; taken in Allenby's advance, Oct., 1918; p. (estd. 1950) 335,060.

Dambovitza, *R.*, Romania; rises in Mt. Omul (Transylvanian Alps), flows S. through Bucharest to R. Danube; flows through impt. oilfields; length 150 m.

Damghan, *t.*, N. Persia; nr. Caspian Sea; p. 16,500.

Damietta, *t.*, Nile Delta, Egypt; cotton; p. (1947) 53,620.

Damoh, *t.*, N. Madhya Pradesh, India; agr. centre and mkt.; p. (1941) 20,728.

Dampier, *spt.*, W. Australia; mouth of Fitzroy R.

Dampier Archipelago, group of *sm. is.*, off N.W. Australia.

Dampier Strait, channel between N.W. of New Guinea and Waigau I.

Dampier Strait, Bismarck archipelago, between Umbel, and New Britain.

Dampremy, *commune*, Hainault, Belgium; coal; p. 13,373.

Danakil or Dankali Country, Eritrea; coast land between Red Sea and Ethiopia (Abyssinia).

Danao, *t.*, Cebu, Philippines; rice and sugar dist.; p. 25,000.

Danbury, *t.*, Conn., U.S.A.; hat-making industry since 1780; p. (1950) 22,067.

Dandenong, *t.*, Victoria, Australia; 18 m. from Melbourne; centre of dairy and mkt.-gardening dist.; veg. dehydration; p. 6,000.

Dannemora, *t.*, Sweden; 25 m. N.E. of Uppsala; iron ore worked since 1579; p. 1,062.

Dannevirke, *t.*, N. I., New Zealand; p. (1951) 4,649.

Dansalan, *chartered c.*, cap. of Lanao prov., Philippine Is.; summer resort; p. 11,319.

Danube, *R.*, second longest r. in Europe; rises in Black Forest, Germany, and flows E. into Black Sea; navigation for steamers from Ulm to the sea; Vienna, Budapest, Belgrade, and other large cities on its banks; length 1,750 m.

Danville, *c.*, Ill., U.S.A.; coal; p. (1950) 37,864.

Danville, *t.*, Ky., U.S.A.; mkt. for tobacco, hemp; horses; p. (1950) 8,686.

Danville, *c.*, Virginia; cotton, tobacco; p. 38,000.

Danzig, *see* Gdansk.

Darbhanga, *t.*, Bihar, India; rice, oil-seeds, grain, sugar; p. (1941) 69,003.

Dardanelles, *strait* between Europe and Turkey, connecting Aegean Sea with Sea of Marmara; (the ancient Hellespont), 40 m. long.

Dar-es-Salaam, *spt.*, *cap.*, Tanganyika Trust Terr., E. Africa; p. (1952) 99,140.



- Dartur**, *prov.*, Anglo-Egyptian Sudan, N.E. Africa; between Kordofan and Wadal; inhabited by Arabs and Negroes; cap. El Fasher; a. 138,150 sq. m.; p. (1947) 882,800.
- Darjeeling**, *hill t.*, Bengal, India; tea, quinine; has suffered from earthquake and landslips; p. 25,873.
- Darlston**, *urb. dist.*, Staffs, Eng.; coal and iron-wks.; p. (1951) 22,024.
- Darling**, *R.*, N.S.W. Australia; rises in Gt. Dividing Range, flows S.W. into Murray R. at Wentworth; length 1,702 m.
- Darling Downs**, *plateau*, S.E. Queensland, Australia; grazing country; ch. t. Toowoomba.
- Darling Range**, *mins.*; granite range; great grazing country of W. Australia; parallel with coast, highest peak, 3,500 ft.
- Darlington**, *t.*, co. bor., Durham, Eng.; coal, engineering; p. (1951) 84,861.
- Darlington**, *t.*, S.C. U.S.A.; tr. centre., agr., cotton goods, tobacco; p. (1950) 6,619.
- Darmstadt**, *t.*, Germany; on Darm E.; iron, machinery, chemicals; p. 115,000.
- Dart**, *R.*, Devon, Eng.; rises in Dartmoor, flows S. into English Channel at Dartmouth; length 46 m.
- Dartford**, *mkt. t.*, mun. bor., Kent, Eng.; nr. S. est. of Thames estuary 15 m. E. of London; chemical wks.; p. (1951) 40,544.
- Dartmoor**, *high stony plateau*, S.W. Devon, Eng.; granite; kaolin mines; pasture for sheep and ponies; convict prison; a. 220 sq. m.; highest point, Yes Tor, 2,028 ft.
- Dartmouth**, *spt.*, mun. bor., S. Devon, Eng.; on W. of estuary of R. Dart; Royal Naval College; p. (1951) 5,842.
- Dartmouth**, *t.*, Nova Scotia; p. (1951) 15,037.
- Dartmouth**, *t.*, Mass., U.S.A.; p. (1950) 11,115.
- Dartmouth**, *pt.*, Richmond Bay, Prince Edward I., Canada.
- Darton**, *urb. dist.*, W.R. York., Eng.; nr. Barnsley; coal; p. (1951) 14,400.
- Darvel**, *burgh*, Ayr, Scot.; on R. Irvine, 8 m. E. of Kilmarnock; curtains, carpets; p. (1951) 3,237.
- Darwen**, *t.*, mun. bor., N.E. Lancs., Eng.; on flank of Rossendale Fells, 3 m. S. of Blackburn; cottons, blast furnaces; p. (1951) 30,827.
- Darwin**, *t.*, spt., N. Terr., Australia; landing place of world airlines—England to Australia; p. 2,538.
- Datchet**, *t.*, Bucks, Eng.; adjoining Windsor, on R. Thames; p. 2,400.
- Datia**, *t.*, Madhya-Bharat, India; stone-walled, palaces; p. (1941) 13,232.
- Datteln**, *commune*, Westphalia, Germany; coal, leather, chemicals, wine; p. 20,114.
- Daugavpils**, *t.*, Latvia, U.S.S.R. on Dvina R.; timber; p. (1935) 45,160.
- Dauphiné**, *old prov.*, S.E. France; now depts. Isère, Drôme, and Hautes-Alpes.
- Dayao**, *t.*, Mindanao, Philippines; p. (1948) 111,263.
- Davenport**, *c.*, Iowa, U.S.A.; at foot of Rock I.; rapids; on Mississippi R.; flour mills; p. (1950) 74,549.
- Daventry**, *t.*, *urb. dist.*, Northampton, Eng.; on Northampton Heights, 9 m. S.E. of Rugby; boot-making; wireless transmission station; p. (1951) 4,078.
- Davis Strait**, *channel* between Greenland and Baffin Land, N.W. Terr., Canada; connects Atlantic with Baffin Bay.
- Davos Platz**, *Alpine winter resort*, Grisons, Switzerland; alt. 4,845; p. 9,259.
- Dawley**, *urb. dist.*, Shropshire, Eng.; on S.E. flank of The Wrekin; ironwks.; p. (1951) 8,369.
- Dawlish**, *t.*, *urb. dist.*, S. Devon, Eng.; on S. est. between estuaries of Rs. Exe and Teign; sea-side resort; p. (1951) 7,512.
- Dawson**, *cap.*, Yukon Terr., Canada; on Yukon R., nr. the Klondyke goldfields; p. (1951) 783.
- Dax**, *t.*, Landes, S.W. France; on Adour R.; hot sulphur spring; horse mart; p. (1946) 14,113.
- Daylesford**, *t.*, Victoria, Australia; 75 m. from Melbourne; tourist resort, gold-mining, wheat; p. 3,100.
- Dayton**, *t.*, Ohio, U.S.A.; on Great Miami R.; aeroplanes, electrical machinery; p. (1950) 243,872.
- Dayton**, *t.*, Wash., U.S.A.; fruit and vegetable canning, sawmills; exports wheat apples; p. (1950) 2,979.
- De Aar**, *t.*, *riv. junction*, C. of Good Hope, S. Africa; 500 m. from Cape Town; rlys. from N.W. (Luderitz, Walvis Bay) and S.E. (Pt. Elizabeth, E. London) join Capetown to Johannesburg trunk rly.; p. 9,137.
- Dead Sea**, *salt-water L.* between Israel and Jordan; surface 1,286 ft. below level of the Mediterranean; a. 340 sq. m., length 47½ m., greatest width 9½ m., greatest depth 1,309 ft.; receives waters of Jordan; high mineral content.
- Deal**, *mun. bor.*, ancient spt., E. Kent, Eng.; on S.E. est., 7 m. N.E. of Dover; opposite Goodwin Sands; seaside resort; Julius Caesar is said to have first landed near; p. (1951) 24,276.
- Dean**, Forest of, Gloucester, Eng.; between Wye and Severn Rs.; coal-mining.
- Dearborn**, *t.*, Michigan, U.S.A.; p. (1950) 94,994.
- Death Valley**, *depression*, Cal., U.S.A.; in Mohave Desert, 150 m. N.E. of Los Angeles; completely arid; floor covered with saline deposits; tourist attraction; depth of valley floor 276 ft. below sea-level.
- Deauville**, *t.*, spt., Calvados, France; on S. shore of Seine estuary; seaside resort; p. 5,000.
- Debar**, *t.*, Yugoslavia; nr. Drin R.; tr. centre, cattle breeding, sulphur springs; p. 6,913.
- Debra Markos**, *cap.*, Gojjam prov., Ethiopia; p. approx. 5,000.
- Debrecen**, *t.*, Hungary; 114 m. E. of Budapest; centre of pastoral dist.; fairs; p. (1949) 119,635.
- Decatur**, *t.*, Alabama, U.S.A.; steel, textiles; p. (1950) 19,974.
- Decatur**, *t.*, Georgia, U.S.A.; p. (1950) 21,635.
- Decatur**, *t.*, Ill., U.S.A.; mnfs., coal; p. (1950) 66,269.
- Decazeville**, *t.*, Aveyron, S. France; coal and ironwks.; p. (1946) 12,138.
- Deccan**, The, gr. upland of S. India, bounded by the Narbada and Kistna Rs.
- Dee**, *R.*, N. Wales and Cheshire; length 90 m.
- Dee**, *R.*, Aberdeen and Kincardine, Scot.; length 87 m.
- Dee**, *R.*, Kirkcudbright, Scot.; length 38 m.
- Dee**, *R.*, Louth, Ireland; flowing to Dundalk B.; length 20 m.
- Defiance**, *t.*, N.W. Ohio, U.S.A.; light mftg., tr. and agr. centre; p. (1950) 11,265.
- De Funiak Springs**, *t.*, Fla., U.S.A.; in agr. region; turpentine; p. (1950) 3,007.
- Dehiwala** (Mt. Lavinia), *t.*, Ceylon; p. (1946) 56,900.
- Dehra Dun**, *t.*, Uttar Pradesh, India; p. (1951) 144,216.
- Deir-ez-Zor**, *t.*, Syria; on Euphrates R.; on motor route between Damascus and Baghdad; p. 10,000.
- Dej**, *t.*, on Szamos R., Romania; large distillery; p. 15,311.
- Delabole**, *vil.*, Cornwall, Eng.; on N.W. flank of Bodmin Moor; lre. slate quarries.
- Delagoa Bay**, *natural harbour*, Mozambique; Portuguese E. Africa; principal port Lourenco Marques.
- Delatyn**, *t.*, Ukraine, U.S.S.R.; salt, mineral baths; p. 8,815.
- Delaware**, *Atlantic state*, U.S.A.; fruit, grain, mnfs., etc.; cap. Dover; ch. port Wilmington; a. 2,057 sq. m.; p. (1950) 318,085.
- Delaware**, *R.*, flows from New York State along the Pennsylvania border, through New Jersey to Delaware Bay; length 350 m.
- Delaware Bay**, *inlet*, Atlantic est., U.S.A.; drowned estuary of R. Delaware, extends 80 m. inland from C. May into heart of highly industri. a. of Philadelphia.
- Delaware**, *c.*, Ohio, U.S.A.; p. (1950) 11,804.
- Delémont**, *t.*, can. Bern, Switzerland; p. 6,393.
- Delft**, *ancient t.*, pt., S. Holland, Netherlands; on Schie R. nr. Rotterdam; butter and cheese mart; earthenware mnfs.; p. (1951) 66,067.
- Delftshaven**, *t.*, on Maas, R., Netherlands; sub. of Rotterdam.
- Delhi**, *c. cap.*, Indian Union; constituted a province (a. 574 sq. m.), October 1st, 1912, out of Punjab; seat of government; cotton mnfs. and other impt. industries; ancient cap. of Mogul Empire; (of prov.) (1951) 1,743,992; (of c.) (1951) 914,790.
- Delitzsch**, *t.*, Saxony, Germany; 16 m. E. of Halle p. 15,000.
- Delmenhorst**, *t.*, Germany; nr. Bremen; jute, woollens, linoleum; p. 24,500.

- Delphi, N. of Chalcis, in Euboea, Greece; famous for Delphic oracle on Mt. Parnassus.
- Del Rio, *spt.*, Texas, U.S.A.; mkt. for agr. area, grapes; exports wool, sheep; p. (1950) 14,211.
- Demavend, *mtn.*, 17,604 ft.; highest peak, Elburz Mtns., N. Persia, extinct volcano.
- Demerara, *co.*, Brit. Guiana; between Essequibo and Demerara Rs.; exports sugar, molasses, rum; p. (1946) 220,639.
- Demirhisar, *t.*, Macedonia, Greece; p. (1940) 8,100.
- Demirkapu, "The Iron Gate," rocky defile, through which the Danube rushes, in the Transylvanian Alps.
- Demmin, *t.*, Mecklenburg, Germany; nr. Stralsund; iron, textiles; p. 14,283.
- Demonte, *fortfd. t.*, Italy; on Stora R.; lead mines; p. 3,350.
- Denain, *t.*, Nord, N. France; nr. Douai; coal; p. (1946) 24,908.
- Denbigh, *co.*, Wales; sheep, dairying, coal, slate, quarrying; a. 669 sq. m.; p. (1951) 170,699.
- Denbigh, *mun. bor.*, *co. t.*, Denbigh, N. Wales; dairying, slate; in Vale of Clwyd, 10 m. S. of Rhyl; p. (1951) 8,127.
- Denby Dale, *urb. dist.*, W.R. Yorks, Eng.; 8 m. W. of Barnsley; p. (1951) 9,651.
- Dendermonde or Termonde, *t.*, Flanders, Belgium; nr. Ghent; p. 9,854.
- Denham, *vil.*, Bucks., Eng.; 1 m. E. of Gerrards Cross; impt. centre of film industry; residt. Den Helder, *see* Helder.
- Denholme, *t.*, *urb. dist.*, W.R. Yorks, Eng.; nr. Bradford; p. (1951) 2,586.
- Denia, *spt.*, Spain; 45 m. N.E. of Alicante; exports oranges, raisins, grapes, and onions; p. 13,286.
- Deniliquin, *t.*, Riverina, N.S.W., Australia; on Edward R.; sheep centre; p. 3,196.
- Denison, *t.*, Iowa, U.S.A.; centre of agr. region; p. (1950) 4,564.
- Denison, *c.*, Texas, U.S.A.; on Red R.; cotton lumber; p. (1950) 17,504.
- Denizli, *t.*, Anatolia, Turkey; 47 m. S.W. of Izmir; gardens—"the Damascus of Anatolia"; nr. site of Laodicea; p. 20,083.
- Denmark, *kingdom*, N.W. Europe; consisting of peninsula of Jutland and islands in Baltic; chiefly agr.; cap. Copenhagen; a. 16,576 sq. m.; p. (1950) 4,281,275.
- Denny and Dunipace, *burgh*, Stirling, Scot.; 6 m. W. of Falkirk; iron and chemical factories; p. (1951) 6,692.
- Dent Blanche, *mtn.*, in Pennine Alps, S. Switzerland; height 14,318 ft.
- Dent du Midi, *mtn.*, Valais Alps, Switzerland; alt. 10,778 ft.
- Denton, *urb. dist.*, Lancs, Eng.; nr. Manchester; felt-hat making; p. (1951) 25,612.
- D'Entrecasteaux Is., group off S.E. New Guinea, administered by Australia.
- D'Entrecasteaux Point, *C.*, S.W. extremity of Australia.
- Denver, *c.*, *cap.*, Colorado, U.S.A.; on the E. slope of Rocky Mtns., on South Platte R.; univ.; impt. industries; p. (1950) 415,786.
- Deoband, *t.*, Uttar Pradesh, India; nr. Meerut; p. (1941) 24,662.
- Deogarh, *t.*, Santal Pargans dist., Bihar, India; numerous temples, place of pilgrimage; p. (1941) 14,217.
- Deori, *t.*, Nagpur, Madhya Pradesh, India; nr. Sagar; p. 5,633.
- De Pere, *t.*, Wis., U.S.A.; agr. centre; mftg.; boots, paper, chemicals, bricks; p. (1950) 8,146.
- Deptford, *metropolitan bor.*, S.E. London, Eng.; on R. Thames; p. (1951) 75,694.
- De Quincy, *t.*, La., U.S.A.; oil, gas, lumber, rice, sugar; p. (1950) 3,837.
- Dera Ghazi Khan, *cap.*, West Punjab, Pakistan; W. side of R. Indus; silk, brass, ivory goods, handsome mosques; p. 25,000.
- Dera Ismail Khan, N.W. Frontier Province, Pakistan; on Indus R.; large bazaar for Afghan traders, inlaid furniture; p. (1941) 39,341.
- Derbent, *t.*, *spt.*, Dagestan, U.S.S.R.; on W. side of Caspian Sea; textiles; p. (1939) 27,476.
- Derbyshire, *co.*, Eng. hilly and rich in minerals; *co. t.*, Derby; a. 1,041 sq. m.; p. (1951) 826,336.
- Derby, *co. bor. co. t.*, Derbyshire, Eng.; on R. Derwent; rly. wks., pottery, aero engines; p. (1951) 141,264.
- Derby, *t.*, Conn., U.S.A.; rubber, metal, hardware mftg.; p. (1950) 10,259.
- Derby, *sm. spt.*, W. Australia; on natural harbour of King Sound on N.W. est. of Australia; hinterland little developed as yet but potential gold and cattle-ranching within area of artesian basin.
- Dereham, East, *t.*, *urb. dist.*, Norfolk, Eng.; 14 m. W. of Norwich; agr. implements; p. (1951) 6,441.
- Derg, Lough, in basin of R. Shannon, Ireland, separating Galway and Clare from Tipperary.
- Derg, *L.*, Donegal, with cave on island much visited by R.C. pilgrims and known as "St. Patrick's Purgatory."
- Derna, *spt.*, Libya, N. Africa; p. (estd. 1951) 15,600.
- Derry, *t.*, N.H., U.S.A.; boots, shoes; p. (1950) 5,826.
- Derwent, *R.*, Cumberland, Eng.; length 33 m.
- Derwent, *R.*, Derby, Eng.; length 60 m.
- Derwent, *R.*, Yorks, Eng.; length 57 m.
- Derwent, *R.*, trib. of the Tyne R., Eng.; length 30 m.
- Derwent, *largest R.*, Tasmania; flowing to Storm Bay; length 30 m.
- Derwentwater, *L.*, Cumberland, Eng., nr. Keswick; 3 m. long.
- Desaguadero, *R.*, Bolivia, S. America; outlet of L. Titicaca.
- Desaguadero, *plateau*, S. Peru and W. Bolivia between the Andes ranges, the second highest in the world.
- Desborough, *t.*, *urb. dist.*, Northants, Eng.; boot and shoe mfts., iron; p. (1951) 4,676.
- Desenzano del Garda, *commune*, Lombardy, Italy; on L. Garda; impt. harbour; p. 10,360.
- Désirade, *I.*, Fr. W. Indies; nr. Guadeloupe; a. 10 sq. m.; p. 1,531.
- Des Moines, *R.*, Iowa, U.S.A.; trib. of Mississippi rising in Minnesota; length 550 m.
- Des Moines, *c.*, *cap.* Iowa State, U.S.A.; rly. and mftg. centre; p. (1950) 177,965.
- Desna, *R.*, trib. of Dnieper R., U.S.S.R.; length 550 m.
- Despoto Dag, *mtn. range*, Balkans; alt. 7,800 ft.
- Dessau, *t.*, Anhalt, N. Germany; on Mulde R.; sugar, chemicals, textiles; p. 120,732.
- Detmold, *cap.* N. Rhine-Westphalia, Germany; textiles, biscuits, furniture, beer; p. 16,051.
- Detroit, *cht. c.*, *pt.*, Michigan, U.S.A.; busy commercial and industr. centre; great grain mart; and centre of the "Ford" motor-car works, aeroplanes, military tanks, largest exporting town on Great Lakes; p. (1950) 1,349,568.
- Detroit, *R.*, channel between L. St. Clair and L. Erie (25 m.), separates state of Michigan from Ontario, Canada; carries more shipping than any other inland waterway in the world; navigable for eight months in the year.
- Detva, *indust. t.*, Czechoslovakia, nr. Hriňova; p. 8,078.
- Deurne, *t.*, Belgium; nr. Antwerp; p. (1947) 56,863.
- Deventer, *c.*, *old Hanse t.*, Overysse, Netherlands; on R. Yssel. 15 m. S.E. of Zwolle; carpets; p. (1951) 47,195.
- Deveron, *R.*, Aberdeen and Banff, Scot.; flows into Moray Firth; length 61 m.
- Deville les Rouen, *indust. sub.* of Rouen, France; p. 7,403.
- Devizes, *mkt. t.*, *mun. bor.*, N. Wilts, Eng.; in Vale of Devizes at N. foot of Marlborough Downs; mkt. and shopping ctr.; p. (1951) 7,892.
- Devon, *R.*, trib. of Porth, Scot.; length 84 m.
- Devonport, *fortfd. spt.*, S. Devon, Eng.; adjoins Plymouth on Tamar estuary; royal dockyards and naval stn.; p. included with Plymouth.
- Devonport, *spt.*, Tasmania, Australia; 82 m. from Launceston; agr. dist.; p. 6,579.
- Devonport, *suburban bor.*, Auckland, N.Z.; naval base and dockyard; p. (1951) 11,639.
- Devonshire, *maritime co.*, S.W. Eng.; between English and Bristol Channels; famous for cream and cider; ch. ts. Exeter and Plymouth; a. 2,611 sq. m.; p. (1951) 798,283.
- Dewsbury, *t.*, *co. bor.*, W.R. Yorks, Eng.; on R. Calder, 8 m. from Leeds; heavy woollens, glass, iron, dyeworks; p. (1951) 53,476.
- Dexter, *t.*, Mo., U.S.A.; cotton, flour, poultry; p. (1950) 4,624.



- Dhahran**, *spt.*, Saudi-Arabia; oil.
- Dhanushkodi**, *t.*, Madras, India; on island Palk Strait; ferry port for passenger traffic from India to Ceylon.
- Dhar**, *t.*, Madhya Bharat, India; cultural and tr. centre; p. (1941) 22,015.
- Dharmasala**, *hill stn.*, E. Punjab, India; 100 m. N.E. of Amritsar; sanatorium; alt. 6,000 ft.; imposing mtn. scenery; p. 10,000.
- Dharwar**, *t.*, Bombay, India; 70 m. E. of Goa. Carnatic dist.; cotton mnf.; p. (1941) 41,671.
- Dhaulagiri**, *mtn.*, Himalayas, Nepal; alt. 26,810 ft.
- Dhofar**, *fertile prov.*, Muscat and Oman, Arabia; sugar-cane, cattle; ch. t. Salalah; ch. pt. Murbat.
- Dholpur**, *t.*, Rajasthan, India; p. 16,500.
- Dhrangadhra**, Saurashtra, India; 75 m. W. of Ahmadabad; brass vessels, cloth, pottery; p. 18,000.
- Dhulia**, *t.*, Khandesh dist., Bombay, India; cotton industry; p. (1941) 39,939.
- Diamante**, *t.*, E. Argentina; on Paraná R.; grain, cattle; p. 11,518.
- Diamante**, *R.*, Mendoza prov., Argentina; rises in Andes, flows E. to R. Salado; irrigates oasis of San Rafael; length 200 m.
- Diamantina**, *t.*, Minas Gerais, Brazil; centre of diamond dist.; p. (1947) 14,700.
- Dibrugarh**, *t.*, Assam, India; terminus of rail and river communications along Brahmaputra from Calcutta; coal, tea; p. (1941) 18,734.
- Dickinson**, *c.*, N. D., U.S.A.; lignite, pottery, livestock, wheat; p. (1950) 7,469.
- Dickson**, *I.*, Kara Sea, Arctic Ocean, U.S.S.R.
- Didymoteikhon**, *t.*, Thrace, Greece; on R. Maritza; p. 10,150.
- Diego Garcia**, *Brit. I.*, dep. of Mauritius; coaling stn., Indian O.; 12½ m. long, 6½ m. wide; ch. export, coconut oil; p. 501.
- Diego Suarez**, *t.*, Bay, extreme N. of Madagascar; p. 4,000.
- Dieppe**, *cross-Channel pt.*, Seine-Inf., France; 35 m. N. of Rouen; fisheries, shipbuilding, machinery; p. (1946) 25,117.
- Diffendange**, *t.*, S.W. Luxembourg; iron ore, cattle; p. 14,158.
- Digne**, *t.*, Basses-Alpes, France; nr. Aix; cath.; p. 4,370.
- Diksmuide**, *t.*, W. Flanders, Belgium; on Yser R.; p. 3,155.
- Dijon**, *t.*, Côte-d'Or, E. France; the Roman *Divonense castrum*; cath.; bathing; casino; great wine trade, tobacco, brewery, textiles; p. (1946) 100,664.
- Dillingen**, *t.*, Bavaria, Germany; on R. Danube 20 m. downstream from Ulm; p. 6,500.
- Dilofo**, *L.*, Angola; near source of Zambesi R.
- Dimboola**, *t.*, Victoria, Australia; 250 m. N.W. of Melbourne; wheat; p. 1,500.
- Dinan**, *t.*, Côte-du-Nord, France; nr. St. Brieux; medieval houses and ramparts; mineral water; p. (1946) 10,638.
- Dinant**, *fortfd.*, *t.*, Namur, Belgium; on R. Meuse; brass, copperware, summer resort; p. 7,106.
- Dinapore**, *military t.*, Bihar, India; on Ganges R., nr. Patna; p. (1941) 24,221.
- Dinard**, *t.*, Ilk-et-Vilaine, France; opposite St. Malo; ch. wat. pt. of Brittany; p. 8,000.
- Dinaric Alps**, *mtn. range*, Yugoslavia; highest peak, Dinara, alt. 6,007 ft.
- Dindigul**, *t.*, Madras, India; 25 m. S. of Trichinopoly, cigar and tobacco factories; p. (1941) 48,617.
- Dingras**, *municipality*, Luzon, Philippine Is.; rice, hemp, tobacco; p. 22,434.
- Dingwall**, *burgh*, Ross and Cromarty, Scot.; at head of Cromarty Firth; rly. junction; p. (1951) 3,367.
- Dinslaken**, *c.*, N. Rhine-Westphalia, Germany; coal, steel, wire, nails, lumber, pottery; p. 25,075.
- Diomedes Is.**, two small granite islands, inhabited by Esquimaux; boundary line U.S.S.R. and U.S.A. territories passes between them.
- Diosgyör**, *mkt. t.*, N. Hungary; nr. Miskolcz; iron and steel wks.; p. 20,854.
- Diourbel**, *t.*, Senegal, Fr. W. Africa; hides, groundnuts; p. (1948) 18,006.
- Diredawa**, *t.*, Ethiopia; 25 m. N. of Harar, rly. wks.; p. (estd. 1953) 30,000.
- Dirk Hartog I.**, off Shark Bay, W. Australia.
- Disko I.**, off W. coast of Greenland in Baffin Bay; contains harbour of Godhavn, cap. N. Greenland; rendezvous for whalers; a. 3,200 sq. m.
- Dismal Swamp**, *morass*, S. Virginia and N. Carolina, U.S.A.; contains L. Drummond and extends 30-40 m. S. from nr. Norfolk.
- Diss**, *mkt. t.*, *urb. dist.*, Norfolk, Eng.; on R. Waveney 28 m. S.W. of Norwich; agricultural implements; p. (1951) 3,505.
- Ditchling Beacon**, nr. Brighton, Sussex, Eng.; alt. 813 ft.
- Dittersbach**, *commune*, S.W. Poland; coal, drugs; p. 14,916.
- Diu**, *Portuguese spt.*, *I.*, off S. coast of Saurashtra, India; a. 20 sq. m.; p. 13,600.
- Divion**, *commune*, Pas de Calais, France; coal; p. 10,156.
- Dixon Entrance**, *channel* between Queen Charlotte I. and Alaska, Brit. Columbia, Canada.
- Diyarbakir**, *t.*, Anatolia, Turkey; on Tigris R.; head of navigation; ancient Amidā, old walls, gates, citadel; morocco leather, filigree work; p. (1945) 41,077.
- Dizful**, *t.*, Persia; 32 m. N.W. of Shushtar; indigo; p. 15,000.
- Djambi**, *dist. and t.*, Sumatra, Indonesia; on E. cst. plain 100 m. N.W. of Palembang; productive oil-field; a. (dist.) 17,345 sq. m.; p. (dist. 1930) 245,272.
- Djapara-Rembang**, *prov.*, N.E. Java; petroleum, sugar, rice; a. 2,339 sq. m.; p. 1,885,548.
- Dmitriev**, *t.*, N.W. Kursk region, U.S.S.R.; rye, oats, sugar-beet, lumber; p. (1939) 51,436.
- Dneprodzerzhinsk**, *t.*, Ukraine, S.S.R., U.S.S.R.; W. of Dnepropetrovsk on Dnieper R.; steel, tractors; p. (1939) 147,829.
- Dnepropetrovsk**, *t.*, Ukraine, U.S.S.R.; on Dnieper R.; ironworks, coal, iron, manganese; p. (1939) 500,662.
- Dneprostroy**, *see* Zaporozhe.
- Dnieper**, *R.*, S.E. Europe; rises in U.S.S.R., flows into the Black Sea; connected by canals with Baltic, etc.; the Dneprostroy dam, a barrage erected across the river at Kichkas by the Soviet Government, feeds the largest power-station in the world; length 1400 m.
- Dniester**, *R.*, S.E. Europe; rises in Carpathians and flows into the Black Sea; length 700 m.
- Doab**, *dist.*, between "two rivers" Jumna and Ganges, Uttar Pradesh, India.
- Döbeln**, *t.*, Saxony, Germany; nr. Leipzig; cloth, leather; p. 24,700.
- Dobrich**, *t.*, Dobruja, Bulgaria; p. 31,049.
- Dobruja**, *dist.*, E. Romania; a. 6,102 sq. m., ch. port Constanta, traversed by ancient wall of Trajan; p. (1948) 503,217.
- Dobsina**, *t.*, Czechoslovakia; curious cave containing ice-field of 2 acres; p. 5,300.
- Doce**, *R.*, Brazil; flows to Atlantic; length 400 m.
- Dodecanese**, group of twelve Greek Is. in Aegean Sea, to S. of Greek Archipelago; Italian 1912-46; a. 1,055 sq. m.; p. (1951) 121,074.
- Dodge City**, *t.*, Kansas, U.S.A.; p. (1950) 17,262.
- Dodoma**, *mkt. t.*, Tanganyika Terr., Brit. E. Africa; 250 m. W. of Dar-es-Salaam on central Tanganyika rly. from Dar-es-Salaam to Kilgoma; also on main N. to S. motor road through the Terr.
- Dodworth**, *urb. dist.*, W.R., Yorks, Eng.; nr. Barnsley; coal; p. (1951) 4,262.
- Dogger Bank**, *sandbank* in N. Sea, between England and Denmark; depth varies from 6 to 20 fathoms; valuable fishing ground; action between British fleet under Beatty and German fleet under Hipper; *Blücher* sunk January 1915.
- Dogs**, *I. of*, *riverside dist.*, formed by bend in the R. Thames off Greenwich, London, Eng.; Millwall docks and shipbuilding yards.
- Dokai Bay**, *inlet*, N. Kyushu, Japan; landlocked bay on S. side of Shimonoseki Strait; flanked by highly indus. zone inc. Yawata, Wakamatsu, Tobata cities; requires constant dredging; length 4 m., width 1-1½ m.
- Dokkum**, *t.*, Friesland, Netherlands; p. 5,073.
- Dôle**, *t.*, Jura, E. France; on R. Doubs, nr. Dijon; ancient cap. of Franche-Comté, ceded to France in 1678; p. (1946) 18,066.
- Doigelly**, *urb. dist.*, *ch. t.*, Merioneth, N. Wales; flannels; p. (1951) 2,246.
- Dollar**, *burgh*, Clackmannan, Scot.; at foot of Ochil Hills, 6 m. N.E. of Alloa; noted for its academy founded in 1818 by Capt. John Menab; p. (estd. 1947) 1,494.
- Dollar Law**, *mtn.*, nr. Peebles, Scot.; alt. 2,680 ft.

- Dolomites**, group of limestone mtns., S. Tyrolese Alps, N.E. Italy; tourist district; peaks assume fantastic forms; principal peak, Marmolata 11,000 ft.
- Dolon-Nor**, t., Mongolia, China: Buddhist temples; brass idols; p. 30,000.
- Dolores** t., Argentina; p. 25,000.
- Dom**, mtn., Valais, Switzerland; alt. 14,942 ft.
- Dombasle**, commune, Meurthe et Moselle, France; soda factories; p. 8,082.
- Dominica**, Brit. col., Windward Is., W. Indies; exports lime-juice, sugar, cacao, fruits, spices; cap. Roseau; a. 305 sq. m.; p. 56,000.
- Dominican Rep.**, E. part of I. of Hispaniola, W. Indies; cap. Ciudad Trujillo; agr. sugar, coffee, cocoa, rice, bananas, tobacco; gold, copper; a. 19,332 sq. m.; p. (1950) 2,121,083.
- Domodossola**, frontier t., Piedmont, N. Italy, nr. Simplon; tourist centre; p. 10,350.
- Don**, R., Aberdeen, Scot.; flows into North Sea; salmon; length 82 m.
- Don**, R., W.R. Yorks, Eng.; trib. of R. Ouse, length 70 m.
- Don**, R., Maine-et-Loire, France; length 40 m.
- Don**, large R., W. Russia; falls into Sea of Azov below Rostov; navigable to Voronezh; access to the Volga by the Don-Volga Canal.
- Donaghadee**, spt., urb. dist., Down, N. Ireland; nearest point to Scot.; flax mills; p. (1951) 3,398.
- Donaldsonville**, c., La., U.S.A.; on Mississippi R.; agr. sugar, maize, rice; p. (1950) 4,150.
- Donauwörth**, t., Bavaria, Germany; machinery, breweries; p. 5,000.
- Donawitz**, commune, Styria prov., Austria; lignite, iron and steel; p. 17,623.
- Donbas**, industr. region, Ukraine, U.S.S.R.; in valleys of Rs. Donetz and lower Dnieper; about 2,800 sq. m.; produces 60% Russia's coal; adjoins Krivoi Rog ironfields; many large industr. towns.
- Don Benito**, t., Badajoz, Spain; trade in wheat, wine, fruit; p. 21,095.
- Doncaster**, t., co. bor., W.R. Yorks, Eng., on Don R. 17 m. N.E. of Sheffield; rly. wks., mnfs.; racecourse; p. (1951) 81,896.
- Donchery**, ancient t., Ardennes, France, on R. Meuse, nr. Sedan; scene of great battle 1870.
- Donegal** (Tirconnail), co., N.W. Ireland; ch. t. Donegal, a. 1,865 sq. m.; p. (1951) 131,511.
- Donegal**, spt., cap., Co. Donegal, Ireland; on W. cst. on Donegal Bay; homespun tweeds.
- Donets**, R., Ukraine S.S.R., U.S.S.R.; rises in uplands of central Russia, flows S.E. 400 m. into R. Don; crosses impt. Donets coalfield. See Donbas.
- Dongola**, New, t., Anglo-Egyptian Sudan; left bank of R. Nile above 3rd Cataract; replaced Old D., now in ruins; p. 5,000.
- Donna**, t., S. Texas, U.S.A.; sugar refining, fruit and vegetables; p. (1950) 7,171.
- Donnybrook**, S.E. sub. of Dublin, Ireland, on Dodder R.; formerly famous for fair.
- Donzère-Mondragon**, Provence, France; site of great barrage on Rhône supplying hydro-electric power; completed 1952.
- Doon**, R., Ayr, Scot.; flows from Loch Doon to Firth of Clyde; length 26 m.
- Dora Baltea**, R., N. Italy; rises in Mt. Blanc, flows E. and S. through Val d'Aosta to R. Po at Chivasso; impt. routeway from N. Italy to Switzerland (through Gr. St. Bernard Pass) and France (through Little St. Bernard Pass); length, 95 m.
- Dora Riparia**, R., Italy; trib. of R. Po, flowing from Cottian Alps past Turin; length 60 m.
- Dorchester**, mun. bor., co. t., Dorset, Eng.; on R. Frome; p. (1951) 11,623.
- Dorchester**, pt. of entry, New Brunswick, Canada; on Penticodiad R.; p. 1,000.
- Dordogne**, dep., S.W. France; a. 3,550 sq. m.; cap. Périgueux; p. (1946) 387,643.
- Dordogne**, R., France; joins Garonne to form the Gironde; length 290 m.
- Dordrecht**, t., nr. Rotterdam, Netherlands, on R. Maas; timber, shipbuilding, seaplanes; p. (1951) 71,808.
- Dordrecht**, Dutch t., C. of Good Hope; battle S. African war December 30th, 1899; p. 2,749.
- Dorking**, mkt. t., urb. dist., Surrey, Eng.; on R. Mole to S. of gap through N. Downs; residtl.; light industries; p. (1951) 20,252.
- Dornoch**, co. burgh, Sutherland, Scot.; on N. side of Dornoch Firth; health resort, p. (1951) 793.
- Dorohoi**, t., Moldavia, Romania; 33 m. S.E. of Chernovtsy; great annual fair; p. 15,375.
- Dorp**, t., Germany; on R. Wupper, nr. Cologne; mnfs.; p. 14,000.
- Dorset**, co., S. Eng.; mainly agr.; sheep, Purbeck marble, Portland stone; co. t. Dorchester; a. 988 sq. m.; p. (1951) 291,157.
- Dorset Heights**, hills, extend E. to W. across Central Dorset, Eng.; chalk, smooth slopes, few streams; short, dry, grass; pastoral farming, sheep; some cultivation where soil is deep enough; rise to 800-900 ft.
- Dortmund**, commercial t., N. Rhine-Westphalia, Germany; nr. Düsseldorf; coal; p. (1950) 507,349.
- Dortmund-Ems Canal**, N. Rhine-Westphalia, Germany; links Dortmund on Ruhr Coalfield with R. Ems 5 m. above Lingen; impt. coal, iron-ore traffic; length 90 m.
- Dothan**, t., Alabama, U.S.A.; p. (1950) 21,584.
- Douai**, t., Nord, France; nr. Lille on Scarpe R.; coal, iron and engineering wks.; bell founding, arsenal; p. (1946) 41,598.
- Douarnenez**, spt., Finistère, N.W. France; on D. Bay; sardine fisheries; p. (1946) 20,664.
- Doubs**, dep., E. France; traversed by the Jura range and the R. Doubs; chiefly agr.; watch-making industry; cap. Besançon; a. 2,052 sq. m.; p. (1946) 298,255.
- Douglas**, cap., I. of Man; 75 m. W. of Liverpool, Eng.; favourite seaside resort; p. (with subs.) 27,604.
- Doullens**, t., Somme, France; on E. Authie, 20 m. N. of Amiens; phosphates; p. 4,000.
- Douro**, R., Portugal and Spain; enters Atlantic below Oporto; flows through one of world's richest wine-producing regions; known as Duero R. in Spain; length 485 m.
- Douro Littoral**, prov., Portugal; textiles, wine, fruit, cattle; cap. Oporto; a. 1,314 sq. m.; p. (1940) 1,104,925.
- Dove**, R., Derby and Staffs, Eng.; trib. of Trent; flows through beautiful dales; length 45 m.
- Dover**, spt., mun. bor., Kent, Eng.; one of old Cinque pts.; nearest spt. to France, the Strait of D. being only 21 m. wide; strongly fortfd.; naval harbour and chief port for passenger and mail traffic with Continent, train ferry to Dunkirk; p. (1951) 35,217.
- Dover**, cap., Delaware, U.S.A.; p. (1950) 6,223.
- Dover**, t., New Hampshire, U.S.A.; p. (1950) 15,874.
- Dover**, t., N.J., U.S.A.; iron, munitions, explosives; knitwear, silk; p. (1950) 11,174.
- Dovercourt**, sub., Harwich, Essex, Eng.; seaside resort.
- Dowlais**, mining dist., Merthyr Tydfil, S. Wales.
- Down**, maritime co., N. Ireland; agr. and fisheries; industr. round Belfast; cap. Downpatrick; a. 957 sq. m.; p. (1951) 241,105.
- Downers Grove**, t., N.E. Ill., U.S.A.; dairy produce; tools, furniture; p. (1950) 11,886.
- Downham Market**, t., urb. dist., Norfolk, Eng.; on R. Ouse; p. (1951) 2,759.
- Downington**, bor., Penns., U.S.A.; textiles, metal products, bricks; p. (1950) 4,948.
- Downpatrick**, urb. dist., co. t., Down, N. Ireland; on R. Quoile; linen; p. (1951) 3,875.
- Downs**, roadstead, natural harbour of refuge for shipping between Kent coast and Goodwin Sands in the English Channel.
- Downs**, North and South, two chiefly pastoral broad chalk ridges in S.E. Eng.; N. Downs ending at Dover, and S. Downs at Beachy Head and enclosing the Weald; fine grazing ground for sheep.
- Downton**, t., S. Wilts, Eng.; nr. Salisbury; on R. Avon; agr. college.
- Doylestown**, bor., Penns., U.S.A.; light mnfs., agr., dairy produce; p. (1950) 5,262.
- Drachenfels**, mtn. peak on the Rhine, the steepest of the Siebengebirge range, nr. Königswinter; alt. 1,065 ft.; ascended by light rly.; famous cave of legendary dragon.
- Draguignan**, cap., Var, dep., S.E. France; nr. Toulon; p. (1946) 11,801.
- Drakensberg**, mtn. chain between Natal and Orange Free State, S. Africa; extending 500 m. from Gt. Fish R. to Olifants R.; highest peak Mont-aux-Sources 10,763 ft.; rly. crosses range by Van Reenen Pass.



- Drama**, *pref.* Macedonia, Greece; cap. Drama; p. (1951) 119,009.
- Drammen**, *spl.*, Norway; nr. Oslo, on the Hallingdalen R.; exports timber, wood-pulp, paper, etc.; p. (1946) 26,589.
- Drava**, *R.*, Yugoslavia; trib. of Danube, flows from the Tyrol across Carinthia and Styria, joining D. nr. t. of Osijek; length 450 m.
- Drenthe**, *E. prov.*, Netherlands; on German frontier; cap. Assen; a. 1,028 sq. m.; p. (1948) 273,800.
- Dresden**, *cap.*, Saxony, on R. Elbe 50 m. E. of Leipzig; Germany; china; fine art collections; p. (1946) 467,966.
- Dreux**, *t.*, Eure-et-Loir, France; nr. Chartres; hardware, heavy iron mnfs.; p. (1946) 19,200.
- Driffield**, *urb. dist.*, E.R. Yorks, Eng.; on Yorks. Wolds 13 m. N. of Beverley; oil-cake wks.; p. (1951) 6,888.
- Drina**, *R.*, trib. Sava, Yugoslavia, separating Serbia from Bosnia; length 300 m.
- Dröbak**, *spl.*, S.E. Norway; winter port for Oslo; summer resort; p. 2,087.
- Drogheda**, *spl.*, Louth, Ireland; considerable trade in agr. produce, salmon, etc.; stormed by Cromwell in 1649; p. (1946) 15,709.
- Drobovych**, *c.*, S.W. Ukraine, U.S.S.R.; petroleum; cattle, agr. goods; p. (1939) 34,627.
- Drohobycz**, *t.*, Ukraine, U.S.S.R.; 40 m. S.W. of Lwow; centre of large oilfields, refineries; p. 32,622.
- Droitwich**, *t.*, *mun. bor.*, Worcester, Eng.; brine baths, salt wks., wireless transmission station; p. (1951) 6,453.
- Drôme**, *dep.*, S.E. France; traversed by Alps and watered by R. Rhône, Drôme, and Isère; cap. Valence; agr., forestry, sericulture, textile industry; a. 2,533 sq. m.; p. (1946) 263,233.
- Dromore**, *mkt. t.*, *urb. dist.*, Down, N. Ireland; on Lagan R.; linen; p. (1951) 2,390.
- Dronfield**, *t.*, *urb. dist.*, Derby, Eng.; between Chesterfield and Sheffield; iron, coal, edged tools; p. (1951) 7,628.
- Droylsden**, *urb. dist.*, Lancs., Eng.; sub. of Manchester; cotton spinning; chemicals; p. (1951) 26,365.
- Drumheller**, *t.*, Alberta, Canada; coal; p. 2,987.
- Drummondville**, *t.*, Quebec, Canada; 45 m. N.E. of Montreal; woollens; p. 10,555.
- Drummoyne**, *c.*, N.S.W., Australia; sub. of Sydney, on Parramatta R.; p. 29,214.
- Drumochter Pass**, Grampian Mtns., Scot.; carries main Perth to Inverness rly. from Glen Garry into valley of R. Spey; highest alt. reached by any main rly. in Gt. Britain, 1,434 ft.
- Duala**, *spl.*, French Cameroons, W. Africa; rly. to Yaunde; p. 18,000.
- Dubbo**, *t.*, N.S.W., Australia; on Macquarie R., 180 m. N.W. of Sydney; in extensive pastoral and agr. dist.; p. (1947) 9,540.
- Dublin**, *co.*, Ireland; *co. t.*, Dublin; a. (including Dublin co. bor.) 358 sq. m.; p. (1951) 691,428.
- Dublin** (Baile Atha Cliath) *co. bor.*, *cap. Rep. o* Ireland; at mouth of R. Liffey; cath., univ., cas.; spirit and chemical produce, stout, glass, etc.; p. (1951) 521,322.
- Dubno**, *t.*, W. Ukraine, U.S.S.R.; tobacco; suffered in both world wars; p. 18,167.
- Dubois**, *c.*, Penns., U.S.A.; 75 m. N.E. of Pittsburgh; coal; p. (1950) 11,497.
- Dubrovnik** (Ragusa), *c.*, E. coast of Yugoslavia; oil, silk, leather industries; p. 16,060.
- Dubuque**, *c.*, Iowa, U.S.A., on Mississippi R.; clothing and carriage factories; p. 52,800.
- Duchov**, *t.*, N.W. Bohemia, Czechoslovakia; 5 m. S.W. of Teplice; glass, pottery; p. 15,000.
- Dudinka**, Arctic *spl.* on R. Yenisei, U.S.S.R.; nickel.
- Dudley**, *t.*, *co. bor.*, Worcester, Eng.; 8 m. N.W. Birmingham; coal, hardware; p. (1951) 62,536.
- Dudweiler**, *t.*, nr. Saarbrücken, Saarland; coal-mines and ironwks.; p. 25,000.
- Dufenia**, *municipality*, Panay, Philippine Is.; rice, hemp; p. 16,310.
- Duffel**, *commune*, Antwerp, Belgium; foundries, distilleries, paper, coarse woollen cloth; p. 10,142.
- Duffield**, *vil.*, Derby, Eng.; on R. Derwent, 4 m. N. of Derby; p. 2,000.
- Duftown**, *burgh*, Banff, Scot.; 10 m. S.W. of Keith; distilleries; p. (1951) 1,460.
- Duisburg**, *t.*, *R. pt.*, Land N. Rhine-Westphalia, Germany; on E. bank of R. Rhine 10 m. N. of Düsseldorf; extensive iron and other industries, p. (1950) 410,783.
- Dukeries**, *dist.*, Sherwood Forest, Notts, Eng.; so called from ducal mansions in dist.
- Dukinfield**, *t.*, *mun. bor.*, Cheshire, Eng.; 6 m. S.E. of Manchester; coal, cotton; p. (1951) 18,445.
- Dukla**, *pass*, Carpathian Mtns., Central Europe; easy route N. from Hungarian Plain to Poland; alt. 1,650 ft.
- Dulag**, *municipality*, Leyte I., Philippine Is.; hemp, rice, cotton, sugar; p. 28,693.
- Dulegino** (Ulcinj) *anc. c.*, Montenegro, Yugoslavia; tobacco, olive oil; p. 6,000.
- Dülken**, *t.*, Rhineland, Germany; nr. Krefeld, iron foundries, textiles; p. 15,700.
- Duluth**, *pt.*, Minn., U.S.A.; at W. end of L. Superior; great trade in grain, timber and iron ore; p. (1950) 104,511.
- Dumaguete**, *spl.*, Negros, Philippines; on Tañon Strait; p. 16,636.
- Dumbarton**, *burgh*, *co. t.*, Dunbarton, Scot.; on N. bank of R. Clyde, 12 m. below Glasgow; shipbuilding; p. (1951) 23,703.
- Dum-Dum**, *t.*, W. Bengal, India; ammunition; p. (1941) 28,356.
- Dumfries**, *maritime co.*, S. Scot.; on Solway Firth; N. parts mtns., much of the remainder pastoral; lead ore, coal, sandstone; a. 1,068 sq. m.; p. (1951) 85,656.
- Dumfries**, *co. burgh*, Dumfries, Scot.; on R. Nith, 10 m. from Solway Firth; p. (1951) 26,320.
- Dunbar**, *spl.*, *burgh*, E. Lothian, Scot.; 25 m. E. of Edinburgh; potatoes; p. (1951) 4,115.
- Dunbarton**, *co.*, W. Scot.; agr., stock-raising, shipbuilding, chemicals, dyeing, paper-making, mining, quarrying, etc., a. 246 sq. m.; p. (1951) 164,263.
- Dunblane**, *mkt. burgh*, Perth, Scot.; on Allan Water, 5 m. from Stirling; ancient cath.; p. (1951) 2,985.
- Duncan**, *c.*, Okla., U.S.A.; oil; machinery for oilwells; asphalt, cottonseed oil; p. (1950) 15,325.
- Duncansby Head**, *promontory*, Caithness, N.E. Scot.
- Dundalk**, *spl.*, *urb. dist.*, *cap.*, Louth, Ireland; impt. rly. centre; p. (1946) 18,546.
- Dundas**, *t.*, N.S.W., Australia; p. 6,017.
- Dundas**, *t.*, Ontario, Canada; at W. end of L. Ontario; leather, paper; p. 5,591.
- Dundee**, *burgh*, *spl.*, Angus, Scot.; on Firth of Tay, 50 m. N. Edinburgh; jute, linoleum, preserves, shipbuilding, fisheries; p. (1951) 177,333.
- Dundee**, *t.*, N. Natal, S. Africa; coal; p. 7,073.
- Dundonald**, *vil.*, coast of Ayr, 5 m. S.W. of Kilmarnock; coal; p. (par.) 18,400.
- Dunedin**, *cap.*, Otago, S. I., New Zealand; named after the old name of Edinburgh; wool and dairy produce; p. (1951) 95,309.
- Dunfermline**, *burgh*, Fife, Scot.; at foot of Leven Hills, 14 m. E. of Alloa; damask linen trade, rubber; p. (including Rosyth) (1951) 44,710.
- Dungannon**, *t.*, Tyrone, N. Ireland; linen; p. (1951) 5,674.
- Dungarvan**, *spl.*, *urb. dist.*, Waterford, Ireland; brewing, woollens; p. (1946) 5,271.
- Dungeness**, *headland of shingle*, Kent, Eng.; 10 m. S.E. of Rye.
- Dunkeld**, *t.*, *par.*, Perth, Scot.; on R. Tay at entrance to Strathmore; cath.; tourist resort; p. (1951) 833.
- Dunkirk** or **Dunkerque**, *spl.*, Nord, France; strong fort; good harbour and trade; fisheries, shipbuilding; scene of evacuation of B.E.F. 1940; p. (1946) 10,575.
- Dunkirk**, *pt.*, N.Y., U.S.A.; on L. Erie; p. (1950) 18,007.
- Dun Laoghaire** (Kingstown), *spl.*, *co. bor.*, Dublin, Ireland; mail packet stn., fishing; p. (1946) 44,689.
- Dunloe**, *Gap of, mtn. pass*, nr. L. of Killarney, Kerry, Ireland.
- Dunmanway**, *t.*, Cork, Ireland; on R. Brandon; tweeds, blankets; p. 1,619.
- Dunmore**, *L.*, Penns., U.S.A.; or. Scranton; anthracite; p. (1950) 20,305.
- Dunmow**, *gt.*, *mkt. t.*, Essex, Eng.; on R. Chelmer 10 m. N.W. of Chelmsford; p. (par.) 2,600.

- Dunmow, Little, *vil.*, 2 m. E. of Gt. Dunmow; "Dunmow Flitch" trial held annually; p. 300.
- Dunnet Head, *promontory*, Caithness, N.E. Scot.
- Dunnottar, *par.*, Kincardine, Scot.; nr. Stonehaven; ruined cas.; p. (1951) 1,514.
- Dunoon, *burgh, wal. pt.*, Argyll, Scot.; on N. side of Firth of Clyde, nearly op. Greenock, ancient cas.; p. (1951) 9,940.
- Duns, *burgh*, Berwick, Scot.; blankets; p. (1951) 2,028.
- Dunsinane, *hill*, Sidlaws, Scot.; nr. Perth; alt. 1,012 ft.; attributed to by Shakespeare in "Macbeth."
- Dunsmuir, *t.*, N. Cal., U.S.A.; summer resort; hunting, fishing; p. 2,359.
- Dunstable, *t., mun. bor.*, Beds, Eng.; on N. edge of Chiltern Hills, 4 m. W. of Luton; straw-hat trade; p. (1951) 17,108.
- Dunvegan, *t.*, Peace R., Athabaska, Canada.
- Dunville, *t.*, Ontario, Canada; p. 3,405.
- Dupont, *bor.*, Penns., U.S.A.; coal; p. (1950) 4,107.
- Duquesne, *c.*, Penns., U.S.A.; 9 m. S.E. of Pittsburgh; steelwks.; p. (1950) 17,620.
- Du Quoin, *c.*, Ill., U.S.A.; meat packing, flour, leather goods, shoes; p. (1950) 7,147.
- Durance, *R.*, S.E. France; trib. of Rhône; rapid current; length 217 m.
- Durango, *inland state*, N.W. Mexico; mining, agr., stock-raising; a. 42,272 sq. m.; p. (1950) 628,265.
- Durango, *cap.*, D. state, Mexico; cath.; p. (1940) 62,170.
- Durant, *c.*, S. Okla., U.S.A.; cotton gins and compresses, cottonseed oil; p. (1950) 10,541.
- Durban, *spt.*, Natal, Union of S. Africa; ch. comm. t. in S.E. Africa; maize, wool, hides; p. (1951) 475,026.
- Düren, *t.*, W. Germany; on R. Ruhr, 23 m. S.W. of Cologne; textiles, sugar, steel; p. 37,176.
- Durham, *cath. c., mun. bor., co. t.*, Durham, N.E. Eng.; univ.; coal, carpets; p. (1951) 19,283.
- Durham Co., N.E. Eng.; fertile valleys, moorland; coal, limestone; cattle; shipbuilding, iron, steel, chemicals; a. 1,015 sq. m.; p. (1951) 1,463,416.
- Durham, *t.*, N. Carolina, U.S.A.; tobacco factories; p. (1950) 71,311.
- Durlach, *t.*, Baden, Germany; 2½ m. E. Karlsruhe; p. 18,658.
- Durrës (Durazzo), *Adriatic spt.*, Albania; olive oil, wheat; p. (1930) 8,739.
- Duryea, *bor.*, Penns., U.S.A.; anthracite; silk; p. (1950) 6,655.
- Düsseldorf, *industl. t.*, Land N. Rhine-Westphalia, Germany; on R. Rhine 20 m. N. of Cologne; iron foundries, engineering, chemicals, paper, glass; art and educational centre; p. (1950) 500,516.
- Dust Bowl, *region*, U.S.A.; name applied to Great Plains on E. flank of Rocky Mtns.; subject to severe soil erosion by wind, particularly in drought years (1933, 1936) due to destruction of natural vegetation by excessive ploughing.
- Dutch Guiana, *see* Suriname.
- Dutch Harbour, *t.*, Unalaska I., Aleutian group, N. Pac. Oc.; strategic American naval base.
- Dvina, *R.*, (N.) flows to White Sea at Arkhangelsk, and is formed by the junction of the Rs. Sukhona and Vychgoda, U.S.S.R.; connected by canal with Neva and Volga; length 1,000 m.
- Dvina, *R.*, (S.) Latvia, U.S.S.R.; rises near sources of Volga and Dnieper, flows to G. of Riga; length 65 m.
- Dysart, *spt., mun. bor.*, Fife, on F. of Forth, Scot.; linen, coal; p. 9,068.
- Dzardzhikau, *t.*, cap. N. Osetin, U.S.S.R.; on R. Terek; factories, distilleries, rly. terminus; p. (1939) 127,172.
- Dzerzhinsk, *industl. t.*, U.S.S.R.; W. of Gorki; chemicals; p. (1939) 103,415.
- Dzhangalantu, (Kobdo), *t.*, N.W. Mongolia, Asia; wool, skins, sheep; impt. cattle mkt.; p. 6,000.
- Dzhezkazgan, *t.*, Kazakh S.S.R., U.S.S.R.; 350 m. W. of L. Balkhash; copper-mines.
- Dzierzoniow, *t.*, S.W. Poland, formerly Germany; ceded to Poland at Potsdam conference; textiles, machinery; cattle, grain mkt.; p. 22,000.
- Dzungaria, *broad trench* leading to the Mongolian plateau from the lowlands round L. Balkhash; formerly independent state.

## E

- Eagle Grove, *c.*, N. Iowa, U.S.A.; gypsum, agr.; p. (1950) 4,176.
- Eaglesham, *par.*, Renfrew, Scot.; p. (1951) 2,498.
- Ealing, *mun. bor.*, Middlesex, Eng.; sub. to W. London; residtl.; p. (1951) 187,308.
- Earby, *urb. dist.*, W.R. Yorks, Eng.; p. (1951) 5,348.
- Earlestown, *mftg. t.*, S. Lancs., Eng.; included in Newton le Willows urb. dist.; engineering, glass.
- Earn, *R.*, Perth, Scot.; issues from Loch Earn (6½ m. long) and flows into the Tay R.; length 46 m.
- Earnslaw, *mtns.*, S.I., New Zealand; highest peak, 9,165 ft.
- Easdale, *I.*, off W. Argyll, Scot.; nr. Oban; slate quarries.
- Easingwold, *t.*, N.R. Yorks, Eng.; rope, steel, agr. centre; p. 2,043.
- East C., extreme N.E. point of Asia.
- East C., extreme E. point of New Zealand; named by Capt. Cook on his first voyage in 1769.
- East Anglia, *dist.*, comprising Norfolk and Suffolk, Eng.; former Anglo-Saxon kingdom.
- East Anglian Heights, *Hills*, extend S.W. to N.E. across N.E. Hertfordshire, N. Essex and S.W. Suffolk, Eng.; chalk overlain by glacial clays and sands; smooth, rolling surface; region of lge. farms and lge. fields, mixed farms mainly concerned with grain (especially wheat) production; rarely exceed 600 ft. alt.
- East Barnet, *urb. dist.*, Herts, Eng.; residtl.; p. (1951) 40,014.
- East Bengal, *E. div. of Pakistan*; includes part of former Bengal Presidency; rice, jute, cotton; a. 5,091 sq. m.; p. (estd. 1951) 42,119,000.
- East Bridgewater, *t.*, Mass., U.S.A.; nr. Boston, p. (1950) 4,412.
- East Chicago, *t.*, Indiana, U.S.A.; L. Michigan; iron and steel wks., oil refining; p. (1950) 40,047.
- East Cleveland, *t.*, Ohio, U.S.A.; residtl.; p. (1950) 54,263.
- East Cowes, *see* Cowes.
- East Dereham, *see* Dereham, East.
- East Greenwich, *t.*, Rhode I., U.S.A.; light mnfg.; shellfish; summer resort; p. (1950) 4,923.
- East Grinstead, *t., urb. dist.*, E. Sussex, Eng.; in centre of the weald, 9 m. W. of Tunbridge Wells; agr. mkt.; famous hospital for plastic surgery; p. (1951) 10,845.
- East Ham, *co. bor.*, Essex, Eng.; mftg. sub., E. of London; chemicals; p. (1951) 120,873.
- East Indies (Malay Archipelago), group of Is. between Asia and Australia, including Borneo, Celebes, New Guinea, Sumatra, Java, Bali, Timor (see under Borneo and Indonesia); sugar, coffee, spices, fruits, rubber, tobacco, sago, tapioca, canes.
- East Las Vegas, *t.*, New Mexico, U.S.A.; p. (1950) 6,269.
- East Linton, *burgh*, E. Lothian, Scot.; p. (1951) 990.
- East Liverpool, *c.*, Ohio, U.S.A.; pottery mnfs.; p. (1950) 24,217.
- East London, *spt.*, C. Prov., S. Africa; at mouth of Buffalo R.; holiday resort, wool, mohair; p. (1951) 90,978.
- East Lothian (Haddington) *co.*, S.E. Scot.; cereals, potatoes, sheep, coal; *co. t.*, Haddington, a. 267 sq. m.; p. (1951) 52,240.
- East Luangwa, *prov.*, N. Rhodesia; maize, tobacco, coffee, some mining; cap. Fort Jackson; a. 22,350 sq. m.; p. 225,076.
- East Main R., Labrador, Newfoundland, Canada; flowing into James Bay.
- East Moline, *t.*, Ill., U.S.A.; p. (1950) 13,913.
- East Orange, *t.*, New Jersey, U.S.A.; residtl. sub., New York; p. (1950) 7,934.
- East Palestine, *t.*, Ohio, U.S.A.; clay, coal, oil, pottery; p. (1950) 5,195.
- East Providence, *t.*, Rhode I., U.S.A.; p. (1950) 35,871.
- East Punjab, *st.*, Indian Union; wheat, rice, millets; a. 37,428 sq. m.; p. (1951) 12,633,617.
- East Retford, *mun. bor.*, Notts, Eng.; on R. Idle, 6 m. E. of Worksop; corn, iron; p. (1951) 16,312.



- East Riding, Yorkshire**, *see* Yorkshire, **East Riding**.  
**East River**, *tidal strait* about 16 m. long and from 600 to 4,000 ft. wide; the R. separates the bors. of Manhattan and Bronx from the bors. of Queens and Brooklyn.  
**East St. Louis, c., R. pt., Ill., U.S.A.**: on Mississippi R.; large stockyards; meat packing; p. (1950) 82,295.  
**East Stonehouse, t., Devon, Eng.**: adjoining Plymouth and Devonport.  
**East Vale, t., Staffs, Eng.**: nr. Stoke-on-Trent.  
**Eastbourne, t., co. bor., E. Sussex, Eng.**: on S. est. to E. of Beachy Head; seaside resort; p. (1951) 57,801.  
**Easter I., E. Pacific Ocean, W. of Chile**: stone images, ruins; p. 250.  
**Eastham, vil., Cheshire, Eng.**: on S. of Mersey estuary, nr. entrance to Manchester Ship Canal.  
**Easthampton, t., Mass., U.S.A.**: p. (1950) 10,694.  
**Eastleigh, t., mun. bor., Hants, Eng.**: locomotives; p. (1951) 30,557.  
**Easton, t., Maryland, U.S.A.**: p. (1950) 4,836.  
**Easton, t., Mass., U.S.A.**: p. (1950) 6,244.  
**Easton, c., Penns., U.S.A.**: on Delaware R.; rly. centre, coal, steel, machinery, furniture; p. (1950) 35,632.  
**Eastwood, t., urb. dist., Notts, Eng.**: coal; p. (1951) 9,896.  
**Eastwood, t., N.S.W., Australia**: p. 3,025.  
**Eau Claire, c., Wisconsin, U.S.A.**: on Chippewa R.; timber, paper, furniture; p. (1950) 36,058.  
**Eaux Bonnes, Les, wat. pl., Pyrenees, S. France**.  
**Eaux Chaudes, wat. pl., Pyrenees, S. France**.  
**Ebal, Mt., Israel**: opposite Gerizim; alt. 2,986 ft.  
**Ebbw Vale, t., urb. dist., Monmouth, Eng.**: 17 m. N.W. of Newport; coal, iron and steel wks.; p. (1951) 29,205.  
**Eberswalde, t., Germany**: N.E. of Berlin; iron-wks., bricks, paper; p. 29,571.  
**Ebingen, c., Württemberg, Germany**: knitwear, velvet; precision tools; p. 12,128.  
**Eboli or Evoli, t., Campagna, Italy**: E. of Salerno; p. 13,275.  
**Ebro, R., N.E. Spain**: flows to Mediterranean from Cantabrian Mtns.; length 440 m.  
**Ebury, R., Monmouth, Eng.**: trib. of Usk R.  
**Eccles, mun. bor., Lancs, Eng.**: 4 m. W. of Manchester; cotton, silk; p. (1951) 43,927.  
**Ecclesfield, t., W.R. Yorks, Eng.**: N. of Sheffield; cutlery.  
**Eccleshall, mkt. t., Staffs, Eng.**: 6 m. N.W. of Stafford; p. 3,630.  
**Echague, t., Philippine Is.**: tobacco centre.  
**Echternach, t., Luxembourg**: famous abbey; Whitsun dancing-procession.  
**Echuca, t., Victoria, Australia**: on R. Murray 50 m. N.E. of Bendigo; rly. centre; irrigation works; wine, sheep; p. (1947) 4,490.  
**Ecija, t., Seville, Spain**: olive oil, wine, pottery; the Roman Astigi; p. 34,944.  
**Eck, Loch, L., Argyll, Scot.**: 6 m. long.  
**Eckington, t., Derby, Eng.**: S.E. of Sheffield; coal, agr. implements; p. 12,600.  
**Ecorse, t., Michigan, U.S.A.**: p. (1950) 17,948.  
**Ecuador, rep., S. America**: on Equatorial Pacific coast; Andes mtns.; Chimborazo, 20,600 ft.; climate: lowlands tropical, uplands cool and dry; race chiefly Indian speaking the Quechua language; poor communications; cocoa, sugar, coffee, cereals, fruits, gold, copper, silver, Panama hats; cap. Quito: a. 275,855 sq. m. (inc. Galapagos Is., 3,028 sq. m.); p. (1950) 3,202,757.  
**Edam, t., Holland, Netherlands**: coast of Zuider Zee; cheese; p. 8,295.  
**Eday, I., Orkney Is., Scot.**: the Ocelli of Ptolemy.  
**Ed Damar, cap., Northern Prov., Anglo-Egyptian Sudan**: p. (estd. 1949) 8,000.  
**Eddystone, rock with lighthouse, Eng. Channel**: 15 m. S.W. of Plymouth.  
**Ede, commune, E. Netherlands**: livestock; p. (1948) 36,436.  
**Ede, t., W. Prov., Nigeria**: p. 57,500.  
**Eden, R., Westmorland, Eng.**: rises in Pennines, flows N.W. to Solway Firth below Carlisle; length 65 m.  
**Eden, t., N.S.W., Australia**: on Tasman Sea; p. 661.  
**Edenburg, t., Orange Free State, S. Africa**.  
**Edenton, t., N.C., U.S.A.**: groundnuts, cotton, herring fisheries; (1950) 4,468.  
**Edessa (Edhessa), t., cap., Pella prefectura, Macedonia, Greece**: p. (1951) 15,415.  
**Edfu, see Idfu**.  
**Edgbaston, S.W. dist., Birmingham, Eng.**: industr.  
**Edgehill, ridge 15 m. S. Warwick, Eng.**: first battle in Civil War, 1642.  
**Edgewater, t., New Jersey, U.S.A.**: suburban to and connected by ferry with New York; p. (1950) 3,952.  
**Edgeworthstown (Meathas Tuim), t., Longford, Ireland**: p. 654.  
**Edgware, t., Middlesex, Eng.**: N. sub. of London; residtl.  
**Edinburg, t., Indiana, U.S.A.**: p. (1950) 3,283.  
**Edinburgh, c., Midlothian; cap. Scot.**: royal burgh on Firth of Forth; univ., cas.; palace (Holyrood); printing, publishing, brewing; Leith, with docks is joined to E.; p. (1951) 466,770.  
**Edirne, c., Turkey**: on left bank of the Marica R.; greatly developed by Hadrian 125; residence of the Sultans 1366-1453; wine, tobacco, silk, perfume; p. (1945) 29,439.  
**Edmonton, cap., Alberta, Canada**: farming, dairying, coal; head of navigation of N. Saskatchewan R.; p. (1951) 153,709.  
**Edmonton, mun. bor., Middlesex, Eng.**: N. sub. of London; residtl.; light industries; p. (1951) 104,244.  
**Edremit, t., Balikesir, N.W. Turkey**: cereals, opium; silverwork; p. (1945) 12,603.  
**Edward, L., on frontier of Uganda and Belg. Congo**, one of the sources of R. Nile; alt. 3,000 ft., length 44 m., breadth 32 m.  
**Edwardsville, t., Ill., U.S.A.**: p. (1950) 8,776.  
**Edwardsville, t., Penns., U.S.A.**: p. (1950) 6,686.  
**Eeklood, t., E. Flanders, Belgium**: textiles; p. 16,903.  
**Eger, c., Hungary**: wine, soap; cath.; p. 34,428.  
**Egersund, spt., S. coast, Norway**: p. 3,392.  
**Eggar, R. pt., Iorin, Nigeria**: p. 10,000.  
**Egham, urb. dist., Surrey, Eng.**: on R. Thames, nr. Staines; contains field of Runnymede, where King John signed Magna Carta; residtl.; p. (1951) 24,615.  
**Egmont, mtn., N.I., New Zealand**: volcanic; alt. 8,200 ft.  
**Egremont, mkt. t., Cumberland, Eng.**: 10 m. S. of Whitehaven; limestone, iron ore; p. 16,727.  
**Egypt, republic, N.E. Africa**: desert, except fertile Nile valley; agr. depends on annual rise of the Nile waters and irrigation; climate: hot, dry summers, warm winters with little rain; agr.: wheat, barley, rice, onions, cotton; phosphates; communications: Nile railway Cairo-Aswan, caravan routes across desert; Mohammedans; cap. Cairo; chief spt. Alexandria; a. 386,198 sq. m.; p. (estd. 1950) 20,439,000.  
**Ehen, R., Cumberland, Eng.**: issues from Ennerdale Water to Irish Sea; length 12 m.  
**Ehrenbreitstein, t., fort., Germany**: on R. Rhine opposite Coblenz.  
**Eibar, c., Guipuzcoa, N. Spain**: iron, steel mnfg.; p. 11,772.  
**Eibenstock, t., Saxony, Germany**: p. 7,760.  
**Eider, R., Germany**: connected with Kiel canal; length 90 m.  
**Eidsvoll, t., Norway**: p. 11,104.  
**Eifel, plateau of ancient rocks, W. Germany**: lies N. of R. Moselle, terminates in steep slope forming W. edge of Rhine gorge between Koblenz and Bonn; drained by Kyll, Ahr, Rur; formerly cultivated, now largely woodland and moorland; farming in valleys; rises to just over 2,000 ft.  
**Eiger, mtn., one of the highest peaks of the Bernese Oberland, Switzerland**: alt. 13,042 ft.  
**Elgg, I., Inner Hebrides, Inverness, Scot.**: 15 m. S.W. of Mallaig; basaltic rocks on cat.; rises to 1,289 ft.  
**Eilat, new spt., Negev, Israel**: on Gulf of Akaba; p. (estd. 1953) 400.  
**Eildon Hills, Roxburgh, Scot.**: S. of Melrose; highest point 1,385 ft.  
**Eilenburg, t., Saxony, Germany**: rly. junction; textiles, machinery, furniture; sugar; p. 18,172.  
**Eilendorf, t., W. Germany**: quarries, chemicals, refractory products; p. 11,566.  
**Eindhoven, t., N. Brabant, Netherlands**: tobacco, textile, electric and radio goods; p. (1951) 143,965.

- Einsiedeln, *t.*, Schwyz, Switzerland; monastery, pilgrim centre.
- Eire, *see* Ireland, Republic of.
- Elsenach, *t.*, Germany; on R. Nesse, at foot of Thuringian forest; p. 52,800.
- Elsenburg, *c.*, Thuringia, Germany; pianos, porcelain, sausages; p. 11,317.
- Eisenerz Alps, *mtn. range*, Austria; most northerly range of Alps, overlooking Danube valley between Linz and Vienna; impt. iron-ore deposits; alt. from 6,000 to 9,000 ft.
- Eisleben, *t.*, Saxony, Germany; machinery, copper- and silver-mining centre; birthplace of Luther; p. 23,694.
- El Alamein, *vil.*, Egypt; in Libyan Desert 60 m. S.W. of Alexandria; scene of great Allied victory, Second World War.
- El Callao, *t.*, Bolivar st., Venezuela; in centre of Guiana Highlands, 125 m. S.E. of Ciudad Bolivar; centre of impt. gold-mining region.
- El Centro, California, U.S.A.; rich agr. a. reclaimed from the desert; p. (1950) 12,590.
- El Dorado, *t.*, Arkansas, U.S.A.; oil; p. (1950) 23,076.
- El Dorado, *t.*, Kansas, U.S.A.; p. (1950) 11,037.
- El Faiyûm or El Fayum, *oasis t., cap.* of Faiyûm prov., Egypt; near L. Moeris; predynastic arch. finds; lgst. cultivated a. of Egypt outside Nile flood plain; p. (1947) 74,314.
- El Fasher, *cap.*, Darfur Prov., Anglo-Egyptian Sudan; p. (estd. 1949) 23,600.
- El Hasa, *dist.*, Saudi Arabia; on Persian Gulf; ch. t. Hofuf.
- El Kharga, *oasis*, Libyan desert, Egypt; 85 m. S.W. of Asyut; p. 5,000.
- El Mistil, *volcano*, Peru, S. America; N.E. of Arequipa; alt. 19,170 ft.
- El Obeid, *cap.*, Kordofan, Anglo-Egyptian Sudan; 200 m. S.W. of Khartoum; ivory, gums, ostrich feathers; p. (estd. 1949) 70,100.
- El Oro, *prov.*, Ecuador; cap. Machala; a. 2,238 sq. m.; p. (1950) 89,306.
- El Paso, *t.*, Texas, U.S.A.; on Rio Grande; p. (1950) 130,485.
- El Qantara (El Kantara), *t.*, Egypt; on E. bank of Suez Canal, 21 m. S. of Pt. Said; terminus of Palestine Rly. system; linked by ferry across canal (and temporary swing bridge) to El Qantara (W.) on Egyptian Rly. systems.
- El Salvador, *see* Salvador.
- El Teniente, *t.*, central Chile; copper mines; p. 11,761.
- El Turbio, *t.*, S. Argentina; coal.
- Elan, R., Radnor, Wales; rises on S.E. sides of Plynlimon, flows S.E. then N.E. into R. Wye at Rhayader; lower valley contains series of four lge. reservoirs, length 4 m., capacity 10,000 million gallons; ch. source of water for Birmingham.
- Elâzığ, *t.*, Turkey; N.E. of Malatya; p. (1945) 23,739.
- Elba, *I.* off Tuscan coast, Italy; iron ore, wine, marble, salt; Napoleon's first exile here; ch. t. Porto Ferrajo.
- Elbasan, *prefecture*, Albania; cap. Elbasan; p. (1930) 111,480.
- Elbe, R., Czechoslovakia, Germany; the Roman "Albis"; rises in Bohemia and flows into North Sea at Cuxhaven, 65 m. below Hamburg; navigable for 500 m. of total length 725 m.
- Eberfeld, *see* Wuppertal.
- Elbert, *mtn.*, Colorado, U.S.A.; alt. 14,420 ft.
- Elbeuf, *t.*, Seine-Inférieure, France; woollens; p. (1946) 15,958.
- Elbing (former German Elbing), *spt.*, Pomerania, Poland; shipbuilding; textiles, leather, iron; p. 21,000.
- Elbrus Mt., highest pt. in the Caucasus; alt. 18,526 ft.
- Elburz, *mtn. range*, N. Persia; bordering on Caspian Sea; highest peak, Demavend, 18,500 ft.
- Elche, *t.*, Alicante, Spain; 15 m. S.W. of Alicante; palm groves; oil, soap; p. (1950) 55,877.
- Eldorado, *radium mine*, N.W. Terr., N. Canada; situated on E. shore of Gr. Bear Lake nr. Arctic Circle; produces 40% of world's radium, sent to Port Hope, Ontario, for refining.
- Electra, *t.*, N. Texas, U.S.A.; oil; drilling tools and equipment; p. (1950) 4,970.
- Elephant Butte Dam, N.M., U.S.A.; on Rio Grande, 125 m. above El Paso; built to control flood water; lake, a. 60 sq. m., supplies irrigation water to 730 sq. m. in N.M. and Texas, water also supplied to Mexico.
- Elephanta, *I.*, Bombay Harbour, India; cave sculptures.
- Elephantine, *I.*, in Nile, Upper Egypt; site of Nilometer.
- Eleuthera, *I.*, Bahamas, W.I.; p. (1943) 6,430.
- Elgin, *co. t., burgh*, Moray, Scot.; woollens; p. (1951) 10,535.
- Elgon Mt., *extinct volcano*, Uganda; Brit. E. Africa; 40 m. in diam.; alt. 14,100 ft.; cave dwellings on slopes.
- Elie and Earlsferry, *burgh*, Fife, Scot.; *summer resort*; p. (1951) 1,190.
- Elisabethville, *t.*, Katanga, Belg. Congo; copper-mining centre; p. (1950) 103,352.
- Elizabeth, *mfg. t.*, N.J., U.S.A.; univ.; sewing machines, iron goods, oil-refining; p. (1950) 112,817.
- Elizabeth, *t.*, N.C., U.S.A.; timber industry; p. (1950) 12,685.
- Elizabethton, *t.*, Tenn., U.S.A.; manganese; rayon; p. (1950) 10,754.
- Elk (former E. Prussian t. of Lyck), N.E. Poland; machinery, tiles, paper, leather; p. 15,159.
- Elkhart, *t.*, Indiana, U.S.A.; E. of Chicago; paper, machinery; p. (1950) 35,646.
- Elk Mtns., *lofty range*, W. Colorado, U.S.A.; highest point Castle Peak, alt. 14,115 ft.
- Elland, *t., urb. dist.*, W.R. Yorks, Eng.; on R. Calder, 3 m. S.E. of Halifax; woollens; p. (1951) 19,273.
- Ellesmere, *t., urb. dist.*, Shropshire, Eng.; 8 m. N.W. of Wem; mkt., malting, tanning; p. (1951) 2,159.
- Ellesmere, *agr. dist.*, S.I., New Zealand; *nu* Canterbury Plain nr. Christchurch.
- Ellesmere I., large island extreme north of Arctic Canada; barren, uninhabited; a. 41,000 sq. m.
- Ellesmere Port and Whitchy, *t., urb. dist.*, Cheshire; Eng.; 10 m. S.E. of Birkenhead; Manchester Ship Canal port; p. (1951) 32,594.
- Ellice, *Is.*, *see* Gilbert and Ellice Is.
- Ellichpur, *t.*, Berar, Madhya Pradesh, India; cotton trade; p. 24,000.
- Ellis I., New York harbour, U.S.A.; important stn. for examination of immigrants.
- Ellon, *burgh*, Aberdeen, Scot.; on R. Ythan; p. 1,491.
- Ellore, *t.*, Madras, India; cotton goods, carpets, hosiery, oil; p. (1941) 45,862.
- Ellwood, *t.*, Penns., U.S.A.; p. (1950) 12,945.
- Elmhurst, *t.*, Ill., U.S.A.; p. (1950) 21,273.
- Elmina, *t.*, Gold Cst., W. Africa; fortress; trade in palm oil, ivory, gold; p. 15,200.
- Elmira, *mfg. t.*, N.Y., U.S.A.; rly. goods, farm implements; burial place of Mark Twain; p. (1950) 49,716.
- Elmshora, *t.*, Germany; N.W. of Hamburg; p. 15,392.
- Elsinore (Helsingør), *t., spt.*, Denmark; shipbuilding, timber; p. 18,930.
- Elstree, *t.*, Herts, Eng.; 4 m. W. of Barnet; residential; films.
- Eltham, *residtl. dist.*, Kent, Eng.; S. sub. of London.
- Eltham, *t.*, N.I., New Zealand; centre of large dairying industry; p. (1951) 1,981.
- Elvas, *c. (fortfd.)*, Portugal; on Guadiana R.; plums, olives; p. 18,615.
- Elwood, *industl. t.*, Indiana, U.S.A.; on Duck Creek; grain, tinplate; p. (1950) 11,362.
- Ely, *c.*, I. of Ely, Cambridge, Eng.; on S. fringe of the Fens; mkt., cath.; agr. centre (fruit, roots); p. (1951) 9,939.
- Ely, *I. of, administrative div.*, Cambridge, Eng.; farming, potatoes, sugar-beet; cap. March; a. 372 sq. m.; p. (1951) 89,038.
- Elyria, *t.*, Ohio, U.S.A.; mftg.; p. 35,000.
- Emba, R., Kazak S.S.R., U.S.S.R.; rises in S. end of Ural Mtns., flows S.W. to Caspian Sea; crosses productive Ural-Emba oilfield.
- Embrun, *c. (fortfd.)*, Hautes Alpes, France; p. 2,802.
- Emden, *t., spt.*, W. Germany; nr. mouth of R. Ems; rope, cement, shipbuilding, agr. produce, livestock; p. 31,481.
- Emilia-Romagna, *region*, N. Italy; S. of Po R.; agr. (grain, wine, fruits); a. 8,542 sq. m.; p. (1951) 3,538,851.
- Emmaus, *bor.*, Penns., U.S.A.; textiles, rubber products; p. (1950) 7,780.



- Emmaville, *t.*, N.S.W., Australia: mining.
- Emmen, *t.*, Drenthe, Netherlands; 30 m. S.E. of Groningen; p. (1951) 57,601.
- Emmerich, *t.*, Germany; on Rhine R., and nr. Netherlands boundary; industrial; p. 13,500.
- Empedrado, *t.*, Argentina; p. 24,300.
- Empoli, *t.*, Florence, Italy; straw, cotton, leather goods, pottery; p. 21,000.
- Emporia, *t.*, Kansas, U.S.A.; stock-raising; p. (1950) 15,669 [p. 7,070].
- Ems, *t.*, Germany; on Sahn R.; spa, silver, lead.
- Ems, *R.*, N. Germany; rises in Teutoburger Wald, flows N. to N. Sea at Emden; length 205 m.
- Emacher, *R.*, W. Germany; rises in Sauerland, flows W. through heart of Ruhr coalfield to enter R. Rhine at Hamborn; canalised for most of its course; length 55 m.
- Emsdetten, *commune*, Germany; on R. Ems; textiles; p. 13,297.
- Emsworth, *vil.*, Hants, Eng.; 2 m. E. of Havant; p. 2,320.
- Encarnacion, *t.*, *cap.*, Itapua dep., S.E. Paraguay; on Paraná R.; rly., agr., cattle; p. 20,000.
- Encounter Bay, S. Australia, receives Murray R.
- Enderby Land, *terr.*, Antarctica; S. of C. of Gd. Hope.
- Endicott, *t.*, N.Y., U.S.A.; shoe manuf.; p. (1950) 20,055.
- Endrick, *R.*, Stirling, Scot.; flows to Loch Lomond; length 29 m.
- Enez, *t.*, S. Turkey-in-Europe; nr. Gallipoli; p. 566.
- Enfield, *urb. dist.*, Middlesex, Eng.; 10 m. N. London; small arms, radios; p. (1951) 110,453.
- Engadine, Switzerland; upper valley of Inn R.; health resort; chief t. St. Moritz.
- Engaño, *c.*, S. extremity of Luzon, Philippine Is.
- Engelberg, *t.*, Unterwalden, Switzerland; tourists; old monastery; p. 2,409.
- Engels, *t.*, U.S.S.R.; on Volga R. opposite Saratov; p. (1939) 73,279.
- England, (with Wales) forms S. and largest division Great Britain; length 420 m., greatest breadth 360 m.; ch. mtns.: Cheviot Hills, Pennine Chain, Cumbrian Grp., Cambrian Mtns., Dartmoor, Exmoor; ch. Rs.: Thames, Severn, Trent, Mersey, Gt. Ouse, Yorkshire Ouse; climate, temperate maritime; vegetation: woods, moor, heath, grassland; ch. industries: agriculture, arable, pastoral; dairying; ch. crops: wheat, barley, oats, sugar-beet, hops, fruit; sheep, cattle, pigs, horses; mining, coal, iron; fishing, herring, cod; mnfs. iron and steel, textiles, ships, pottery; good road and rail communications; cap. London; a. 50,876 sq. m.; p. (1951) 43,744,924.
- Englewood, *t.*, New Jersey, U.S.A.; p. (1950) 23,145.
- English Channel (La Manche), *narrow sea* separating England from France; extends from Strait of Dover to Land's End in Cornwall; length 300 m., greatest width 155 m.
- Enid, *t.*, Oklahoma, U.S.A.; ironwks., farm implements; p. (1950) 36,017.
- Enkhuizen, *t.*, *spt.*, Netherlands; on W. coast Zuider Zee; p. 9,634.
- Enna (Castrogiovanni), *t.*, Sicily; rock salt, sulphur mines; famous for its connection with the Proserpine legend.
- En Nahud, *t.*, central Anglo-Egyptian Sudan; tr. in cattle, ivory, cotton, ostrich feathers; p. 19,300.
- Ennerdale Water, *L.*, Cumberland, Eng.
- Ennis, *mkt. t.*, *urb. dist.*, Clare, Ireland; farming, flour; p. (1946) 5,876.
- Enniscorthy, *mkt. t.*, *urb. dist.*, Wexford, Ireland; brewing, tanning; p. (1946) 6,020.
- Enniskillen, *c. t.*, *mun. bor.*, Fermanagh, N. Ireland; brewing; p. (1951) 6,318.
- Enns, *R.*, Austria; S. trib. of Danube; length 112 m.
- Enschede, *t.*, Overijssel, Netherlands; cotton-spinning, weaving; p. (1951) 109,326.
- Entebbe, *cap.*, Uganda, Brit. E. Africa; on L. Victoria; cotton ginning; p. (1948) 7,932.
- Enterprise, *c.*, Ala., U.S.A.; peanuts; p. (1950) 7,288.
- Entre Rios, *prov.*, Argentina; between Paraná and Uruguay Rs.; wheat, linseed, livestock; cap. Paraná; a. 29,427 sq. m.; p. (1947) 776,380.
- Entrocamento, *t.*, Central Portugal, on Tagus R.
- Enugu, *cap. E. prov.*, Nigeria; coal; p. 12,459.
- Epervay, *t.*, Marne, France; champagne; p. (1946) 20,381.
- Ephesus, *ruined c.*, Turkey, S. of Izmir.
- Ephrata, *t.*, S.E. Penna., U.S.A.; cattle rearing, printing; p. (1950) 7,027.
- Epinal, *cap.*, Vosages dep., France; on Moselle R.; cotton, printing; p. (1946) 23,395.
- Epirus, *dist.*, N.W. Greece; a. 3,688 sq. m.; p. (1951) 331,631.
- Epping, *t.*, *urb. dist.*, Essex, Eng.; mkt. gardening, dairying; p. (1951) 6,934.
- Epping, *forest*, Essex, Eng.
- Epsom and Ewell, *mun. bor.*, Surrey, Eng.; 18 m. S.W. of London; residit., racecourse; p. (1951) 68,049.
- Equatoria, *prov.*, Anglo-Egyptian Sudan; a. 76,995 sq. m.; cap. Juba; p. (estd. 1951) 632,900.
- Erando, *t.*, N. sub. of Bilbao, Spain; iron ore, paper, tobacco, wine; p. 11,263.
- Erebus, *mtn.*, active volcano, Victoria Land, Antarctica.
- Eregli, *spt.*, Black Sea, Turkey; rly. to Zonguldak coal-mines; p. 6,360.
- Erfurt, *c.*, Germany; cath., centre of mkt. gardening and seed-growing dist., textiles, machinery; brewing; p. (1946) 174,633.
- Ericht, *loch*, Perth, Inverness, Scot.; in central Grampians; 15½ m. long; hydro-electric scheme.
- Erie, *lake*, N. America; separating Canada from U.S.A.; a. 9,946 sq. m.; 240 m. long, 40 m. broad.
- Erie, *indust. t.*, *lake pt.*, Penna., U.S.A.; iron and steel industry, engineering; p. (1950) 130,803.
- Erie Canal, *see* New York State Barge Canal.
- Eriskay, *I.*, Outer Hebrides, Scot.
- Erith, *t.*, *mun. bor.*, Kent, Eng.; on S. bank of Thames estuary 5 m. below London; engineering, oil refining; p. (1951) 46,263.
- Eritrea, federated with Ethiopia 1952; former Italian col., N.E. Africa; tobacco, cereals, pearl fishing; cap. Asmara; a. 45,754 sq. m.; p. (estd. 1948) 1,086,302.
- Erivan, *cap.*, Armenian S.S.R., U.S.S.R.; situated in deep valley in Caucasus Mtns.; woollen mfs., fruit canning, machine tools; p. (1939) 200,000.
- Erlangen, *t.*, Bavaria, Germany; p. 36,000.
- Ernakulam, *t.*, Travancore-Cochin, India; cotton, coffee, hides; p. (1941) 36,638.
- Erne, *R.*, (72 m.) and *L.*, N. Ireland, flows to Donegal Bay.
- Erode, *t.*, S. Madras, India; cotton; p. (1941) 33,672.
- Erskineville, *t.*, N.S.W., Australia; p. 6,624.
- Erzgebirge (Ore Mtns.), *mtn. range*, Germany; highest peak, 4,122 ft.
- Erzurum, *t.*, Turkey; brasswork, salt, tanning; forests and mineral springs nearby; p. (1945) 52,534.
- Esbjerg, *spt.*, Denmark; on W. cst. of Jutland; cross-channel steamers to Harwich, Eng.; exports dairy produce; p. (1950) 43,205.
- Escalante, *t.*, Philippine Is.; p. 23,934.
- Escanaba, *t.*, Michigan, U.S.A.; iron, shipping, lumber, chemicals; p. (1950) 15,170.
- Escatron, *t.*, Spain; on Ebro R.
- Esch-sur-Alzette, *t.*, Luxembourg; mining centre; p. (1948) 26,351.
- Eschwege, *t.*, W. Germany; soap, varied mnfs.; p. 12,723.
- Esdraelon, *plain*, Israel; S.W. Asia; between Carmel and Gilboa Mtns.
- Esher, *urb. dist.*, Surrey, Eng.; on R. Mole, residit.; Sandown Park racecourse; p. 51,130.
- Eshowe, *cap.*, Zululand, Natal, S. Africa; at mouth of Tugela R.; asbestos; p. 2,223.
- Esk, *R.*, Dumfries, Scot., rises in S. Uplands, flows S. into Solway Firth; length 50 m.
- Esk, *R.*, N.R., Yorks., Eng., rises in Cleveland Hills, flows E. into N. Sea at Whitby; length 28 m.
- Eskestuna, *t.*, Sweden; on R. of same name; iron, steel, cutlery; p. (1951) 53,577.
- Eskisehir, *t.*, Turkey; W. of Ankara, ancient Dorylaeum; rly. centre; meerschaum; p. (1945) 80,096.
- Esmeralda, *t.*, Venezuela, S. America; on Orinoco R.
- Esmeraldas, *prov.*, Ecuador, S. America; cap. E. on R. of same name; cacao, tobacco; a. 5,464 sq. m.; p. (1950) 75,407.

- Esneh, *see* Isna.
- Esperance, *t.*, W. Australia: summer resort; interesting caves; p. 356.
- Esperanza, *old t.*, Santa Clara, Cuba: guava jelly; p. 13,091.
- Espirito, Santo, *maritime st.*, Brazil: sugar, cotton, coffee, fruits, forests; cap. Vitória; a. 15,785 sq. m.; p. (1950) 870,987.
- Essen, *t.*, Land N. Rhine-Westphalia, Germany: rly. centre; coal-mining, iron and steel, textiles, tobacco, locomotives, tractors; p. (1950) 605,411.
- Essendon, *sub.*, Melbourne, Victoria, Australia: meat; p. 46,100.
- Essentuk, *t.*, Stavropol, U.S.S.R.: light mnfs., medicinal springs; p. 23,000.
- Essequibo, *R.*, Brit. Guiana, S. America: length 620 m.
- Essex, *co.*, Eng.: flat, wooded, agr., wheat, barley; oyster beds; mnfs. farming implements, engineering, brewing, silk, gunpowder; largest ts. part of Greater London, East and West Ham, Leyton, Walthamstow; a. 1,523 sq. m.; p. (1951) 2,043,574.
- Esslingen, *c.*, Germany: on R. Neckar, textiles, chemicals, leather goods; p. 64,923.
- Essones, *t.*, Seine-et-Oise, France: paper; p. (1946) 10,683.
- Estcourt, *t.*, Natal, S. Africa: p. 3,879.
- Este, *t.*, N.E. Italy: anc. fortress; iron, pottery, chemicals; p. 14,438.
- Estel, *dep.*, W. Nicaragua: a. 772 sq. m.; p. 53,872.
- Estepona, *spt.*, Malaga, Spain: wine, olives, citrus fruit, sardines; p. 11,851.
- Estevan, *t.*, Saskatchewan, Canada: nr. U.S.A. bdy., 110 m. S.E. of Regina: coal-mines.
- Eston, *t.*, *urb. dist.*, N.R. Yorks, Eng.: 3 m. E. of Middlesbrough; iron and steel; p. (1951) 33,315.
- Estonia, *constituent rep.*, U.S.S.R.: formerly independent st.; climate: severe winter, mild summer, moderate rainfall; farming and dairying, textiles, matches, leather; a. 17,610 sq. m.; cap. Tallin; p. (1940) 1,117,300.
- Estrela, Sierra da, *mtn. range*, Portugal: highest peak 7,524 ft.
- Estremadura, *prov.*, Portugal: cap. Lisbon: a. 2,064 sq. m.; p. (1940) 1,379,533.
- Esztergom, *t.*, Hungary: weaving; mineral springs; cath.; p. 22,171.
- Etables, *t.*, Côtes du Nord, France.
- Etampes, *t.*, Seine-et-Oise, France: 30 m. S. of Paris; commerce; p. 10,425.
- Etang de Berre, *lagoon*, Bouches-du-Rhône, S.E. France: lies E. of Rhône delta, separated from Gulf of Lions by low Chaine de l'Estaque; traversed by Rhône-Marseille Canal; salt pans; approx. a. 100 sq. m.
- Etaples, *t.*, Pas de Calais, France: seaside resort; p. 6,534.
- Etawney, *L.*, Manitoba, Canada.
- Ethiopia (Abyssinia) *independent kingdom*, Africa: under Italian domination 1936-41; federated with Eritrea 1952; a. 350,000 sq. m.; tableland with average height 3,000 ft. intersected deep valleys, Samen Mtns. 15,000 ft.; climate: temperature modified by height; summer rains; pastoral, farming, coffee; cap. Addis Ababa.
- Etna, *volcano*, N.E. Sicily, Italy: alt. 10,784 ft.
- Etna, *t.*, Penns., U.S.A.; p. (1950) 6,750.
- Eton, *t.*, *urb. dist.*, Bucks, Eng.: on N. bank of R. Thames opposite Windsor; famous public school, founded by Henry VI.; p. (1951) 3,250.
- Etowah, *R.*, Georgia, U.S.A.: trib. of Coosa R.
- Etruria, *t.*, Staffs, Eng.: potteries, ironwks.
- Etruria, *ancient Italian country*, now Tuscany and part of Umbria and inhabited by Etruscans, powerful before Roman conquest.
- Ettelbrück, *t.*, Luxembourg; p. 4,373.
- Ettterbeck, *commune*, sub. Brussels, Belgium: carpets, brewing; p. (1947) 45,328.
- Ettrick, *R.*, Selkirk, Scot.: length 32 m.
- Eu, *t.*, France; château; p. 5,963.
- Euboea, *see* Evvoia.
- Eucla, *t.*, W. Australia: close to boundary of S. Australia on Transcontinental rly.; artesian wells.
- Euclid, *t.*, Ohio, U.S.A.; p. (1950) 41,396.
- Eugene, *t.*, Oregon, U.S.A.: univ.; ironwks.; p. (1950) 35,379.
- Eunice, *t.*, La., U.S.A.: cotton, rice; p. (1950) 8,184.
- Eupatoria, *see* Yevpatoriya.
- Euphrates, *largest R.* in S.W. Asia: rises in Armenian uplands and joined by the Tigris, enters Persian G. at Shatt-el-Arab; length 1,780 m.
- Eure, *dep.*, Normandy, France: agr., fruit, livestock, textiles; cap. Evreux; a. 2,331 sq. m.; p. (1946) 315,902.
- Eure-et-Loir, *dep.*, N. France: flour, textiles, iron, paper; cap. Chartres; a. 2,291 sq. m.; p. (1946) 258,110.
- Eureka, *c.*, California, U.S.A.: timber; p. (1950) 23,053.
- Eureka, *t.*, Utah, U.S.A.: gold, silver, copper; Europe, *continent*: a. 3,900,000 sq. m.; greatest length N. to S. 2,400 m. breadth E. to W. 3,000 m.; ch. mtns.: Alps, Pyrenees, Carpathians, Balkans, Apennines, Sierra Nevada, Urals, Caucasus; ch. Rs.: Volga, Danube, Rhine, Dnieper, Ural, Don; ch. lakes: Ladoga, Onega, Peipus, Vänern, Vättern; climate: Arctic border, long cold winter, short cool summer, snow; W. seaboard, cool summer, mild winter, abundant rainfall; Continental, warm summer, cold winter; Mediterranean, hot dry summers, warm wet winters; vegetation: N. tundra; Scandinavia and N. Russia, coniferous forests; European plain, woodlands; Mediterranean, drought-resisting evergreens; S. Russia, steppe; Caspian shores, desert; ch. ind.: agr., cereals, fruits, sugar-beet, potatoes, flax, hemp; pastoral, cattle-rearing, dairying, fishing; forestry; wood pulp, paper; mining, iron, coal, petroleum; hydro-electric power; mountainous regions. Politically divided into reps, kingdoms, principalities, and a grand duchy; p. (est.) 533,000,000.
- Euros, *prefecture*, Thrace, Greece: cap. Alexandroupolis; p. (1940) 153,071.
- Euskirchen, *t.*, N. Rhine-Westphalia, Germany; W. of Bonn; cloth, tanning, sugar; p. 17,000.
- Evanston, *t.*, Ill., U.S.A.: on L. Michigan; sub. of Chicago; seat of N.W. Univ.; p. (1950) 73,641.
- Evanston, *t.*, Wyo., U.S.A.: coal, oil, iron; dairying, agr.; p. (1950) 3,863.
- Evans Strait, divides Southampton Land from Coats I., Hudson Bay, Canada.
- Evansville, *mftg. t.*, Indiana, U.S.A.: on Ohio R.; hardwood trade, coal, farm implements; p. (1950) 128,636.
- Everest, *Mt.* (Chomolungma=Goddess Mother of the Earth), Himalayas, on frontier of Nepal and Tibet; alt. 29,002 ft.; highest mtn. in the world; Hillary and Tenzing first to reach summit in 1953.
- Everett, *mftg. t.*, Mass., U.S.A., nr. Boston: iron and steel; p. (1950) 45,982.
- Everett, *t.*, Washington, U.S.A.: timber, salmon, fruit; p. (1950) 33,849.
- Everglades, Florida, U.S.A.: extensive marshes.
- Evora, *cap.*, Alto Alentejo prov., Portugal; iron, cork; famous for its mules; p. 27,038.
- Evesham, *mkt. t.*, *mun. bor.*, Worcester, Eng.: on R. Avon, in Vale of Evesham, 15 m. S.E. of Worcester; fruit centre; p. (1951) 12,066.
- Evreux, *t.*, *cap.*, Eure, France: iron, glass, textiles; p. (1946) 20,436.
- Evvoia (Euboea), *Greek I.*, Aegean Sea; 115 m. long: wheat, olive oil, wine; cap. Khalkis; p. (1951) 163,720.
- Ewell, *t.*, Surrey, Eng.; residtl.
- Exe, *R.*, Somerset and Devon, rises on Exmoor, flows S. to English Channel at Exmouth; length 44 m.
- Exeter, *co. bor.*, *co. t.*, Devon, Eng.: E. of Dartmoor on R. Exe 8 m. from the sea; ironwks., brewing; cath.; p. (1951) 75,479.
- Exeter, *bor.*, Penns., U.S.A.: coal, timber; p. (1950) 5,130.
- Exmoor, *moorland tract*, Somerset, Devon, Eng.: highest point, Dunkery Beacon, 1,707 ft.
- Exmouth, *t.*, *urb. dist.*, Devon, Eng.: on E. side of estuary of R. Exe; lace, fishing, holiday resort; p. (1951) 17,232.
- Exploits, *R.*, Newfoundland, Canada; length 150 m.
- Extramadura, *old prov.*, S.W. Spain: largely plateau, alt. 1,500-3,000 ft.; heathy moorland; sheep; less arid conditions than in remainder of central Spain allow olives, vines, cereals; irrigation in valleys of Tagus, Guadiana.
- Exuma, *group of small is.*, Bahamas, W. Indies; p. 3,784.



**Eye, mkt. t., mun. bor., Suffolk, Eng.:** 12 m. N.E. of Stowmarket; brewing; p. (1951) 1,631.  
**Eyemouth, burgh, Berwick, Scot.:** on E. est., 9 m. N. of Berwick; fishing; p. (1951) 2,269.  
**Eyre, L. (salt), N. part of S. Australia:** a. 4,000 sq. m., 38 ft. below sea-level; practically dried up.  
**Eyre Peninsula, S. Australia:** between G. of St. Vincent and Spencer G.  
**Eyzies, Les, commune, Dordogne dep., France:** caves, arch., interests, Paleolithic paintings, Cromagnon type site.

## F

**Faaborg, spt., Fyn I., Denmark.**  
**Fabiano, mfg. t., Marches, Italy:** 30 m. S.W. of Ancona; fine cath.; paper; p. 26,625.  
**Fabrizia, t., nr. Monteleone, Italy:** p. 4,150.  
**Facone, sacred L., Honshu, Japan:** 67 m. from Tokyo.  
**Faenza, t., Ravenna, Italy:** at foot of Apennines, 15 m. S.W. of Ravenna; pottery (faience), silk; p. 50,000.  
**Fagersta, t., Västmanland, Sweden:** pig iron; p. 10,022.  
**Failsworth, t., urb. dist., Lancs., Eng.:** N.E. of Manchester; cotton mfg.; p. (1951) 18,033.  
**Fair I., midway between Shetland and Orkney, Scot.:** famous for brightly patterned, hand-knitted articles.  
**Fairbanks, t., Alaska, U.S.A.:** p. (1950) 5,625.  
**Fairfield, t., Alabama, U.S.A.:** p. (1950) 13,177.  
**Fairfield, t., Iowa, U.S.A.:** p. (1950) 7,299.  
**Fairhaven, t., Mass., U.S.A.:** p. (1950) 12,764.  
**Fairhead, C., N.W. Antrim, N. Ireland.**  
**Fairmont, t., W. Virginia, U.S.A.:** p. (1950) 29,346.  
**Fairweather, mtn., Alaska, N. America:** alt. 14,872 ft.  
**Faiyum, see El Faiyum.**  
**Falzabad, ch. t., Badakhshan, N.E. Afghanistan:** p. 25,770.  
**Fakenham, t., Norfolk, Eng.:** on R. Wensum.  
**Fal, R., Cornwall, Eng.:** flows to the English Channel; length 23 m.  
**Falaise, t., Calvados, France:** birthplace of William the Conqueror; scene of rout of a German Army, 1944; p. 5,667.  
**Falaise de l'Île de France, low S.E.-facing escarpment, 50 m. S.E. and E. of Paris, France:** overlooks "pays" of Champagne Pouilleuse; ch. vine-growing district for champagne-wine industry of Reims, Epervay.  
**Falcon, st., Venezuela:** bordering Caribbean Sea; cap. Coro; p. (1941) 232,644.  
**Falkenstein, c., Saxony, Germany:** textiles; p. 15,626.  
**Falkirk, burgh, Stirling, Scot.:** 10 m. S.E. of Stirling; foundries, coal, iron, distilleries; battles 1298 and 1746; p. (1951) 37,528.  
**Falkland, burgh, Fife, Scot.:** 3 m. S. of Auchtermuchty; mkt.; p. (1951) 1,037.  
**Falkland Is., Brit. Crown col., S. Atlantic:** sheep rearing (for wool); whaling centre; cap. Stanley on E. Falkland I.; a. 4,618 sq. m.; p. (1952) 2,300.  
**Falkland Is., Dependencies, comprise Falkland Is., S. Shetlands, S. Orkneys, Sandwich Group, Graham Land:** all islands and territories between 20° and 50° W. long. South of 50° S. lat., and between 50° and 80° W. long., South of 58° S. lat.  
**Fall River, indust. c., Mass., U.S.A.:** cottons, dyeing, brewing, iron; p. (1950) 111,963.  
**Falmouth, spt., mun. bor., Cornwall, Eng.:** on W. side of estuary of R. Fal, 10 m. S. of Truro; sea-side resort; fisheries; p. (1951) 17,036.  
**False Bay, inlet on E. side of C. of Good Hope peninsula.**  
**Falster, I. in the Baltic, Denmark:** cap. Nykøbing.  
**Falticeni, t., N.E. Romania:** timber; p. 14,347.  
**Falun, t., Kopparberg, Sweden:** copper, iron, wood-pulp; p. 18,136.  
**Famagusta, t., spt., Cyprus:** on E. coast, 2½ m. S. of ruins of ancient Salamis; p. (estd. 1951) 19,000.  
**Famatina, t., La Rioja prov., Argentina:** in foothills of Andes, 360 m. N.W. of Córdoba; copper-mines.  
**Fannich, loch, Ross, Scot.:** (6½ m. long), drains to Cromarty F.

**Fanning, Brit. I., Gilbert and Ellice Is. col.:** N. Pacific Ocean; a. 15 sq. m.; guano, mother-of-pearl; p. 196.  
**Fano, t., Italy:** on Adriatic est., N. of Ancona; resort; p. 30,900.  
**Fanø, I., Denmark:** off W. coast of Jutland, opposite Esbjerg; a. 20 sq. m.  
**Farafra, oasis, Libyan Desert, Egypt:** 200 m. W. of Asyut; dates; stage on caravan route from Cyrenaica to Upper Egypt.  
**Farciennes, commune, S.W. Belgium:** coal, mftg.; p. 10,570.  
**Farham, t., urb. dist., Hants., Eng.:** at N.W. corner of Portsmouth Harbour; flour; pottery; p. (1951) 42,470.  
**Farwell, C., southernmost tip of Greenland.**  
**Farwell, G., most northerly point S.I. New Zealand.**  
**Fargo, c., N. Dakota, U.S.A.:** on Red R.; grain, farm-machinery; p. (1950) 33,256.  
**Faribault, t., Minn., U.S.A.:** flour, factories; p. (1950) 16,028.  
**Faridpur, t., E. Bengal, Pakistan:** cloth, carpets; p. (1941) 14,500.  
**Farington, mkt. t., Berks, Eng.:** on N. edge of Vale of White Horse; p. 11,450.  
**Farmington, t., N. Conn., U.S.A.:** residtl. and industl.; p. (1950) 7,026.  
**Farmville, t., Va., U.S.A.:** mkt. for tobacco, lumber; p. (1950) 4,375.  
**Farnborough, t., urb. dist., Hants, Eng.:** 3 m. N. of Aldershot; military camp; p. (1951) 27,702.  
**Farne Is., off Northumberland est., Eng.:** a. 80 acres; since 1923 bird sanctuaries.  
**Farnham, mkt. t., urb. dist., Surrey, Eng.:** at N. Foot of N. Downs, 10 m. W. of Guildford; p. (1951) 23,911.  
**Farnworth, mfg. t., mun. bor., Lancs., Eng., nr. Bolton:** cotton mfts.; p. (1951) 23,614.  
**Faro, spt., cap., Algarve prov., Portugal:** wine fruit, cork; p. (1950) 33,903.  
**Faro, C., N. point of Sicily, nearest to Italy.**  
**Faroe Is., 200 m. N.W. of the Shetlands, Scot.:** cap. Thorshavn (Strömo I.); Danish possession; a. 540 sq. m.; p. (1950) 31,664.  
**Farrell, t., Penns., U.S.A.:** p. (1950) 13,644.  
**Farrukhabad, t., Uttar Pradesh, India:** on Ganges R.; gold, lace, brass wk.; p. (1941) 69,418.  
**Fars, S.W. prov., Persia:** on the Persian G.; cap. Shiraz.  
**Farshūt, t., Qena prov., Upper Egypt:** agr.; p. 12,000.  
**Farsley, t., W.R. Yorks, Eng.:** nr. Bradford; woollens; p. 6,153.  
**Fasa, t., Fars Prov., Persia:** silk, wool; p. 10,000.  
**Fasano, t., Bari, Italy:** industl.; p. over 20,000.  
**Fastnet, lighthouse in Atlantic, 4½ m. S.W. C. Clear, Irish est.**  
**Fatehpur, t., Uttar Pradesh, India:** hides, grain; p. 10,000.  
**Fatshan (Nanhai), industl. t., China:** S.W. of Canton; p. (estd. 1931) 163,314.  
**Faucilles, Les Monts, range of hills connecting Vosges and Langres plateau, E. France:** highest point about 1,600 ft.  
**Favara, t., Sicily, Italy:** sulphur, marble; p. 21,500.  
**Faversham, old mkt. t., mun. bor., Kent, Eng.:** 10 m. W. Canterbury; fruit, hops, bricks; p. (1951) 12,294.  
**Fawley, vil., Hants, Eng.:** on W. shore of Southampton Water, 2 m. N.W. of Calshot; site of lge. new oil-refinery; p. (1931) 3,394.  
**Fayal I., Azores:** orange growing; cap. Horta.  
**Fayetteville, t., Ark., U.S.A.:** univ.; rly. and tr. centre, agr. implements, resort; p. (1950) 17,071.  
**Fayetteville, t., N. Carolina, U.S.A.:** p. 40,000.  
**Fear, C., point of the N. Carolina est., U.S.A.**  
**Feather, R., California, U.S.A.:** trib. of Sacramento R.  
**Featherstone, t., urb. dist., W.R. Yorks, Eng.:** coal; p. (1951) 13,925.  
**Fécamp, spt., wat. pl., Seine-Inférieure, France:** Benedictine, ship-building, fishing; p. 16,876.  
**Federal Dist., st., Mexico:** a. 431 sq. m.; p. (estd. 1940) 1,500,000.  
**Federated Malay States, see Malaya, Federation of.**  
**Fehmarn, I., in W. Baltic Sea:** pastureland; belongs to Schleswig-Holstein, Germany; a. 72 sq. m.; p. 12,000.  
**Felding, t., Wellington, New Zealand:** p. (1951) 5,810.

- Felanity, *t.*, E. est. Majorca, Spain; wine trade.
- Feldberg, *min. peak*, Black Forest, Germany; alt. 4,900 ft.
- Feldkirch, *t.*, Vorarlberg, Austria; on Swiss frontier; p. 15,313.
- Felixstowe, *t.*, *urb. dist.*, E. Suffolk, Eng.; 12 m. S.E. Ipswich; seaside resort; p. (1951) 15,080.
- Felletin, *t.*, Creuse, France; tapestries; p. 2,557.
- Felling, *urb. dist.*, Durham, Eng.; Tyneside mftg. and colliery dist.; p. (1951) 25,286.
- Feltham, *urb. dist.*, Middlesex, Eng.; nr. Staines; p. (1951) 44,830.
- Feltre, *t.*, Venetia, Italy; cath.; silk, wine; p. 19,000.
- Fenny Stratford, *mkt. t.*, Bucks, Eng.; 2 m. E. of Bletchley; straw-plaiting; p. 4,300.
- Fens, *The*, low-lying dist. round the Wash; protected by high embankments against flooding by spring tides; includes parts of six English counties.
- Fenton, *t.*, Staffs, Eng.; nr. Stoke-on-Trent; earthenware works.
- Feodosiya, *spt.*, Crimea, U.S.S.R.; harbour, health resort; oysters; p. (1939) 27,379.
- Ferentino, *t.*, prov. Rome, Italy; wine, olive oil; cath.; p. 14,625.
- Ferghana, *region*, Uzbek S.S.R., U.S.S.R.; deep basin at W. end of Tien Shan Mtns.; drained W. by R. Syr Darya; semi-arid but extensive irrigation system allows intensive cultivation of cotton, citrus fruits, silk, rice; ch. ts., Kokand, Namangan.
- Ferghana, *t.*, Uzbekistan, U.S.S.R.; cotton, silk; p. (1939) 14,275.
- Fergus Falls, *t.*, Minn., U.S.A.; flour, dairy produce; p. (1950) 12,917.
- Fermanagh, *inland co.*, N. Ireland; bisected by R. Erne and lakes; cap. Enniskillen; stock-raising, dairying, stone; a. 714 sq. m.; p. (1951) 53,040.
- Fermo, *c.*, Ascoli, Italy; p. 25,000.
- Fermoy, *t.*, Cork, Ireland; on R. Blackwater; p. 4,212.
- Fernando de Noronha, *st.*, consisting of islands off E. coast Brazil; penal stn.
- Fernando Po, *mountainous is.*, Spanish col., W. Africa; in Bight of Biafra, off Cameroon est.; a. 760 sq. m.; cap. Santa Isabel; cocoa, palm-oil.
- Ferndale, *t.*, Michigan, U.S.A.; p. (1950) 29,675.
- Fernie, *t.*, Brit. Columbia, Canada; in Rockies, nr. Crows Nest Pass; coal.
- Ferozepore, *t.*, Punjab, India; wheat; p. (1941) 65,000.
- Ferrara, *prov.*, N. Italy; cap. Ferrara; a. 1,019 sq. m.; p. (1951) 420,527.
- Ferrara, *fortified c.*, N. Italy; nr. head of delta of R. Po; cath., univ.; mns. silk, hemp, wine; mkt. for fertile plain; p. (1951) 133,928.
- Ferro, *most S.W. I.*, Canary Is.; a. 105 sq. m.; was chosen by Fr. scientists (1630) as first meridian; cap. Valverde.
- Ferrol, *spt.*, *naval arsenal*, Spain; on N.W. est., nr. Corunna; p. (1950) 77,030.
- Ferryhill, *vil.*, Durham, Eng.; 5 m. S. of Durham, in gap through limestone ridge which separates Wear valley from Tees valley; commands main N. to S. route along lowland E. of Pennines.
- Ferté-Macé, *La*, *indust. t.*, Orne, France.
- Fertile Crescent, an arc of fertile land from the Mediterranean Sea, N. of the Arabian Desert, to Persian Gulf; home of some very early civilisations and migrations.
- Festiniog, *see* Ffestiniog.
- Fethiye, *spt.*, Turkey; opposite Rhodes; p. (1945) 4,174.
- Fetlar I., Shetland Is., Scot.; 6½ m. long by 2½ m. wide.
- Feuerbach, *indust. c.*, Württemberg, Germany; N.W. sub. of Stuttgart; sandstone; p. 17,617.
- Fez, *c.*, Morocco, Fr. N. Africa; Mohammedan "holy city"; impt. commercial centre, cap. of Frizone, and one of the three caps. of Morocco; 150 m. S. of Tangier; univ.; p. (estd. 1947) 200,900.
- Fezzan, *region*, N. Africa; formerly part of Italian Libya, now under French administration.
- Ffestiniog (Festiniog), *urb. dist.*, Merioneth, N. Wales; at head of Vale of Ffestiniog, 9 m. E. of Portmadoc; contains vils. of Ffestiniog and Blaenau Ffestiniog; impt. slate quarries, hydro-electric power-station; p. (1951) 6,923.
- Fianarantsoa, *t.*, Madagascar; p. 14,740.
- Fichtel Gebirge (Fir Mtns.), *mtn. range*, N.E. Bavaria, Germany; highest peak, Schneeberg; alt. 3,454 ft.
- Fife, *pen., co.*, E. Scot.; between the F. of Tay and Forth; co. t. Cupar; a. 492 sq. m.; p. (1951) 306,855.
- Fife Ness, *extreme E. point*, Fife, Scot.
- Figueira da Foz, *t.*, Portugal; resort at mouth of R. Mondego; corn, wine; p. 10,229.
- Figuéras, *fortfd. t.*, Gerona, Spain; nr. French frontier; glass, cork, leather; p. 13,500.
- Fiji, *archipelago of about 322 coral is.* in S. Pacific; Brit. Crown Col.; forests, bananas, coconuts, sugar cane; cap. Suva on Viti Levu I.; a. 7,040 sq. m.; p. (1952) 307,000.
- Filey, *t.*, *urb. dist.*, E.R. Yorks, Eng.; on E. est. 5 m. S.E. of Scarborough; seaside resort; p. (1951) 4,764.
- Finale, *t.*, N. Italy; silk; p. 16,000.
- Finchley, *mun. bor.*, Middx., Eng.; N. sub. of London; residt.; p. (1951) 69,990.
- Findhorn, *fishing vil.*, Moray, Scot.; holiday resort.
- Findlay, *mftg. t.*, Ohio, U.S.A.; on Blanchard R.; p. (1950) 23,845.
- Findon or Finnan, *fishing vil.*, Kincardine, Scot.
- Fingal's Cave, Staffa I., Inner Hebrides, W. Scot.; basaltic columns.
- Finistère, *dep.*, N.W. France; cap. Quimper; cereals, fruit, livestock; coal, granite; fishing; a. 2,730 sq. m.; p. (1946) 724,735.
- Finistère, *c.*, extreme N.W. point of Spain.
- Finland, *rep.*, Europe; low-lying tableland, glaciated, innumerable lakes; forested; oats, rye, barley, potatoes; timber, wood-pulp, textiles; iron mining; official languages, Finnish and Swedish (Swedish names mainly as alternatives on W. coast); mainly agr.; cap. Helsinki; a. 117,975 sq. m.; p. (1950) 4,032,538.
- Finland, G. of, the E. arm of Baltic Sea, extending 250 m.
- Finnmark, *most northerly dist.*, Norway; inhabited by Lapps; whale fisheries; a. 13,581 sq. m.; p. (1950) 64,475.
- Finsbury, *met. bor.*, London, Eng.; p. (1951) 35,347.
- Finsteraarhorn, *mtn.*, Switzerland, (14,025 ft.) highest peak in Bernese Oberland.
- Finsterwalde, *t.*, Brandenburg, Germany; textiles, machinery, furniture; p. 19,700.
- Fir Mountains, *see* Fichtel Gebirge.
- Firenze, *see* Florence.
- Finriny, *mftg. t.*, Loire, France; S.E. of St. Etienne.
- Fishguard and Goodwick, *spt.*, *urb. dist.*, N. Pembroke, Wales; on S. of Cardigan Bay; steamer connection to Cork and Rosslare (Ireland); p. (1951) 4,840.
- Fitchburg, *c.*, Mass., U.S.A.; woollens, paper, machinery; p. (1950) 42,691.
- Fitzroy, *R.*, Queensland, Australia; flows into Keppel Bay.
- Flume, *see* Rijeka. [p. 17,550.]
- Flivizzano, *t.*, Tuscany, Italy; mineral springs.
- Flagstaff, *t.*, Arizona, U.S.A.; seat of Lowell Univ.; p. (1950) 7,663.
- Flamborough Head, *c.*, Yorks coast, Eng.; chalk cliffs, alt. 500 ft.; lighthouse.
- Fläming, *heathland*, Brandenburg, Soviet Zone, Germany; occupies low sandy ridge, alt. below 800 ft., 50 m. S.W. of Berlin; heathland, coniferous woodland; former military training area.
- Flanders, *dist.*, Belgium, divided into two provs. of W. (1,248 sq. m., p. 996,449) and E. (1,147 sq. m., p. 1,216,899); caps. Bruges and Ghent.
- Flat River, *c.*, Mo., U.S.A.; lead mines; p. (1950) 5,308.
- Flattery Cape, on Pacific est., Washington, U.S.A.
- Flèche, *La*, *t.*, Sarthe, France; nr. Le Mans; p. (1946) 11,293.
- Fleet, *t.*, *urb. dist.*, Hants, Eng.; 4 m. N.W. of Aldershot; p. (1951) 9,018.
- Fleetwood, *spt.*, *mun. bor.*, Lancs, Eng.; at mouth of Wyre; fishing; p. (1951) 27,525.
- Flémalle, 2 *communes*, Liège prov., Belgium; glass; p. 11,914.
- Flensburg, *spt.*, Schleswig-Holstein, Germany; on Baltic est.; coal; shipbuilding, paper, sugar; p. (1950) 102,832.
- Flevosted, *t.*, Netherlands; administrative centre of new S.E. Polder.
- Flinders, *R.*, Queensland, Australia; flowing to G. of Carpentaria.



- Flinders Range, *mtns.*, S. Australia; extend 250 m. N.E. from head of Spencer G.; alt. 3,900 ft.
- Flin Flon, *t.*, Manitoba, Canada; 90 m. by rly. N. of The Pas; centre of gold-mining area.
- Flint, *co.*, Wales; stock-raising; coal, iron; a. 257 sq. m.; p. (1951) 145,108.
- Flint, *c.*, Mich., U.S.A.; motor cars, lumber, woollens, aeroplane engines; p. (1950) 163,143.
- Flint, *mun. bor.*, *co. t.*, Flint, Wales; chemicals, bricks; p. (1951) 14,257.
- Flint I., (Brit.), Pacific Ocean; uninhabited.
- Flodden, *vil.*, Northumberland, Eng.; on R. Till; famous battle 1513, James IV of Scotland defeated by the Earl of Surrey.
- Florence (Firenze), *c.*, Tuscany, Italy; on R. Arno; famous for art treasures, cath. and churches; ruled by Medici 1421-1737; birth-place of Dante and Michelangelo; p. (1951) 376,383.
- Florence, *c.*, N.W. Ala., U.S.A.; iron, textiles, lumber, food; airport; p. (1950) 23,379.
- Florence, *t.*, S. Carolina, U.S.A.; p. (1950) 22,513.
- Flores, *I.*, most north-westerly of the Azores group; Portuguese; cap. Santa Cruz.
- Flores, *I.*, Indonesia; divided between Indonesia and Portugal; mountainous, volcanic, densely forested; a. 8,870 sq. m.; p. 500,000.
- Flores, *dep.*, Uruguay; cap. Trinidad; a. 1,744 sq. m.; p. (1942) 36,125.
- Flores Sea, between Celebes and Flores, Indonesia.
- Florianopolis, *spt.*, cap. Santa Catarina st., Brazil; coast tr.; p. (1947) 53,400.
- Florida, *st.*, U.S.A.; between Atlantic and G. of Mexico; ch. products: grape-fruit, oranges, tobacco, sugar-cane, cotton; ch. mineral: phosphate rock; has almost a monopoly of sponge fishing; cap. Tallahassee; a. 58,560 sq. m.; p. (1950) 2,771,305 (27% negro).
- Florida, *dep.*, Uruguay; cap. Florida; a. 4,673 sq. m.; p. (1942) 106,455.
- Floridabanca, *t.*, Luzon, Philippine Is.; sugar, rice; p. 17,521.
- Florida Strait, between Florida and Bahama Is.; course of "Gulf Stream" from Gulf of Mexico.
- Florina, see Philorina.
- Flume, The, picturesque gorge, Franconia Mtns., New Hampshire, U.S.A.
- Flushing, *spt.*, *wat. pl.*; Walcheren I., Netherlands; steam-packet stn.; p. (1951) 24,043.
- Flushing Meadow, t., Flushing Bay, Long Island, N.Y., U.S.A.; U.N.O. meeting place.
- Fly, R., New Guinea; flows S.E. to G. of Papua.
- Fochabers, *vil.*, Moray, Scot.; nr. mouth of Spey; tourist resort.
- Focsani, *t.*, Putna dist., Romania; on R. Milkov; soap, petroleum; p. 32,799.
- Foggia, *prov.*, Apulia, S. Italy; a. 2,683 sq. m.; p. (1951) 660,703.
- Foggia, *t.*, S. Italy, Apulia; cath.; industl.; p. (1951) 97,386.
- Fogo, *par.*, Berwick, Scot.; nr. Duns; p. (1951) 426.
- Fogo, *I.*, Atl. Oc.; in Cape Verde group; volcanic.
- Folda Fjord, W. coast, Norway.
- Foligno, *t.*, Perugia, Italy; remarkable grotto; numerous factories; p. 33,000.
- Folkestone, *spt.*, *mun. bor.*, Kent, Eng.; sea-side resort. port for Folkestone-Boulogne route to France 29 m.; p. (1951) 45,200.
- Fond du Lac, *mfto. t.*, Winnebago Lake, Wisconsin, U.S.A.; cath.; p. 27,209.
- Fonsagrada, *industl. t.*, Lugo, Spain; p. 14,832.
- Fonseca Bay, *inlet* on Pacific est. of C. America, bordering on Nicaragua; U.S.A. naval base; (U.S.A. have acquired the option for a canal route through Nicaragua).
- Fontainebleau, *t.*, Seine-et-Marne, France; on R. Seine, 35 m. S.E. of Paris; magnificent forest (a. 42,500 acres) and palace, residence of President in summer; porcelain; Ecole d'Artilerie; p. 15,003.
- Fontenay-le-Comte, *industl. t.*, Vendée, France; p. 9,423.
- Fontenay-sous-Bois, *t.*, Seine, France; sub. of Paris; p. 30,860.
- Fontenoy, *t.*, Belgium; nr. Tournai; battle, 1745, Marshall Saxe defeated the Allies under Duke of Cumberland.
- Fontevault, *t.*, *dep.* Maine-et-Loire, France.
- Foochow (Minhow) *c.*, Fukien, China; former treaty pt.; great tea-exporting centre; p. (estd. 1946) 318,075.
- Foots Cray, *sm. t.*, Kent, Eng.; paper-mills.
- Forbach, *t.*, Lorraine, France; nr. Saarbrücken; p. 12,167.
- Forbes, *t.*, N.S.W., Australia; p. 5,949.
- Fordingbridge, *mkt. t.*, Hants, Eng.; on R. Avon, sail-cloth; p. 3,394.
- Fordlandia, *t.*, Para, N.E. Brazil; on Tapajoz R.; one of the Ford rubber plantations.
- Foreland, N. and S., two headlands, on E. coast of Kent, Eng.; lighthouse.
- Forest Hills, *resid. a.*, part of Queen's bor., N.Y., U.S.A.; on Long I.; p. 21,400.
- Forfar, *burgh*, Angus, Scot.; in Strathmore, 17 m. S.W. of Montrose; linen, jute; p. (1951) 9,981.
- Forlì, *ancient c.*, Emilia, Italy; silk factories, ironwks.; felt; p. (1951) 77,033.
- Formby, *t.*, *urb. dist.*, Lancs, Eng.; on W. cst., 6 m. S.W. of Southport; p. (1951) 10,429.
- Formentera, *I.*, Balearic Is., S. of Ibiza; 13 m. l.
- Formia, *t.*, Caserta, Italy; the ancient Formlæ.
- Formigine, *t.*, Modena prov., N. Italy; silk, leather; p. 10,935.
- Formosa (Taiwan), *I.*, China, 100 m. E. of mainland; fishing, rice, tea, sugar, camphor, coal, gold; cap. Taihoku; a. 13,890 sq. m.; p. (1950) 7,647,703 (plus c. 1 million refugees and c. 1 million Nationalist army).
- Formosa, *terr.*, N. Argentina; bordering on Paraguay; timber; cap. Formosa; a. 27,825 sq. m.; p. (1947) 112,056.
- Fornæs, *c.*, extreme E. point of Jutland.
- Forres, *burgh*, Moray, Scot.; nr. mouth of R. Findhorn, 25 m. E. of Inverness; distilling, chemicals, woollens; p. (1951) 4,462.
- Forst, *t.*, Brandenburg, E. Germany; textiles, white wines; p. 35,962.
- Fort Augustus, *vil.*, Inverness, Scot.; at S.W. end of Loch Ness; on Caledonian Canal; Fort now Abbey.
- Fort Collins, *t.*, Colorado, U.S.A.; site of Colorado State College of Agriculture and Mechanic Arts; p. (1950) 14,937.
- Fort de France (formerly Fort Royal), *cap.*, Martinique, W. Indies; has a land-locked harbour of some 16 sq. m.; exports rum, sugar; p. (1946) 66,006.
- Fort Dodge, *t.*, Iowa, U.S.A.; on Des Moines R., in rich agr. ctv.; grain pottery, coal; p. 26,000.
- Fort Edward, *vil.*, N.Y., U.S.A.; on Hudson R.; pulp, paper mills; p. (1950) 3,797.
- Fort Frances, *t.*, Ontario, Canada; pulp, lumbering; p. 5,897. [James Bay.]
- Fort George, *R.*, Labrador, Canada; flowing into Fort Jameson, *t.*, N. Rhodesia; cotton.
- Fort Lamy, *t.*, *cap.*, Chad terr., Fr. Equatorial Africa; p. 18,465.
- Fort Madison, *c.*, Iowa, U.S.A.; meat packing; p. (1950) 14,954.
- Fort Monroe, Virginia, U.S.A.; at mouth of James R.; p. 2,000.
- Fort St. John, *t.*, Brit. Columbia, Canada; on Peace R.; p. 600.
- Fort Scott, *t.*, Kansas, U.S.A.; maize, wheat, cattle; p. (1950) 10,335.
- Fort Smith, *c.*, Arkansas, U.S.A.; on Arkansas R.; rly. centre. cotton, maize, wagons, furniture; p. (1950) 47,942. [p. 200.]
- Fort Smith, *t.*, N.W. Terr., Canada; on Slave R.; and livestock centre; gold and other minerals; historic ruins in Zimbabwe Nat. Park.
- Fort Wayne, *c.*, Indiana, U.S.A.; rly.-carriage bldg. and machine shops; p. (1950) 133,607.
- Fort William, *c.*, Ontario, Canada; on L. Superior; grain port; p. 30,585.
- Fort William, *burgh*, Inverness, Scot.; nr. head of Loch Linnhe, at base of Ben Nevis; p. (1951) 2,661.
- Forth Worth, *c.*, Texas, U.S.A.; rly. and commercial centre on Trinity R.; petroleum, meat packing, aeroplanes, oilfield equipment; p. (1950) 278,778.
- Fort Yukon, Alaska, U.S.A.; trading stn. on Yukon R.; p. 274.
- Fortaleza, *cap.*, Ceará st., Brazil; exports sugar, rubber, cotton, carnauba wax; p. (1950) 280,084.
- Fortescue, *R.*, W. Australia.
- Forth, *R.*, Scot.; rises on Ben Lomond, and flows E. into Firth of Forth nr. Alloa; length 65 m.
- Forth Bridge, *rly. bridge*, Scot.; spans Firth of Forth between N. and S. Queensferry; length 1½ m.

- Forth, Firth of, *lge. inlet*, E. est. of Scot.; submerged estuary of R. Forth; navigable by lge. vessels for 40 m. inland to Grangemouth; other pts., Leith, Rosyth (naval), Bo'ness; length (to Alloa) 50 m.; width varies from 1 to 13 m.
- Forth and Clyde Canal, Scot.; links Firth of Forth at Grangemouth, and Firth of Clyde at Glasgow; length 38 m.
- Fortrose, *t., burgh*, Ross and Cromarty, Scot.; on S. est. of Black Isle, on Moray Firth; p. (1951) 882.
- Fortune Bay, *inlet*, S. est. of Newfoundland, Canada.
- Fossano, *t.*, Italy; nr. Turin; cath.; paper, silk; p. 21,850.
- Fostoria, *t.*, Ohio, U.S.A.; glass, quarries, stock-yards; p. (1950) 14,351.
- Fotheringay, *vil.*, on R. Nen, Northampton, Eng.; Mary Queen of Scots beheaded in F. Castle, 1587.
- Fougères, *t.*, Ille-et-Vilaine, France; cas.; p. (1946) 19,281.
- Fougerolles, *t.*, Haute-Saône, France.
- Foula, I., Shetland Is., Scot.; westward of main group.
- Foulness Island, Essex, Eng.
- Foulweather, C., Oregon, U.S.A.
- Fountains Abbey, fine ruin, Cistercian, founded 1132, W.R. Yorks, Eng.; nr. Ripon.
- Fourchambault, *t.*, Nièvre, France; on R. Loire; p. 4,817.
- Fournies, *t.*, Nord, France; nr. Valenciennes; p. (1946) 12,694.
- Foveaux Strait, New Zealand; separates S.I. from Stewart I.
- Fowey, *spl., mun. bor.*, Cornwall, Eng.; on W. of Fowey estuary, 22 m. W. of Plymouth; seaside resort, fishing; exports kaolin; p. (1951) 2,344.
- Foxboro, *t.*, Mass., U.S.A.; mnfs. light metal goods; p. (1950) 7,030.
- Fox Is., one of the Aleutian Is. group.
- Foxe Basin and Channel, to N. of Hudson Bay, between Baffin I. and Southampton I.
- Foxe Peninsula, Baffin I., Franklin, Canada.
- Foxton, *bor.*, N.I., New Zealand; p. (1951) 2,226.
- Foyers, *falls*, Inverness, Scot.; E. of Loch Ness, nr. Fort Augustus; aluminium works, hydro-electric scheme.
- Foyle, Lough, estuary of Foyle R., between Donegal and Londonderry, N. Ireland.
- Foynes, *spl. and airport*, Ireland; on S. shore of Shannon estuary 20 m. S.W. of Limerick; imports coal, petroleum; impt. refuelling base on trans-Atlantic air services (mainly American) from U.S.A. to Europe.
- Framingham, *indusl. t.*, Mass., U.S.A.; 10 m. W. of Boston; p. (1950) 28,086.
- Framlingham, *mkt. t.*, E. Suffolk, Eng.; 15 m. N.E. of Ipswich.
- Francavilla, *t.*, Lecce, Italy; wine, oil, leather; p. 21,375.
- France, *rep. (former monarchy and empire)*, W. Europe, bounded N. by Belgium and English Channel, W. by the Bay of Biscay, S. by the Pyrenees and the Mediterranean, E. by Italy, Switzerland, and Germany. Greatest length about 600 m., greatest breadth 540 m.; a. 212,600 sq. m., or 3½ times size of England and Wales; F. is divided into 90 metropolitan depts.; ch. ts. are Paris (the cap., the fifth largest c. in Europe), Bordeaux, Marseilles, Lyons, Lille, Nice, and Toulouse. Cols. and dependencies of France, in Asia, America, and Africa, have an area of about 5,120,000 sq. m.; ch. mtns.: Cevennes, Jura, Vosges, Pyrenees; ch. Rs.: Seine, Loire, Rhône, Garonne; climate, temperate; agr.; wheat, oats, potatoes, sugar-beet, vine, fruits, silk, cattle, sheep, dairying; minerals: coal, iron, bauxite, potash; mnfs.: iron and steel, machinery, textiles; communications excellent; p. of the Rep. (1946) 40,502,513.
- Francville, *t.*, Middle Congo terr., Fr. Equatorial Africa; on R. Ogowe; p. 1,000.
- Francisco Morazan, *den. central* Honduras; a. 3,870 sq. m.; p. (1950) 209,395.
- Francis Lake, *l.*, Yukon, Canada.
- Francistown, *gold-mining t.*, Bechuanaland, Africa; p. 10,000.
- Frankenthal, *t.*, Germany; N.W. of Mannheim; engineering, farm implements; p. 27,000.
- Frankfort, *t.*, Kentucky, U.S.A.; mining, horse-breeding; p. (1950) 11,916.
- Frankfort, *t.*, Indiana, U.S.A.; p. (1950) 15,028.
- Frankfurt-on-Main, *c.*, Hessen, W. Germany; restored cath.; univ.; banking; jewellery, perfumery, machinery; p. (1950) 532,027.
- Frankfurt-on-Oder, *t.*, E. Germany; 50 m. from Berlin; gr. rly. centre; machinery, chemicals; p. 75,831.
- Frankischer (Franconian) Jura, *plateau with steep N.-facing edge*, S.W. Germany; runs 80 m. S.W. from Fichtel Gebirge (Fir Mtns.), highest elevation just exceeds 3,000 ft.; drained by Regnitz Altmühl; slate quarrying; vine, maize in sheltered valleys.
- Franklin, *t.*, New Hampshire, U.S.A.; p. (1950) 6,552.
- Franklin, *bor.*, N.J., U.S.A.; centre of U.S. zinc industry; p. (1950) 3,864.
- Franklin, *c.*, Penns., U.S.A.; petroleum, oil-well tools, rolling stock; p. (1950) 10,006.
- Franklin, *t.*, Tasmania, Australia; 20 m. from Hobart; principal fruit-growing dist. in island.
- Franklin, *dist.*, N.W. Terr., Canada; comprising the islands of Arctic Canada from Banks I. to Baffin I., including Boothia Peninsula and Melville Peninsula; sparsely populated; furs; a. 554,032 sq. m.
- Frantiskové Lázně, (Franzenbad), *t.*, *vat. pl.*, Czechoslovakia.
- Franz Josef Land, U.S.S.R., *archipelago* in Arctic ocean; N. of Novaya Zemlya; a. 7,050 sq. m.; mainly ice-covered.
- Frascati, *t.*, Italy; 12 m. S.E. of Rome; summer resort; famous villas and archaeological remains; p. 11,425.
- Fraser, *R.*, Brit. Columbia, Canada; famous salmon fisheries; length 750 m.
- Fraserburg, *agricultural t.*, C. of Good Hope, S. Africa; supply stn. for stock-raisers between Calvinia and Carnarvon.
- Fraserburgh, *coast burgh*, N.E. Aberdeen, Scot.; extreme N.E. of Buchan peninsula; one of ch. stns. of herring fishery; granite; p. (1951) 10,444.
- Fraserville, *t.*, Quebec, Canada; on St. Lawrence R.
- Fratta Maggiore, *t.*, Italy; 6 m. from Naples, p. 18,100.
- Frauenfeld, *cap.*, Thurgau, Switzerland; cas.; cotton; p. 9,581.
- Fray Bentos, *t.*, *cap.*, Rio Negro, Uruguay; on R. Uruguay 50 m. from its mouth; meat canning and salting, meat extracts; p. (1942) 18,000.
- Fredericia, *spl.*, *t.*, Velle, Jutland, Denmark; traffic centre, barracks; railway wks, tobacco, cottons; new bridge over Little Belt; p. (1945) 22,963.
- Frederick, *c.*, Maryland, U.S.A.; canning, tanning; p. (1950) 18,142.
- Fredericksburg, *t.*, Virginia, U.S.A.; scene of severe Federal rebuff, Civil War; p. (1950) 12,158.
- Fredericton, *t.*, *cap.*, New Brunswick, Canada; on St. John R.; univ., cath.; lumbering, p. (1951) 16,018.
- Frederikshaab, *small spl.*, on W. coast of Greenland.
- Frederiksborg, *sub.*, Copenhagen, Denmark; p. 113,584.
- Frederikshavn, *spl.*, *fishing t.*, N. est. of Jutland; p. 16,827.
- Frederikstad, *t.*, Norway; at mouth of Glommen R.; timber, rly. workshops, shipbuilding; p. (1946) 14,117.
- Fredonia, *t.*, N.Y., U.S.A.; p. (1950) 7,095.
- Freehold, *t.*, New Jersey, U.S.A.; p. (1950) 7,550.
- Free Port, *mfg. t.*, Ill., U.S.A., on the Peconica R.; p. (1950) 22,467.
- Free Port, *t.*, Long Island, N.Y., U.S.A.; p. (1950) 24,630.
- Freeport, *spl.*, Texas; sulphur, chemicals, magnesium from sea; p. (1950) 6,012.
- Freetown, *cap.*, Sierra Leone, W. Africa; coaling stn.; exports palm oil; p. (estd. 1951) 70,000.
- Fregenal de la Sierra, *t.*, Spain; nr. Badajoz; p. 10,806.
- Freiberg, Saxony, Germany; silver-lead mines; woollens; ironware; p. 36,000.
- Freiburg, *t.*, Baden, Germany; in Black Forest; cath., univ.; silk-thread, glass; p. (1950) 109,717.
- Freiburg, *see* Swiebodzice.



- Freising, t.,** Bavaria, Germany: iron, farming machinery, porcelain; p. (1946) 24,482.
- Fréjus, coast t.,** Var, France; p. 12,907.
- Fréjus, Col de,** the Alpine pass under which the Mont Cenis tunnel runs.
- Fremantle, spt.,** W. Australia; at mouth of Swan R., 12 m. S.W. from Perth, principal port of commerce in W. Australia and first Australian port of call for mail steamers; p. (1947) 27,926.
- Fremont, t.,** Nebraska, U.S.A.; on Platte R.; p. (1950) 14,762.
- Fremont, c.,** Ohio, U.S.A.; on Sandusky R.; petroleum field; p. (1950) 16,537.
- Fremont's Peak,** highest peak of Wind River Range, Wyoming St., U.S.A.; alt. 13,570 ft.
- French Equatorial Africa,** (includes Gabun (cap. Libreville), Middle Congo (cap. Brazzaville), Ubangi-Shari (cap. Bangui), and Chad (cap. Fort Lamy); forests: valuable timber: ivory: poor communications; a. 959,256 sq. m.; p. (1946) 4,127,300 (inc. 7,808 whites).
- French Guiana, col.,** S. America; forests: cocoa, gold, phosphates: poor communications; cap. Cayenne; a. 84,740 sq. m.; p. (1946) 28,537.
- French Guinea, col.,** W. Africa; cap. Conakri; rubber, nuts, palm oil; cattle; a. 96,866 sq. m.; p. (1946) 2,220,267.
- French Indo-China, see** Indo-China.
- French R.,** Ontario, Canada; the outlet of L. Nipissing into L. Huron.
- French Settlements in India,** comprised 4 provinces which passed under Indian control Nov. 1, 1954: Pondicherry, Karikal, Mahé on Malabar est. and Yanam in Orissa; total a. abt. 193 sq. m.; p. (1941) 285,011.
- French Somaliland, see** Somaliland, French.
- French Sudan, col. of Fr. W. Africa;** cap. Bamako; cattle farming; a. 590,966 sq. m.; p. (1946) 3,790,000.
- French W. Africa,** consists of Fr. Guinea, the Ivory Coast, Dahomey, Fr. Sudan, Mauritania, Niger; ch. product groundnuts; also fruit, rubber, timber, cotton; cap. Dakar; a. 1,815,768 sq. m.; p. (1948) 15,996,000.
- Freshwater, sm. t.,** bathing resort, I. of Wight, Eng.; at W. end of I., 8 m. W. of Newport.
- Fresnillo, t.,** Zacatecas St., Mexico; p. 25,000.
- Fresno, c.,** California, U.S.A.; centre of impt. irrigated fruit-growing dist.; dairying, copper, petroleum; p. (1950) 91,699.
- Friburg (Fribourg), can.,** Switz.; much forest and unproductive land; a. 645 sq. m.; p. 158,400.
- Friburg, cap. Friburg,** Switzerland; between Bern and Lausanne; fine viaduct and bridges; univ.; machinery, chocolate; p. 26,045.
- Friedberg, t.,** Hesse, Germany; nr. Frankfurt-on-Main; p. 11,121.
- Friedrichshafen, t., L. pl.,** Germany; on L. Constance; machinery, boat building; p. 25,000.
- Friedrichsthal, t.,** Saar; mining, mfg.; p. 14,000.
- Friendly Is. (Tonga),** Pac. Oc.; 400 miles S.E. Fiji; independent Polynesian kingdom under Brit. protection; mild and healthy climate; ch. I., Tongatapu; cap. Nukualofa in Tongatapu; copra, bananas; a. 269 sq. m.; p. (1952) 50,000.
- Frilern Barnet, urb. dist.,** Middx., Eng.; N. sub. of London; residtl.; p. (1951) 29,164.
- Friesland, prov.,** Netherlands; cap. Leeuwarden; dairying, horses, cattle; a. 1,325 sq. m.; p. (1948) 460,519.
- Frimley and Camberley, urb. dist.,** Surrey, Eng.; 3 m. N. of Farnborough (Hants); p. (1951) 20,376.
- Frinton and Walton, urb. dist.,** Essex, Eng.; on E. est., 5 m. N.E. of Clacton; seaside resort; p. (1951) 8,440.
- Friol, commune,** Lugo, N.W. Spain; leather, linen; p. 10,667.
- Frisches Haff, shallow freshwater lagoon,** Baltic coast of Poland; 53 m. long, 4-11 m. broad.
- Frisches Nehrung, sandspit,** G. of Danzig, Baltic Sea; astride bdy, between Poland, U.S.S.R.; almost separates Frisches Haff (Zalew Wislany) from G. of Danzig; length 36 m.
- Frisian Islands, chain of Is. stretching from** Zuyder Zee and N. to Jutland, along the coasts of the Netherlands and N. Germany; ch. Is. are Texel, Vlieland, and Ameland.
- Friuli-Venezia-Giulia, region,** N.E. Italy; ch. t., Udine; a. 2,948 sq. m.; p. (1951) 928,415.
- Frobisher Bay, inlet in S. Baffin I.,** N. Canada, extending 200 m. between Cumberland Sound and Hudson Strait.
- Frodingham, t.,** Lincoln, Eng.; on W. flank of limestone ridge, Lincoln Edge; impt. iron-ore open-cast mines; mnfs. iron and steel; p. (1951) 54,245 (with Scunthorpe).
- Frodsham, mkt. t.,** Cheshire, Eng.; 10 m. N.E. Chester; chemicals.
- Frome, mkt. t., urb. dist.,** Somerset, Eng.; on R. Frome, 11 m. S. of Bath; woollens, silk, printing; p. (1951) 11,116.
- Frosinone, industr. t.,** Lazio, Italy; on R. Cosa; p. (1951) 24,706.
- Frostburg, t.,** Maryland, U.S.A.; p. (1950) 6,876.
- Froward, c.,** Magallanes prov., Southern Chile.
- Frunze, cap.,** Kirgizia, U.S.S.R.; p. (1939) 92,659.
- Fthiotis and Focis, pref.,** Greece; cap. Lamia; p. (1940) 216,416.
- Fucino, L. (now drained),** Aquila, Central Italy; old volcanic crater.
- Fuente-Alamo, industr. t.,** S.E. Spain; 18 m. S. from Murcia; p. 9,270.
- Fuente de Cantos, industr. t.,** Badajoz, Spain; p. 10,982.
- Fuente-Ovejuna, t.,** Cordoba, Spain; centre of lead-mining dist.
- Fuerteventura, I.,** Canary group; a. 663 sq. m.; p. 14,069.
- Fujiyama, extinct volcano,** Japan, 60 m. S.W. of Tokyo; pilgrim resort; alt. 12,395 ft.
- Fukien, prov.,** China; cap. Foochow (Minhow); tea, rice, cotton, sugar, tobacco; paper, coal, gold, silver; a. 45,845 sq. m.; p. (1947) 11,990,000.
- Fukui, t.,** Honshu, Japan; silk, paper; p. (1950) 100,691.
- Fukuoka, t.,** Kyushu, Japan; silk-weaving; p. (1950) 392,649. [56,653]
- Fukuyama, t.,** S. Hokkaido, Japan; p. (1947)
- Fulda, t.,** W. Germany; nr. Cassel; on R. Fulda; palace, abbey; textiles, iron ware; p. 34,000.
- Fulda, R.,** Central Germany; with the Werra forms the R. Weser.
- Fulham, metropolitan bor.,** London, Eng.; on R. Thames; p. (1951) 122,047.
- Fullerton, t.,** Cal., U.S.A.; p. (1950) 13,958.
- Fulton, t.,** Mo., U.S.A.; firebrick and shoe factories; p. (1950) 10,052.
- Fulton, c.,** N.Y., U.S.A.; woollens, cutlery, paper; p. (1950) 13,922.
- Fulwood, urb. dist.,** Lancs, Eng.; 2 m. N.E. of Preston; p. (1951) 13,087.
- Funchal, t., spt., cap.,** Madeira; winter resort; wine; p. 70,000.
- Fundy, Bay of, inlet** between Nova Scotia and New Brunswick, Canada.
- Furneaux, Is.,** group in Bass Strait, belonging to Tasmania.
- Furnes, industr. t.,** Belgium; nr. Bruges; p. 7,569.
- Furness, dist.,** N.W. Lancs, Eng.; between Morecambe Bay and the Irish Sea; hematite iron ore.
- Fürstenwalde, industr. t.,** E. Germany; on R. Spree; coal, brewing, cloth, glass, chemicals; p. 29,500.
- Fürth, t.,** W. Germany; nr. Nürnberg; printing, toys; p. about 80,000.
- Fusan, see** Pusan.
- Fushiki, t., spt.,** Honshu, Japan; on Toyama Bay to E. of Noto Peninsula; lge. coastwise trade in rice from Koga and Toyama plains; exports chemicals, lumber, metals; imports metals, coal, bean-cake, flax.
- Fushun, c.,** Liaoning, N. China; at foot of Changpai Shan, 22 m. S.E. of Shenyang (Mukden); most impt. coal-mines in Far East; possesses world's thickest bituminous coal seam (417 ft.) worked by deep and open-cast mines; p. (estd. 1952) 233,000.
- Fushimi, c.,** Honshu, Japan; sub. of Kyoto; p. 29,700.
- Fusing, c.,** Jehol, N. China; p. (estd. 1941) 166,186.
- Futa, La, pass,** Tusco-Emilian Apennines, N. Italy; used by main road from Bologna to Florence; alt. 2,962 ft.
- Futa Jalon, upland dist.,** Senegambia, Fr. W. Africa; cap. Timbo.
- Futuna and Alofi, Is.,** S. of Wallis Is., dependency of Fr. Col. of New Caledonia; p. about 2,000.
- Fuyu, t.,** Manchuria; on Sungari R.; agr.; p. 57,065.
- Fyde, rur. dist., geographical sub-region,** W. Lancashire, Eng.; extends along W. est. between estuaries of Ribble and Wyre; low, flat plain behind coastal sand dunes, covered

by very fertile glacial deposits; intensively cultivated where drained, grain, vegetables; impt. pig and poultry rearing dist.; ch. t., Blackpool, famous holiday resort; p. (rur. Dist., 1951) 16,219.

Fyn, *second largest I.*, Denmark; in the Baltic Sea; a. 1,320 sq. m.; cap. Odense.

Fyne, *loch* on Argyll est. W. Scot.; an arm of F. of Clyde; length 40 m.

Fyvie, *par.*, Aberdeen, Scot.; on E. Ythan; p. (1951) 3,006.

Fyzabad, *t.*, Uttar Pradesh, India; sugar; p. 55,215.

## G

Gabes, *spt.*, Tunisia; on G. of Gabes, 200 m. S. of Tunis; dates, henna, wool; p. 22,512.

Gabun, *terr.*, Fr. Equatorial Africa; cap. Libreville; ivory, ebony, palm oil, etc.; a. 92,218 sq. m.; p. (estd. 1946) 422,500 (inc. 1,517 whites).

Gadag, *t.*, Bombay, India; cotton and silk weaving; p. 25,000.

Gadsden, *industl. t.*, Ala., U.S.A.; cotton, cars, coal, iron steel; p. (1950) 55,725.

Gaeta, *spt.*, fort, Caserta, Italy; 40 m. N.W. of Naples; the ancient Caietae Portus; cath.; p. 22,882.

Gaffney, *t.*, S.C., U.S.A.; limestone, textiles; p. (1950) 8,123.

Gaïsa, *t.*, Tunisia; phosphates; p. 11,320.

Gagny, *commune*, Seine-et-Oise, France; light industries; p. (1946) 13,495.

Gallac, *t.*, Tarn, France; noted for wines; p. 7,034.

Gaillard Cut, *excavated channel*, Panama Canal Zone; carries Panama Canal through Culebra Mtn. from L. Gatun to Pac. Oc.; length 7 m.

Gainesville, *t.*, Fla., U.S.A.; p. (1950) 26,681.

Gainesville, *t.*, Ga., U.S.A.; p. (1950) 11,936.

Gainesville, *t.*, Texas, U.S.A.; p. (1950) 11,246.

Gainsborough, *mkt. t. urb. dist.*, Lincs., Eng.; on R. Trent, 15 m. N.W. of Lincoln; engineering, farm implements.

Gairdner, *L.*, S. Australia; 130 m. long, 23 m. broad.

Galápagos, *volcanic Is.*, Pac. Oc.; 600 m. W. Ecuador; administered by Ecuador; peculiar fauna and flora; guano; a. 2,868 sq. m.; p. 1,000.

Galashiels, *burgh*, Selkirk, Scot.; on Gala Water, 2 m. above confluence with R. Tweed; tweeds, woollens; p. (1951) 12,496.

Galati, *Black Sea port*, Romania, on Danube R.; grain trade, timber; p. 93,229.

Galatina, *t.*, Apulia, Italy; p. 20,300.

Galena, *t.*, Kan., U.S.A.; lead; p. (1950) 4,029.

Galena, *t.*, Ill., U.S.A.; lead, zinc, marble, granite; p. (1950) 4,648.

Galesburg, *t.*, Ill., U.S.A.; engineering; p. (1950) 31,425.

Galicja, *former Austrian prov.*, Polish 1918-39, since 1939 E. part transferred to Ukrainian S.S.R. and W. remaining Polish (provs. Krakow and Rzeszów); mountainous; agr., paper, pottery, leather.

Galicja, *old prov.*, N.W. Spain; now forming provs. of La Coruña, Lugo, Orense, and Pontevedra; mountainous; dairying; mining, lead, copper, iron; p. 2,200,000.

Galilee, *N. div.* of Palestine in Roman period, containing Capernaum, Nazareth.

Galilee, *Sea* of (formerly Sea of Chinnereth, L. of Gennesaret), 13 m. long; greatest width 7 m., 686 ft. below sea-level.

Gallion, *t.*, Ohio, U.S.A.; mftg.; rly. centre; p. (1950) 9,952.

Galla and Sidamo, *prov.*, Ethiopia.

Gallarata, *commune*, Lombardy, N. Italy; cotton weaving; p. 24,505.

Galle, *spt.*, Ceylon; on S.W. coast; extensive trade in tea, coconut oil; p. (1946) 49,000.

Galleana, *mkt. t.*, Leon Prov., Mexico; at foot of Sierra Madre Oriental, 120 m. S. of Monterrey; focus of trade between tropical lowlands and high plateau.

Gallego, *R.*, N.E. Spain; rises in Pyrenees, flows S. to R. Ebro at Zaragoza; river provides water for irrigation around Zaragoza; valley used by main railway across Pyrenees from Pau (France) to Zaragoza; length 110 m.

Gallegos, *t.*, cap., Santa Cruz terr., Argentina; p. 7,003.

Gallipoli, *spt.*, Italy; on E. shore G. of Taranto; p. 12,200.

Gallipoli, *see* Galliboli.

Gallipolis, *t.*, Ohio, U.S.A.; p. (1950) 7,871.

Gällivare, *t.*, N. Sweden; inside Arctic Circle, 120 m. N.W. of Luleå; iron ore; p. 21,666.

Galloway, *dist.*, S.W. Scot.; including the cos. of Wigton and Kirkcudbright.

Galloway, *Mull* of, extreme S.W. point of Scot.

Gallup, *t.*, N.M., U.S.A.; coal, wool, sheep, cattle rearing; p. (1950) 9,133.

Galston, *burgh*, Ayr, Scot.; on R. Irvine, nr. Kilmarnock; coal; p. (1951) 4,560.

Galt, *t.*, Ontario, Canada; mnfs.; p. 15,346.

Galty Mtns., Tipperary, Ireland; alt. 3,000 ft.

Galveston, *spt.*, Texas, U.S.A.; on I. in G. of Mexico; great cotton port; mills, foundries; p. (1950) 66,568.

Galway, *co.*, Galway Bay, Connacht, Ireland; fishery, cattle, marble quarrying; a. 2,452 sq. m.; (1951) 160,124.

Galway, *t.*, cap., Galway, Ireland; p. (1946) 20,437.

Gambela, *tr. stn.*, leased to Anglo-Egyptian Sudan by Ethiopia; p. 15,013.

Gambia, *Brit. Col. and Protectorate*, W. Africa; narrow terr., average 20 m. wide, extends 200 m. inland astride R. Gambia; hot all year, summer rain; savannah grassland; ground-nuts, palm-kernels, bees-wax, hides; cap. Bathurst; a. 96 sq. m. (col.), 4,005 sq. m. (protectorate); p. (1951) col. 27,297, Protectorate, 252,389.

Gambia, *R.*, Fr. W. Africa and Gambia Col. and Protectorate; rises in Futa Jallon Plateau, flows N. and W. into Atl. Oc. at Bathurst; forms main means of communication through Gambia Protectorate.

Gananogue, *t.*, Ontario, Canada; p. 4,044.

Gander, *airport*, Newfoundland, Canada; p. (1951) 3,956.

Gandia, *t.*, Valencia, Spain; p. 19,975.

Ganges, *gr. sacred R.*, India; rises in Himalayas and flows to Bay of Bengal, by several delta mouths, on one of which stands Calcutta. Delta very fertile and densely populated. Navigable for large ships from Allahabad; length 1,500 m.

Gangpur, *st.*, N.E. Indian Union; agr., rice; a. 2,477 sq. m.; p. (1941) 398,771.

Ganjam, *t.*, Orissa, India; S.W. of Cuttack; p. 5,100.

Gao, *t.*, Fr. W. Africa; p. 9,000.

Gap, *c.* Hautes Alpes, S.E. France; silk and other textiles; p. (1946) 16,371.

Gard, *Mediterranean dep.*, France; cap., Nîmes; vines, olives, sericulture; a. 2,270 sq. m.; p. (1946) 393,279.

Garda, *L.*, between Lombardy and Venezia, Italy; a. 143 sq. m.; greatest depth, 1,135 ft.

Garden City, *t.*, N.Y., U.S.A.; p. (1950) 14,486.

Gardena, *t.*, S.W. Cal., U.S.A.; mkt. gardening; p. (1950) 14,405.

Gardiner, *t.*, Me., U.S.A.; p. (1950) 6,649.

Gardner, *t.*, Mass., U.S.A.; chair mftg.; p. (1950) 19,551.

Garelochhead, *vil.*, Dunbarton, Scot.; summer resort; p. 1,300.

Garfield, *t.*, N.J., U.S.A.; p. (1950) 27,550.

Garfield Heights, *t.*, Ohio, U.S.A.; iron, steel, oil refineries, abrasives; p. (1950) 21,662.

Garhwal, *dist.*, Uttar Pradesh, India; on S. slopes of Himalayas; forested; tea, grain, coarse cloth; a. 5,812 sq. m.; p. (1941) 485,000.

Garret, *t.*, W. Java, Indonesia; mtn. resort; p. 24,219.

Garó Hills, *mountainous dist.*, Assam, India; a. 3,140 sq. m.; dense forests; p. 180,000.

Garonne, *R.*, S.W. France; rises at foot of Mt. Maladetta (Pyrenees), and enters the Gironde estuary 20 m. below Bordeaux; length 350 m.

Garonne, *Haute, dep.*, S. France; a. 2,453 sq. m.; p. (1946) 512,260.

Garrigue, *region*, Languedoc, S. France; low limestone hills, run N.E. to S.W., W. of Rhône delta; semi-arid; scanty vegetation; winter pasture for sheep, olives; Montpellier, Nîmes located on S. flank.

Garston, *spt.*, Mersey estuary, Lancs, Eng.; docks; p. 28,000.

Gary, *t.*, Ind., U.S.A.; at S. end of L. Michigan; steel, tin-plate; p. (1950) 133,911.

Gas City, *t.*, Ind., U.S.A.; glass; p. (1950) 3,787.

Gascony, *ancient prov., duchy*, S.W. France.



- Gaspé, *peninsula*, Quebec, Canada; on S. side of St. Lawrence.
- Gastein, *t.*, Salzburg, Austria; mineral springs.
- Gastonia, *c.*, N. Carolina, U.S.A.; p. (1950) 23,069.
- Gateshead, *t.*, *co. bor.*, Durham, Eng.; on R. Tyne, opposite Newcastle; shipbuilding, iron, chemicals; p. (1951) 115,017.
- Gatesville, *t.*, Texas, U.S.A.; cotton processing; p. (1950) 3,856.
- Gatineau, *R.*, Canada; trib. of Ottawa R., which it joins nr. Ottawa; length 300 m.
- Gatooma, *t.*, S. Rhodesia; gold; p. 2,422.
- Gatun, artificial L., Panama Canal Zone, Central America; passed through by Panama Canal; alt. 40 ft. above Caribbean Sea, a. (approx.) 250 sq. m.
- Gauhati, *t.*, Assam, India; silk, cotton, lace; p. 17,000.
- Gauri-Sankar, *mtn.* in Himalayas; 35 m. W. of Mt. Everest; alt. 23,440 ft.
- Gävle, *spt.*, Sweden; textiles, sail-cloth; exports wood-pulp; p. (1950) 46,894.
- Gävleborg, *co.*, Sweden; ch. *t.*, Gävle; a. 7,610 sq. m.; p. (1950) 285,024.
- Gawler, *t.*, S. Australia; flour, iron foundries; p. 4,427. [133,700.]
- Gaya, *t.*, Bihar, India; cottons, silks; p. (1951)
- Gaza, *spt.*, Israel; exports cereals, wool; p. (1946) 37,820.
- Gaziantep, *t.*, Turkey; S.W. of Malatya; p. (1945) 62,873.
- Gdansk, *prov. (voivodship)*, Poland; ch. *t.* Gdansk (Danzig); a. 4,290 sq. m.; p. (estd. 1950) 898,939.
- Gdansk (Danzig), *spt.*, Poland; on R. Vistula; formerly Polish, Prussian (1713-1919), constituted Free City by Treaty of Versailles; 1939-45 German; restored to Poland 1945; shipbuilding, distilling, brewing, machinery; p. (estd. 1950) 169,675.
- Gdynia, *spt.*, Poland; specially constructed by Poles after 1919, when Danzig was Free City; exports dairy produce, timber, matches; p. (estd. 1950) 111,147.
- Géant, *Aiguille du*, *mtn.* in Savoy Alps, France; alt. 13,170 ft.; nearby Col du Géant, pass from Chamonix to Italy, alt. 11,145 ft.
- Gelong, *spt.*, Port Phillip, Victoria, Australia; fine harbour; trade in flour, wool; p. (1947) 44,561.
- Geestmunde, *spt.*, Germany, at mouth of R. Weser; fishing; p. 20,000.
- Geislingen, *t.*, Württemberg, Germany; p. 17,500.
- Gelderland, *prov.*, Netherlands; S.E. of Zuider Zee; a. 1,939 sq. m.; cap. Arnhem; cereals, tobacco; cattle rearing; p. 1,039,025.
- Gelibolu, (Gallipoli), *t.* and *peninsula* on the Dardanelles, Turkey; vines, sericulture; scene of unsuccessful landing by British and Anzac troops 1915; p. 16,496.
- Gelligaer, *t.*, *urb. dist.*, Glamorgan, Wales; 4 m. N.E. of Pontypridd; mining; p. (1951) 36,159.
- Gelsenkirchen, *t.*, N. Rhine-Westphalia, Germany; nr. Dortmund; collieries, ironwks., glass, chemicals; p. (1950) 315,469.
- Gemmi, *mtn.* pass across Swiss Alps, Valais to Berne; alt. 7,600 ft.
- Gemona, *t.*, Italy; in Plain of Lombardy, nr. Udine; p. 10,000.
- General Pico, *t.*, S. central Argentina; grain, cattle; p. 14,500.
- Geneva, *c.*, S.W. Switzerland; at W. end of L. of Geneva, the Rhône flows through the c.; cath., univ.; former H.Q. of League of Nations, H.Q. of I.L.O., W.H.O., I.T.U., International Red Cross; watch-making, jewellery, electrical goods, chocolate; tourist resort; p. (1950) 145,473.
- Geneva, *can.*, Switzerland; a. 109 sq. m.; p. (1950) 202,918.
- Geneva, *L.*, S.W. corner of Switzerland; length 40 m., greatest breadth 8½ m.; a. 108 sq. m.
- Geneva, *t.*, Ill., U.S.A.; foundries, car parts; livestock; p. (1950) 5,139. [17,144.]
- Geneva, *t.*, N.Y., U.S.A.; engineering; p. (1950)
- Génissiat, France; site of great barrage and hydro-electric power station on Rhône below Geneva; completed 1950.
- Genk, *t.*, Limburg, Belgium; p. 33,858.
- Genoa, *maritime prov.*, Liguria, N. Italy; a. 1,582 sq. m.; p. (1951) 921,723.
- Genoa (Genova), *spt.*, and *commercial c.*, situated on G. of Genoa; fine palaces, cath., univ.; shipbuilding, engineering, tanning, sugar, textiles; p. (1951) 680,553.
- George, *t.*, C. of Good Hope, S. Africa; between C. Agulhas and Port Elizabeth; p. 11,987.
- Georgetown, *cap.*, Brit. Guiana, S. America; on Demerara R.; exports sugar, cocoa, coffee, timber; gold, diamonds, bauxite; p. 34,077.
- Georgetown, *t.*, S.C., U.S.A.; fish, lumber, cotton; p. (1950) 6,004.
- Georgetown, *t.*, Washington D.C., U.S.A.; on R. Potomac; univ., cath.
- Georgetown, *spt.*, Penang, Malaya; p. 189,068.
- Georgia, *st.*, U.S.A.; on Atlantic est.; one-third of population is coloured; forested, agr.; cotton, tobacco, maize, etc.; mnfs.: cottons, woollens, flour; chief ts.: Atlanta (cap.) and Savannah; a. 58,876 sq. m.; p. (1950) 3,444,578.
- Georgia, *constituent rep.*, U.S.S.R.; maize, cotton, tobacco, silk; rich manganese-ore beds; agr.; wheat, forests, timber; Stalin a native of this state; cap. Tbilisi; a. 37,570 sq. m.; p. (1939) 3,542,289.
- Georgian Bay, Ige. Inlet, Ontario, Canada; E. shore of L. Huron; many impt. lake ports (Owen Sound, Parry Sound) where Prairie wheat is transhipped to rly. for despatch to Montreal; a. approx. 4,500 sq. m.
- Georgievsk, *t.*, S. Stavropol Terr., U.S.S.R.; tr. centre for agr.; large cattle fairs; p. (1933) 21,629.
- Gera, *t.*, Thuringia, Germany; lignite, woollens, printing; p. 83,000.
- Geraldton, *spt.*, W. Australia; 306 m. from Perth; in agr. and pastoral districts; exports gold, copper, wool; p. (1947) 5,974.
- Gérardmer, *mtt.* *t.*, health resort, Vosges, France; cheese; p. 4,000.
- Germany, after defeat in second world war became divided into E. and W. Germany—the W. German Government under the United States, Great Britain and France, and the E. German Government under U.S.S.R. Administrative centre of W. Germany, Bonn; Berlin, under Four Power Control; total a. 136,460 sq. m. approx.; the province of E. Prussia has been divided and is administered by the U.S.S.R. and Poland; *prin. t.* Königsberg renamed Kaliningrad; pending the final peace settlements Poland occupies and administers those parts of Germany lying east of a line running from the Baltic Sea immediately W. of Swinemünde along the R. Oder to its confluence with the W. Neisse, and thence along the latter to the Czechoslovak frontier; ch. German industries: agr.; rye, oats, wheat, potatoes, sugar-beet, wines; pastoral: cattle, pigs, sheep; forests, timber; minerals: coal, lignite, iron, potash, copper, zinc, salt; mnfs., machinery, shipbuilding, textiles, chemicals, dyes, printing, etc.; commerce: communications very good.
- Germiston, *t.*, Transvaal, S. Africa; nr. Johannesburg; gold-mining; p. (1951) 149,982.
- Gerona, *maritime prov.*, N.E. Spain; cap. G.; textiles, coal, paper; a. 2,264 sq. m.; p. (1950) 327,321.
- Gerona, *municipality*, Luzon, Philippine Is.; rice, sugar, pineapples; p. 20,892.
- Gers, *dep.*, S.W. France; cap. Auch; grain, vines, brandy; a. 2,429 sq. m.; p. (1946) 190,430.
- Gers, *R.*, rising in the Pyrenees, flows to the Garonne; length 75 m.
- Gettysburg, *t.*, Penns., U.S.A.; Federal victory 1863; granite; p. (1950) 7,046.
- Gevelsberg, *c.*, Westphalia, Germany; iron, stoves; p. 20,704.
- Geyser Springs, *summer resort*, California, U.S.A.; 90 m. N.W. of San Francisco.
- Gezira, *district*, Anglo-Egyptian Sudan, N.E. Africa; situated between Blue and White Niles above confluence at Khartoum; approx. 4,700 sq. m. capable of irrigation by water drawn from Blue Nile at Sennar Dam; large-scale growing of high-quality cotton; total a. approx. 7,800 sq. m.
- Ghadames, *oasis*, Sahara Desert, Libya; N. Africa; at point where terr. of Tunis, Algeria, Libya converge 800 m. S.W. of Tripoli; impt. focus of caravan routes.
- Ghardaia, *terr.*, S. Algeria, N. Africa; caravan trade; dates; p. 166,366.
- Ghats, E. and W., *two mtn. ranges* bordering the triangular upland of S. India, the Deccan; alt. of ch. summits, 4,700-7,000 ft.

- Chazipur, *t.*, N. India: on Ganges, R., E. of Benares; agr. school: p. 25,000.
- Ghazni, *fortd. min. t.*, Afghanistan: 78 m. S.W. of Kabul; great trade centre; cap. of the Empire of Mahmud, circa A.D. 1000: p. 10,500.
- Ghent, *lge. comm. and cath. c.*, Belgium; cap. of E. Flanders, on R. Scheldt: extensive cotton, woollen, and other mfnis.: p. (wito suburbs) (1947) 166,096.
- Ghernigap, *t.*, Victoria, Australia: 55 m. from Melbourne: p. 4,500.
- Giant Mtns., *see* Riesengebirge.
- Giant's Causeway, *famous basaltic columns*, on promontory of N. coast of Antrim, Ireland.
- Giarre, *t.*, Sicily, Italy: nr. Mt. Etna; industrl.: p. 20,050.
- Gibare, *t.*, Oriente prov., Cuba, W. Indies; exports, bananas: p. 8,045.
- Gibraltar, *Brit. fortress and naval base* of great strategic importance, W. end of Mediterranean; on rocky peninsula (1,396 ft.), extreme S. of Spain; captured by British in 1704; a. 24 sq. m.: civilian p. (1952) 24,000.
- Gibraltar, Strait of, connects Atlantic and Mediterranean; its narrowest breadth is 9 m.
- Gien, *t.*, Loiret, France; faience: p. 8,257.
- Giessen, *t.*, Hesse, Germany: on R. Lahn; univ.; machinery, rubber, chemicals, leather: p. 46,000.
- Gifu, *t.*, Central Honshu, Japan; silk, paper: p. (1950) 211,845.
- Gigha, *I.*, Argyll, Scot.; off W. cst.; 6 m. long, 2 m. wide; p. (with Cara) 243.
- Gijon, *spl.*, Oviedo, Spain: on Bay of Biscay; fine harbour; tobacco, petroleum, coal, earthenware: p. (1950) 110,935.
- Gila, *R.*, New Mexico and Arizona, U.S.A.; trib. of Rio Colorado; water used for irrigation in Imperial Valley; length 650 m.
- Gilan, *prov.*, N. Persia; on S.W. shore Caspian Sea; a. 4,673 sq. m.; cap. Resht.
- Gilbert and Ellice Islands Colony, *group of Is.* (Brit.), Micronesia, Pac. Oc.; ch. crops; pandanus fruit and coconuts; exports phosphates and copra; a. 369 sq. m.; p. (1952) 33,000.
- Gilford, *t.*, Down, N. Ireland; linen: p. (1951) 813.
- Gilgit, *cap.*, G., extreme N.W. dist. of Kashmir.
- Gilgit, *R.*, of the Punjab rising in Chitral, trib. of the Indus, flowing along the Gilgit valley into Kashmir.
- Gill, Lough, *L.*, on borders of cos. Sligo and Antrim, Ireland.
- Gillespie, *t.*, Ill., U.S.A.; coal: p. (1950) 4,105.
- Gillingham, *t.*, *mun. bor.*, Kent, Eng.; 2 m. E. of Chatham; cherry orchards, cement: p. (1951) 68,099.
- Gilly, *t.*, Hainault, Belgium, nr. Charleroi; coal: p. 22,610.
- Gilolo I., *see* Halmahera I.
- Gilp Loch, Argyll, Scot.; inlet of Loch Fyne, at head of Crinan Canal.
- Gioia del Colle, *c.*, Bari, S. Italy; olive oil, wine, wool: p. 24,000.
- Giovinnazzo, *spl.*, S. Italy; on the Adriatic, N. of Bari: p. 12,150.
- Gippsland, *dist.*, S.E. Victoria, Australia; a. 13,900 sq. m.; mountainous; farming, grazing; coal.
- Girardot, *t.*, Colombia, S. America; impt. river port and airport on upper course of R. Magdalena, 635 m. upstream from Caribbean Sea; linked by railway (70 m.) to Bogota.
- Giresun, *spl.*, Black Sea, Turkey, W. of Trabzon: p. 12,431.
- Girga, *t.*, Upper Egypt; on R. Nile: p. 1,000.
- Girga, *admin. div.*, Upper Egypt, N.E. Africa; a. 595 sq. m.; p. (1947) 1,288,425.
- Girgenti (same as Agrigento, *q.v.*), *t.*, S. Sicily, Italy; famous for its Greek temples.
- Grishk, *t.*, Afghanistan; on Helmand R.; centre of agr. district.
- Gironde, *dep.*, France; vineyards, grain, fruit, wines; cap. Bordeaux; a. 4,140 sq. m.; p. (1946) 858,811.
- Gironde, *R.*, *estuary*, S.W. France; formed by junction of Rs. Garonne and Dordogne; navigable to Pauillac.
- Girton, *par.*, nr. Cambridge, Eng.; women's college.
- Girvan, *burgh*, Ayr, Scot.; on Firth of Clyde, 18 m. S.W. of Ayr; summer resort: p. (1951) 5,990.
- Gisborne, *spl.*, N.I., New Zealand; on Poverty Bay, 60 m. N.E. of Napier; p. (1951) 19,777.
- Gisburn, *t.*, W.R. Yorks; on R. Ribble, nr. Clitheroe.
- Giugliano, *t.*, Italy; N.W. of Naples; mfnis.: p. 20,500.
- Giulianova, *t.*, Teramo, Italy; fruit, grain: p. 20,000.
- Giurgiu, *port*, Romania; on R. Danube; opposite Ruse; good trade; timber: p. 36,798.
- Givet, *t.*, Ardennes, N.E. France; on R. Meuse; tanneries: p. 6,000.
- Givors, *t.*, Rhône dep., France; on Rhône R., 10 m. S. of Lyons; mfnis.: p. (1946) 13,205.
- Giza, *admin. div.*, Egypt; cap. Giza; a. 392 sq. m.; p. (1947) 820,241.
- Giza, *t.*, Lower Egypt; on the Nile, 3 m. S.W. of Cairo; nr. pyramids of Khafra (Chephren) Khufu (Cheops) and Men-ka-va; also the Sphinx; contains Museum of Egyptian antiquities; p. (1947) 68,520.
- Gjinokastër (Argyrocastro), *prefecture*, Albania; cap. G.; p. (1930) 143,928.
- Gjovik, *t.*, S. Norway; on L. Mjøsa; dairying: p. 5,072.
- Gjuhëzës, *C.* (Glossa C.), Albania, Strait of Otranto.
- Glace Bay, *t.*, Nova Scotia, Canada; coal: p. (1951) 25,586.
- Gladbach-Rheydt, *t.*, W. Germany; on R. Rhine; union of former towns of München-Gladbach, Rheydt and Odenkirchen; cotton, calico printing, silk, boots, elec. tech. indus.: p. (1950) 124,879.
- Gladewater, *t.*, N.E. Texas, U.S.A.; oil, lumber: p. (1950) 5,305.
- Gladstone, *t.*, Queensland, Australia; p. (1947) 5,248.
- Gladstone, *t.*, S. Mich., U.S.A.; harbour; mfnis. sports equipment: p. (1950) 4,331.
- Glamorgan, *co.*, S. Wales; immense coal and iron deposits; copper and tin smelting; machinery; chemicals; co. t. Cardiff; a. 813 sq. m.; p. (1951) 1,201,939.
- Glamorgan, Vale of, *see* Gwent, Plain of.
- Glarus, *can.*, Switz.; E. of Schwyz; a. 264 sq. m.; sheep, cheese, cottons: p. (1950) 37,663.
- Glarus, *c.*, *cap.*, can. G., Switzerland; on R. Linth, nr. Wesen: p. (1941) 5,266.
- Glasgow, *c.*, *burgh*, Lanark, Scot.; on R. Clyde; third largest city in Gt. Britain; many thriving mfnis.; shipbuilding, iron founding, boilers, locomotives, tractors, textiles, chemicals, paper; commercial and musical centre of Scot.; univ. and famous cath.; p. (1951) 1,089,555.
- Gasport, *bor.*, Penna., U.S.A.; tools, steel, hoops, glass: p. (1950) 8,707.
- Glastonbury, *t.*, *mun. bor.*, Somerset, Eng.; at foot of Mendip Hills, 7 m. S.E. of Wells; noted 8th-century abbey with legend of thorn planted by Joseph of Arimathea, also adjacent to Avalon, burial I. of King Arthur: p. (1951) 5,081.
- Glatz, *see* Kladzko.
- Glauchau, *t.*, Saxony, E. Germany; on R. Mulde; woollens, calicoes, dyes; p. 33,800.
- Glebe, *sub.*, Sydney, N.S.W., Australia.
- Gleiwitz, *see* Gliwice.
- Glen, The, beautiful valley and resort in White Mountain dist. of New Hampshire, U.S.A.
- Glen Affric, Inverness, Scot.; drained E. to Moray Firth; hydro-electric scheme.
- Glen Garry, Inverness, Scot.; used by Perth to Inverness rly. on S. approach to Drumochter Pass.
- Glen Innes, *hill t.*, N.S.W., Australia; alt. 3,518 ft.; pastoral and agricultural district; p. 5,462.
- Glen More, Scottish Valley traversed by Caledonian Canal, from Fort William to Inverness.
- Glen Roy, Inverness, Scot.; 15 m. N.E. of Fort William; remarkable terraces, remains of series of glacial lakes.
- Glen Spean, Inverness, Scot.; used by Glasgow to Fort William rly.
- Glencoe, Argyll, Scot.; S.E. of Ballachulish; scene of massacre of MacDonalds, 1692.
- Glendale, *t.*, California, U.S.A.; p. (1950) 95,702.
- Glendalough, *valley*, Wicklow, Ireland; scenic beauty; ecclesiastical ruins; tourists.
- Glennel, *R.*, S.W. Victoria, Australia; length 200 m.
- Glennel, *t.*, S. Australia; on Holdfast Bay, nr. Adelaide.



- Glenluce, *vil.*, Wigtown, Scot.; at head of Luce Bay; p. 806.
- Glenoiden, *bor.*, Penns., U.S.A.; surgical instruments; p. (1950) 6,450.
- Glenora, *t.*, Brito, Columbia, Canada; on R. Stikine.
- Glens Falls, *t.*, N.Y., U.S.A.; on Hudson R.; lime kilns and many mnfs.; lumber, paper; p. (1950) 19,610.
- Glenside, *t.*, S.E. Penns., U.S.A.; mnfs. rubber and wood products; paints, toys; p. (1950) 9,654.
- Glitterind, *mtn.*, Opland co., S. Norway; highest peak in Scandinavia; alt. 8,140 ft.
- Gliwice (former Gleiwitz), *c.*, Upper Silesia, Poland; nr. Katowice; coal, ironwks., glass; p. (estd. 1950) 113,517.
- Globe, *t.*, Ariz., U.S.A.; copper, manganese, gold, silver, vanadium, tungsten mining; p. (1950) 6,419.
- Głogów (Glogau), *t.*, Poland; on R. Odra; wool market; p. 4,910.
- Glommen R., Norway; largest Norwegian R., flows S. in Skaggerak.
- Glossa, *C. (see Gjiuhezës, C.)*, strait, Otranto, Albania.
- Glossop, *mkt. t., mun. bor.*, Derby, Eng.; at W. foot of Pennines. 12 m. S.E. of Manchester; cotton and woollen mnfs.; p. (1951) 18,014.
- Gloucester, *co.*, W. of Eng.; fertile valleys, Cotswold Hills; dairying, cheese, sheep, coal machinery, textiles, glass, broadcloth; a. 1,257 sq. m.; p. (1951) 938,618.
- Gloucester, *cath. c., co. bor.*, on R. Severn; engineering, matches; p. (1951) 67,268.
- Gloucester, *t.*, Mass., U.S.A.; fishing; granite; p. (1950) 25,167. [23,634]
- Gloversville, *c.*, N.Y., U.S.A.; gloves; p. (1950)
- Glubczyce (former German Leobschütz), *t.*, Upper Silesia, Poland; p. 8,000.
- Glückstadt, *pt.*, W. Germany; on R. Elbe, nr. Hamburg; p. 9,300.
- Glyder Fach, *mtn.*, Caernarvonsh., N. Wales; alt. 3,262 ft.
- Glyder Fawr, *mtn.*, Caernarvonsh., N. Wales; alt. 3,279 ft.
- Glynorrwg, *urb. dist.*, Glamorgan, Wales; 4 m. N. of Maesteg; coal, iron; p. (1951) 9,236.
- Gmünd, *t.*, Austria, on Czechoslovakian border.
- Gmund, *t.*, W. Germany; on R. Rems, nr. Stuttgart; jewellery and silver work, wood-carving; p. 30,748.
- Gniezno (Gnesen), *mfg. t.*, Poland; E. of Poznan; cath.; linen; p. 30,292.
- Gôa, *Portuguese terr.*, W. coast, India; farming and fishing, coconut products, spices, iron and manganese; cap. Nova Gôa; a. about 1,500 sq. m.; p. abt. 650,000 (Christians and Hindus).
- Goajira, *peninsula* on G. of Maracaibo, N. coast of S. America; crossed by boundary of Venezuela and Colombia.
- Goalunda, *pt.*, Pakistan; at junction of Rs. Ganges and Brahmaputra.
- Goat Fell, *mtn.*, I. of Arran, Bute, Scot.; alt. 2,866 ft.
- Gobi, steppes and stony or sandy desert in Central Asia; divided into two principal divs.; Shamo in Central Mongolia, and the basins of the Tarim, E. Turkestan; length about 1,500 m. (E. to W.), breadth 500-700 m.
- Goch, *t.*, N. Rhine-Westphalia, Germany; leather, tobacco, oil, margarine; p. 11,798.
- Godalming, *t., mun. bor.*, Surrey, Eng.; 4 m. S.W. of Guildford; paper, hosiery; p. (1951) 14,239.
- Godavari, *R.*, India; flows E. across Deccan to Bay of Bengal; forms large delta; length 900 m.
- Goderich, *pt.*, Ontario, Canada; on S.E. est. of L. Huron; transh. wheat from prairies; p. 4,557.
- Godesberg, *t.*, W. Germany; nr. Bonn; famous hydro; chalybeate springs; p. 20,396.
- Godhavn, Danish settlement, Disco I., W. of Greenland; whaling; scientific station.
- Godhra, *t.*, Bombay, W. Indian Union; timber tr.; tanneries; p. (1941) 35,110.
- Godmanchester, *sm. t., mun. bor.*, Hunts, Eng.; on R. Ouse; cheese; p. (1951) 2,499.
- Godstone, *vil., rural dist.*, Surrey, Eng.; nr. Reigate; p. (1951 rural dist.) 32,815.
- Godthaab, *t.*, Greenland; first Danish col. 1721; p. 1,313.
- Godwin Austen (K<sub>2</sub>), *Mt.*, Himalaya, second highest in the world; alt. 28,250 ft. Summit reached by Prof. Desio in July 1954. Mt. named Chobrum.
- Gogo, *spl.*, Saurashtra, India; on G. of Cambay.
- Gogra, *sacred R.*, India; rising in Tibet, trib. of Ganges; length 600 m.
- Goáinia, *cap.*, Goiás State, Brazil; p. 9,828.
- Goais, *st.*, Central Brazil; mountainous, forested; stock raising; tobacco; gold, diamonds; cap. Goáinia, on Vermelho R.; a. 240,334 sq. m.; p. (1950) 1,234,740.
- Golborne, *t., urb. dist.*, Lancs, Eng.; p. (1951) 16,876.
- Golconda, *fort and ruined c.*, nr. Hyderabad, S. India; famous for diamonds in former days and mausoleums of ancient kings.
- Gold Coast, *Brit. col.*, W. Africa; inc. protectorate of Ashanti and the N. Terr., also the trusteeship terr. of Togoland; agr.: cocoa, palm-oil, groundnuts; mahogany; manganese, gold, diamonds; cap. Accra; total a. 91,843 sq. m.; p. (1952) 4,409,000 (inc. 6,000 non-Africans).
- Golden, *c.*, Colorado, U.S.A.; nr. Denver; p. (1950) 5,238.
- Golden Gate, entrance of Bay of San Francisco, California, U.S.A.; famed Golden Gate Bridge, opened 1937.
- Golden Horn, *peninsula* on the Bosphorus, forming the harbour of Istanbul.
- Golden Vale, *dist.*, Limerick, Tipperary, Ireland; lies between Slieve Bloom Mtns. and Galtee Mtns., drained W. to Shannon and E. to Suir; rich farming area, beef and dairy cattle, pigs.
- Goldingen, *t.*, Latvia, U.S.S.R.; on R. Windau.
- Goldboro, *t.*, N. Carolina, U.S.A.; on Neuse R.; cotton, tobacco; p. (1950) 21,454.
- Golspie, *sm. fishing pt.*, E. coast, Sutherland, Scot.
- Gomal Pass, from Afghanistan to W. Punjab, Pakistan, over Sulaiman mtns.
- Gomel, *t.*, Byelorussia, U.S.S.R.; on R. Sozh; grain and timber trade; p. (1939) 144,169.
- Gomera, *i.*, Canaries; 18 m. S.W. Tenerife; cap. San Sebastian.
- Gometray I., Hebrides, included in co. Argyll, Scot.; fishing, stn. and harbour.
- Gonaives, *spt.*, Haiti, W. Indies; on W. coast; p. 21,000.
- Gondal, *t.*, Saurashtra, India; p. 267,048.
- Gondar, *t.*, Amhara prov., Ethiopia; p. 22,000.
- Gonzaga, *t.*, Mantua, N. Italy; p. 9,950.
- Good Hope, *t.*, N.W. Terr., Canada; on Mackenzie R.
- Good Hope, *C. of*, see C. of Good Hope.
- Goodenough Bay, *inlet*, N. coast of Papua, New Guinea, E. Indies.
- Goodwick, see Fishguard and Goodwick.
- Goodwin Sands, *dangerous sand-banks* off E. coast of Kent, Eng.; shielding the Down roadstead.
- Goole, *t., mun. bor.*, W.R. Yorks, Eng.; at confluence of Rs. Don and Ouse; iron, ship-building; p. (1951) 19,227.
- Goose Bay, *t.*, Labrador, Canada; on Hamilton R.
- Göppingen, *t.*, W. Germany; between Ulm and Stuttgart; textiles, leather, machinery; p. 35,764.
- Gorakhpur, *t.*, Uttar Pradesh, India; on the Rapti R., 100 m. N. of Benares; grain, timber; Govt. agr. school; p. (1951) 132,436.
- Gordon, *t.*, Victoria, Australia; mining and agr. dist.
- Gordon Bennett, *mtn.*, in Ruwenzori ra., Central Africa; nr. L. Albert Nyanza; alt. 16,000 ft.
- Gore, *t.*, Otago, S.L., New Zealand; p. (1951) 5,548.
- Gorgonzola, *t.*, N. Italy; 12 m. N.E. of Milan, famous for its cheese; p. 5,725.
- Gorham, *t.*, Maine, U.S.A.; p. (1950) 6,146.
- Gori, *t.*, Georgia, U.S.S.R.; grain, timber; p. (1939) 12,820.
- Gorinchem, *t.*, S. Holland, Netherlands; p. 14,433.
- Goring, *t.*, on R. Thames, Oxford, Eng.; p. 1,989.
- Gorki (formerly Nizhni-Novgorod), *t.*, U.S.S.R.; at confluence of Rs. Oka and Volga; gr. commercial centre, noted for its fairs; distilling, flour, machinery; p. (1939) 644,116.
- Gorkum or Goreum, *t.*, Netherlands; nr. Rotterdam on the Merwede Canal.
- Gorleston, *t.*, Norfolk, Eng.; at mouth of R. Yare; seaside resort; p. 20,391.
- Görlitz, *t.*, Germany; on W. Neisse R.; E. part transferred to Poland 1945, re-named Zgorzelec; mnfs.; p. 80,332.
- Gorlovka, *t.*, Ukraine, U.S.S.R.; chemicals; p. (1939) 108,693.
- Gorodok Yageloski, *t.*, W. Ukraine, U.S.S.R.; tr. in flax, wheat; p. 15,015.

- Gorseinon, *vil.*, Glamorgan, S. Wales; nr. Loughor estuary, 4 m. N.W. of Swansea; steel-works, zinc refineries.
- Gort, *rural dist.*, Galway, Ireland; p. (1946) 9,374.
- Görz, *cap.* of Gorizia prov., Italy; silks, cotton, leather, pottery; p. 46,640.
- Göschenen, *vil.*, Switzerland; at end of St. Gotthard tunnel.
- Gosford, *t.*, N.S.W., Australia; 50 m. N. of Sydney; p. 4,413.
- Gosforth, *t.*, *urb. dist.*, sub. to Newcastle-on-Tyne, Eng.; coal; p. (1951) 24,424.
- Goshen, *c.*, Indiana, U.S.A.; p. (1950) 13,003.
- Goslar, *t.*, W. Germany; at foot of Harz Mtns.; silver, copper, lead; p. 27,000.
- Gosport, *mun. bor.*, *spt.*, Naval depot, Hants, Eng.; W. side of Portsmouth harbour; p. (1951) 58,246.
- Gossau, *t.*, St. Gallen, Switzerland; embroidery, lace; p. 7,914.
- Göta, *R.*, Sweden; flows from L. Vänern to the Kattegat; also canal connecting L. Vänern with the Baltic; the G. Canal provides a popular tourist trip from Stockholm to Göteborg.
- Göteborg and Bohus, *prov.*, Sweden; on est. of Kattegat; a. 1,989 sq. m.; p. (1950) 557,545.
- Göteborg *c.*, *cap.*, Göteborg and Bohus, Sweden; at mouth of R. Göta; second city in Sweden for commerce and industry; p. (1950) 353,991.
- Götha, *c.*, Thuringia, E. Germany; toys, sugar; p. about 50,000.
- Gotland I., *fertile Swedish I.* in the Baltic; *cap.* Visby; a. 1,225 sq. m.; p. (1950) 58,993.
- Gotland, *prov.*, S. Sweden; a. 35,788 sq. m.; p. (1948) 2,760,000.
- Gottesberg, *t.*, S.W. Poland; coal, mnfg.; assigned to Poland at Potsdam conference; p. 8,000.
- Göttingen, *t.*, W. Germany; univ.; scientific instruments, textiles, chemicals; p. 61,300.
- Gouda, *t.*, Netherlands; on R. Yssel 11 m. from Rotterdam; famous for its cheese; p. (1951) 39,140.
- Gough Is., Atlantic Ocean dependency of St. Helena.
- Goulburn, *t.*, N.S.W., Australia; commands route across Gt. Dividing Range; in agr. dist. 134 m. W. of Sydney; mnfs.; p. (1947) 16,029.
- Goulburn R., Victoria, Australia.
- Gourock, *burgh*, Renfrew, Scot.; on Firth of Clyde, 2 m. W. of Greenock; p. (1951) 9,107.
- Gouverneur, *t.*, N. N.Y., U.S.A.; mines talc, lead, zinc; mnfs. wood pulp, silk; p. (1950) 4,916.
- Govan, *par.*, Lanark, Scot.; on the Clyde, part of Glasgow; shipbuilding; p. (1951) 312,911.
- Governor's I., *fort*, Boston Harbour; also fortified islet in harbour of New York, U.S.A.
- Gower, *peninsula*, W. Glamorgan, Wales.
- Gowerton, *vil.*, Glamorgan, S. Wales; S. est. of Loughor estuary, 4 m. W. of Swansea; new steel-works.
- Gowrie, *Carse of*, fertile tract N. side Firth of Tay, Scot.; includes Dundee, Kinnoull, Perth.
- Goya, *t.*, Argentina; on R. Paraná; cattle; p. 22,099.
- Goyanna, *commercial t.*, Brazil; 40 m. N. of Recife.
- Gozo, *Br. I.* in Mediterranean, nr. Malta; the anc. Gaulos; surrounded by perpendicular cliffs; a. 26 sq. m.; p. 27,612.
- Graafi-Reinet, *t.*, C. of Good Hope, S. Africa; fruit growing, wool; p. 13,914.
- Graciosa, *I.*, Azores group, N.W. of Terceira.
- Grado, *commune*, Oviedo, N.W. Spain; iron foundries; p. 17,318.
- Grafton, *t.*, N.S.W., Australia; on Clarence R.; p. (1947) 12,026.
- Graham, *t.*, N. Texas, U.S.A.; oil refining, flour milling; p. (1950) 6,742.
- Graham I., the largest of the Queen Charlotte group in the Pacific; off coast of Brit. Columbia.
- Graham Land, Falkland Is. Dependencies, Antarctica; mountainous, icebound; discovered 1832.
- Grahamstown, *t.*, C. of Good Hope, S. Africa; N.E. of Port Elizabeth; p. (1946) 22,836.
- Graian Alps, *mtns.* between Savoy and Piedmont; highest point Gran Paradiso; alt. 13,320 ft.
- Grain Coast, general name formerly applied to est. of Liberia, W. Africa; "grain" refers to pepper, spices, etc.
- Grammichele, *t.*, E. Sicily, Italy; 23 m. S.W. of Catania; marble; p. 14,014.
- Grammont, *t.*, E. Flanders, Belgium; nr. Ghent, on Dender R.; mftg.
- Grampians, *highest mtns.* of Scot.; highest point Ben Nevis; alt. 4,406 ft.; includes Cairngorms, high granitic mtns.
- Gran, *see* Esztergom.
- Granada, *prov.*, S. Spain; traversed by Sierra Nevada; wheat, olives, textiles, liqueurs, paper; a. 4,838 sq. m.; p. (1950) 782,963.
- Granada, *ancient c.*, Granada, S. Spain; at foot of Sierra Nevada; formerly cap. of the Moorish Kingdom of G.; now cap. of fertile maritime prov.; famous 14th-century Alhambra; p. (1950) 163,256.
- Granada, *c.*, Nicaragua, Central America; gold-wire-drawing industry; p. 33,918.
- Granby, *t.*, Quebec, Canada; on Yamaska R.; sawmills, leather; p. 14,197.
- Gran Chaco, *extensive dist.*, N. Argentina and Paraguay; flat with large areas of forest; quebracho.
- Grand Bank, *submarine plateau*, extending S.E. from Newfoundland, Canada; a. 500,000 sq. m.; important cod fisheries.
- Grand Bassam, *t.*, *spt.*, Ivory Cst., Fr. W. Africa; exports bananas, palm-kernels; p. 5,743.
- Grand Bahama, one of the Bahama Is., W. Indies; p. 2,333.
- Grand Canal, *canal*, N. China; abt. 1,000 m. long from Tientsin to Hangchow; built between A.D. 605-18 and A.D. 1282-92; now silted up and coast or rail transport more imp.
- Grand Canal, main water thoroughfare through Venice, Italy.
- Grand Canary, *I.*, Canaries; *cap.* Las Palmas.
- Grand Canyon, Arizona, U.S.A.; narrow gorge, 3,000 ft. to over 5,000 ft. deep of Colorado R.
- Grand Cayman I., Brit. W. Indies; a. 85 sq. m.; coconuts; *cap.* Georgetown.
- Grand Combin, *mtn.* in the Alps, N. of Aosta, Italy; alt. 10,141 ft.
- Grand Coulee Dam, Wash., U.S.A.; across R. Columbia 110 m. below Spokane; world's largest dam; reservoir formed 151 m. long, a. 130 sq. m. supplies irrigation water to 1900 sq. m. between Rs. Columbia and Snake; hydro-electric power station when complete will generate 2,700,000 h.p.
- Grande Chartreuse, *La, monastery*, Isère, France; 15 m. N. of Grenoble, France; famous for its liqueur.
- Grande Prairie, *t.*, Alberta, Canada; wheat; p. 2,267.
- Grand Forks, *t.*, Brit. Columbia, Canada; saw-mills, copper and gold smelting; p. 1,359.
- Grand Forks, *t.*, N. Dakota, U.S.A.; on Red R.; in wheat region; p. (1950) 26,836.
- Grand Island, *c.*, Nebraska, U.S.A.; cattle and grain tr.; p. (1950) 22,682.
- Grand Junction, *t.*, Colorado, U.S.A.; p. (1950) 14,504.
- Grand Lake, *largest L.*, Newfoundland; a. about 200 sq. m.
- Grand Lahou, *t.*, Ivory Cst., Fr. W. Africa; p. 1,000.
- Grand' Mère, *t.*, Quebec, Canada; pulp and paper mills; p. (1941) 3,608.
- Grand Rapids, *t.*, Mich., U.S.A.; on Grand R.; fruit, flour, iron and steel; p. (1950) 176,516.
- Grand R., Mich., U.S.A.; enters L. Mich. at Grand Haven, navigable to Grand Rapids; length 250 m.
- Grand R., W. Colorado and E. Utah, U.S.A.; trib. of the Colorado R.; length 350 m.
- Grand Turk I., *seat of government*, Turks and Caicos Is.; p. 1,693.
- Grand Prairie, *see* Black Prairie.
- Grange, *t.*, *urb. dist.*, N. Lancs., Eng.; on N. est. of Morecambe Bay; sm. summer resort; p. (1951) 3,070.
- Grangemouth, *burgh*, Stirling, Scot.; on F. of Forth, 20 m. W. of Leith; shipbuilding, iron; p. (1951) 15,305.
- Grangesborg, *t.*, Kopparberg Co., Sweden; on S. fringe of Scandinavian mtns.; imp. deposits iron ore.
- Granite City, Ill., U.S.A.; p. 28,000.
- Gran Sasso d'Italia, *rugged limestone highlands*, Abruzzi, Central Italy; highest part of Apennines, Monte Corno alt. 9,584 ft.; winter sports centre, Aquila.
- Grantham, *t.*, *mun. bor.*, Lincoln, Eng.; on Witham R.; tanning, agr. machinery; p. (1951) 23,405.



- Grant Land, *region*, N. of Ellesmere I., Arctic Canada.
- Grant-on-Spey, *burgh*, Moray, Scot.; on R. Spey; health resort; p. (1951) 1,541.
- Grants Pass, t., S.W. Ore., U.S.A.; fruit growing; lumber, mining, fishing; p. (1950) 8,116.
- Granville, *spt.*, *wat. pl.*, Manche, France; at mouth of the Bosq; fisheries; p. (1946) 10,329.
- Granville, *sub.*, Sydney, N.S.W., Australia; p. 19,717.
- Grasmere, *picturesque vil.*, Westmorland, Eng.; at head of Grasmere Lake; home of Wordsworth.
- Grasse, t., *health resort*, Alpes-Maritimes, S.E. France; perfumes; p. (1946) 21,217.
- Graubünden (Grisons), *can.*, Switzerland; cap. Chur; a. 2,746 sq. m., p. (1941) 128,247.
- Graudenz, *see* Grudziadz.
- Gravelines, *spt.*, Nord, N.E. France; fisheries; p. 5,448.
- 's-Gravenhage, *see* Hague.
- Graves, *Pointe de*, N. point of Médoc Peninsula, France; in famous wine district.
- Gravesend, *spt.*, *mun. bor.*, Kent, Eng.; on S. bank of R. Thames facing Tilbury; shipping, paper; p. (1951) 45,043.
- Gravina, *indust. c.*, Apulia, Italy; p. 20,775.
- Gray's Peak, Rocky Mtns., Colorado, U.S.A.; alt. 14,341 ft.
- Grays Thurrock, *urb. dist.*, Essex, Eng.; on the Thames, nr. Tilbury Fort; cement mfgt; p. (1951) 81,634.
- Graz, t., Austria; on R. Mur; machinery, iron and steel, rly. wks.; p. (1951) 226,271.
- Great Altai, *range of mtns.*, lying mainly in outer Mongolia but also in Western Siberia.
- Great Atlas, *mtns.*, N.W. Africa; alt. 7,000 ft.
- Great Australian Basin, *artesian basin*, Australia; underlies plains of S.W. Queensland, N.W. New South Wales, N.E. of S. Australia; water supply used on sheep-farms, cattle-ranches, in area from Normanton in N. to Kenmare in S., Oodnadatta in E. to Roma in E.; a. 570,000 sq. m.
- Great Australian Bight, *wide inlet*, S. of Australia, between C. Arid and Port Whidbey; 850 m.
- Great Barrier Reef, *coral reef barrier*, off N.E. cst. of Australia; 1,000 m. long, 75-100 m. from coast.
- Great Barrington, t., Mass., U.S.A.; summer resort; p. (1950) 3,913.
- Great Basin, *high plateau region* between the Wasatch and Sierra Nevada Mtns., U.S.A.; includes most of Nev., parts of Utah, Cal., Idaho, Ore., Wyo.; inland drainage centre Great Salt Lake; a. 210,000 sq. m.; much desert; sparse population.
- Great Bear Lake, on the Arctic Circle, in N.W. Terr., Canada, over 150 m. long; a. 14,000 sq. m.; outlet through Great Bear R. to Mackenzie R.; on E. shore radium.
- Great Belt, *strait*, separating I. of Fyn from Zealand, Denmark.
- Great Britain, *see* England, Scotland, Wales, Britain.
- Great Dividing Range, *mtn. system*, E. Australia; extends, under different local names, from Queensland to Victoria and separates E. est. plains from interior; reaches max. alt. in Mt. Kosciusko, (7,328 ft.) in Australian Alps, on bdy. between Victoria and New South Wales.
- Great Falls, t., Montana, U.S.A.; on Missouri R.; wool; gold, silver; lead and copper smelting; p. (1950) 39,214.
- Great Fish R., C. of Good Hope, S. Africa.
- Great Fisher Bank, *submarine sandbank* in N. Sea; 200 m. E. of Aberdeen, 100 m. S.W. of St. Vanger; valuable fishing-ground; depth of water, from 25 to 40 fathoms.
- Great Gable, *mtn.*, Cumberland, Eng.; alt. 2,949 ft.
- Great Grimsby, *see* Grimsby.
- Great Harwood, t., *urb. dist.*, Lancs, Eng.; 5 m. N.E. of Blackburn; cotton weaving, engineering; p. (1951) 10,738.
- Great Inagua, I., one of the Bahama Is., West Indies; p. 890.
- Great Karroo, C. of Good Hope, U. of S. Africa; high plateau; ostrich farming.
- Great Lakes, N. America; comprising Ls. Superior, Michigan, Huron, Erie, Ontario; frozen 4 or 5 months in winter; enormous L. traffic in cereals, iron, coal, etc.; a. 96,000 sq. m.
- Great Makarikari, Bechuanaland Protectorate, South Africa; salt pan.
- Great Namaqualand, S. region of S.W. Africa.
- Great Ormes Head, *promontory*, N. Wales; nr. Llanduduo.
- Great Plains, *lowland area* of central N. America, extending E. from Rocky Mtns. and S. from Mackenzie to S. Texas.
- Great St. Bernard, *pass*, Switzerland; 8,111 ft. over Pennine Alps; hospice with St. Bernard dogs.
- Great Salt Lake, Utah, U.S.A.; in the Great Basin plateau of N. America; 90 m. long; a. over 2,000 sq. m.; alt. 4,218 ft.; receives Bear, Jordan and Beaver Rs.; no outlet.
- Great Sandy Desert, N. part, W. Australia.
- Great Slave Lake, N.W. Terr., Canada; length 300 m.; greatest breadth 50 m., outlet Mackenzie R.
- Great Slave R., Canada, flowing between L. Athabaska and the Great Slave L.
- Great Smoky Mtns., Tenn., U.S.A.; with Blue Ridge Mtns. form E. zone of Appalachian Mtn. system; rise to alt. over 6,000 ft.; largely preserved as National Park.
- Great Yarmouth, *see* Yarmouth, Great.
- Greater Antilles Is., W. Indies.
- Greece, *kingdom*, S. part of Balkan Peninsula, bounded on N. by Albania, Yugoslavia and Bulgaria, on W. and S. by the Mediterranean, and on the E. by the Aegean Sea, and including islands in the Mediterranean, Aegean, and Ionian Seas; cap. Athens; agr.: cereals, tobacco, currants, vines, fruit; sheep, goats, cattle; minerals, iron, lead, magnesite, lignite; mnfs.: olive oil, wine, textiles, chemicals; a. 51,182 sq. m.; p. (1951) 7,603,599.
- Greeley, t., Colorado, U.S.A.; nr. Denver, site of st. college of education; lumber, flour; p. (1950) 20,354.
- Green Bay, t., Wisconsin, U.S.A.; trade in timber, flour, etc., paper, coal; p. (1950) 52,735.
- Greencastle, t., Londonderry, N. Ireland; on Loch Foyle.
- Greenfield, t., Mass., U.S.A.; p. (1950) 15,075.
- Greenford, *sub.* of London, W. Middx., Eng.
- Greenhithe, Thames-side, nr. Dartford, Kent, Eng.
- Greenland, I., between Arctic Ocean and Baffin Bay; lofty ice-capped plateau; peopled by coastal settlements of Eskimos; whale oil, seal skins; U.S. base at Thule; part of Danish kingdom; cap. Godthaab; a. 840,000 sq. m., of which 708,000 sq. m. are under a permanent ice-cap; p. (1945) 21,412.
- Greenlaw, t., Berwick, Scot.
- Green Mtns., Vermont section of Appalachian mtns.; highest peak, alt. 4,430 ft.
- Greenock, *burgh*, Renfrew, Scot.; on S. shore of Firth of Clyde, 20 m. W. of Glasgow; ship-building and sugar-refining; p. (1951) 76,299.
- Greenore, *cape*, Louth, Ireland; separating Dundalk Bay from Carlingford, Lough.
- Green R., trib. of Grand R., Utah, U.S.A.; length 750 m.
- Greensboro', t., N. Carolina, U.S.A.; cotton, tobacco; p. (1950) 74,389.
- Greensburg, t., Penns., U.S.A.; iron and glass factories; p. (1950) 16,923.
- Greenville, t., Mississippi, U.S.A.; on Mississippi R.; cotton trade; p. (1950) 29,936.
- Greenville, t., S. Carolina, U.S.A.; in the cotton belt; p. (1950) 58,161.
- Greenville, Texas, U.S.A.; cotton, rayon, shipping; p. (1950) 14,727.
- Greenwich, *metropolitan bor.*, London, Eng.; on S. bank of R. Thames; famous for its Hospital, Observatory (now moved to Herstmonceux), and R.N. College; longitudes conventionally calculated Greenwich meridian either E. or W.; p. (1951) 91,492.
- Greenwood, t., Mississippi, U.S.A.; p. (1950) 18,061.
- Greenwood, t., S. Carolina, U.S.A.; p. (1950) 13,806.
- Greifswald, c., Mecklenburg, Germany; univ.; p. 37,100.
- Greiz, t., Thuringia, Germany; fabrics, dyeing, tanning; p. 39,000.
- Grenaa, t., Randers, Jutland, Denmark.
- Grenada, I., Brit. W. Indies; cap. St. George's; seat of govt. of the Windward Is.; fruit, cocoa, spices; a. 133 sq. m.; p. (1952) 81,000.

- Grenadines, *Brit. group of sm. I.*, between Grenada and St. Vincent; Windward Is.; sea-island cotton; p. (estd. 1946) 13,000.
- Grenoble, *fortd. c.*, Isère, S.E. France; on R. Isère; 60 m. from Lyons; gloves, buttons, machinery, liqueurs, cement; p. (1946) 102,161.
- Gretna, *t.*, Louisiana, U.S.A.; on the Mississippi R.; p. (1950) 13,813.
- Grevenbroich, *t.*, N. Rhine-Westphalia, Germany; rly. junction; aluminium products; p. 4,041.
- Grey Range, *mins.*, S.W. Queensland, Australia; extends S.W. from Gt. Dividing Range towards Flinders Range and Spencer G.; forms divide between streams draining E. to R. Darling and those draining W. to L. Eyre.
- Greymouth, *spt.*, S.I., New Zealand; on W. cst. at mouth of Grey R.; ch. t. prov. of Westland; coal; p. (1951) 8,862.
- Greytown, *see* San Juan del Norte.
- Greytown, *t.*, Natal, S. Africa; wattle bark; p. 4,644.
- Greytown, *bor.*, N.L., New Zealand; p. (1951) 1,258.
- Griffin, *c.*, Georgia, U.S.A.; cotton factories and trade; p. (1950) 13,982.
- Grigoriopol, *t.*, Moldavian S.S.R., U.S.S.R.; on R. Dniester.
- Grim, *C.*, N.W. Tasmania.
- Grimaldi, *caves*, N.W. Italy; remains of prehistoric man, late Paleolithic, found there.
- Grimbsy, *spt., co. bor.*, Lincoln, Eng.; on S. bank of R. Humber; centre of fishery industry; p. (1951) 94,527.
- Grimsel Pass, Bernese Alps, Switzerland; alt. 7,100 ft.
- Grindelwald, *vil.*, Bernese Oberland, Switzerland; tourist centre.
- Griqualand East, *dist.*, C. of Good Hope, S. Africa; pastures, wool; ch. t. Kokstad; a. 6,602 sq. m.; p. 265,000.
- Griqualand W., *dist.*, C. of Good Hope, S. Africa; diamonds; cf. t., Kimberley; a. 15,197 sq. m.; p. 160,793.
- Griz Nez, *C.*, N.E. France; nearest point on French coast to Dover.
- Grisons (Graubünden), *can.*, Switzerland; one-half only productive, many glaciers, contains the mtn. health resorts of Davos-Platz (alt. 5,115 ft.), St. Moritz (alt. 6,089 ft.), and Arosa (alt. 6,108 ft.); a. 2,746 sq. m.; p. (1950) 137,100.
- Grivegne, *t.*, Belgium; nr. Liège; ironwks.
- Grodno, *t.*, W. Byelorussia (Polish until 1939); agr.; p. 25,000.
- Grodzisk Mazowiecki, *commune*, Poland; 12 m. S.W. of Warsaw; p. 18,737.
- Grong, *spt.*, Norway, on Falda Fjord.
- Groningen, *t., cap.*, Groningen, Netherlands; woollens, glucose, shipbuilding; p. (1951) 137,719.
- Groningen, *prov.*, N.E. Netherlands; agr. and dairying; a. 883 sq. m.; p. (1948) 453,057.
- Groote Eylandt, *L.*, G. of Carpentaria; off est. of N. Terr., Australia.
- Grootfontein, *t.*, S.W. Africa; copper and lead mining; world's largest known meteorite on nearby farm; p. 2,008.
- Grossenhain, *t.*, Saxony, E. Germany; 20 m. N.W. of Dresden; industri.; p. 16,000.
- Grosseto, *prov.*, central Italy; ch. t. Grosseto, a. 1,735 sq. m.; p. (1951) 211,470.
- Grosseto, *t., cap.*, Grosseto Prov., Central Italy; p. (1951) 37,397.
- Groton, *indust. t.*, Conn., U.S.A.; opp. New London at mouth of Thames R.; p. (1950) 7,036.
- Grottaglia, *t.*, Lecce, Apulia, Italy; nr. Brindisi; white glaze pottery; p. 14,850.
- Grove City, *bor.*, Penns., U.S.A.; engines, carriages; p. (1950) 7,411.
- Grozny, *t.*, N. Caucasus, U.S.S.R.; on R. Terek; naphtha wells, refinery; p. (1939) 172,468.
- Grudziadz (Graudenz), *t.*, on R. Vistula, Polish Pomerania; p. 37,000.
- Grumo, *t.*, S. Italy; nr. Bari; p. 10,625.
- Gruyère, *dist.*, can. Friburg, Switzerland; cheese.
- Gruz, *t.*, Jugoslavia; nr. Dubrovnik; p. 10,000.
- Guadalajara, *c.*, Mexico; cap. of Jalisco st.; cotton and woolmfrs.; cath.; p. (1950) 337,000.
- Guadalajara, *prov.*, Spain; agr. and salt mines; a. 4,709 sq. m.; p. (1950) 203,278.
- Guadalajara, *mtg. t.*, G. prov., Spain; woollens, leather; p. (1949) 21,562.
- Guadalquivir, *R.*, E. Spain; flows into Mediterranean, nr. Valencia; length 130 m.
- Guadalcanal, *I.*, Brit. Solomon Is., Protectorate, Pac. Oc.
- Guadaluquivir, *R.*, Spain; flows through Andalusia to Atlantic; length 375 m.
- Guadalupe Hidalgo, *t.*, Mexico; treaty signed 1848 terminating Mexican-U.S. war; p. (1940) 25,934.
- Guadeloupe and Dependencies, Leeward group; a. 722 sq. m.; sugar produce; ch. port, Pointe-a-Pitre; p. 262,000. French Overseas Dept.; Leeward grp. consists of Guadeloupe (p. 113,412, ch. t. Basse-Terre), Grand Terre (p. 113,545, ch. t. Pointe-a-Pitre); united a. of Is., 583 sq. m.; and 5 smaller Is., Marie Galante, Désirade, St. Barthelemy, and St. Martin (total p. 304,000), still inhabited by white descendants of French emigrants of 300 years ago; mountainous; rum, sugar, coffee, bananas.
- Guadiana, *R.*, forms part of Spanish and Portuguese frontier; flows into Bay of Cadiz; length 510 m.
- Guadix, *c.*, Granada, S. Spain; cath.; hats, hemp, brandy, pottery; p. 26,023.
- Guaira, *La, spt.*, Venezuela; linked by rly. and motor road to Caracas; exports hides, sugar, cocoa, coffee; p. (1941) 10,103.
- Gualdo Tadino, *commune*, central Italy; cath.; pottery; p. 12,791.
- Guam, *I.*, most S. and largest of Marianas Archipelago, N. Pacific; naval stn. of the U.S.A.; ch. t. Agaña and spt. Is. Piti; rice, maize, copra; a. 225 sq. m.; p. (1950) 59,498.
- Guanabacoa, *indust. t.*, nr. Havana, Cuba; p. 21,999.
- Guanacasta, *prov.*, Costa Rica, Central America; p. (1950) 88,190.
- Guanajuato, *st.*, Central Mexico; very fertile, productive and prosperous; a. 11,804 sq. m.; p. (1950) 1,326,448.
- Guanajuato, *ch. t.*, G. st., Mexico; 250 m. from Mexico c.; cotton, silver, lead; p. (1940) 44,875.
- Guanare, *indust. t.*, Venezuela; nr. Trujillo; cap. of Portuguesa st.; p. 5,441.
- Guanta, *spt.*, Anzoategui st., Venezuela, S. America; on Caribbean Sea, linked by rail to Barcelona (10 m.); exports cattle, coal.
- Guapore, *R.*, Brazil, S. America; joins the Mamore; length 900 m.
- Guapore, *Fed. terr.*, Brazil; on Bolivian border; a. 98,135 sq. m.; cap. Porto Velho; p. (1947) 24,696.
- Guaranda, *cap.*, Bolívar prov., Ecuador, S. America; cinchona bark; p. (1938) 15,606.
- Guarda, *t.*, Portugal; alt. over 3,000 ft.; p. 9,766.
- Guarda, *wine-growing dist.*, Portugal; between Rs. Tagus and Douro; a. 2,126 sq. m.; p. (1950) 307,003.
- Guardafui, *C.*, most E. point of Africa.
- Guastalla, *commune*, N. Italy; spun silk, leather, cheese; p. 13,732.
- Guatemala, *republican st.*, Central America; adjoins Mexico, Br. Honduras, and El Salvador, coffee, bananas, chicle for man. of chewing gum in U.S.A.; a. 45,452 sq. m.; p. (1950) 2,787,030.
- Guatemala City, *cap. c.*, Guatemala; minerals; gold, silver, copper, lead; p. (1946) 241,335.
- Guayaquil, *ch. port*, Ecuador, S. America; on Guayas R., 30 m. above its entrance into the Bay of Guayaquil; devastated by fire in 1896 and 1899; univ.; shipbuilding, rubber, Panama hats; p. (1950) 262,624.
- Guayas, *prov.*, Ecuador; cap. Guayaquil; a. 8,331 sq. m.; p. (1950) 582,144.
- Gubat, *municipality*, Luzon, Philippine Is.; hemp, coconuts, sugar-cane region; p. 22,880.
- Gubbio, *t.*, Perugia, Italy; lustre ware; p. 30,850.
- Gubin (Guben), *walled t.*, Poland; on R. Neisse; cloth, yarn, pottery, paper; p. about 45,000.
- Gudbrandsdal, *or valley*, S. Norway; leads S.E. from Dovre Fjeld towards Oslo; drained by R. Logan; used by main road Oslo to Trondheim; provides relatively large area of cultivable land; hay, oats, barley, dairy cattle.
- Gudiyatam, *t.*, Madras, India; p. (1941) 24,688.
- Guebwiller, *t.*, Alsace, France; cottons; p. 10,085.
- Guelders (Gelderland), *prov.*, Netherlands; cap. Arnhem; a. 1939 sq. m.; p. (1947) 1,039,025.
- Guelph, *t.*, Ontario, Canada; cloth, yarn, pottery, paper; p. 23,275.
- Guernsey, Channel Is., between coast of France and England; tomatoes, grapes (under glass), flowers, cattle; ch. spt. St. Peter Port; a. 23 sq. m.; p. (1951) 44,384.



- Guerrero, Pacific st., Mexico:** cereals, cotton, coffee, tobacco; cap. Chilpancingo; ch. port Acapulco; a. 24,885 sq. m.; p. (1950) 915,528.
- Guiana, region, S. America:** a. 179,000 sq. m.; comprises Brit., Fr., and Neth. Guiana (*q.v.*).
- Guiana Highland, plateau, S. America:** extends approx. 900 m. from E. to W. across S. parts of Venezuela, Brit. Guiana, Suriname, Fr. Guiana; steep sides, rounded tops approx. 3,000 ft. alt. but rises to 8,635 ft. in Mt. Roraima; chiefly composed crystalline rocks rich in minerals.
- Guienne, old French prov.,** separated by R. Garonne from Gascony.
- Guildford, mkt. t., mun. bor., Surrey, Eng.:** 30 m. S.W. London; on gap cut by R. Wey through N. Downs; light industries; residtl.; p. (1951) 47,484.
- Guildford, sub. of Sydney, N.S.W., Australia:** p. 12,000.
- Guimarães, t., Minho, Portugal:** vineyards; p. 11,257.
- Guinea, general name for W. African coastlands** round the greatest bend of G. of G. from the Gambia to the Congo Rs.
- Guinea, military dep., Port. W. Africa:** between Senegal and Fr. Guinea, includes archipelagos of Bissagos and Bolama; ch. products: rice, palm oil, seeds, hides; cap. and ch. sp., Bissao; a. 13,948 sq. m.; p. (1940) 351,089.
- Guinea, Span. col., W. African coast:** includes Is. of Fernando Po (a. 800 sq. m., p. 26,405); Annobon (7 sq. m.), Corisco (5½ sq. m.), Little Elobey (22 acres), and Gr. Elobey (3 sq. m.); ch. t. Bata; products: cocoa, coffee, gold, etc.; p. 351,089.
- Guinea, Fr., see Fr. Guinea.**
- Guinea Current, ocean current,** flows W. to E. along Guinea Coast, diverted away from est. in Bight of Benin by C. Three Points; relatively warm water.
- Guines, t., Havana, Cuba, W. Indies:** sugar; p. 22,669.
- Guingamp, t., Côtes-du-Nord, N.W. France:** on R. Trieux, nr. St. Briec; ch. of Notre Dame; pilgrim resort; p. 8,575.
- Guinobatan, municipality, Luzon, Philippine Is.:** hemp; lime deposits; p. 26,419.
- Guipuzcoa, Basque prov., Spain:** mftg., minerals, agr.; cap. San Sebastian; a. 728 sq. m.; p. (1950) 374,040.
- Guisborough, t., urb. dist., N.R. Yorks, Eng.:** in Cleveland iron-mining dist., 8 m. S.E. of Middlesbrough; p. (1951) 8,009.
- Guiránwala, c., W. Punjab, Pakistan:** N. of Lahore; p. (1951) 120,860.
- Gujat, t., W. Punjab, Pakistan:** on Chenab R.; cotton, brassware; p. (1941) 22,000.
- Gulbarga, t., W. Hyderabad, India:** oil, cotton, flour, paint; p. (1941) 41,083.
- Gulf Basin, W. Australia:** artesian well basin.
- Gulfport, t., Mississippi, U.S.A.:** p. (1950) 22,659.
- Gulf Stream, current of the Atlantic,** issuing from Gulf of Mexico by Florida Strait.
- Gulf Stream Drift, see North Atlantic Drift.**
- Gummersbach, t., Rhine prov., Germany:** textiles, leather; p. 17,338.
- Gumti, R., trib. of Ganges, India:** flows past Lucknow.
- Guntur, t., Madras, India:** cotton mftg.; p. (1951) 125,255.
- Gurdaspur, t., E. Punjab, India:** p. 10,000.
- Gurgan (Asterabad), t., N. Persia:** nr. S.E. end of Caspian Sea; carpets, cotton, rice.
- Guryev, t., U.S.S.R.:** on mouth of R. Ural, entrance to Caspian Sea; p. (1939) 57,995.
- Gütersloh, t., N. Rhine-Westphalia, W. Germany:** nr. Bielefeld; silk and cotton industry; famous for its Pumpernickel (Westphalian rye bread); p. 32,800.
- Guthrie, t., Oklahoma, U.S.A.:** p. (1950) 10,113.
- Gwadar, Oman terr. on est. of W. Baluchistan:** p. 15,000.
- Gwalior, dist., Madhya Bharat, India:** a. 26,008 sq. m.
- Gwalior, t., Madhya Bharat, India,** formerly Lashkar, situated 76 m. S. of Agra in Gwalior dist.; cotton spinning, muslin, carpets, cereals, sugar-cane; bauxite; p. (1951) 241,577.
- Gwatar, sp., on G. of Oman, Persia:** by border of Pakistan.
- Gweebarra Bay, inlet of the coast of Donegal, Ireland.**
- Gwent, Plain of (Vale of Glamorgan), Lowland dist., Glamorgan, S. Wales:** lies S. of moorland of S. Wales Coalfield, extends E. into Monmouth; fertile soils; mixed farming except in industrial areas of Cardiff, Barry.
- Gympie, t., Queensland, Australia:** on Mary R., 106 m. from Brisbane; former goldfield; now dairying and pastoral district, with extensive banana plantations; p. (1947) 8,413.
- Győr, c., Hungary:** at junction of R. Raab with arm of R. Danube; cath.; horses, textiles; p. 57,190.
- Gytheon, sp., Peleponnese, Greece:** on G. of Laconia; p. (1940) 7,893.
- H**
- Haan, c., Rhine prov., Germany:** sub. of Solingen; steel, tools, silks, woollens; p. 10,670.
- Haapsalu, t., Estonia, U.S.S.R.:** p. 10,000.
- Haarlem, t., cap., N. Holland, Netherlands:** textiles, printing, brewing, bulb growing; Franz Hals settled here 1616; p. (1951) 164,007.
- Haab, dist., W. coast Red Sea, Ethiopia.**
- Hachioji, c., Honshu, Japan:** weaving, silk-cotton mixtures; p. (1947) 73,494.
- Hackensack, t., N.J., U.S.A.:** iron foundries, silk, jewellery, paper; p. (1950) 29,219.
- Hackettstown, t., N.J., U.S.A.:** silk, leather; agr. implements; p. (1950) 3,394.
- Hackney, metropolitan bor., London, Eng.:** commercial; p. (1951) 471,337.
- Haddington, burgh, cap., E. Lothian, Scot.:** on R. Tyne 18 m. E. of Edinburgh; woollen mnf.; grain mkt., corn mills; p. (1951) 4,497.
- Haderslev, t., Denmark:** gloves, tobacco, iron-works, tanning; p. 17,583.
- Hadhrāmūt, dist. Arabia:** E. of Aden Protectorate dist., Arabia, E. of Aden Protectorate; subject to loose British control; fertile coastal valley; frankincense, aloes, tobacco, shawls, carpets; p. 150,000 (est.).
- Hadsund, t., Jutland, Denmark:** p. 7,451.
- Hafnarfjörður, t., S. of Reykjavik, Iceland:** p. (1950) 5,055.
- Hagen, t., N. Rhine-Westphalia, Germany:** iron, steel, textiles, tanning, brewing; p. (1950) 146,401.
- Hagenau, t., N. Alsace, France:** textiles, porcelain, soap, beer; p. (1946) 14,000.
- Hagerstown, c., Maryland, U.S.A.:** college for women; machinery, furniture, chemicals; p. (1950) 36,250.
- Hagonoy, municipality, Luzon, Philippine Is.:** maize, rice, sugar; p. 29,734.
- Hague, C. de la, Cotentin Peninsula, France:** French fleet defeated by British 1692.
- Hague, The, or 's-Gravenhage or Den Haag, t., S. Holland, Netherlands:** seat of the Dutch Government; numerous canals, cas., Palace of Peace, art gall.; copper, lead and iron; printing, distilling; p. (1951) 571,853.
- Haifa, ch., sp., Israel:** on Bay of Acre at foot of Mt. Carmel; terminus of Iraq oil pipeline, closed since 1950; industries incl. oil refining, car assembly, steel and chemical works; p. (estd. 1951) 190,000.
- Hail, t., Nejd, Saudi Arabia:** p. over 10,000.
- Hailsham, mkt. t., rural dist., Sussex, Eng.:** 5 m. N. of Eastbourne; mats, rope and twine; p. (rural dist. 1951) 36,916.
- Haimen, c., Kiangsu, China:** on N. bank of Yangtze-Kiang estuary; commands channel N. of Tsungming I.; p. (est. 1935) 100,572.
- Hainan, I., S. coast of China:** ch. t. Klungchow; densely wooded, camphor, mahogany, rosewood; a. 13,974 sq. m.
- Hainaut, prov., Belgium,** adjoining N.E. border of France; industri. and agr.; coal and iron mines; a. 1,436 sq. m.; p. (1947) 1,124,000.
- Hainburg, t., Austria:** on R. Danube; tobacco; Roman remains; p. 7,545.
- Haine, R., Belgium, and Nord, France:** trib. of R. Scheldt; length 40 m.
- Haiphong, t., ch. port, Tongking, Viet-Nam, Indo-China:** thriving tr.; cotton, thread, soap; p. of greater H. (estd. 1948) 143,000.
- Haiti, rep. (the "Black Republic"), W. Indies:** consists of W. portion of I. of Hispaniola; cap. Port au Prince; language French; ch. products: coffee, cocoa, cotton, sisal, tobacco, bananas; a. 10,204 sq. m.; p. (1950) 3,111,973.

- Hakari, t.**, S.E., Turkey; p. 2,145.
- Hakodate, *spl.***, Hokkaido, Japan; fishing centre. sulphur, dried fish, timber; p. (1950) 228,394.
- Hal, t.**, central Belgium; flax; p. 17,408.
- Halberstadt, t.**, Saxony, Germany; sugar, cigars, paper; p. 57,000.
- Halden, t.**, S.E. corner of Norway; wood-pulp, paper; p. 9,368.
- Hale, *urb. dist.***, Cheshire, Eng.; 2 m. S. of Altrincham; p. (1951) 12,155.
- Halesowen, *industl. t., mun. bor.***, S.W. of Birmingham, Worcester, Eng.; agr. implements, nails; p. (1951) 39,684.
- Halesworth, t., *urb. dist.***, E. Suffolk, Eng.; on R. Blythe, 7 m. S. of Beccles; farming, corn mills, malting; p. (1951) 2,154.
- Halfaya, t.**, Anglo-Egyptian Sudan; nr. Khartoum.
- Halicz, t.**, S.W. Ukraine, U.S.S.R.; p. 4,386.
- Halifax, *spl., cap.***, Nova Scotia, Canada; gr. trade; naval stn. and dockyard, open in winter; machinery, iron foundries, boots and shoes; p. (1951) 85,589.
- Halifax, t., *co. bor.***, W.R. Yorks, Eng.; in valley of R. Calder, 7 m. S.W. of Bradford; carpets, woollens, iron, chemicals; p. (1951) 98,376.
- Hall, t.**, Württemberg, Germany; salt mines; p. 15,165.
- Hall Pen.**, S.E. Baffin Land, Canada; between Cumberland Sound and Frobisher Bay.
- Hallamshire, S., *dist.***, W.R. Yorks, Eng.; including Sheffield and Ecclesfield.
- Halland, co.**, Sweden; a. 1,901 sq. m.; p. (1950) 163,496.
- Halle, t.**, Saxony, Germany; on R. Saale; univ.; glass, sugar, starch; p. (1946) 222,505.
- Hallein, t.**, Salzburg, Austria; on Austro-German frontier, 13 m. S. of Salzburg; impt. salt-mines.
- Halliwell, t.**, Lancs, Eng.; nr. Bolton; cotton goods.
- Hallstatt, *vill.***, Upper Austria; early Iron Age culture type site.
- Halluin, *frontier industl. t.***, Nord, France; on R. Lys.
- Halmahera, I.**, Indonesia; mountainous, active volcanoes, tropical forests; spices, pearl fisheries; grows sago and rice; a. 6,648 sq. m.
- Halmstad, *spl.***, Kattgat, Sweden; cloth, jute, and paper factories; salmon fishing, granite, timber; p. (1951) 35,276. [3,167]
- Hals, t.**, Jutland, Denmark; on Lim Fjord; p. Helsingborg, see Helsingborg.
- Halsstead, t., *urb. dist.***, Essex, Eng.; on R. Colne, 12 m. N.W. of Colchester; stone-ware, farming; p. (1951) 5,995.
- Haltwhistle, *mkt. t., rural dist.***, Northumberland, Eng.; on R. Tyne; coal, baize; p. (rural dist. 1951) 7,487.
- Ham, t.**, Somme dep., N. France; on R. Somme, nr. Amiens; old castle; p. 2,793.
- Hama, c.**, Upper Syria; on R. Orontes; the ancient Hamath, cap. of a kingdom in times of Kings David and Solomon; p. (estd. 1950) 146,564.
- Hamadan, c.**, Persia; the ancient Ecbatana; carpet mfrs.; shellac; p. (estd. 1949) 122,000.
- Hamamatsu, t.**, S. Honshu, Japan; on est. plain 60 m. S.E. of Nagoya; centre of impt. cotton-mfg. region; textiles, dyeing, musical instruments; p. (1950) 152,028. [10,177]
- Hamar, t.**, Norway; on L. Mjosa; p. (1946)
- Hamburg, Land, W. Germany; cap. Hamburg;** a. 299 sq. m.; p. (1952) 1,674,811.
- Hamburg, *or. spl., industl. and commercial t.***, land Hamburg, W. Germany; astride R. Elbe, 85 m. upstream from N. Sea; handles vast trade, incl. liner traffic and barge traffic down Elbe from Saxony and Bohemia (Czechoslovakia), also much transshipment of goods; imports, fuel, raw materials for industries, foodstuffs; exports, textiles, leather goods, chemicals, light-engineering products; industries, ship-building, food processing, leather, brewing; p. (1950) 1,605,606.
- Hamburg, t.**, N.Y., U.S.A.; optical goods; mkt. gardening; p. (1950) 6,938.
- Hamburg, *bor.***, S.E. Penns., U.S.A.; coal, mnfs.; p. (1950) 3,805.
- Hame (Tavastehus), *dep.***, Finland; a. 7,118 sq. m.; p. (1950) 556,327.
- Hameln, t., Land, Lower Saxony, Germany; on R. Weser;** picturesque mediaeval t.; sugar-refining, machinery, cement, pottery, textiles, paper; legend of the Pied Piper of Hamelin; p. (1946) 43,576.
- Hamilton, *cap.***, Bermudas (on largest I.); p. (1948) 3,275.
- Hamilton, t., W. Victoria, Australia;** p. (1947) 7,180.
- Hamilton, c. and l. pt.**, S.E. Ontario, Canada; at W. end of L. Ontario; varied metallurgical mnfs. and has been called the "Birmingham" and "Manchester" of Canada; fruit ctr.; univ.; p. (1951) 201,296.
- Hamilton, t.**, New Zealand; p. (1951) 33,138.
- Hamilton, *burgh***, Lanark, Scot.; in Clyde valley, 10 m. S.E. of Glasgow; cotton and lace factories; p. (1951) 40,173.
- Hamilton, c.**, Ohio, U.S.A.; on the Gr. Maine R., thriving industry and tr.; p. (1950) 57,951.
- Hamilton, R.**, flows into H. Inlet, coast of Labrador, Canada; magnificent waterfall known as Grand Falls.
- Hamlet, t.**, N.C., U.S.A.; rly. centre in peach and tobacco growing region; p. (1950) 5,061.
- Hamm, t.**, Germany; on R. Lippe, nr. Dortmund; rly. marshalling yards; iron industries; p. 59,000.
- Hamme, t.**, E. Flanders, Belgium; rope, linen, and lace factories; p. 16,534.
- Hammerfest, *spl.***, Norway; p. 2,297.
- HammerSmith, *Thames-side metropolitan bor.***, London, Eng.; industl. and residtl.; p. (1951) 119,357.
- Hammond, c.**, Indiana, U.S.A.; ironwks., pork packing; p. (1950) 87,594.
- Hammond, t.**, La., U.S.A.; strawberry culture; p. (1950) 8,010.
- Hamoaze, estuary of the R. Tamar**, Plymouth, Eng.
- Hamphshire, co.**, Eng.; ch. town Southampton; farming; shipbuilding, brewing, tanning; a. 1,599 sq. m. (Inc. I. of Wight); p. (1951) 1,292,211.
- Hampstead, *hilly metropolitan bor.***, N. London, Eng.; mainly residential; p. (1951) 95,073.
- Hampton, *Thames-side t.***, W. of London, Eng.; Hampton Court Palace in the par.; Hampton Wick is a mile E. of H. Court.
- Hampton, t.**, S.E. Va., U.S.A.; oldest English community in the U.S.; fishing, oyster and crab packing; p. (1950) 5,966.
- Hamtramck, t.**, Michigan, U.S.A.; p. (1950) 43,355.
- Han Kiang, R.**, Hupeh, China; rises in E. edge of Tibet Plateau, flows S.E. between Tsainling Shan and Tapa Shan into Yangtze-Kiang at Hankow; upper course crosses fertile Nancheng valley, length 60 m., width 12 m.; lower course interrupted by many deep gorges especially below Ankang; ch. trib. of Yangtze-Kiang, length over 1,000 m.
- Hanan, t.**, Germany; gold and silver work, diamond cutting, brewing, chemicals, paper; p. 42,000.
- Hancock, t.**, Mich., U.S.A.; copper mines; iron and brass mnfs.; p. 5,554.
- Hangchow, c., *cap.***, Chekiang, China; head of H. Bay; former treaty port; extensive tr.; centre of silk-weaving industry; p. (estd. 1944) 606,134.
- Hangö, t.**, on S. point, Finland; p. 6,083.
- Hankow, c., *former treaty port***, Hupeh, China; 700 m. from mouth of Yangtze-Kiang; great tea mart, also large trade in opium, raw silk, cotton, etc., iron and steel wks., textiles, flour; p. (estd. 1948) 749,942. See also Wuhan.
- Hanley, *industl. t.*** (now included in co. bor. of Stoke-on-Trent), Staffs, Eng.; pottery, china.
- Hannibal, c.**, Missouri, U.S.A.; on R. Mississippi; timber and wagon building; p. (1950) 20,444.
- Hanoi, c., *cap.***, Tongking, Viet-Nam, Indo-China; ancient "Ke-Sho" or "great market" on the Red R.; old Annamese fort, now modern commercial centre; univ.; cotton, silks, tobacco, pottery; p. greater H. (estd. 1948) 237,500.
- Hanover, t.**, Germany; industl. and commercial t. W. of Brunswick; hardware, chemicals, machinery; p. (1950) 444,296.
- Hanover, *bor.***, Penns., U.S.A.; mnfs. shoes, jute, wire cloth; p. (1950) 14,048.
- Hanwell, t.**, Middx., Eng.; on R. Brent.
- Hanyang, *industl. c.***, China; opp. Hankow, on Yangtze-Kiang; p. (estd. 1934) 137,241. See also Wuhan.
- Haparanda, *spl.***, N. Sweden; exports tar, timber, and products of the Lapps; p. 2,951.
- Hapur, t.**, W. Uttar Pradesh, India; tr. in sugar, timber, cotton, brassware; p. (1941) 26,116.



- Harar**, *cap.*, Harar prov., Ethiopia; hides and skins, ivory, cattle; p. approx. 25,000.
- Harbin** (Pinking), *t.*, Manch., China; former treaty port; rly. junction, soya-beans, flour, tanning, distilling; p. (estd. 1947) 760,000.
- Harbour Grace**, *t.*, *pt.*, Conception Bay, Newfoundland, Canada; p. 2,065.
- Harburg**, *spt.*, Hanover, Germany; on R. Elbe, nr. Hamburg; linseed-crushing, india-rubber industry, etc.
- Hardanger Fjord**, W. coast Norway; length 75 miles.
- Hardt Mtns.**, W. Germany; northward continuation of Vosges on W. of Rhine rift valley; formerly forested, now largely cleared for pasture; highest points reach just over 2,000 ft.
- Hardwar**, *t.*, Uttar Pradesh, India; on R. Ganges; great annual fair and pilgrimage; p. 33,287.
- Harelbeke**, *t.*, N.W. Belgium; tobacco; p. 10,446.
- Harfleur**, *t.*, *spt.*, Calvados, France; potteries, distilling, chemicals; p. 5,080.
- Hari-Rud**, *R.*, N. Afghanistan and Persia; the ancient "Arius"; length 650 m.
- Harlech**, *t.*, Merioneth, Wales; on Cardigan Bay, 10 m. N. of Barmouth; famous cas.; farming.
- Harlen**, *R.*, N.Y., U.S.A.; and Spuyten Duyvil Creek together form a waterway about 8 m. in length, which extends from the East R. to the Hudson R., and separates the boroughs of Manhattan and Bronx.
- Harlingen**, *spt.*, Friesland, Netherlands; margarine, mixed farming, fish; p. 10,400.
- Harlow**, *t.*, Essex, Hertfordshire, Eng.; in valley of R. Stort, 22 m. N.E. of London; one of "New Towns" constituted 1946; spreads S.W. from nucleus of old mkt. t. of Harlow; light industries; p. (1951) 5,828.
- Härnösand**, *t.*, Sweden; on G. of Bothnia; saw-mills, pulp; p. (1948) 13,316.
- Harpenden**, *t.*, *urb. dist.*, Herts, Eng.; in Chiltern Hills, 5 m. N. of St. Albans; Rothamsted agr. experimental station; farming, brewing, bricks, hats; p. (1951) 14,236.
- Harrington**, *resid.*, sub., London, Middx., Eng.
- Harris**, *par.*, Lewis I., Outer Hebrides, Scot.; inc. several sm. islets; famous for tweeds, fishing; p. 4,467.
- Harrisburg**, *c.*, *cap.*, Penns., U.S.A.; iron, steel factories, machinery, cigarettes, cotton goods; p. (1950) 89,544.
- Harrisburg**, *t.*, Ill., U.S.A.; p. (1950) 10,999.
- Harrison** or East Newark, *indust. t.*, New Jersey, U.S.A.; p. (1950) 13,490.
- Harrogate**, *t.*, *mun. bor.*, *spt.*, W.R. Yorks, Eng.; in valley of R. Nidd, 14 m. N. of Leeds; numerous chalybeate springs; p. (1951) 50,454.
- Harrow**, *urb. dist.*, Middx., Eng.; 12 m. N.W. of London; famous Public School; p. (1951) 219,463.
- Harsova**, *t.*, Romanla; on R. Danube, N. of Cernovada; p. 3,762.
- Harstad**, *ch. t.*, Lofoten Is., N.W. Norway; p. 4,283.
- Hart Fells**, *mtn.*, between Peebles and Dumfries, Scot.; alt. 2,651 ft.
- Hartebeestpoort Dam**, Transvaal, Union of S. Africa; on R. Crocodile (Limpopo), 25 m. W. of Pretoria; supplies water for cultivation, under irrigation, of cotton, maize, tobacco.
- Hartford**, *cap.*, Conn., U.S.A.; large commercial centre, seat of Trinity College; small arms, typewriters, electrical machinery; p. (1950) 177,397.
- Hartford City**, Indiana, U.S.A.; p. (1950) 7,253.
- Hartland Point**, on Barnstaple Bay, N. Devon, Eng.
- Hartlepool**, *spt.*, *mun. bor.*, Durham, Eng.; on E. est., 2 m. N. of W. Hartlepool; p. (1951) 17,217.
- Hartlepool**, W., *spt.*, *co. bor.*, Durham, Eng.; on E. est., 3 m. N. of estuary of R. Tees; iron industries, shipbuilding, light industries; p. (1951) 72,597.
- Hartsville**, *t.*, S. C., U.S.A.; cotton, rayon, silk textiles; p. (1950) 5,658.
- Harvey**, *t.*, N.E. Ill., U.S.A.; rolling stock, diesel engines, heavy machinery; p. (1950) 20,683.
- Harwell**, *vil.*, Berkshire, Eng.; 12 m. S. of Oxford; first atomic pile built in England.
- Harwich**, *spt.*, *mun. bor.*, Essex, Eng.; on S. est. of estuary of R. Stour; packet stn. for Belgium, Netherlands, Denmark; docks, naval base, fisheries; p. (1951) 13,488.
- Harz Mtns.**, range in Hanover and Brunswick, Germany; highest peak the Brocken; forested slopes rich in minerals; length 57 m.
- Haslemere**, *mkt. t.*, *urb. dist.*, Surrey, Eng.; 13 m. S.W. of Guildford, on hills of Hindhead and Blackdown; residtl.; p. (1951) 11,992.
- Hastings**, *t.*, *mun. bor.*, Lancs, Eng.; on Rossendale Fells, 3 m. S. of Accrington; cotton and engineering wks.; p. (1951) 14,505.
- Hasselt**, *t.*, prov. Limbourg, Belgium; gin distilleries; p. (1947) 29,229.
- Hastings**, *t.*, *co. bor.*, E. Sussex, Eng.; on S. est., midway between Beachy Head and Dungeness; seaside resort; one of the Cinque Ports; p. (1951) 65,506.
- Hastings**, *t.*, Michigan, U.S.A.; p. (1950) 6,096.
- Hastings**, *t.*, Minnesota, U.S.A.; p. (1950) 6,560.
- Hastings**, *t.*, N.I., New Zealand; on Hawkes Bay, nr. Napier; p. (1951) 23,792.
- Hastings**, *t.*, Nebraska, U.S.A.; p. (1950) 20,211.
- Hastings-on-Hudson**, *t.*, N.Y., U.S.A.; residtl.; mnfs. copper, chemicals; p. (1950) 7,565.
- Hatay** (formerly Sanjak of Alexandretta), ceded to Turkey by France 1939; p. (1945) 273,350.
- Hatfield**, *rural dist.*, Herts, Eng.; Hatfield House, seat of the Marquis of Salisbury; p. (rural dist. 1951) 23,326.
- Hatfield**, *t.*, Hertfordshire, Eng.; on Great North Road, 19 m. N. of London; one of "New Towns" constituted 1946; growing around old t. of Bishops Hatfield; light engineering, aircraft; p. (1951) 9,258.
- Hathras**, *t.*, Aligarh dist., W. Uttar Pradesh, India; sugar, cotton, carved work; p. 30,784.
- Hatteras**, *C.*, N. Carolina, U.S.A.; stormy region.
- Hattiesburg**, *t.*, Mississippi, U.S.A.; p. (1950) 29,474.
- Hattingen**, *t.*, Westphalia, Germany; sub. of Essen; iron, machinery; p. 14,402.
- Hatvan**, *mkt. t.*, Hungary; E. of Budapest; p. 16,020.
- Haubourdin**, *t.*, Nord, France; nr. Lille; p. (1946) 15,971.
- Haugesund**, *spt.*, S. Norway; on S.W. coast, 35 m. N. of Stavanger; ch. ctr. of herring fishery; canning indus.; p. 18,119.
- Hauraki**, *G.*, E. coast N.I., New Zealand.
- Haut-Rhin**, see Rhin-Haut.
- Haute-Garonne**, see Garonne-Haute.
- Haute-Loire**, see Loire-Haute.
- Haute-Marne**, see Marne-Haute.
- Haute-Saône**, see Saône-Haute.
- Haute-Savoie**, see Savoie-Haute.
- Haute-Vienne**, see Vienne-Haute.
- Hautes-Alpes**, see Alpes-Hautes.
- Hautes-Pyrénées**, see Pyrénées.
- Havana**, *prov.*, Cuba; *cap. H.*; lge. export tr.; a. 3,173 sq. m.; p. (1943) 1,235,939.
- Havana**, *spt.*, *cap.*, Cuba; ch. c. of the W. Indies; cigars, tobacco, sugar, rum, coffee, woollens, straw hats; p. 750,000.
- Havant** and Waterloo, *urb. dist.*, Hants, Eng.; at foot of Portsdown Hill, 6 m. N.E. of Portsmouth; malting, brewing, tanning; p. (1951) 32,453.
- Havel**, *R.*, Germany; flowing to R. Elbe; length 221 m.
- Haverfordwest**, *mkt. t.*, *mun. bor.*, Pembroke, Wales; 6 m. N.E. of Milford Haven; coal, paper; p. (1951) 4,840.
- Haverhill**, *t.*, *urb. dist.*, Suffolk, E. Eng.; p. (1951) 4,096.
- Haverhill**, *t.*, Mass., U.S.A.; boot factories; p. (1950) 47,280.
- Haverstraw**, *t.*, N.Y., U.S.A.; brick-making; p. (1950) 5,818.
- Havre**, *Le*, *spt.*, Seine-Inf., France; on English Channel at mouth of R. Seine; fine boulevards; ship-building, engineering, chemicals, ropes, cottons; p. (1946) 106,934.
- Havre de Grace**, *t.*, Md., U.S.A.; resort; duck shooting; p. (1950) 7,809.
- Hawaii**, *I.*, largest and most attractive of the Hawaiian group; mountainous, highest peak Mauna Kea, alt. 13,820 ft.; Mauna Loa has largest active volcano in the world extending about 60 m. and over 13,600 ft., whilst Mauna Haleakala has largest pit crater; forested, cane sugar, pineapples, coffee, hides, bananas; a. 4,016 sq. m.; p. (1950) 67,683.
- Hawaiian Is.** (Sandwich Is.), Pac. Oc., terr., U.S.A.; a. 6,441 sq. m.; *cap.* Honolulu; p. (1950) 499,714.

- Hawarden, *t.*, rural dist., Flint, N. Wales; cas.; p. (rural dist. 1951) 34,659.
- Hawash, R., Ethiopia, flows E. of Shoa frontier; length 500 m.
- Hawera, *t.*, N.I., New Zealand; p. (1951) 5,340.
- Hawes Water, L., Westmorland, Eng. (2½ m. long).
- Hawick, burgh, Roxburgh, Scot.; on R. Teviot, 18 m. S.W. of Kelso; woollens, dyewks., tanneries; p. (1951) 16,718.
- Hawke's Bay, prov. dist., N.I., New Zealand; on E. cst.; cap. Napier; a. 4,280 sq. m.; p. (1951) 91,244.
- Hawkesbury, R., N.S.W., Australia; length 330 m.
- Hawkesbury, *t.*, Ontario, Canada; p. 6,263.
- Haworth, *t.*, W.R. Yorks, Eng.; nr. Keighley; home of the Brontës.
- Hawthorne, *t.*, S.W. Cal., U.S.A.; residtl.; in gas- and oil-producing area; p. (1950) 16,316.
- Hawthorne, *bor.*, N.J., U.S.A.; paint, glass, textiles, dyewks.; p. (1950) 14,816.
- Hay, R., Alberta, Canada; flows into G. Slave Lake.
- Hay, urb. dist., Brecknock, Wales; on R. Wye; p. (1951) 1,452.
- Hay, *t.*, N.S.W., Australia; situated on R. Murrumbidgee on N. edge of Riverina district; collecting centre for fruit and wheat grown under irrigation, for despatch by rail E. to Narandera and Sydney, or by river W. to Adelaide.
- Hayange, *t.*, Lorraine, France; ironwks.; p. 10,358.
- Havden, *Mt.*, or Grand Teton peak, Rockies, Wyoming, U.S.A.; alt. 13,600 ft.
- Haydock, *t.*, urb. dist., Lancs, Eng.; coal-mining; p. (1951) 11,838.
- Hayes and Harrington, urb. dist., Middx, Eng.; 10 m. W. of London; residtl.; many and varied light industries; p. (1951) 65,608.
- Hayle, *t.*, Cornwall, Eng.; nr. St. Ives; engineering; p. 1,026.
- Hayling Island, resort, Hants, Eng.; E. of Portsmouth.
- Haystack, summit of the Adirondacks, Vermont, U.S.A.; alt. 4,919 ft.
- Hayward's Heath, mkt. *t.*, Sussex, Eng.; nr. Cuckfield; cattle mkt.; p. 5,400.
- Hazard, *t.*, Ky., U.S.A.; gas, coal, sawmills, steel mills; p. (1950) 6,935.
- Hazaribagh, *t.*, Bihar, India; coal, mica.
- Hazebrouck, *t.*, France, Nord; rly. centre, textiles, grain, livestock; p. (1946) 14,391.
- Hazel Grove and Bramhall, urb. dist., Cheshire, Eng.; p. (1951) 19,659.
- Hazleton, *bor.*, Penns., U.S.A.; anthracite region; coal, iron, textiles, iron and steel mnfs.; p. (1950) 35,491.
- Headingley, sub., Leeds, Yorks, Eng.; mainly residtl.
- Healdtown, minous, *str.*, nr. Fort Beaufort, C. of Good Hope, S. Africa.
- Heanor, *t.*, urb. dist., Derby, Eng.; 7 m. N.E. of Derby; coal, ironstone, lace; p. (1951) 24,395.
- Heard, I., S. Indian Ocean; 280 m. S.E. of Kerguelen I.; Australian possession.
- Heathrow, vil., Middx, Eng.; on W. margin of built-up area of London; site of London Airport; arterial road link with London.
- Heaton Norris, industr. *t.*, Lancs, Eng.; on R. Mersey; p. 11,000.
- Hebronville, *t.*, Texas, U.S.A.; oil; cattle; p. (1950) 4,302.
- Hebburn, *t.*, urb. dist., Durham, Eng.; on R. Tyne, 4 m. below Gateshead; shipbuilding, engineering, and colliery industries; p. (1951) 23,163.
- Hebden Royd, urb. dist., W.R. Yorks, Eng.; cotton factories, dyewks.; p. (1951) 10,233.
- Hebrides or Western Is., Scot., grouped as Outer and Inner Hebrides; ch. *t.* Stornoway, Lewis; a. 2,850 sq. m.
- Hebron, *t.*, Jordan; 16 m. S.W. of Jerusalem; p. (1946) 23,183.
- Heckmondwike, *t.*, urb. dist., W.R. Yorks, Eng.; p. (1951) 8,648.
- Hede, *t.*, Jämtland, Central Sweden; p. 1,956.
- Hedmark, *co.*, Norway; on Swedish border; a. 10,621 sq. m.; p. (1950) 173,067.
- Hedon, *mun. bor.*, E.R. Yorks, Eng.; p. (1951) 1,991.
- Heerenveen, commune, Friesland prov., N. Netherlands; livestock; p. (1951) 24,205.
- Hegoumenitsa, *cap.*, Thesprotia, Epirus, Greece; p. (1951) 1,353.
- Heidelberg, famous *univ. c.*, Württemberg-Baden, Germany; on R. Neckar, nr. Mannheim; beer, wine, books, scientific instruments; p. (1950) 116,488.
- Heidenheim, *t.*, N. of Ulm, Germany; p. 34,694.
- Heilbronn, *c.*, Württemberg-Baden, Germany; metal goods, machinery, paper; p. 77,000.
- Heiligenstadt, *t.*, Germany; E. of Kassel; p. 10,000.
- Heilungkiang, prov., Manchuria, N. China; cap. Pehán; a. 70,969 sq. m.; p. (1947) 2,469,000.
- Hejaz, *region*, Saudi Arabia; mainly desert; very poor communications; ch. *t.* Mecca; a. 150,000 sq. m.; p. 1,000,000 (estimated).
- Hekla, volcano, Iceland; alt. 5,095 ft.
- Helder (Den Helder), *t.*, N. Holland, Netherlands; on est. of Holland, 50 m. N. of Amsterdam, and connected by Helder Canal; arsenal and garrison; p. (1951) 36,209.
- Helena, *t.*, Arkansas, U.S.A.; on Mississippi R.; shipping centre for cotton; p. (1950) 11,236.
- Helena, *cap.*, Montana, U.S.A.; gold, silver, iron, smelting; p. (1950) 17,581.
- Helensburgh, residtl. burgh, Dunbarton, Scot.; on N. side of Firth of Clyde at entrance to Gare Loch; p. (1951) 8,760.
- Heligoland, German I., N. Sea, off mouth of Elbe; formerly British.
- Helikon, *mtn.*, Greece; between G. of Corinth and L. Kopais; alt. 5,736 ft.
- Hell Gate R., Montana, U.S.A.; trib. of Bitter Root R.
- Hellendoorn, commune, E. Netherlands; textiles; p. 13,721.
- Hellespont, see Dardanelles.
- Hellin, *t.*, Albacete, Spain; sulphur mines; p. 25,643.
- Helmoud, *t.*, N. Brabant, Netherlands; on the Bois-le-Duc Canal; textiles; p. (1951) 36,262.
- Helmstedt, *t.*, Brunswick, Germany; coal; p. 13,000.
- Helmund, R., Afghanistan; falls into L. Hamun; length 650 m.
- Helsingborg or Hålsingborg, *spt.*, Sweden; on the Sound, opposite Helsingör, Denmark; pottery, brewing, sugar-refining; p. (1951) 71,718.
- Helsingør, *t.*, Sjælland (Zealand), Denmark; p. 18,930.
- Helsinki (Helsingfors), *spt.*, *cap.*, Finland; on G. of Finland, harbour ice-bound Jan. to April except for channel opened by ice-breaker; *univ.*; timber products, textiles, carpets, etc.; p. (1950) 367,462.
- Helston, *t.*, *mun. bor.*, Cornwall, Eng.; on R. Hel, 8 m. W. of Falmouth; p. (1951) 5,545.
- Helvellyn, *mtn.*, Cumberland, Eng.; 9 m. S.E. Keswick; alt. 3,118 ft.
- Hemel Hempstead, *t.*, *mun. bor.*, Herts, Eng.; in Chiltern Hills, 7 m. N. of Watford; paper, straw-plaiting, tanning; p. (1951) 23,523.
- Hemel Hempstead, *t.*, Herts, Eng.; on S. slopes of Chilterns, 9 m. N. of Watford; one of "New Towns" constituted 1946; consists of bulk of *mun. bor.* of Hemel Hempstead with new growth to E. and S.E.; paper, tanning, light engineering; p. (1951) 22,064.
- Hempstead, *t.*, Long I., N.Y., U.S.A.; p. (1950) 29,135.
- Hemsworth, urb. dist., W.R. Yorks, Eng.; 6 m. S.E. of Wakefield; p. (1951) 13,654.
- Henderson, *c.*, Kentucky, U.S.A.; tobacco, cotton, coal; p. (1950) 16,837.
- Henderson, *t.*, N.C., U.S.A.; cotton, tobacco, mkt. and mnfs.; p. (1950) 10,996.
- Hendon, *mun. bor.*, Middx., Eng.; N.W. sub. to London; many varied light industries; p. (1951) 155,835.
- Hengyang, *c.*, Hunan, China; on Siang Kiang in foot-hills to S. of Yangtze plain; nr. *impt.* lead and zinc mining dist.; p. (estd. 1946) 181,424.
- Henley-on-Thames, *mun. bor.*, Oxford, Eng.; 5 m. N.E. of Reading; mkt. gardening, brewing; p. (1951) 7,970.
- Hennebont, *t.*, Morbihan, France; on R. Blavet; p. 8,297.
- Henrietta Maria, C., Ontario, Canada; on Hudson Bay.
- Henry, C., Virginia, U.S.A.; at S. entrance to Chesapeake Bay.
- Hensbarrow, *upland area*, Cornwall, Eng.; granite; *impt.* kaolin mining district, kaolin



- exported by sea from Par, Fowey; rises to over 1,000 ft.; a. 30 sq. m.
- Henzada, t.**, Burma, on R. Irrawaddy; p. 28,542.
- Herat, cap. c.** of prov. same name, Afghanistan; on Hari Rud; strongly fortified; has been called "the key of India"; p. 85,000.
- Hérault, dep.**, S. France; wines, fruit, olives, cheese, sheep-rearing; cap. Montpellier; a. 2,402 sq. m.; p. (1946) 461,100.
- Herberton, t.**, E. Queensland, Australia; on Atherton Plateau, Gr. Dividing Range, 45 m. S.W. of Cairns to which it is linked by rail; tin-mining.
- Herculaneum, buried c.**, Italy; 7 m. E.S.E. Naples; re-discovered in 1709.
- Hercules, t.**, Transvaal, S. Africa; sub. of Pretoria; p. 16,119.
- Heredia, prov.**, Costa Rica, Central America; cap. Heredia; p. (1950) 51,760.
- Hereford, co.**, Eng.; on Welsh border; fertile, fruit, cereals, cattle, sheep, cider, salmon, limestone; a. 842 sq. m.; p. (1951) 127,092.
- Hereford, co. t.**, *mun. bor.*, Hereford, Eng.; on R. Wye, in centre of Plain of Hereford; cath.; cider, tiles, leather; p. (1951) 32,490.
- Herenthals, commune**, N. Belgium; mftg.; p. 12,172.
- Herford, t.**, N. Rhine, Germany; on R. Werra; cotton, flax, furniture, cigars; p. 42,000.
- Herisau, t.**, Appenzell, Switzerland; muslin mftg., embroidery, dyeing; p. (1941) 12,789.
- Herkimer, t.**, N.Y., U.S.A.; dairy centre; p. (1950) 9,400.
- Herm, sm. I.** of Channel Is., English Channel; 4 m. N.W. Sark and N.E. of Guernsey.
- Hermou, m/n.**, Syria; in Anti-Lebanon mtns.; alt. 9,385 ft.
- Hermosillo, t., cap.**, Sonora, Mexico; on Sonora R.; lmpt. tr.; distilling, silver; p. (1940) 30,065.
- Hermopolis, spf., cap.**, Cyclades, Greece; p. (1951) 16,953.
- Herne, t.**, N. Rhine-Westphalia, Germany; nr. Dortmund; coal; p. (1950) 111,591.
- Herne Bay, t., urb. dist.**, Kent, Eng.; on est., 62 m. from London; p. (1951) 18,298.
- Herning, t.**, Jutland, Denmark; commercial; p. 18,140.
- Hernösand, see Härnösand.**
- Herrera, prov.**, Panama, cap. Chitré; p. (1950) 50,095.
- Hersfeld, c.**, Hesse-Nassau, Germany; textiles; machinery; cable; p. 11,297.
- Herstal, t.**, Belgium; nr. Liège; renowned repeating rifle factories, aero-engines; p. (1947) 27,260.
- Herten, commune**, Westphalia, Germany; coal, machinery; p. 34,055.
- Hertford, co.**, Eng.; undulating parks, woods, wheat, fruit; industries: straw-plaiting, silk and cotton thread; a. 632 sq. m.; p. (1951) 609,735.
- Hertford, co. t.**, *mun. bor.*, Hertford, Eng.; on R. Lea, 20 m. N. of London; malting, brewing, gloves; p. (1951) 14,190.
- Hertogenbosch, t.**, Netherlands; on R. Maas; cap. of N. Brabant prov.; p. (1951) 58,471.
- Hessen, land**, Germany; a. 7,931 sq. m.; cap. Wiesbaden; p. (1950) 4,323,801.
- Hessen Nassau, former Prussian prov.**, Germany; a. 6,472 sq. m.; cap. Cassel; forested, cereals, tobacco, flax, potatoes, mineral springs, iron, coal, copper.
- Heston and Isleworth, mun. bor.**, Middx, Eng.; sub. W. of London; mkt. gardening; p. (1951) 106,636.
- Hetch Hetchy Dam, Cal., U.S.A.**; on R. Tuolumne 100 m. upstream from St. Joaquin R.; ch. source of irrigation for middle St. Joaquin valley; supplies water and hydro-electricity to San Francisco; height 430 ft., capacity 1,466,000,000,000 gallons.
- Hetton, t., urb. dist.**, Durham, Eng.; 5 m. N.E. of Durham; coal; p. (1951) 18,511.
- Héverlé, commune**, central Belgium; market gardens; p. (1947) 10,141.
- Hex, R., C. of Gd. Hope, Union of S. Africa**; rises in Lange Berge, flows S.W. to Gr. Berg R. at Worcester; valley gives access to Gr. Karroo and Central African tableland, is used by trunk rly. from Cape Town to Johannesburg.
- Hexham, mkt. t., urb. dist.**, Northumberland, Eng.; on R. Tyne, 20 m. W. of Newcastle; gloves; p. (1951) 9,715.
- Heysham, see Morecambe and Heysham.**
- Heywood, t., mun. bor.**, Lancs, Eng.; 3 m. E. Bury; coal, cotton, chemicals; p. (1951) 25,193.
- Hiawasse, R.**, Tennessee, U.S.A.; trib. Tennessee R.
- Hibbing, t.**, Minn., U.S.A.; iron ore; p. (1950) 16,276.
- Hickory, t.**, N. Carolina, U.S.A.; p. (1950) 14,755.
- Hidalgo, st.**, Mexico; cap. Pachuca; mining, coffee, sugar, tobacco; a. 8,057 sq. m.; p. (1950) 850,505.
- High Point, t.**, N. Carolina, U.S.A.; textiles; p. (1950) 39,973.
- High Wycombe, t., mun. bor.**, Bucks, Eng.; 15 m. N.W. of Windsor; furniture; p. (1951) 40,692.
- Higham Ferrers, mkt. t., mun. bor.**, Northants, Eng.; 3 m. E. of Wellingborough; p. (1951) 3,679.
- Highgate, residtl. dist.**, London, Eng.; on hill N. of St. Pancras bor.
- Highland Park, t.**, Michigan, U.S.A.; motor cars; p. (1950) 46,393.
- Highland Park, bor.**, N.J., U.S.A.; non-metallic stn. of U.S. Bureau of Mines; p. (1950) 9,721.
- Highlands of Scotland, mountainous dists.**, N. of the Grampians.
- Hildburghausen, t.**, Thuringia, Germany; on R. Werra; p. 6,900.
- Hilden, t.**, N. Rhine-Westphalia, Germany; S.E. of Düsseldorf; textiles; p. 20,000.
- Hildesheim, old industr. t.**, Hanover dist., Germany; at foot of Harz Mtns.; cath.; machinery, farm implements, sugar, cigars, brewing, tanning, bell foundry; p. 76,429.
- Hilla, t.**, Iraq; on R. Euphrates; nr. ancient Babylon; p. (1947) 261,903.
- Hilleröd, t.**, N.E. Zealand, Denmark; p. 8,387.
- Hillsboro, t.**, Texas, U.S.A.; cotton region; p. (1950) 8,363.
- Hillsdale, c.**, Michigan, U.S.A.; p. (1950) 7,297.
- Hillside, t.**, N.J., U.S.A.; engines; speed boats; drugs; lumber; p. (1950) 21,007.
- Hilo, c.**, Hawaii; nr. largest active volcano in the world, Mauna Loa; alt. 13,600 ft.
- Hilversum, t.**, Netherlands; nr. Utrecht; floor-cloth factories, wireless equipment; broadcasting stn.; p. (1951) 89,447.
- Himachal Pradesh, st.**, Indian Union; a. 10,600 sq. m.; cap. Simla; p. (1951) 939,437.
- Himalayas, vast chain of mtns.** along N. border of India; 1,600 m. long; highest peak, Mt. Everest, 29,002 ft.
- Himeji, industr. t.**, S. Honshu, Japan; on shore of Inland Sea, 30 m. W. of Kobe; iron and steel industry, heavy engineering; p. (1950) 212,100.
- Hinckley, mkt. t., urb. dist.**, on border of Leicester and Warwick, Eng.; hosiery, boots; p. (1951) 39,088.
- Hindenburg, see Zabrze.**
- Hindhead, hilly common and health resort**, Surrey, nr. Haslemere, Eng.
- Hindiya Barrage, dam**, Iraq; across R. Euphrates, 30 m. above Hilla; provides flood control and irrigation in area between Shatt el-Hilla and R. Euphrates.
- Hindley, t., urb. dist.**, Lancs, Eng.; 2 m. S.E. of Wigan; mnfs.; p. (1951) 19,414.
- Hindu Kush, mtn. range** continuing W. of Himalayas; length 350 m.; highest point 20,000 ft.
- Hindustan**, former name of part of N. India between the Himalayas and the Vindhya ranges.
- Hinojosa del Duque, commune**, S. Spain; copper; agr.; textiles; p. 14,844.
- Hirado, I.**, off W. est. Japan; nr. Sasebo; famous for blue and white porcelain; p. 151,948.
- Hirosaki, t.**, Honshu, Japan; lacquer ware; p. Hiroshima, *spf.*, c. central Honshu, Japan; close to the "Island of Light" with its famous Shinto temple; first city to be destroyed by atomic bomb; now partially rebuilt; p. (1950) 258,712.
- Hirson, t.**, Aisne, France; on R. Oise; basket work; p. (1946) 10,462.
- Hispaniola, Greater Antilles, W. Indies**; large I., divided between the Haiti and Dominican Reps.; a. 29,536 sq. m.
- Histon, vil.**, Cambridge, Eng.; 5 m. N. of Cambridge; lge. jam and fruit preserving industry.
- Hitchin, mkt. t., urb. dist.**, Herts, Eng.; in gap through Chiltern Hills, 35 m. N. of London; malting, chalk, straw-plaiting; p. (1951) 19,959.

- Hjelmar Lake**, Sweden; S.W. of L. Malar; a. 185 sq. m.
- Hjörning, t.**, Jutland, N. Denmark; textiles, engineering, food processing; p. (1947) 13,346.
- Hlaing (Rangoon)**, R., Burma; flows to G. of Martaban.
- Hobart, c., cap.**, Tasmania, Australia; on R. Derwent; gr. fruit exports; p. (1947) 72,155.
- Hobbs, t.**, N.M., U.S.A.; oilwell area; supply centre; p. (1950) 13,375.
- Hoboken, t.**, Antwerp, Belgium; shipbuilding; p. (1947) 31,725.
- Hoboken, c., N.J.**, U.S.A.; lge. ocean commerce; p. (1950) 50,676.
- Hobro, spt.**, Jutland, Denmark; at W. end of Mariager Fjord; p. 7,699.
- Höchst, t.**, Hessen; Germany; on R. Main; p. 15,791.
- Hochstetter, mtn.**, S.I., New Zealand; in Southern Alps; alt. 11,200 ft.
- Hoddesdon, t.**, urb. dist., Herts, Eng.; in Lea valley 4 m. S. of Ware; brewing; p. (1951) 13,728.
- Hodeida, spt.**, Yemen, Arabia; on Red Sea; p. 50,000.
- Hodmezovarsarhely, t.**, S.E. Hungary; wheat, fruit, tobacco, cattle; p. 61,739.
- Hof, t.**, Bavaria, Germany; on R. Saale; textiles, sugar, dyes, chemicals, hardware; p. 54,645.
- Hoffman, mtn. peak** of the Sierra Nevada, California; alt. 8,108 ft.
- Hofuf, t.**, Hasa, Saudi Arabia; p. 31,500.
- Hog's Back**, Surrey, Eng.; chalk ridge; alt. 505 ft.
- Höhe Tauern, Alpine range**, Tyrol, Austria; rugged crystalline rocks; highest point, Grau Glockner, alt. 12,461 ft.
- Hohenlimburg, t.**, N. Rhine-Westphalia, Germany; nr. Dortmund; iron, steel; p. 16,000.
- Hohenstein-Ernstthal, t.**, Saxony, Germany; textiles, metal goods; p. 16,754.
- Hohenzollern, former prov.**, Germany; Upper Danube; a. 441 sq. m.
- Hokiang, prov.**, China; a. 50,816 sq. m.; cap. Kaimusze; p. (estd. 1947) 1,298,000.
- Hokitika, t.**, S.I., New Zealand; on W. cst., 20 m. S. of Greymouth; p. (1951) 2,390.
- Hokkaido, lge. I.**, Japan, N. of Honshu; a. 34,276 sq. m.; p. (1950) 4,295,567.
- Holbaek, t.**, Zealand, Denmark; W. of Copenhagen; p. 13,467.
- Holbeach, mkt. t.**, S. Lincoln, Eng.; in Fens, 7 m. E. of Spalding; agriculture, brewing; p. (1948) 5,382.
- Holborn, metropolitan bor.**, London, Eng.; immediately N. of City; p. (1951) 24,806.
- Holderness, div.**, E.R. Yorks, Eng.; between R. Humber and N. Sea; agr. and pastoral.
- Holguin, t.**, E. Cuba, W. Indies; exports cattle, maize, tobacco, hardwoods; p. 171,997.
- Holland, see Netherlands.**
- Holland, Parts of; admin. div. of Lincoln, Eng.**; adjoining the Wash; ch. ts. Boston, Spalding; a. 419 sq. m.; p. (1951) 101,545.
- Holland, t.**, Michigan, U.S.A.; p. (1950) 15,858.
- Holland, n. prov.**, Netherlands; a. 1,081 sq. m.; p. (1947) 1,794,070.
- Holland, S. prov.**, Netherlands; a. 1,130 sq. m.; p. (1947) 2,308,382.
- Holidaysburg, bor.**, Penns., U.S.A.; coal, iron ore, limestone; foundries, machine shops; p. (1950) 6,433.
- Holloway, N. dist.**, Islington bor., London, Eng.
- Hollywood, sub. Los Angeles**, California, U.S.A.; centre of film industry.
- Holmesdale, Vale of, geographical sub-region**, Kent, E. Surrey, Eng.; extends along foot of North Downs escarpment E. from Dorking; drained by Rs. Mole, Darent, Medway, Len, Stour; heavy clay soils; woodland or rich meadow-land; dairy farming; some cultivation along N. and S. fringe; ch. ts., Dorking, Reigate, Sevenoaks, Maidstone, Ashford have grown up on gaps through hills to N. and S. of the Vale; length 60 m., average width 1 m.
- Holmfrith, t.**, urb. dist., W.R. Yorks, Eng.; 5 m. S. of Huddersfield; woollen cloth, stone; p. (1951) 19,073.
- Holroyd, t.**, N.S.W., Australia; sub. of Sydney, p. 15,915.
- Holstein, former Danish Duchy**, now included in Schleswig-Holstein Land of Germany.
- Holston, R.**, U.S.A.; head of Tennessee R.; flows through Virginia and Tennessee; length 300 m.
- Holsworthy, t.**, and rural dist., Devon, Eng.; p. (rural dist. 1951) 6,196.
- Holt, t.**, Denbigh, Wales; on R. Dee, 7 m. S. of Chester.
- Holt, mkt. t.**, N. Norfolk, Eng.; 5 m. S.W. of Sheringham.
- Holyhead, spt.**, urb. dist., Anglesey, Wales; on Holyhead I.; mail packet stn. for Ireland; l. is 7½ m. long, width ¼ m. to 4 m.; p. (1951) 10,669.
- Holy I.**, off cst. of Anglesey, Wales.
- Holy I., Scot.**, in F. of Clyde, nr. I. of Arran.
- Holy I. (Lindisfarne)**, off cst. of Northumberland, Eng.
- Holyoke, c.**, Mass., U.S.A.; impt. mftg. centre, paper, machinery; on Connecticut R.; seat of Mount Holyoke College for women; p. (1950) 54,661.
- Holyrood House, ancient royal palace**, Edinburgh, Scot.
- Holytown, t.**, Lanark, Scot.; nr. Glasgow; coal, steel; p. 20,669.
- Holywell, mkt. t.**, urb. dist., Flint, N. Wales; coal, lead, zinc, hardware; p. (1951) 8,196.
- Holywood, spt.**, urb. dist., Down, N. Ireland; on S. shore of Belfast Lough; seaside resort; p. (1951) 6,316.
- Holzminden, c.**, Brunswick, Germany; glass, chemicals, lumber; p. 12,192.
- Homburg, t.**, Germany; N.W. of Frankfurt; spa; machinery, dyes, leatherwork, hats; p. 18,700.
- Homer, t.**, N.La., U.S.A.; petroleum, timber; p. (1950) 4,749.
- Homestead, bor.**, Penns., U.S.A.; ironwks.; p. (1950) 10,046.
- Homs, t.**, W. Syria; on R. Orontes; ancient Emesa; silk, textiles; p. (1950) 224,094.
- Honan, fertile prov.**, China; traversed by Yellow R.; cap. Kaifeng; cereals, coal; a. 64,545 sq. m.; p. (1947) 34,290,000.
- Honda, t.**, Tolima dep., Colombia; oil, coffee; p. 12,424.
- Honduras, repub.**, Central America; mtinous; bananas, coconuts, coffee; gold, silver, copper, iron; cap. Tegucigalpa; a. 44,411 sq. m.; p. (1950) 1,368,605.
- Honduras, British, see British Honduras.**
- Hønefoss, t.**, N.W. Oslo, Norway; p. 3,538.
- Honesdale, bor.**, Penns., U.S.A.; coal, textiles, shoes, glass; p. (1950) 5,662.
- Honfleur, spt.**, Caen, France; fine harbour; p. (1946) 8,491.
- Hong Kong, Brit. I. and Crown Col.**, China; at mouth of R. Canton; includes peninsula of Kowloon and Is.; total a. 391 sq. m.; univ.; naval base; p. (1952) 2,250,000.
- Honiton, mkt. t.**, mun. bor., E. Devon, Eng.; on R. Otter, 18 m. E. of Exeter; formerly famous for lace-making; p. (1951) 4,614.
- Honolulu, t.**, cap., Hawaiian Is.; on the I. of Oahu; good harbour, fruit canning, sugar; U.S. naval base; p. (1950) 245,612.
- Honshu, lgt. I.**, of Japan; a. 88,919 sq. m.
- Hood Mt.**, highest peak Cascade range, Oregon, U.S.A.; alt. 11,225 ft.
- Hoogeveen, t.**, Drenthe, Netherlands; p. (1951) 21,617.
- Hooghli or Hughli, R.**, W. branch of R. Ganges, India; flows into Bay of Bengal; Calcutta on its banks.
- Hook of Holland, spt.**, Netherlands; packet station with steamer connections to Harwich, Eng.
- Hooker Mt.**, Rockies, Brit. Columbia, Canada.
- Hoole, t.**, urb. dist., Cheshire, Eng.; 2 m. N.E. of Chester; mnfs.; p. (1951) 9,054.
- Hoopstad, t.**, Orange Free State, S. Africa; on Vt. R.
- Hoorn, old fishing t.**, N. Holland, Netherlands; on Ysselmeer, 20 m. N. of Amsterdam; cheese and cattle markets; birthplace Tasman, discoverer of Tasmania and New Zealand; founder of Batavia; p. (1948) 12,770.
- Hoosack, mtns.**, part of Green Mtn. range, Mass., U.S.A.
- Hoosick Falls, t.**, N.Y., U.S.A.; paper, electrical goods; agr. implements; p. (1950) 4,297.
- Hopedale, t.**, Labrador cst., Newfoundland, Canada.



- Hopel, *prov.*, China: cap. Tsingyuan: cereals, cotton, iron ore; a. 54,154 sq. m.; p. (1947) 28,644,000.
- Hopetown, *t.*, C. of Good Hope, S. Africa: on Orange R.; nr. Orange Free State, S. Africa: p. 2,215.
- Hopewell, *t.*, Va., U.S.A.: synthetic textiles, chemicals, pottery; p. (1950) 10,219.
- Hopkinsville, *c.*, Kentucky, U.S.A.: p. (1950) 12,526.
- Hoquiam, *spt.*, Wash., U.S.A.: lumber, salmon, tuna fishing, oysters, canning; p. (1950) 11,123.
- Hor Mt., Arabia Petrea between Dead S. and G. of Akaba; alt. 4,360 ft.
- Horbury, *urb. dist.*, W.R. Yorks, Eng.: nr. Wakefield; p. (1951) 7,966.
- Hordaland, *dist.*, Norway: a. 6,043 sq. m.; ch. t. Bergen; p. (1950) 198,047.
- Horde, *t.*, Germany: nr. Dortmund: coal, iron, steel; p. 35,000.
- Horeb, *mtn.*, Arabia (*see* Sinai).
- Horley, *sm. t.*, Surrey, Eng.: on R. Mole, 7 m. S.E. of Dorking.
- Hormuz, *t.*, off S. est. of Persia and nr. Qishm I.: in Hormuz Strait.
- Horn, *C.*, most S. point of S. America: noted for severe gales encountered there.
- Horn (North C.), N. point of Iceland.
- Horncastle, *mkt. t.*, *urb. dist.*, Lindsey, Lincoln, Eng.: on R. Bain at foot of Lincoln Wolds; impt. cattle fairs, malting, coal, corn, horse fairs; p. (1951) 3,809.
- Hornchurch, *t.*, *urb. dist.*, Essex, Eng.: nr. Romford; residtl.; p. (1951) 104,123.
- Hornell, *c.*, N.Y., U.S.A.: rly. car wks.; p. (1950) 15,049.
- Hornsea, *t.*, *urb. dist.*, E.R. Yorks, Eng.: on E. cst., 13 m. N.E. of Hull: seaside resort; p. (1951) 5,324.
- Hornsey, *mun. bor.*, *residtl. dist.*, N. London, Eng.: p. (1951) 98,134.
- Horodenka, *t.*, S.W. Ukraine, U.S.S.R.: linen, brandy; p. (1939) 12,200.
- Horsens, *spt.*, Jutland, Denmark: diesel engines, weaving, electrical goods; p. (1950) 35,393.
- Horsforth, *t.*, *urb. dist.*, W.R. Yorks, Eng.: in Aire valley 4 m. N.W. of Leeds; stone quarries, cloth; p. (1951) 14,105.
- Horsham, *t.*, *urb. dist.*, W. Sussex, Eng.: on R. Arun at W. end of forested dist. of the High Weald, brewing; p. (1951) 16,682.
- Horsham, *t.*, Victoria, Australia: on R. Wimmera: pastoral, dairying and agr. dist.; p. (1947) 6,363.
- Horta, *ch. spt.*, Fayal I., Azores, Atl. Oc.: cap. of dist.; fruit, wine, winter resort; p. (1947) 7,000.
- Horten, *spt.*, Norway: nr. Oslo: shipbuilding; p. (1948) 10,775.
- Horton, *R.*, N.W. Terr., Canada: flows into Arctic Ocean.
- Horwich, *t.*, *urb. dist.*, S. Lancs, Eng.: on W. edge of Rossendale Fells, 4 m. N.W. of Bolton: bleaching and cotton spinning, calico printing, paper, coal, stone; p. (1951) 15,552.
- Hoshangabad, *t.*, Madhya Pradesh, India: on Narbada R.; p. 10,000.
- Hoshiarpur, *t.*, E. Punjab, India: lacquer works, inland goods; p. (1941) 35,345.
- Hospitalet, *t.*, Spain: p. (1950) 71,580.
- Hot Springs, *c.*, Arkansas, U.S.A.: health resort; p. (1950) 29,307.
- Houdeng-Goegnies, *commune*, S.W. Belgium: coal, smelting, glassworks; p. 9,022.
- Houghton-le-Spring, *t.*, *urb. dist.*, Durham, Eng.: 5 m. S.W. of Sunderland: coal; p. (1951) 30,676.
- Hounslow, *t.*, Middx, Eng.: sub. W. of London.
- Housatonic, *R.*, Conn. and Mass., U.S.A.: empties into Long Island Sound; length 150 m.
- Houston, *t.*, *spt.*, Texas, U.S.A.: on Buffalo Bay: rly. centre, canal to est., oil refineries, machinery; large cotton tr.; p. (1950) 596,163.
- Houston Ship Canal, Texas, U.S.A.: links Houston to head of shallow Galveston Bay and continues through bay to deep water: provides site for heavy industries, cement, paper, fertilisers, oil-refining, etc.; opened 1915: total length 45 m.
- Hove, *t.*, *mun. bor.*, E. Sussex, Eng.: on S. cst., continuous with Brighton: residtl.; holiday resort; p. (1951) 69,435.
- Howe, *C.*, Victoria: S.E. extremity of Australia.
- Howell, *t.*, S.E. Mich., U.S.A.: dairy products; p. (1950) 4,353.
- Howrah, *c.*, Bengal, India: faces Calcutta across Hooghly R.; jute, cotton, shipbuilding; p. (1951) 433,630.
- Howth, *t.*, nr. Dublin, Ireland: fishing; p. 4,830.
- Howth, *hill*, nr. Dublin: alt. 563 ft.
- Hoxter, *t.*, N. Rhine-Westphalia, Germany: on R. Weser.
- Hoy, *I.*, Orkneys, Scot.
- Hoylake, *t.*, *urb. dist.*, Cheshire, Eng.: on N. est. of Wirral peninsula: residtl.; p. (1951) 30,920.
- Hoyland, *Nether. urb. dist.*, W.R. Yorks, Eng.: p. (1951) 15,707.
- Hron, *R.*, Czechoslovakia: trib. of R. Danube.
- Hrubieszów, *t.*, E. Poland: nr. Lublin; p. 13,000.
- Hsia-men, *see* Amoy.
- Hsikwangshan, *indust. t.*, Hunan, China: centre of antimony-mining dist., ores smelted locally or at Changsha and Hankow.
- Hsingan, *prov.*, China: a. 103,918 sq. m.; cap. Hulun; p. (1947) 1,293,000.
- Huacho, *spt.*, Peru, S. America: p. 16,039.
- Huancavelica, *dep.*, Central Peru: a. 8,297 sq. m.; cap. H.; p. (1947) 300,133.
- Huancayo, *cap.*, Junin, Peru; p. (1947) 33,459.
- Huanuco, *dep.*, Central Peru: a. 15,426 sq. m.; ch. t. Huancayo; p. (1947) 309,780.
- Huaras, *ch. t.*, Ancash, Peru: mineral springs, copper, silver; p. (1947) 14,250.
- Huasco, *spt.*, Atacama, Chile: exports copper, silver, gold, cattle; p. 2,311.
- Hubli, *t.*, Bombay, India: E. of Goa: cotton, silk-weaving; p. (1951) 129,609.
- Hucknall, *indust. t.*, *urb. dist.*, Nottingham, Eng.: 5 m. N. of Nottingham: hosiery, coal; p. (1951) 23,213.
- Huddersfield, *mfg. t.*, *co. bor.*, W.R. Yorks, Eng.: on edge of Pennines, 10 m. S. of Bradford: wool, cotton, silk, steam-engines, iron foundries, coal; p. (1951) 129,021.
- Hudiksvall, *spt.*, Sweden: on inlet of G. of Bothnia: timber, wood pulp; p. 8,387.
- Hudson, *t.*, N.Y., U.S.A.: cement, textiles, machinery; p. (1950) 11,629.
- Hudson, *R.*, N.Y., U.S.A.: flows from the Adirondacks to New York Harbour: with valley of Mohawk R. makes gr. highway of tr. between Gr. Lakes and New York; length 350 m.
- Hudson Bay, *inland sea*, Canada: communicating by Hudson's Strait (400 m. long) with Davis Strait: salmon, cod; a. 540,000 sq. m.
- Huê, *c.*, *cap.*, Annam, Viet-Nam, Indo-China: nr. mth. of Huê R.: royal palace; glass factories; impt. tr.; p. 13,056.
- Huelva, *maritime prov.*, S.W. Spain: copper mining, vine and olive growing, stock-raising, fisheries, brandy distillery, etc.; a. 3,906 sq. m.; p. (1950) 368,013.
- Huelva, *spt.*, *cap.* Huelva, Spain: on G. of Cadiz; p. (1950) 63,648.
- Huércal-Overa, *t.*, Almería, S.E. Spain: silver, lead, and copper mining; p. 13,030.
- Huesca, *frontier prov.*, N.E. Spain: mtous.: forested; a. 5,849 sq. m.; p. (1950) 236,232.
- Huesca, *t.*, *cap.* Huesca prov., Spain: on R. Isuela cath.; gr. wine and timber tr. with France, pottery, leather, cereals; p. (1949) 23,016.
- Hugh Town, *cap.*, St. Mary's I., Scilly Isles.
- Huila, *dep.*, Colombia, S. America: a. 7,990 sq. m.; cap. Neiva; p. (1947) 233,830.
- Huizen, *commune*, W. Netherlands: radio stn.; fishing; p. 7,500.
- Hulan, *t.*, N. Manchuria, China: 20 m. N. of Harbin: tr. centre: on Harbin-Aigun rly.; p. 25,000.
- Hull or Kingston-upon-Hull, *spt.*, *co. bor.*, E.R. Yorks, Eng.: at influx of R. Hull, in estuary of the Humber: university; impt. mfn. and gr. shipping tr.; docks, fishing, shipbuilding, rope, machinery, chemicals, tanning, veg. oils; p. (1951) 299,063.
- Hull, *c.*, Quebec, Canada: faces Ottawa across R. Ottawa: sawmills, paper factories; p. 43,483.
- Humber, *estuary* of Rs. Ouse and Trent, separating Yorks and Lincoln, Eng.: fine waterway; 1-7 m. wide, length 38 m.
- Humboldt Bay, *inlet*, California, U.S.A.
- Humboldt, *mtn. range*, E. Nevada, U.S.A.
- Humboldt Current, *see* Peru Current.
- Hume Reservoir, *artificial lake*, N.S.W., Australia: formed by dam where R. Murray leaves Gr. Dividing Range, just below confluence with R.

- Mitta Mitta; supplies water for irrigation in upper Riverina district; approx. capacity 4,000 million cu. ft.
- Hunan, *inland prov.*, China; coal, zinc, tea, wheat, rice, tung oil; cap. Changsha; a. 79,378 sq. m.; p. (1947) 28,294,000.
- Hungary, *rep.*, Central Europe; ch. physical features; central plain of treeless steppes; R. Danube, R. Tisza, Carpathian mtns., L. Balaton; hot and dry summer, rainfall moderate; race, Magyar; ch. industries; agr., wheat, maize, potatoes, sugar-beet, horse-breeding, cattle, sheep, pigs; coal, lignite, bauxite; milling, brewing, sugar; communications good; cap. Budapest; a. 35,902 sq. m.; p. (1949) 9,201,158.
- Hungerford, *mkt. t., rural dist.*, Berks, Eng.; on R. Kennet, 6 m. W. of Newbury; p. (rural dist. 1951) 9,411.
- Hunmanby, *t.*, E.R. Yorks, Eng.; S. of Scarborough; bricks and tiles.
- Hunsrück, *mtn. a.* in Rhineland-Palatinate, Germany; highest point, 2,677 ft.
- Hunstanton, *New, urb. dist.*, Norfolk, Eng.; on S.E. shore of The Wash; seaside resort; p. (1951), 3,414.
- Hunter, *R.*, N.S.W., Australia; rises in Liverpool Range, Gr. Dividing Range, flows S. and E. into Tasman Sea at Newcastle; valley of Hunter and ch. trib. Goulburn lead from Newcastle up to Cassilis Gate through Gr. Dividing Range to interior; length, approx. 250 m.
- Huntingburg, *t.*, S.W. Ind., U.S.A.; pottery, light engineering; p. (1950) 4,056.
- Huntingdon, *inland co.*, Eng.; a. 366 sq. m.; mkt. gardening, fruit-growing, agr.; p. (1951) 69,273.
- Huntingdon, *co. t., mun. bor.*, Hunts, Eng.; on R. Ouse, 6 m. above St. Ives; nurseries, breweries, bricks; birthplace of Oliver Cromwell; p. (1951) 5,282.
- Huntingdon, *bor.*, Penns., U.S.A.; engineering, paper; p. (1950) 7,330.
- Huntington, *t.*, Indiana, U.S.A.; on Little R.; rly. and wool wks.; p. (1950) 15,079.
- Huntington, *t.*, W. Virginia, U.S.A.; on Ohio R.; machine wks., lumbering; p. (1950) 86,353.
- Huntly, *mkt. burgh*, Aberdeen, Scot.; at confluence of Rs. Bogie and Deveron; farming, woollens; p. (1951) 4,197.
- Huntly, *t.*, N.I., New Zealand; on Waikato R.; 65 m. S. of Auckland; coal; p. (1951) 3,812.
- Huntsville, *t.*, Alabama, U.S.A.; cotton-mills; p. (1950) 16,437.
- Huon, *I.*, 170 m. N. of and *dep.* of New Caledonia, Pacific; very barren group.
- Huonville, *t.*, S.E. Tasmania, Australia; fruit, cattle; p. (1947) 5,037.
- Hupei, *prov.*, China; N. of the Yangtze-Kiang; cap. Wuchang; tea, cotton, wheat, coal, paper; a. 71,955 sq. m.; p. (1952) 25,542,000.
- Hurlford and Crookedholme, *ts.*, Ayr, Scot.; nr. Kilmarnock; iron, fireclay, worsteds, coal-mining.
- Huron, *L.*, between Canada and U.S.A.; one of the Great Lakes of the St. Lawrence basin; a. 23,610 sq. m.; 280 m. long.
- Huron, *t.*, S. Dakota, U.S.A.; meat products; p. (1950) 12,788.
- Hurstmonceux, *vil.*, nr. Hastings, Sussex, Eng.; cas.; site of Royal Greenwich Observatory.
- Hurstpierpoint, *mkt. t.*, Sussex, Eng.; 7 m. N. of Brighton; p. 3,100.
- Hurstville, *sub.*, S. of Sydney, N.S.W., Australia; p. 22,667.
- Husi, *mftg. t.*, Romania; tobacco, wine; p. 16,605.
- Husum, *spi.*, Schleswig-Holstein, Germany; p. 14,500.
- Hutchinson, *c.*, Kansas, U.S.A.; p. (1950) 33,575.
- Huy, *t.*, Belgium; on R. Meuse; nr. Liège; vine-growing dist.; p. (1947) 13,064.
- Huyton with Roby, *urb. dist.*, Lancs, Eng.; sub. of Liverpool; p. (1951) 55,783.
- Hwai Ho (Hwai Ho), *R.*, N. China; rises in Tung-p'eh Shan, flows E. across N. China plain into Hungtse Hu, thence N.E. into Yellow Sea or S.E. into Yangtze-Kiang; subject to disastrous floods and changes of course.
- Hwang Hai (Yellow Sea), arm of the Pac. Oc. between Korea and China; branches into the Gs. of Chihli (Pohai) and Liaotung; greatest width 400 m., length 600 m.
- Hwang Ho (Yellow R.), China; rises nr. source of Yangtze-Kiang, Tibet, flows through N.W. China into G. of Chihli (Pohai); length 2,610 m.
- Hyde, *indust. mkt. t., mun. bor.*, Cheshire, Eng.; on R. Tame, 5 m. S.E. of Manchester; cotton, iron foundries; p. (1951) 31,498.
- Hyderabad, *principal st.*, acceded to the Indian Union; rice, cotton, wheat; a. 82,313 sq. m.; p. (1951) 18,652,964.
- Hyderabad, *ch. t.*, of H., India; on R. Musi; walled t. and important commercial centre; p. (1951) 1,085,722.
- Hyderabad, *t.*, Sind, Pakistan; on R. Indus; arsenal; silks, gold and silver work, pottery; p. (1951) 241,301.
- Hydra, *I.*, Greece; off Morea; a. 26 sq. m.; p. 3,693.
- Hyères, *winter health resort*, Var, France; nr. Toulon; vines, oranges, flowers, fruit; p. (1946) 23,564.
- Hythe, *t., mun. bor.*, Kent, Eng.; on S. est., 3 m. W. of Folkestone; one of the Cinque Ports; Royal school of musketry; p. (1951) 9,218.

## I

Iasi, *see* Jassy.

Iba, *spi., municipality*, cap. of Zambales prov., Luzon, Philippine Is.; uranium, lumbering; p. 8,299.

Ibadan, *t.*, Yoruba, cap. of Western prov., Nigeria, W. Africa; 60 m. N. of Lagos; silk, tobacco, cotton; univ. college established 1947; p. (1946) 335,500.

Ibagué, *cap.*, Tolima, Colombia, S. America; cotton, tobacco, sugar; p. (1947) 27,448.

Ibarra, *t.*, Ecuador, S. America; at foot of Volcanso of Imbabura; p. (1938) 13,454.

Iberian Peninsula, S.W. peninsula of Europe; containing sts. of Spain and Portugal; derived from the Iberian people who lived along the R. Ebro (Iberus); a. 229,054 sq. m.; p. 35,470,953.

Iberville, *t.*, Montreal, Canada; light engineering; p. 3,454.

Ibicui, *t.*, S. Paraguay; iron ore; p. 14,350.

Ica, *est. dep.*, Peru; cap. Ica; a. 9,796 sq. m.; p. (1947) 155,794.

Iceland, *I.*, N. Atlantic Ocean; 130 m. E. Greenland; independent rep.; barren and mountainous, with ice-covered plateaus and volcanoes; glacier fields cover 5,000 sq. m.; highest peak, Oræfá Jökull, alt. 6,950 ft.; main industry fishing; cap. Reykjavik; a. 39,709 sq. m.; p. (1947) 135,935.

Ichang, *port*, Hupei, China; on Yangtze-Kiang; cotton, rice, oil; large tr.; p. 107,940.

Ichinomiya, *t.*, S.E. Honshu, Japan; anc. Shinto shrine; textiles, pottery; p. (1947) 53,376.

Ichow, *c.*, Shantung, China; at foot of Shantung highlands, 80 m. N.E. of Tungshan (Suchow); silk industry; p. (estd. 1922) 100,000.

Icknield Way, *anc. highway* in S. Eng.; from near Bury St. Edmunds, through Wantage to Cirencester and Gloucester.

Icod, *commune*, N.W. Tenerife, Canary Is.; agr., silk; p. 13,263.

Ida, *mtn.*, Central Crete, Greece; famous in Greek mythology; 8,058 ft.

Idaho, *mtn. st.*, U.S.A.; part of Rocky Mtns. in st.; rich mineral region; cap. Boise City; a. 83,557 sq. m.; p. (1950) 588,637.

Idaho Falls, *t.*, Idaho, U.S.A.; p. (1950) 19,218.

Idle, *mftg. t.*, W.R. Yorks, Eng.; in Aire valley, 3 m. N. of Bradford; woollens, motor cars; p. 7,900.

Idle, *R.*, Notts, Eng.; trib. to R. Trent.

Idrija, *t.*, N.W. Yugoslavia; anc. castle; mercury mines; cinnabar; p. 10,317.

Imi, *Spanish terr.*, Atlantic est., N. Africa; a. 741 sq. m.; cap. Sidi Idni; p. 35,000.

Igarka, *sm. t.*, Siberia, U.S.S.R.; on R. Yenesei, 400 m. from its mouth; nickel-mines, lumber-mills; p. (1939) 18,000.

Iglesias, *t.*, Sardinia, Italy; N.W. of Cagliari; cath.; p. 23,575.

Igualada, *t.*, Barcelona, Spain; leather, textiles; centre of wine-producing dist.; p. 13,438.

Ignassu, *R.*, S. Brazil; famous falls.

Ilalmi, *t.*, Finland; E. of Kokkola; p. 25,000.

Ijmuiden, *t.*, W. Netherlands; on est. at mouth of N. Sea Canal; fishing; p. (1948) 27,939.



- IJsselmeer** (Lake IJssel), Netherlands; shallow expanse of water, formerly Zuider Zee; separated from N. Sea by Wierengen-Friesland Barrage (length 19 m.) constructed 1932; active land reclamation in progress round margins; a. (1952) 1,055 sq. m.; when reclamation has been completed, water a. will be reduced to 468 sq. m.
- Ilanag, cap.**, Isabela prov. Luzon, Philippines; tobacco; p. 23,000.
- Ilan, treaty port**, E. Manchuria, China; furs; p. 50,000.
- Ilchester, t.**, Somerset, Eng.; on R. Yeol; N.W. of Yeovil; nr. birthplace of Roger Bacon; p. 485.
- Ilelsk, t.**, Kazakhstan, U.S.S.R., on R. Ilel, trib. of R. Ural; S. of Chkalov; rock salt; p. 13,010.
- Ilford, mun. bor.**, Essex, Eng.; E. sub. of London on R. Roding; bordering on Hainault Forest; paper-mills, films, and photoplate works; p. (1951) 184,707.
- Ilfracombe, t., urb. dist.**, N. Devon, Eng.; on est. of Bristol Channel; seaside resort; p. (1951) 9,218.
- Ilhavo, spt.**, Beira Litoral, Portugal; glass, porcelain, fisheries; p. 16,335.
- Ilheus, spt.**, Baia, Brazil; p. 15,566.
- Ilir, R.**, Central Asia; rises in Tien Shan and flows into L. Balkhash; length 850 m.
- Ilia (Ellis), prefecture**, S. Greece; cap. Pyrgos; p. (1940) 189,729.
- Illon, t.**, N.Y., U.S.A.; firearms; office equipment; p. (1950) 9,363.
- Ilkeston, t., mun. bor.**, Derby, Eng.; 5 m. N.W. of Nottingham; hosiery, coal, iron; p. (1951) 33,674.
- Ilkley, t., urb. dist., spa**, W.R. Yorks, Eng.; on R. Wharfe 15 m. N.W. of Leeds; local mkt.; p. (1951) 17,265.
- Il, R.**, E. France; rises in Jura Mtns., flows N. through Mulhouse, Colmar, Strasbourg, enters Rhine 12 m. below Strasbourg; length 135 m.
- Ilawarra, dist.**, N.S.W., Australia; forming belt of land between S. tableland and coast; very fertile; dairy farming; coal seams; ch. ts., Kiama, Wollongong, Bulli, Geringong.
- Ile-et-Vilaime, dep.**, N.W. France; on English Channel; a. 2,699 sq. m.; agr.; cap. Rennes; p. (1946) 578,246.
- Ilhman, Mt.**, nr. La Paz, Bolivia; 21,184 ft.
- Ilinois, st.**, U.S.A.; named after its principal R.: a large trib. (360 m.) of Mississippi R.; cap. Springfield; largest t. Chicago; a. 56,400 sq. m.; p. (1950) 8,712,176.
- Illogan, vil.**, Cornwall, Eng.; N.W. of Redruth; tin, copper; p. (par.) 8,300.
- Illyria, region**, mainly Yugoslavia, stretching along Adriatic Sea from Trieste in N. to Albania in the S. and inland as far as Es. Danube and Morava. [fisheries.]
- Ilmen, L.**, S. of Novgorod, Russia; a. 360 sq. m.
- Ilmenau, t., summer resort**, S.W. Germany; at N. base of Thüringer Wald, S.S.E. of Gotha; porcelain, toys; p. 14,000.
- Ilminster, t., urb. dist.**, Somerset, Eng.; 10 m. S.E. of Taunton; p. (1951) 2,610.
- Iloabasco, c.**, Salvador, Central America; cattle, coffee, sugar, indigo; p. 21,225.
- Iloilo, cap.**, prov. of Iloilo, Panay, Philippines; coconut oil; p. (1948) 110,122.
- Ilorin, t.**, N. Nigeria, Brit. W. Africa; on Lagos-Kano rly.; agr. and caravan centre; p. (1946) 54,686.
- Isley, t.**, Berks, Eng.; 11 m. S. of Abingdon; sheep mkt. and fair.
- Iuka, spt.**, N.S.W., Australia; on Clarence R., N. of Sydney.
- Imabari, t., spt.**, N.W. Shikoku, Japan; on shore of Inland Sea; mnfs. cotton textiles, paper, canned fruits; p. (1947) 55,557.
- Imbabura, prov.**, Ecuador; a. 2,414 sq. m.; cap. Ibarra; p. (1950) 146,893.
- Imbros, Turkish I.**, Aegean Sea; fertile fruit-growing dist.
- Immingham, pt.**, Lindsey, Lincoln, Eng.; on S. est. of Humber, 4 m. N.W. of Grimsby; lge. docks; p. 2,200.
- Imola, t.**, Italy; S.E. of Bologna; cath.; glass, pottery; p. 37,000.
- Imperial Valley, S. Cal., U.S.A.**; extends 30 m. S.E. from Salton Sea to Mexican bdy.; mainly below sea-level; hot, arid climate; cotton, dates, wheat under irrigation; water brought from Colorado R. by Imperial Canal (Laguna Dam) and All-American Canal (Imperial Dam) nr. Yuma; total irrigated area (1938) 700 sq. m.
- Imphal, ch. t.**, Manipur, India; p. 80,000.
- Inari L., extensive L.**, Lappl, Finland; outlet into Barents Sea; a. 685 sq. m.
- Inca, t.**, I. of Majorca, Spain; 18 m. from Palma; p. 10,547.
- Inchgarvie, islet**, Firth of Forth, Scot.; forms central support of the two great spans of Forth Bridge. [nr. Leith.]
- Inchkeith, fortfd. I.**, Firth of Forth, Fife, Scot.
- Inchon, spt.**, S. Korea; on W. est.; expt. soya beans, rice; p. (1949) 265,767.
- Indan, municipality**, Luzon, Philippine Is.; rice; p. 11,240.
- Independence, t.**, Missouri, U.S.A.; on prairie, S. of Missouri R.; p. (1950) 39,963.
- Independence, t.**, Iowa, U.S.A.; p. (1950) 4,365.
- Independence, t.**, Kansas, U.S.A.; p. (1950) 11,335.
- India, peninsula subcontinent**, Asia; now subdivided into the Dominion of the Union of India, the Dominion of Pakistan, the Dominion of Ceylon; ch. mtns.: Himalayas (Everest 29,002 ft.), E. and W. Ghats, Sulaiman range, Hindu Kush, Karakoram; Ganges Plain, Thar desert; ch. Rs.: Indus, Ganges, Brahmaputra; climate: monsoonal; vegetation: dense forests in region of high rainfall; sal, teak; elsewhere savannah or jungle, bamboo; coconuts on coast; variety of races; industries: agr., rice, wheat, millet, sugar-cane, cotton, jute, tea, rubber, linseed, cattle, sheep, goats; forests, timber; minerals: coal, petroleum, manganese, lead, gold, silver; mnfs.: cottons, jute, milling, engineering, machinery, tea, brass, carpets; communications: good rail and sea; total a. 1,866,742 sq. m.; total p. (1951) approx. 433,000,000.
- India, (Indian Union), free and independent rep.**, within the Commonwealth; consisting of states (former provinces), states-unions (unions of several larger or smaller states) and states centrally administered. In 1947-48 larger sts. integrated themselves to form unions, and many smaller sts. merged into neighbouring provs.; ch. ts.: Delhi and Bombay; mnfs.: metal wks., jute, cotton, tea, rice, sugar, rubber; a. 1,269,640 sq. m.; p. (1951) 356,329,485.
- India, French, possessions of French Rep.** on the Comorand est. are Pondicherry, Karikal; in Orissa, t. of Yanam; and on the Malabar coast, Mahé. Seat of administration, Pondicherry.
- India, Portuguese, consists of** Gôa, (Pangim), Angediva São Jorge, and Morecos Is., on Malabar est.; Damão, Dadar, and Nagar-Aveli on G. of Cambay, and Diu with Gogola and Simbor on S. est. of Saurashtra; salt wks., coconuts, fish, spices, manganese; cap. Gôa (Pangim); a. 1,537 sq. m.; p. (1940) 624,177.
- Indian Harbour, Labrador est.**, nr. Hamilton Inlet, Canada.
- Indian Ocean** extends from S. of Asia and E. of Africa to the C. of Good Hope and C. Leeuwin in Australia, separated from the Pacific by the Malay Archipelago and Australia; a. 29,340,000 sq. m.
- Indian Territory**, since 1907 part of the st. of Oklahoma, U.S.A.; Indian reservations have an a. of 5 sq. m.
- Indiana, st.**, between Kentucky and Michigan, Illinois and Ohio, U.S.A.; agr., mining, and mnfs.; cap. Indianapolis; a. 36,291 sq. m.; p. (1950) 3,334,224.
- Indianapolis, cap., Indiana, U.S.A.**; on White R.; impt. rly. centre; meat packing; p. (1950) 427,173.
- Indianola, t.**, W. Miss., U.S.A.; cotton mkt.; processing plants; p. (1950) 4,369.
- Indigirka R., Yakut, U.S.S.R.**; flows into Laptev Sea.
- Indo-China, Asia; federation in French Union** until end of hostilities July 1954. Consists of the three states of Viet-Nam, Cambodia, and Laos; rice, rubber, pepper, hides; coal, zinc, tin; a. 286,000 sq. m.; p. 27,030,000.
- Indonesia, (comprising Java, Sumatra, Borneo, Celebes, 15 minor islands, thousands of smaller ones)**; climate: tropical, abundant rainfall; vegetation: equatorial forest; race: Malay;

- agr.: rice, maize, sweet potatoes, sugar-cane, coffee, tea, tobacco, oil palms, cinchona spices, rubber; petroleum, tin; communications poor; cap. Jakarta (Batavia); p. 70,000,000 (est.).
- Indore, t.,** Madhya Pradesh, Indian Union: in valley of R. Nerbada; cotton-mills; p. (1951) 310,859.
- Indre, dep.,** Central France: agr. and industri.: cap. Châteauroux; a. 2,666 sq. m.; p. (1946) 252,075.
- Indre-et-Loire, dep.,** Central France: to the N.W. of Indre; agr., vines, silk factories; cap. Tours; a. 2,377 sq. m.; p. (1946) 349,685.
- Indus, R.,** Pakistan: rises in Tibet, and flows through Kashmir, Punjab, Sind, to the Arabian Sea; length 1,800 m.
- Inebolu, spt.,** Anatolia, Turkey; nr. Kastamonu, on est. of Black Sea; trade in mohair and wool; p. 10,000. [20,331]
- Infanta, municipality,** Luzon, Philippine Is.: p. Ingersoll, t., Ontario, Canada; N.E. of Hamilton; p. 5,000.
- Ingleborough, mtn.,** near Settle, Yorks, Eng.: limestone; underground caves, stalactites, stalagmites; alt. 2,373 ft.
- Ingletton, vil.,** W.R. Yorks, Eng.: at foot of Ingleborough; centre for geologist and tourist; p. (par.) 2,400.
- Inglewood, mun. bor.,** Victoria, Australia; mining; p. 1,500.
- Inglewood, c.,** S.W. Cal., U.S.A.: chinchilla farms; furniture; light engineering; p. (1950) 46,185.
- Ingolstadt, t.,** Bavaria, Germany; on Danube, nr. Munich; univ.; iron and machinery; p. 36,764.
- Inhambane, spt.,** Mozambique; exports, sugar, copra, oil-seeds; p. 20,000.
- Inishmore, largest of Aran Is.,** Galway, Ireland: 30 m. S.W. of Galway; fishing; p. 1,800.
- Inkerman, t.,** Crimea, U.S.S.R.; nr. E. extremity of Sevastopol harbour; battle 1854.
- Inkpen Beacon, hill,** Hampshire, Eng.: W. end of N. Downs, 7 m. S.W. of Newbury; highest point reached by chalk hills in England; alt. 975 ft. [16,728]
- Inkster, t.,** S.E. Mich., U.S.A.; residt.; p. (1950)
- Inland Sea, Japan:** length 250 m., breadth 10 to 40 m.; chief spts.: Hiroshima, Okayama, Kobe.
- Inn, R.,** traversing Switzerland, the Austrian Tyrol and Bavaria; trib. of R. Danube; the ancient *Enus*; enters R. Danube at Passau; length 320 m.
- Innerleithen, burgh and health resort,** Peebles, Scot.: on R. Tweed, 5 m. S.E. of Peebles; p. (1951) 2,361.
- Innisfail, t.,** Queensland, Australia; ch. sugar-producing centre of Australia; p. 4,000.
- Innsbruck, cap.,** the Tyrol, Austria; on R. Inn; commands N. approach to Brenner Pass; univ.; military stronghold; p. (1951) 94,599.
- Inowroclaw, t.,** N. Poland; nr. Bydgoszcz; rock-salt, iron pyrites; tr. in agr. produce; p. 36,000.
- Insein, dist.,** Lower Burma; a. 1,914 sq. m.; p. 331,145; cap. I., p. 20,487.
- Interlaken, t.,** Bernese Oberland, Bern, Switzerland; on R. Aar, between Ls. Thun and Brienz; tourist resort; p. (1941) 3,771.
- International Falls, t.,** N. Minn., U.S.A.; rly. centre; paper; p. (1950) 6,269.
- Inverallochy, fishing vil.,** Aberdeen, Scot.; on est. of Buchan peninsula nr. Fraserburgh.
- Inveraray, burgh, co. t.,** Argyll, Scot.; nr. head of Loch Fyne; herring fishing; p. (1951) 503.
- Inverbervie, burgh, Kincardine, Scot.;** on E. est., 8 m. S. of Stonehaven; p. (1951) 885.
- Invercargill, c., spt.,** S.I., New Zealand; on S.F. est.; sawmills, meat-freezing plants; p. (1951) 31,612.
- Inverell, t.,** N.S.W., Australia; 383 m. N. of Sydney; p. (1947) 6,530.
- Invergordon, burgh, spt.,** Ross and Cromarty, Scot.; on N. side of Cromarty Firth, 12 m. N.E. of Dingwall; naval pt.; p. (1951) 1,514.
- Inverkeithing, burgh, Fife, Scot.;** on N. side of Firth of Forth, nr. Dunfermline; shipbuilding; p. (1951) 3,703.
- Inverkip, par., vil.,** Renfrew, Scot.; 6 m. S.W. of Greenock; par. contains Gourock; wat. pl.; p. (1951) 17,288.
- Inverness, co.,** Scot.; mountainous and well wooded; rising to Ben Nevis 4,406 ft.; Caledonian Canal crosses co.; little cultivation; deer forests and grouse moors, fishing, sheep breeding, distilleries; a. 4,351 sq. m.; p. (1951) 84,924.
- Inverness, burgh, co. t.,** Inverness, Scot.; on Moray Firth nr. N.E. end of Caledonian Canal; tweed and cloth industry; fisheries and agr.; p. (1951) 28,115.
- Inverurie, burgh, Aberdeen, Scot.;** on R. Don, 14 m. N.W. of Aberdeen; rly. centre, wool fair; p. (1951) 5,054. [Italia]
- Investigator I.,** off est. of Eyre Peninsula, S. Aus.; Inyokern, t., E. Cal., U.S.A.; naval ordnance research stn.; p. 12,000.
- Ioannina (Janina), prefecture,** Epirus, Greece; ch. t. Ioannina; p. (1951) 154,568.
- Ioannina (Janina), t.,** Epirus, Greece; nr. Albanian frontier; embroidery; p. (1951) 33,268.
- Iona, I.,** off est. of Mull, Argyll, Scot.; early Scottish Christian centre; St. Columba's burial place; ancient burial place of Scottish kings.
- Ionian Is.,** group in Mediterranean, belonging to Greece, formerly under British protection; comprising Kerkira (Corfu), Kephallenia, Zakynthos, Levkas, Ithake, Paxos and Kythera; suffered from severe earthquakes in Aug., 1953; total a. 752 sq. m.; p. (1951) 228,119.
- Ionian Sea, Mediterranean;** between Greece on E., Italy and Sicily on W.
- Iowa, st.,** U.S.A.; prairie country; over 1,000 ft. above sea-level; watered by Mississippi and Missouri; farming, dairying, wheat, maize, oats, potatoes; coal, gypsum, limestone; cap. Des Moines; a. 56,290 sq. m.; p. (1950) 2,621,073.
- Iowa City, Iowa, U.S.A.;** farming, stockbreeding; p. (1950) 27,212.
- Ipoth, t.,** Perak, Malaya; tin; p. 80,874.
- Ipswich, co. t., co. bor.,** Suffolk, Eng.; at head of estuary of R. Orwell; agr. implements, iron, boots, rly. chairs, brewing; p. (1951) 104,788.
- Ipswich, t.,** N.E. Mass., U.S.A.; textiles, printing; p. (1950) 4,952.
- Ipswich, t.,** Queensland, Australia; farming; coal; p. (1947) 26,278.
- Iquique, c., pl.,** Tarapaca, Chile; iodine and nitrate of soda tr.; p. (1940) 39,282.
- Iquitos, ch. t.,** Loreto, Peru; shipyards, docks; rubber, cotton, tobacco; p. (estd. 1950) 42,018.
- Iran, see** Persia.
- Iraklion (Heraklion), prefecture,** Crete; cap. Iraklion; p. (1940) 168,717.
- Iraklion (Candia), cap.,** Crete; central position on N. coast at foot of gently sloping, terraced hill slopes; wine, olive oil, fishing; p. (1940) 42,357.
- Irapuato, c.,** central Mexico; agr. centre; p. 33,337.
- Iraq, kingdom,** S.W. Asia; approx. co-extensive with ancient Mesopotamia; ch. Rs.: Tigris, Euphrates; climate, hot, rainless in summer, cool in winter, scanty rainfall; races: Arabs, Kurds; language, Arabic; ch. crops: dates, wheat, maize, barley, beans, cotton; impt. oilfields; communications: rail, Mosul-Baghdad-Persian G.; cap. Baghdad; a. 116,600 sq. m.; p. (1947) 4,799,500.
- Irbit, t.,** Sverdlovsk region, U.S.S.R.; mkt., famous fair; p. 12,000.
- Ireland, 2nd. lgst. I.,** Brit. Is.; ch. physical features: L. Neagh in N.E., Rs. Shannon, Boyne, Blackwater, Barrow, Nore, Suir, Liffey; ch. mtn. groups—all near coast—Mourne Mtns., Wicklow Mtns., Mtns. of Kerry; peat bogs over considerable areas, large areas grassland; climate, mild and damp; vegetation, chiefly meadowland; communications, rail and canal; a. 32,631 sq. m.; greatest length 280 m., width 180 m.; p. (approx.) 4,324,000.
- Ireland, Republic of (Eire), sov. ind. st.,** covering 26 of the 32 cos. of Ireland incl. the 3 provs. of Leinster, Munster, and Connaught (Connacht) together with 3 of the cos. (Cavan, Monaghan, and Donegal), of the fmr. prov. of Ulster. Ceased to be member of Br. Commonwealth in 1949; agr.; potatoes, turnips and other root crops, oats, barley, hay, cattle, sheep, pigs, horses; fisheries; mnfs.: grain milling, flour, dairy produce, bacon, brewing, tobacco, clothing, etc.; religion, R.C.; cap. Dublin; a. 26,600 sq. m.; p. (1951) 2,958,878.
- Irian, Indonesian name for Netherlands New Guinea.**
- Iriga, municipality,** Luzon, Philippine Is.; hemp, copra, agr.; p. 30,005.



- Iringa, *t.*, Tanganyika; coffee, cattle, fruit; *p.* 5,000.
- Irish Sea, Brit. Is.; between Gr. Britain and Ireland, connecting N. and S. with Atlantic Ocean; 200 m. long; 50 to 140 m. wide; greatest depth 140 fathoms; a. 7,000 sq. m.
- Irkutsk, *t.*, Siberia, U.S.S.R.; on R. Angara; on Trans-Siberian Rly.; fur; *p.* (1939) 243,380.
- Irlam, *t.*, *urb. dist.*, Lancs, Eng.; soap, candles; *p.* (1951) 15,063.
- Iron County, Utah, U.S.A.; contains vast reserves of iron ore; not yet developed due to inaccessibility.
- Iron Gate, Romania; famous rapids in R. Danube.
- Iron Knob, *t.*, S. Australia; S.W. of Port Augusta; iron ore.
- Iron Mountain, *t.*, Mich., U.S.A.; former iron mining centre; *p.* (1950) 9,679.
- Ironton, *c.*, Ohio, U.S.A.; machinery; coal, iron, fireclay; *p.* (1950) 16,393.
- Ironwood, *t.*, Mich., U.S.A.; iron-mining, lumbering; *p.* (1950) 11,466.
- Irrawaddy, *R.*, Burma; flows S. to Bay of Bengal; navigable for large steamers 900 m.; irrigation wks.; length 1,300 m.
- Irtys, *R.*, Siberia, U.S.S.R.; trib. of R. Ob; two-thirds navigable; crossed by Trans-Siberian Rly. at Omsk; length 2,500 m.
- Irun, *t.*, N.E. frontier, Spain; nr. San Sebastian; tanning and brandy distillery; paper mills, iron; Roman remains; *p.* 14,638.
- Irvine, *burgh, spl.*, Ayr, Scot.; nr. mouth of R. Irvine, 7 m. W. of Kilmarnock; iron, chemicals, shipbuilding; *p.* (1951) 14,741.
- Irvington, *t.*, New Jersey, U.S.A.; *p.* (1950) 59,201.
- Irvington, *t.*, N.Y., U.S.A.; residtl.; light engineering; *p.* (1950) 3,657.
- Irwell, *R.*, S. Lancs., Eng.; flows past Manchester to the Mersey; length 30 m.
- Isarco, *R.*, N. Italy; rises nr. Brenner Pass, flows S. into R. Adige at Bolzano; used by main rail and road routes from N. Italy to Austria; length 60 m.
- Ischia, *I.*, in G. of Naples, Italy; saline baths; cap. I.; a. 26 sq. m.; *p.* 30,000.
- Ischl, *t.*, Austria; *wat. pl.*, saline baths; *p.* 14,004.
- Isdud (Ashdod), *ancient Philistine c.*, Israel; 20 m. S. of Jaffa.
- Ise Bay, *inlet*, S. Honshu, Japan; flanked by ch. textile mfg. region of Japan containing 5 million people centred on Nagoya; length 40 m., width 15-20 m.
- Isella, *t.*, N.W. Italy; S. terminal of Simplon Pass and tunnel.
- Isère, *dep.*, S.E. France; drained by Rs. Isère and Rhône; cap. Grenoble; mountainous; cereals; wine, butter, cheese; iron, coal, lead, silver, copper; gloves, silks; a. 3,178 sq. m.; *p.* (1946) 574,019.
- Isère, *R.*, S.E. France; rises in W. Alps (Grande Sassiére), flows W. into R. Rhône nr. Valence; used to generate hydro-electricity; used, with trib. R. Arc, by main railway from France to N. Italy through Mt. Cenis (Fréjus) Tunnel.
- Iserlohn, *t.*, N. Rhine-Westphalia, Germany; iron, steel, metalwks.; needles; *p.* 38,400.
- Isernia, *t.*, Campobasso, Italy; mnfs.; *p.* 16,437.
- Iseyin, *t.*, W. Prov., Nigeria, Brit. W. Africa; *p.* (1946) 48,470.
- Isfahan (ancient Aspadana), *prov.*, Persia; cap. I., former cap. of Persia, on R. Zaindeh; carpet mfg.; woollen and cotton cloth and yarns mfg.; matches; *p.* (estd. 1950) 192,000.
- Ishikari, *t.*, Hokkaido, Japan; on est. of Otaru Bay, 10 m. N. of Sapporo; centre of second lgst. coal-field in Japan; also sm. petroleum production.
- Ishim, *t.*, Siberia, U.S.S.R.; on R. Ishim, S. of Tobolsk; famous fair, one of the most imp. for agr. produce in Siberia; *p.* 10,000.
- Ishpeming, *c.*, Michigan, U.S.A.; machinery, gold, silver, iron, marble; *p.* (1950) 8,962.
- Isis, *R.*, head stream of R. Thames, Eng.; so named until its confluence with Thames at Dorchester, Oxfordshire.
- Iskenderon, *spt.*, Hatay, Turkey; *p.* 18,612.
- Isle, *R.*, Perth and Forfar, Scot.; trib. of R. Tay; length 40 m.
- Islay, *I.*, Inner Hebrides; Argyll, Scot.; 13 m. W. Kintyre; a. 235 sq. m.; farming, dairying, distilleries.
- Isle Royale, *I.*, in L. Superior, Michigan, U.S.A.; length 40 m.
- Isleworth, *see* Heston and Isleworth.
- Islington, *metropolitan bor.*, London, Eng.; N. of City; industri. and residtl.; *p.* (1951) 235,645.
- Islip, *summer resort*, Long I., N.Y., U.S.A.; *p.* (1950) 5,264.
- Ismaïlia, *t.*, Egypt; on L. Timsah, 40 m. S. of Port Said; (Suez Canal control, H.Q., all H.M. Forces to be evacuated by June 1956); *p.* (1947) 68,338.
- Isna (Esneh), *t.*, Upper Egypt; caravan centre; barrage; *p.* (1947) 18,458.
- Isonzo, *R.*, Illyria, Italy; flows into Adriatic Sea.
- Isparta, *t.*, Turkey; N. of Antalya; *p.* 17,292.
- Israel, *independent Jewish rep.* since 1948; part of former Palestine mandate; cap. Jerusalem, imp. ts. Tel Aviv, Haifa; agr. mixed farming, dairying, citrus fruit; industry, large range of consumer goods, potash and bromine from Dead Sea; a. 8,050 sq. m.; *p.* (1951) 1,578,000 (90% Jews).
- Issoire, *commune*, Puy-de-Dôme France; old church; *p.* 6,719.
- Issoudun, *t.*, Indre, France; leather, parchment, woollens, farm implements; *p.* (1946) 12,645.
- Issy, *t.*, France; on R. Seine; sub. of Paris; *p.* (1946) 42,449.
- Issyk-kul, *L.*, Kirgizia, U.S.S.R.; alt. 4,476 ft.; a. 250 sq. m.; drained by R. Chu.
- Istanbul (Constantinople), *chief spt.*; former cap., Turkey; S. entrance of the Bosphorus; Turkish t. (Stamboul) and Christian subs. (Galata and Pera) sep. by the "Golden Horn"; the ancient Byzantium; magnificent mosque of St. Sophia; *p.* (1950) 1,000,022.
- Istria, *peninsula*, N. Adriatic Sea; formerly Italian, now divided between Yugoslavia and Free Territory of Trieste; agr., olive, vine, oranges, maize; rural population mainly Slav, towns mainly Italian.
- Ita, *c.*, S. Paraguay; cattle, agr.; leather; *p.* 16,892.
- Itabira, *t.*, Minas Geraes st., Brazil; on Brazilian Plateau, 60 m. N.E. of Belo Horizonte; largest deposit of iron ore in Brazil.
- Itabuna, *c.*, E. Brazil; coffee, tobacco; *p.* 15,868.
- Italy, *rep.*, S. Europe; peninsula 750 m. long and 100-120 m. broad; many islands (chief Sardinia, Sicily); mtns. in N. (Alps) and in centre and S. (Apennines); ch. R. Po; climate, Mediterranean; wheat and other cereals; vines, olives, fruit; cattle, sheep; sulphur, iron and iron pyrites, mercury, lead, zinc; Carrara marble; hydro-electric power, and little coal; mnfs.; cottons, silks, sugar, glass, furniture, olive oil; fisheries; capital Rome; a. 116,235 sq. m.; *p.* (1951) 47,138,235.
- Itasca, *L.*, a source of Mississippi R., Minn., U.S.A.; alt. 1,575 ft.
- Itatiaia, *mtn.*, highest mtn. in Brazil; 9,255 ft.
- Itaugua, *t.*, S.W. Paraguay; lace making; *p.* 11,300.
- Itchen, *R.*, Hants, Eng.; flows to Southampton Water; length 25 m.
- Ithaca, *t.*, N.Y., U.S.A.; on Cayuga L.; seat of Cornell Univ.; electric clocks; *p.* (1950) 29,257.
- Ithake, *one of the Ionian Is.*, Greece; a. 37 sq. m.; ch. t. Ithake; severe earthquake, 1953.
- Itzehoe, *t.*, Schleswig-Holstein, Germany; on Stör R.; metal founding, shipbuilding; *p.* 23,000.
- Ivanovo, *t.*, U.S.S.R.; N.E. of Moscow; textiles, iron and chemical wks.; *p.* (1939) 285,069.
- Ivigtut, *Danish settlement*, S.W. Greenland; cryolite.
- Iviza, *I.*, Balearic group in the W. Mediterranean; Spanish; cath., fortress.
- Ivory Coast, Fr. W. Africa; climate, tropical; race, Negro; maize, coffee, rubber, mahogany; dense forests; cap. Abidjan; a. 184,174 sq. m.; *p.* (1948) 2,031,000.
- Ivrea, *t.*, Italy; on the Dora Baltea, nr. Turin; silks, cotton mnfs.; *p.* 14,473.
- Ivry-sur-Seine, *t.*, France; on R. Seine, sub. of Paris; organs, chemicals, iron and steel; *p.* (1946) 42,445.
- Iwamizawa, *t.*, W. Hokkaido, Japan; rly. junction; coalfield; *p.* (1947) 41,198.
- Iwanai, *spt.*, S.W. Hokkaido, Japan; copper, coal, sulphur; fisheries; *p.* (1947) 20,394.
- Iwo, *t.*, Nigeria, Brit. W. Africa; nr. Ibadan; *p.* (1946) 86,000.

**Ixmiquilpan, t.**, Hidalgo st., Mexico; silver; p. 1,543.  
**Ixfian, t.**, Jalisco st., Mexico; comm. and indus-  
 tr.; p. 4,720.  
**Izegem, commune**, N.W. Belgium; linen, tobacco;  
 p. 15,111.  
**Izhevsk, t.**, Udmurt, U.S.S.R.; p. (1939) 175,740.  
**Izieux, t.**, Loire, France; nr. St. Etienne.  
**Izmail, former prov.** of Bessarabia, Romania;  
 ceded to U.S.S.R. in 1940, and now part of  
 Ukrainian S.S.R.  
**Izmail, t.**, U.S.S.R.; on R. Danube; cereals, wool,  
 hides; p. (1939) 24,000.  
**Izmid, t.**, Turkey; E. end of Sea of Marmara;  
 cereals, tobacco.  
**Izmir (Smyrna), c.**, Turkey; at head of G. of  
 Smyrna, Anatolia; exports figs, raisins, tobacco,  
 carpets, rugs, etc.; very anc. and historic c.;  
 ch. comm. ctr. of the Levant; p. (1950) 230,508.  
**Izucar, t.**, Puebla, Mexico; nr. Popocatepetl;  
 p. 7,065.  
**Izyum, t.**, Ukraine, U.S.S.R.; on R. Donets.

## J

**Jabbok, R.**, Syria, trib. of R. Jordan; length  
 45 m.  
**Jablonec, t.**, N. Bohemia, Czechoslovakia; on  
 R. Neisse; p. (1947) 23,112.  
**Jaboatua, c.**, E. Brazil; sub. of Recife; p. 13,102.  
**Jaca, t.**, N. Spain; at foot of Pyrenees; p.  
 7,703.  
**Jachymov, t.**, N.W. Bohemia, Czechoslovakia;  
 uranium mines; p. 6,806.  
**Jackson, c.**, Mich., U.S.A.; on Grand R.; loco-  
 motives, motor car accessories; p. (1950)  
 51,088.  
**Jackson, t.**, cap. Mississippi, U.S.A.; cotton tr.;  
 p. (1950) 98,271.  
**Jackson, t.**, Tennessee, U.S.A.; univ.; cotton,  
 cotton-seed oil, engines, sewing-machines;  
 p. (1950) 30,207.  
**Jackson, t.**, Ohio, U.S.A.; foundries, gas wells;  
 p. (1950) 6,504.  
**Jacksonville, t.**, Florida, U.S.A.; on St. John's  
 R.; timber, cotton, cigars; fish, fruit; phos-  
 phates; p. (1950) 204,517. (More than half  
 coloured.)  
**Jacksonville, t.**, Texas, U.S.A.; rly. centre; fruit,  
 vegetables, cotton; p. (1950) 8,607.  
**Jacksonville, c.**, Ill., U.S.A.; woollens, rly. wks.;  
 p. (1950) 20,387.  
**Jacobabad, frontier stn.**, Sind, Pakistan; one of  
 hottest places in the Indian sub-continent;  
 p. (1941) 15,748.  
**Jacobina, t.**, Bahia, Brazil; on R. Itapicura;  
 p. 4,389.  
**Jacobsdal, t.**, Orange Free State, S. Africa;  
 on Riet R.  
**Jacobstadt, see** Yekabpils.  
**Jacques-Cartier, R.**, Quebec, Canada; trib. of  
 St. Lawrence.  
**Jacuy, R.**, S. Brazil; rises in S. edge of Brazilian  
 Plateau, enters Atlantic Ocean through lagoon,  
 Lagoa dos Patos; length 350 m.  
**Jade, or Jahde, estuary**, North Sea, Germany;  
 fine harbour and entrance to port of Wilhelms-  
 haven.  
**Jaen, prov.**, S. Spain; mines, wine, garden  
 produce, leather, weaving; a. 5,209 sq. m.;  
 p. (1950) 765,697.  
**Jaen, t.**, cap., Jaen, S. Spain; N. of Granada;  
 p. (1950) 61,610.  
**Jafia-Tel Aviv, t.**, spt., Israel; orange-growing  
 dist.; p. (1946) 284,780.  
**Jaffna, t.**, spt., N. Ceylon; p. (1946) 63,000.  
**Jagdalpur, t.**, Madhya Pradesh, India; p. 10,128.  
**Jagersfontein, Orange Free State**, S. Africa;  
 diamonds; p. 2,978.  
**Jahrum, t.**, Fars, Persia; tobacco, dates; p.  
 15,000.  
**Jaipur, terr.**, Rajasthan, India; iron, copper,  
 marble; a. 15,610 sq. m.; p. (1941) 3,040,876.  
**Jaipur, cap. c.** of Rajasthan; comm. ctr.; p. (1951)  
 291,130.  
**Jakarta (Batavia), t.**, cap., Java, Indonesia;  
 comm. ctr.; coffee, rice, sugar, indigo,  
 spices, rubber, petroleum; p. 533,015.  
**Jalalabad, t.**, S. Kabul R., Afghanistan; p. 14,456.  
**Jalapa, dep.**, S.E. Guatemala; maize, beans;  
 cap. Jalapa; a. 797 sq. m.; p. (1940) 124,855.  
**Jalapa, cap.**, Veracruz st., Mexico; p. (1940)  
 46,827.

**Jalisco, Pacific st.**, Mexico; well timbered, agr.,  
 mining; cap. Guadalajara; a. 81,149 sq. m.;  
 p. (1950) 1,746,239.  
**Jallieu, commune**, Isère, S.E. France; light mnfs.;  
 p. 5,377.  
**Jaina, t.**, N.W. Hyderabad, India; E. of Auranga-  
 bad; p. 17,000.  
**Jalon, R.**, Spain; rises in Iberian Mtns., flows  
 N.E. into R. Ebro nr. Zaragoza; valley forms  
 main railway, road route from Madrid to Ebro  
 Valley.  
**Jaluit, I.**, Marshall Is., Pacific Ocean.  
**Jamaica, principal I.** of Brit. W. Indies; divided  
 into three cos., Middlesex, Surrey, and Cornwall;  
 mountainous, highest peak (in Blue Mtns.)  
 7,420 ft.; exports sugar, rum, spices, coffee;  
 cap. Kingston; a. 4,411 sq. m.; p. 1,460,000.  
**Jamalpur, t.**, N.E. Bengal, Pakistan; p. (1941)  
 23,077.  
**Jamalur, t.**, N.E. Bihar, Indian Union; p. (1941)  
 30,346.  
**Jambes, commune**, S. Belgium; sub. of Namur;  
 glass, engineering; p. 7,954.  
**James (or Powhattan), R.**, Virginia, U.S.A.; flows  
 from Blue Ridge to Chesapeake Bay; length  
 450 m.  
**James Bay, S.** part of Hudson Bay, Canada; length  
 about 1,250 m.  
**James W. Ellsworth Land**, Antarctica; claimed  
 by U.S.A.  
**Jamestown, c.**, N.D., U.S.A.; cattle; food  
 processing; p. (1950) 10,697.  
**Jamestown, spt., cap.**, St. Helena I.; p. (1946) 1,547.  
**Jamestown, c.**, N.Y., U.S.A.; summer resort and  
 mfg.; p. (1950) 43,354.  
**Jamestown, t.**, dist., Virginia, U.S.A.; nr. mouth of  
 James R., where first English permanent settle-  
 ment was founded 1607.  
**Jammer Bay, bay**, W. coast of Vendsyssel, Jut-  
 land, Denmark.  
**Jammu and Kashmir, rev.**, N. India; traversed by  
 ranges of the Himalayas; in Jhelum valley is  
 the lovely "Happy Valley," vale of K.; rich  
 agr. dists.; also noted for textile products;  
 cap. Srinagar; winter cap. Jammu; a. 84,471  
 sq. m.; p. (estd. 1951) 4,410,000.  
**Jamshedpur, t.**, Bihar, India; W. of Calcutta;  
 Tara iron- and steel-wks.; p. (1951) 218,162.  
**Jämtland, co.**, Sweden; a. 19,967 sq. m.; p.  
 (1950) 144,024.  
**Janesville, t.**, Wisconsin, U.S.A.; in agr. region;  
 textiles, machinery; p. (1950) 24,899.  
**Janina, see** Ioannina.  
**Januay, t.**, Panay, Philippines; fine woven  
 fabrics.  
**Jan Mayen I.**, between Spitzbergen and Iceland,  
 Arctic Ocean; belongs to Norway; seal and  
 whale fisheries; government weather-forecast  
 stn; a. about 144 sq. m.  
**Japan, civ.**, E. Asia; ch. Is. Shikoku, Hokkaido,  
 Honshu, Kyushu; mountainous, largely  
 volcanic, 18 active volcanoes; subject to disas-  
 trous earthquakes; only one-tenth of total  
 surface is agr. land; climate varies according to  
 latitude, in N. temperate, in S. sub-tropical,  
 warm summers, abundant rainfall; vegetation,  
 broad-leaved forest and meadows, coniferous  
 forest; fine harbours, good communications;  
 ch. industries; agr., rice, cereals, mulberry and  
 silk, tobacco, cotton, tea; coal, iron, copper,  
 lumber; fisheries; textiles, silks, cottons,  
 woollens; shipbuilding, engineering, machinery,  
 paper; cap. Tokyo; a. 147,611 sq. m.; p.  
 (1950) 83,199,637.  
**Japan, Sea of**, portion of Pacific Ocean between  
 Korea, U.S.S.R., and Japan.  
**Japan Current, see** Kuroshio.  
**Jappen I.**, Geelvink Bay, New Guinea, Indonesia.  
**Japura, R.**, Colombia, Brazil, S. America; rising  
 in the Andes of Colombia, and flowing through  
 Brazil to R. Amazon; length 1,300 m.  
**Jarocin, t.**, Poland; S. of Poznan; p. 11,818.  
**Jarosław, mfg. t.**, Galicia, Poland; on R. San;  
 garrison; p. 19,376.  
**Jarrah, R.**, S.W. Persia; flows into Persian G.  
**Jarrow, t.**, mun. bor., Durham, Eng.; on S.  
 bank of R. Tyne, 7 m. below Gateshead;  
 shipbuilding; suffered severely in depression  
 after First World War; light industries being  
 introduced into area; birthplace of Venerable  
 Bede; p. (1951) 28,541.  
**Jaslow, commune**, Rzeszow, Poland; oil wells;  
 p. 12,000.



- Jasper, *t.*, E. Texas, U.S.A.; cattle, agr., lumber: p. (1950) 4,403.
- Jassy (Iasi), *t.*, Romania; former cap. Moldavia; in vineyard dist.; active tr. and mnfs.; p. (1945) 107,987.
- Jászberény, *t.*, Hungary; on R. Zagyva; p. 31,070.
- Jativa, *t.*, Valencia, Spain; wine, oil, fruit; p. 18,263.
- Jau, *c.*, São Paulo st., S.E. Brazil; coffee; p. 18,655.
- Jaul, *t.*, Nejd, Saudi Arabia; p. exceeds 10,000.
- Jauja, *t.*, Junin, Central Peru; E. of Lima; p. 3,276.
- Jaunpur, *t.*, Uttar Pradesh, India; on R. Gumti; perfumes; p. (1941) 32,569.
- Java, *ch. I.*, Indonesia; mtns. (many volcanic); loftiest peak, 12,057 ft.; agr., rubber, tobacco, sugar, coffee, tea; oil palms, cinchona, spices; coal, tin, gold, silver; teak forests; petroleum; densely populated; cap. Jakarta; a. 50,390 sq. m.; p. (inc. Madura) (1930) 41,718,364.
- Javari (Yavari), *R.*, forms boundary between Peru and Brazil; trib. of R. Amazon.
- Java Sea, part of the Pacific Ocean between N. cst. Java, Borneo, and Sumatra.
- Jawalapur, *t.*, Uttar Pradesh, India; on R. Ganges.
- Jawor (Jauer), *t.*, Lower Silesia, Poland; p. 12,114.
- Jaworzno, *industl. t.*, Poland; nr. Cracow; coal; p. 17,000.
- Jaxartes *R.*, see Syr Darya.
- Jayuya, *municipality*, central Puerto Rico, W. Indies; sugar, tobacco, cotton; p. 14,589.
- Jeanerette, *t.*, S. La., U.S.A.; sugar, pecan nuts, rice; p. (1950) 4,692.
- Jeanette, *bor.*, Penns., U.S.A.; natural gas region; p. (1950) 16,172.
- Jebba, *t.*, Nigeria, W. Africa; on R. Niger.
- Jebel Aulia, *vil.*, Anglo-Egyptian Sudan; S. of Khartoum; proposed site for dam across White Nile R.
- Jebel ed Druz, *terr.*, S.E. of Hauran, Syria; ch. t. Es Suweida.
- Jebel-Hauran, high tableland of Syria; alt. 6,000 ft.
- Jebel Serbal, *mtn.*, Sinai peninsula, Egypt; alt. 6,760 ft.
- Jedburgh, *burgh*, Roxburgh, Scot.; on R. Jed, 12 m. S.W. of Kelso; abbey ruins, tweeds, woollens, rayon; p. (1951) 4,083.
- Jefferson, *c.*, Wisconsin, U.S.A.; p. (1950) 3,625.
- Jefferson, *t.*, Texas, U.S.A.; near oil-field; cattle, grain; p. (1950) 3,164.
- Jefferson City, *cap.*, Missouri, U.S.A.; on R. Missouri, 100 m. W. of St. Louis; shoes, tiles, farm implements; p. (1951) 25,039.
- Jeffersonville, *mftg. t.*, Indiana, U.S.A.; on Ohio R.; p. (1950) 14,685.
- Jehol, *prov.*, China; cap. Chengteh; a. 74,297 sq. m.; p. (estd. 1947) 2,185,000.
- Jelenia Góra (Hirschberg), *mftg. t.*, Lower Silesia, Poland; p. 39,991.
- Jelep-la, *high pass*, leading from Sikkim, N. India, to Tibet; alt. 14,390 ft.
- Jelgava (Mitau), *t.*, Latvia, U.S.S.R.; on R. Aa; linen, soap; p. (1935) 34,099.
- Jemappes, *industl. t.*, Hainaut, Belgium; on the Halne R.; coal, iron; French victory over Austria 1792; p. (1947) 14,573.
- Jena, *t.*, Thuringia, E. Germany; on R. Saale; famous univ.; books, pianos; optical mftg.; p. 68,357.
- Jenkins, *t.*, Ky., U.S.A.; on coal-field; p. (1950) 6,921.
- Jenkinson, *bor.*, Penns., U.S.A.; residtl.; p. (1950) 5,130.
- Jennings, *t.*, La., U.S.A.; agr.; oil wells; p. (1950) 9,663.
- Jenolan Caves, N.S.W., Australia; in Blue Mtns., 20 m. S.W. of tourist centre Katoomba; lge. natural caves in limestone, stalactites, stalagmites.
- Jeremie, *spt.*, S.W. Haiti; p. 6,000.
- Jerez de la Frontera, *t.*, Andalusia, Spain; 14 m. N.E. of Cadiz; noted for sherry; p. (1950) 107,770.
- Jerez de los Caballeros, *commune*, S.W. Spain; marble, tr. centre for agr. region; p. 16,154.
- Jericho, *vil.*, Jordan Valley, Israel; Roman and Byzantine remains; p. 5,000.
- Jersey, *I.*, largest of Channel Is., 13 m. W. of French coast; potatoes, fruit, tomatoes, cattle, etc.; cap. St. Heller; a. 45 sq. m.; p. (1952) 55,388.
- Jersey City, *spt.*, N.J., U.S.A.; opp. New York on Hudson R.; canning, iron, steel, tobacco, chemicals; rly. centre; p. (1950) 299,017.
- Jerusalem, *c.*, Holy Land; 2,660 ft. above sea-level, between Dead Sea and Mediterranean; the "Holy City" of the Jews and sacred city of Christians and Mohammedans; since 1950 c. divided between Israel and Jordan; cap. of Israel; "Old City" in Jordan; Hebrew univ.; varied industries; p. (estd. 1951) 150,000 (Israel only).
- Jervis Bay, *Commonwealth terr.*, acquired as site for port for Canberra by Federal Government of Australia 1909; a. 28 sq. m.; p. 360.
- Jesi, *t.*, Ancona, Italy; cath.; p. 23,600.
- Jesselton, *impt. spt.*, cap. of N. Borneo; on W. cst.; p. (1951) 11,704.
- Jessup, *t.*, N.E. Penns., U.S.A.; coal-mining; p. 9,270.
- Jeumont, *commune*, Nord, France; glass-ware, light engineering; p. 6,642.
- Jhansi, *t.*, Uttar Pradesh, India; p. (1941) 103,254.
- Jhelam, *R.*, W. Punjab, Pakistan; most W. of the five Rs. of the Punjab; flows from Kashmir to join the Chenab.
- Jibuti, *cap.*, Fr. Somaliland; impt. transit tr. between Ethiopia and the outer world; p. 17,000.
- Jičín, *t.*, N.E. Bohemia, Czechoslovakia; mkt.; p. 11,034.
- Jidda, *spt. t.*, Hejaz, nr. Mecca; p. about 40,000.
- Jihlava, *t.*, Moravia, Czechoslovakia; timber, grain, textiles; p. (1947) 23,413.
- Jimena de la Frontera, *t.*, Spain; nr. Cadiz; p. 10,123.
- Jimma, *t.*, *prov.*, Ethiopia; ch. product Jimma coffee; connected by road with Addis Ababa.
- Jinja, *t.*, Uganda Protectorate, Brit. E. Africa; on N. shore of L. Victoria where R. Nile drains from L. over Ripon Falls; hydro-electric power scheme; rly. bridge, opened 1931, allowed extension of rly. across Nile to Kampala.
- Jipijapa, *c.*, W. Ecuador, S. America; straw hats; p. (1938) 8,000.
- João Pessoa, *cap.*, Paraíba st., Brazil; p. (1950) 120,857.
- Joazeiro, *t.*, Baia, Brazil; on São Francisco R.
- Johan, *dist.*, N.E. Honshu, Japan; third lgst. coalfield in Japan; ch. t. Fukushima.
- Jodhpur, *t.*, Rajasthan, Indian Union; p. (1951) 180,717.
- Joensuu, *t.*, on chain of La., S.E. Finland; p. 6,354.
- Jogjakarta, *c.*, Java; 40 m. S. of Semarang; connected with Jakarta by rail; citadel, with palace; p. 137,000.
- Johanna, *I.* of the Comoro group in Mozambique Channel; p. 12,870.
- Johannesburg, *t.*, Transvaal, S. Africa; univ.; gold mining centre of Witwatersrand; tobacco, brewing, ironfounding, printing; p. (1951) 880,014 (inc. 359,539 whites).
- John o' Groat's House, *place* nr., Duncansby Head, Caithness, Scot.
- Johnsomburg, *bor.*, Penns., U.S.A.; chemicals, paper, iron and steel; p. (1950) 4,567.
- Johnson City, *t.*, N.Y., U.S.A.; leather, chemicals, paper; p. (1950) 19,249.
- Johnson City, *t.*, N.E. Tenn., U.S.A.; mkt., iron, textiles; p. (1950) 27,864.
- Johnston, *t.*, Providence, Rhode I., U.S.A.; p. (1950) 12,725.
- Johnstone, *mftg. burgh*, Renfrew, Scot.; on R. Black Cart, nr. Paisley; iron, brass, machine tools, textile indus.; p. (1951) 15,661.
- Johnstown, *t.*, N.Y., U.S.A.; glove mftg.; p. (1950) 10,923.
- Johnstown, *t.*, Penns., U.S.A.; on Conemaugh R.; immense steel wks.; p. (1950) 63,232.
- Johore, *st.*, Fed. of Malaya; at S. end of peninsula; forested; rubber, rice, copra, pineapples; a. 7,330 sq. m.; p. (1947) 733,251, two-fifths Chinese.
- Johore Bahru, *cap.*, Johore prov., Malaya; across the Strait from Singapore; p. (1940) 35,826.
- Joinville, *t.*, Haute-Marne, France; p. 3,162.
- Jökulsá, *R.*, flowing into Axar Fjord, Iceland.
- Joliet, *t.*, Ill., U.S.A.; rly. and mftg. centre p. (1950) 51,601.

Joliette, *t.*, Quebec, Canada; woollens, paper, tobacco; p. (1941) 12,749.

Jonesborough, *t.*, Arkansas, U.S.A.; p. (1950) 16,310.

Jönköping, *co.*, Sweden; cap. Jönköping; a. 4,447 sq. m.; p. (1950) 271,475.

Jönköping, *t.*, cap. Jönköping, Sweden; paper, carpets, matches; p. (1951) 44,685.

Jouquiére, *t.*, S. Quebec, Canada; lumber, rly. shops; p. (1941) 13,769.

Jonzaac, *t.*, Charente-Inferieure, France; on R. Seugne; p. 3,041.

Joplin, *tt.*, Missouri, U.S.A.; lead-mining; p. (1950) 38,711.

Jordan, *kingdom*, bounded by Israel, Syria, Saudi Arabia, and Iraq; agr. but lge. areas of desert; phosphate deposits and potash; cap. Amman; a. 34,750 sq. m.; p. (estd. 1950) 600,000.

Jordan, *R.*, famous in Bible history; flowing S. from Anti-Lebanon along a sinuous course, mostly below sea-level to the Dead Sea, its rapidity and variant depth render it unnavigable, and no t. of any importance has ever been built on its banks; length 120 m.

Jorullo, *volcano*, Michoacan st., Mexico; alt. 4,265 ft.

Jos, *t.*, central Nigeria; on Bauchi Plateau, 60 m. S.W. of Bauchi; impt. tin-mines; on branch line linking with E. Nigerian rly. system to Pt. Harcourt.

Jotunheimen, *mtn. region*, central Norway; Goldhøpigen, alt. 8,097 ft., Glitterind, alt. 8,048 ft.

Joyce's Country, *mountainous dist.*, Galway, Ireland.

Juan de Fuca Strait, between Vancouver I. and Washington st., U.S.A.

Juan Fernandez, *rocky I.*, S. Pac. Oc.; belonging to Chile; a. 38 sq. m.; famous for Alex. Selkirk (Robinson Crusoe), 1704-9.

Juba, *R.*, E. Africa; flows to Indian Ocean, nr. the Equator.

Juba, *cap.*, Equatorial Prov., Anglo-Egyptian Sudan; p. 10,000.

Jubbulpore, *t.*, Madhya Pradesh, India; carpets, cottons, oil mills; p. (1941) 140,227.

Juby, *C.*, Rio de Oro, N.W. Africa.

Jucar, *R.*, E. Spain; rises in Serrania de Cuenca, flows S.E. to G. of Valencia, Mediterranean Sea; length 250 m.

Juchipila, *t.*, Mexico; nr. Guadalajara; p. 2,821.

Juchitan, *t.*, S.E. Mexico; mkt. for rich agr. region; p. (1950) 14,550.

Judaea, *div.* of Palestine in the Roman period.

Judenburg, *t.*, Styria, Austria; on R. Mur; p. 10,929.

Juggernaut, *see* Puri.

Jugoslavia, *Federal People's Rep.*, comprising former terrs. of Serbia, Montenegro, Croatia, Dalmatia, Bosnia, Herzegovina, and Slavonia; farming, wheat, maize, barley, rye, oats, fruits, plums; sheep, cattle, pigs, goats; timber, coal, iron, copper, chromium, salt, bauxite; cap. Belgrade; a. 95,558 sq. m.; p. (1948) 15,751,938.

Juiz de Fora, *mngf. t.*, E. Brazil; textiles, lumber; p. 85,000.

Jujuy, *prov.*, Argentina; cap. Jujuy; a. 16,859 sq. m.; p. (1947) 166,783.

Julian Alps, *mtn. range*, Venetia, Carinthia, Carniola, and Croatia; highest peak Triglav, 9,394 ft.

Julianehaab, *stn.*, Greenland; N.W. of C. Farewell.

Jullundur, *t.*, E. Punjab, India; cotton and silk mngs.; p. (1951) 168,816.

Jumet, *t.*, Belgium; nr. Charleroi; mftg. and mining; p. (1947) 28,569.

Jumilla, *t.*, Murcia, Spain; exports fabrics; p. 21,165.

Jumna, *R.*, N. India; ch. trib. of R. Ganges; rises in the Himalayas and flows past Delhi and Agra to Allahabad; length 860 m.

Junagadh, *st.*, of Saurashtra Union, India; a. 3,897 sq. m.; p. (1951) 815,535.

Junction City, Kansas, U.S.A.; p. (1950) 13,462.

Jundial, *t.*, S.E. Brazil; rly. junction, cotton mngs.; p. (1947) 29,891.

Juneau City, *cap., mining settlement*, Alaska; gold; fisheries; p. (1950) 5,818.

Jungfrau, *peak*, Bernese Oberland, Switzerland; height 13,669 ft.; electric rly. from Kleine Scheidegg to Jungfraujoch.

Juniata, *R.*, Penns., U.S.A.; flows to the Susquehanna at Petersburg.

Junin, *inland dep.*, Peru; traversed by the Andes; copper, silver, lead; ch. t. Huancayo; a. 22,814 sq. m.; p. (1947) 423,636.

Jura, *mtns.*, Switzerland and France; highest peak Crête de la Neige; alt. 5,654 ft.; length 180 m., width up to 30 m.

Jura, *dep.*, E. France; named from the mtns.; many vineyards; forests, cereals, watches, toys; a. 1,951 sq. m.; p. (1946) 216,386.

Jura, *I.*, Argyll, Scot.; off W. cst.; a. 146 sq. m.

Jurua R., trib. of R. Amazon.

Jüterbog, *industl. t.*, Germany; nr. Potsdam; p. 14,000.

Juticalpa, *t.*, Honduras, C. America; farming, mining; p. 10,990.

Jutland, *peninsula*, Denmark; intensive agr. and poultry farming; a. 11,411 sq. m.; p. (1947) 1,826,056.

Jyväskylä, *t.*, central Finland; mkt.; pulp and paper; p. (1950) 30,680.

## K

K<sup>2</sup>, *see* Godwin-Austen, Mt.

Kabankalan, *municipality*, Negros Occidental, Philippine Is.; agr.; p. 29,315.

Kabansk, *t.*, E. Siberia, U.S.S.R.; nr. L. Baikal; agr. and industl.

Kabardinian, U.S.S.R., Transcaucasia, U.S.S.R.; mtns., Mt. Elbruz 18,463 ft.; a. 3,600 sq. m.; maize, sunflowers, sheep and cattle.

Kabinda, *t.*, Angola, W. Africa; on W. cst., 30 m. N. of Congo estuary; p. 1,000.

Kabul, *cap.*, Afghanistan; on R. Kabul, S. of the Hindu Kush; 6,900 ft. above sea; univ.; p. (estd. 1948) 206,208.

Kabul, *R.*, flowing through Afghanistan to the R. Indus at Peshawar, Pakistan; length 270 m.

Kachin, *st.*, Burma; comprising former Myitkyina and Bhamo dists.

Kadi, *t.*, Bombay, India; spinning, brass and copper work; p. 14,000.

Kadine, *t.*, S. Australia; 10 m. E. of Wallaroo; rly. junction; centre of fruit-growing dist.

Kadiyevka, *t.*, E. Ukraine, U.S.S.R.; mngf.; p. (1939) 68,360.

Kaduna, *t.*, N. Nigeria; cap. of Northern Provs.; impt. rly. junction with main rlys. to Lagos, Pt. Harcourt; p. 10,000.

Kafraria, *extensive dist.*, C. of Good Hope, S. Africa; comprising Griqualand E., Tembuland, Transkei, and Pondoland.

Kafue, *R.*, N. Rhodesia; famous gorge.

Kagoshima, *spt.*, at S. end of Kyushu I., Japan; p. (1950) 229,462.

Kahoolawe, *I.*, Hawaiian Is.; a. 45 sq. m.; uninhabited.

Kaiapoi, *t.*, S.I., New Zealand; on the Waimakariri R., 14 m. by rail from Christchurch; p. (1951) 2,246.

Kaieteur Falls, Brit. Guiana, S. America; located where R. Potaro leaves Guiana Highlands; among world's highest falls (741 ft.).

Kaifeng, *c.*, *cap.*, Honan, China; on Hwang-Ho R.; one of the most ancient cities in the empire; cottons; p. (estd. 1936) 303,422.

Kaikoura, *t.*, S.I., New Zealand; on E. cst., 80 m. N.E. of Lyttelton; in this region are the Kaikoura ranges, in which the highest peaks are Taipugenuku (9,465 ft.) and Alarm (9,400 ft.).

Kaiping, *t.*, Hopeh, N. China; on border of Manchuria, 80 m. N.E. of Tientsin; second largest coal-mining area (Kaillan mines) in China; coal exported through Chinwangtao.

Kairouan, *holy c.* of the Moslems, Tunisia, N. Africa; 80 m. S.S.E. of Tunis; founded circa A.D. 670; mosque; p. (1946) 32,299.

Kaiserslautern, *industl. t.*, Germany; nr. Mannheim; iron, textiles, beer tobacco; p. 62,219.

Kaiserswerth, *t.*, Rhine prov., Germany; anc. Benedictine monastery; p. 2,972.

Kaiser Wilhelm's Land, *Australian Dependency*, Antarctica.

Kaishu, *cap.* of Kokai prov., W. Korea; p. 29,688.

Kaiyvan, *t.*, S. Manchuria; on rly., mkt., soybeans; p. 34,380.

Kajaani, *t.*, on Oulu L., Finland; p. 8,732.

Kakamega, *t.*, Kenya, Brit. E. Africa; 30 m. N. of Kisumu; centre of gold-mining district.

Kalabaka, *t.*, Central Greece; N. of Trikkala; p. 3,690.

Kalafat, *t.*, Romania; on R. Danube, opposite Vidin.



- Kalahari Desert, *gr. infertile tract* of S. Central Africa, between the R. Orange and the Zambezi; mainly in Bechuanaland Protectorate; alt. 3,700 ft. a. 20,000 sq. m.; inhabited chiefly by Bushmen.
- Kalamata, *t.*, Peloponnese, Greece; nr. Sparta; silk industry, figs, currants, olive oil export; p. (1951) 38,663.
- Kalamazoo, *t.*, Michigan, U.S.A.; rly. centre, engineering; college; p. (1950) 57,704.
- Kalamita Bay, Black Sea; W. cst. Crimea, U.S.S.R.
- Kalat or Khelat, *st.*, Baluchistan, Pakistan; a. 53,995 sq. m.; p. (1951) 283,000.
- Kalgan, *see* Wanchuan.
- Kalgoorlie, *t.*, W. Australia; on Transcontinental rly. route 350 m. E. of Perth; semi-desert conditions; famous gold-mining area; p. (1947) 11,904.
- Kalimnos (Caymnos) *I.* and *prefecture* Dodecanese, Greece; cap. Kalimnos; p. (1940) 24,393.
- Kalinin, *t.*, U.S.S.R.; on trib. of R. Volga; cath.; cotton, linen, leather, machinery; p. (1939) 216,131.
- Kaliningrad, *new prov.*, R.S.F.S.R., U.S.S.R.; cap. K.
- Kaliningrad (formerly Königsberg), *t.*, formerly E. Prussia, now U.S.S.R.; on R. Pregel; cath.; splendid buildings; machinery, wood-pulp, chemicals, sugar-beet; tea centre; p. 368,400.
- Kalispell, *t.*, Mont., U.S.A.; mkt. for agr. region, lumber; p. (1950) 9,737.
- Kalisz, *t.*, Poland; on R. Prosna; linen factories; p. 48,000.
- Kalk, *t.*, N. Rhine-Westphalia, Germany; iron and chemical wks.
- Kalmar, *co.*, S. Sweden; cap. Kalmar; a. 4,485 sq. m.; p. (1950) 236,847.
- Kalmar, *spt.*, Sweden; on E. cst.; match and tobacco factories, busy trade; p. (1951) 27,049.
- Kalocsa, *t.*, Hungary; on R. Danube; cath., palace; wine; p. 12,000.
- Kaluga, *t.*, U.S.S.R.; on R. Oka; leather; p. (1939) 89,484.
- Kalushin, *t.*, S.W. Ukraine, U.S.S.R.; mines salt, potassium; brewing; leather; p. 14,699.
- Kalyan, *spt.*, Thana, Bombay, India; p. (1941) 26,291.
- Kama, *R.*, U.S.S.R.; trib. of R. Volga, which it joins S. of Kazan; length 1,400 m.
- Kamaishi, *t.*, *spt.*, N.E. Honshu, Japan; serves Kamaishi-Sennin iron-ore field, lgst. worked deposits and reserves in Japan; impt. iron and steel industry; imports coal, iron ore, machinery; p. (1947) 26,200.
- Kamarian I., Red Sea; under Aden admin.; quarantine stn. for pilgrims travelling to Mecca from the E.; a. 22 sq. m.; p. about 2,200.
- Kamchatka, *penin.*, E. Siberia, U.S.S.R.; mtns. with volcanoes (Klyuchevsk, alt. 16,512 ft.); mineral wealth, fisheries on cst., climate cold, wet and foggy; cap. Petropavlovsk on E. cst., good roadstead; a. 465,837 sq. m.; p. 6,500.
- Kamen, *t.*, Westphalia, Germany; coal, leather, metals; p. 11,686.
- Kamenets Podolski, *t.*, Ukraine, U.S.S.R.; brewing, tobacco; p. 25,000.
- Kamensk, *dist.*, Moldavian S.S.R.; U.S.S.R.
- Kamensk, *t.*, Ukraine, U.S.S.R.; on N. Donets R.; coal-mining.
- Kamensk Uralsk, *t.*, U.S.S.R.; p. (1939) 50,897.
- Kamet, *mtn.*, N. Garhwal dist., Himalayas; alt. 25,477; until 1953 (Everest) highest mtn. climbed (Smythe, 1931).
- Kamloops, *c.*, Brit. Columbia, Canada; on Thompson R.; formerly known as Fort Thompson; on trans-continental rlys.; supply centre for mining and grazing dist.; p. (1951) 8,099.
- Kampala, *t.*, Uganda, Brit. E. Africa; ch. commercial centre of colony; p. 40,000.
- Kampar, *t.*, Perak, Fed. of Malaya; p. 17,449.
- Kampen, *t.*, Overijssel, Netherlands; on R. Yssel; p. (1951) 24,382.
- Kampot, *spt.*, Indo-China; pepper; p. 3,000.
- Kamyshin, *mftg. t.*, U.S.S.R.; on R. Volga; p. 24,000.
- Kan Kiang, *R.*, S. China; rises in Nan Shan, flows N. into L. Poyang; valley provides route for main road from Kiangsi prov. to Kwangtung prov. over Meiling Pass.
- Kanawha, *R.*, W. Va., U.S.A.; rises in Alleghany Mtns., flows S.W. to Hinton, then turns N.W. across Alleghany Plateau into R. Ohio; lower course runs through ch. mining a. of W. Va. coalfield nr. Charleston; length 350 m. approx.
- Kanazawa, *t.*, Kaga, Honshu, Japan; silks and pottery; p. (1947) 231,450.
- Kanchenjunga, *mtn.*, on Nepal-Sikkim bdy., N.E. India; 3rd highest mtn. in world; alt. 28,146 ft.
- Kandahar, *prov.*, S. Afghanistan; mountainous; cap. K.; p. over 1,500,000.
- Kandahar, *c.*, former cap., Afghanistan; alt. 3,400 ft.; 370 m. from Herat on N.W.; p. 60,000.
- Kandersteg, *t.*, Bernese Oberland, Switzerland; health resort.
- Kandy, *t.*, Ceylon; in centre of I., 75 m. from Colombo at alt. 3,000 ft.; resort in hot season; tea and cocoa; p. (1946) 51,200.
- Kane, *bor.*, Penns., U.S.A.; natural-gas region; p. (1950) 5,706.
- Kangaroo I., S. Australia; eucalyptus.
- Kaniapiskau, *t.*, Labrador pen., Canada; iron.
- Kanjiza Stara, *indust. t.*, Yugoslavia on R. Tisa.
- Kankakee, *t.*, Ill., U.S.A.; farm implements; machinery; p. (1950) 25,856. [28,448.]
- Kannopolis, *t.*, N.C., U.S.A.; textiles; p. (1950)
- Kano, *t.*, N. Nigeria, Brit. W. Africa; gr. emporium for the Central Sudan; impt. airport and rly. terminus; p. (1946) 89,162.
- Kanpur, *see* Cawnpore.
- Kansas, *st.*, U.S.A.; called the "Sunflower State"; prairie; farming, maize, wheat; cattle, dairying, pigs; coal, petroleum, natural gas, lead, meat-packing, flour-milling; cap. Topeka; a. 82,276 sq. m.; p. (1950) 1,905,299.
- Kansas City, Missouri, U.S.A.; on right bank of R. Missouri; great live-stock mart; p. (1950) 456,622; adjoins Kansas City, Kansas; meat-packing centre; p. (1950) 129,553.
- Kansu, *prov.*, China; cap. Lanchow; cereals, poppy; a. 151,161 sq. m.; p. (estd. 1947) 6,256,000.
- Kanye, *t.*, Bechuanaland Protectorate, S. Africa; cap. of Bangwaketse tribe; p. 12,000.
- Kaohsiung, *spt.*, Formosa (Taiwan); on S.W. cst.; exports rice, sugar; p. (1950) 267,515.
- Kapfenberg, *commune*, Austria; iron, chemicals, paper; resort; p. (1951) 23,843. [centre.]
- Kapunda, *t.*, S. Australia; wheat, sheep, fruit
- Kara-Bogaz, *lge. G.* on E. cst. of Caspian Sea, U.S.S.R.; v. high salinity, impt. deposits of Glauber's salt used in local chemical industry; a. 7,000 sq. m.
- Karachev, *t.*, Orel, U.S.S.R.; hemp factories and oil wks.; p. 10,000.
- Karachi, *spt.*, cap., Pakistan; on the Indus delta; thriving trade, wheat and hides; airport; p. (1951) 1,126,417 (Federal capital).
- Karafuto, *see* Sakhalin.
- Karaganda, *t.*, Kazakhstan, U.S.S.R.; town built since 1926 on impt. new coalfield; p. (1939) 165,937.
- Karakorum Mtns., separating E. Turkestan from Kashmir; highest peak K<sup>2</sup> (Godwin-Austen) 28,250 ft.
- Kara-Kum, *see* Qara Qum.
- Kara Sea, Arctic Ocean; E. of Novaya Zemlya; navigation open July-Sept.
- Karatsu, *spt.*, N.W. Kyushu, Japan; coal; p. (1947) 46,442.
- Karbala, *t.*, Iraq; N.W. of Hilla; centre of pilgrimage; sacred c. of Shiites; p. (1947) 122,719.
- Karacz, *t.*, E. Hungary; tortoiseshell goods; p. 24,565.
- Karelo-Finnish S.S.R., *constituent rep.*, U.S.S.R.; cap. Petrozavodsk; rich in timber, minerals, precious metals; a. 69,720 sq. m.; p. (estd. 1940) 900,000.
- Karenni Sts., Burma; between Siam and Lower Burma, drained by Salween R.; comprising Kantarawaddy, Bawlake, and Kyeboogyi; a. 4,280 sq. m.; p. 70,493.
- Karikal, *former French prov.*, united with India 1954; on E. cst., 150 m. S. of Madras; p. (1948) 70,541.
- Karkonosze (Riesengebirge), *mtn. range*, between Polish Silesia and Bohemia; highest peak Śnieżka (Schneekoppe), 5,275 ft.
- Karlovac, *t.*, Croatia, Yugoslavia; S.W. of Zagreb; chemicals; p. (1948) 23,830.
- Karlovy Vary, *t.*, *vat. pl.*, Czechoslovakia; on R. Ohře; p. (1947) 30,915.
- Karlskrona, *ch. naval stn.*, Sweden; on the S. cst.; p. (1951) 30,997.

- Karlsruhe, *t.*, Württemberg-Baden, Germany; machinery, chemicals, hardware, beer; p. (1950) 198,840.
- Karlstad, *t.*, Sweden; on N. shore L. Vänern; ironwks., and match factories; p. (1951) 35,651.
- Karnak, *vil.*, Upper Egypt; on Nile, the site of ancient Thebes; ruined temples.
- Karpachos, *Greek I.*, Mediterranean Sea; between Rhodes and Crete, one of the Dodecanese; p. 8,747.
- Karroos, Great, and Little, extensive treeless plateaus between mtn. ranges covered by scrub, O. of Good Hope, S. Africa.
- Kars, *c.*, Turkey; formerly Russian; woollens, carpets; p. (1945) 22,264.
- Karsakpai, *t.*, Kazakh S.S.R., U.S.S.R.; on R. Sary Su, 400 m. W. of L. Balkhash; smelting of copper using ore from Dzhezkazgan, coal from Karaganda.
- Karvinna, *t.*, Silesia, Czechoslovakia; coal, lumber; p. (1947) 22,330.
- Kasai, *R.*, Angola and Belgian Congo, Central Africa; rises in Bihe Plateau (Angola) and flows over 1,200 m. into R. Congo 120 m. above Leopoldville; navigable from R. Congo upstream to Pt. Franquell, where connection made with Katanga rly.
- Kasanlik, *t.*, Central Bulgaria; captured at the surrender of the Sipka Pass 1878 from the Turks; famous for attar of roses.
- Kashan, *prov.*, Persia; between Isfahan and Qum; cap. *c. K.*; carpets; p. (estd. 1949) 55,000.
- Kashgar (Shufu), *comm. c.*, Sinkiang, China; leather; textiles; p. (estd. 1945) 50,000.
- Kashgar, *R.*, E. Turkestan; flowing 500 m. to the R. Yarkand.
- Kashing, *t.*, N. Chekiang, E. China; on Grand Canal; mkt. and tr. centre; p. (estd. 1935) 102,329.
- Kashmir, *see* Jammu and Kashmir.
- Kassala, *prov.*, Anglo-Egyptian Sudan; a. 134,450 sq. m.; p. (estd. 1951) 788,200.
- Kassel, *t.*, Hessen, Germany; p. (1950) 162,132.
- Kastamonu, *t.*, Karasu, Turkey; cap. of Turkish I. same name; great commercial centre; fruit, cotton, mohair; p. (1945) 12,565.
- Kastoria, *t.*, N. Greece; E. of Verroia; p. (1951) 9,977.
- Katahdin, *mtn.*, N. of Bangor, Maine, U.S.A.; alt. 5,385 ft.
- Katanga, *prov.*, Belgian Congo; copper, radium, uranium, cattle; a. 180,000 sq. m.; p. 1,178,029.
- Katmandu, *cap.*, Nepal; on Vishnumati R., 75 m. from Indian frontier; caravan centre; p. (1941) 103,805.
- Kathlawar, *peninsula, st.*, union of Saurashtra, India.
- Katoomba, *see* Blue Mountains.
- Katowice (Kattowitz), *industl. c., cap.*, Upper Silesia, Poland; ironwks. and coal-mines; p. (estd. 1950) 156,000.
- Katrine, Loch, S.W. Perth, Scot.; on R. Teith, 8 m. long; principal source of Glasgow water supply; beautiful scenery.
- Kattegat, arm of North Sea linked with Baltic; separates Denmark (Jutland) from Sweden; 40-70 m. wide.
- Kauai I., Hawaiian Is.; a. 555 sq. m.; p. (1950) 29,838.
- Kaunas (Kovno), *t.*, Lithuania, U.S.S.R.; on R. Niemen; old time cap.; univ.; metal goods; p. 152,365.
- Kavajë, *t.*, on Adriatic Sea, Albania; p. 7,000.
- Kavalla, *prefecture*, Macedonia, Greece; ch. *t.* Kavalla; p. (1940) 135,789.
- Kavalla, *t.*, Kavalla, Greece; on Bay of Kavalla; great tobacco-preparing and exporting centre; p. (1940) 49,667.
- Kawasaki, *c.*, Honshu, Japan; S. sub. of Tokyo; pilgrims; engineering; p. (1950) 319,226.
- Kayes, *t.*, Fr. Sudan, Fr. W. Africa; on Senegal R.; p. 19,000.
- Kayseri, *t.*, Turkey; S.E. of Ankara; p. (1945) 57,698.
- Kazakhstan, *constituent rep.*, U.S.S.R.; cap. Alma-Ata; steppe with stock-raising; large desert areas, being made fertile by irrigation; grain in N.; coal at Karaganda; minerals; a. 1,072,797 sq. m.; p. (1939) 6,145,937.
- Kazan, *cap. t.*, Tatar Rep., U.S.S.R.; impt. tr. centre for E. U.S.S.R., Turkestan, Bokhara, and Iran; cath., univ.; soap and candle factories; p. (1939) 401,665.
- Kazan Retto (Volcano Is.), group of Is., Pacific Ocean; S. of Ogasawara Is. and of Japan.
- Kazerun, *t.*, S.W. Iran; oranges, cotton, opium; p. 7,000.
- Kazvin, *t.*, Navistain, Persia; good transit tr.; p. (estd. 1950) 80,000.
- Keady, *t.*, urb. dist., Armagh, N. Ireland; 10 m. S. of Armagh; p. (1951) 1,463.
- Kearny, *t.*, N.J., U.S.A.; mnfs.; p. (1950) 39,952.
- Kearsley, *urb. dist.*, Lancs, Eng.; coal, cotton; p. (1951) 10,675.
- Keeskemet, *industl. t.*, Hungary; nr. Budapest; p. 87,269.
- Kedah, *st.*, Fed. of Malaya; rice, rubber, coconuts; a. 3,860 sq. m.; cap. Alor Star; p. (1947) 554,441.
- Keeling Is., *see* Cocos Is.
- Keen, *mtn.*, nr. Ballater, Forfar and Aberdeen, Scot.; alt. 3,077 ft.
- Keene, *c.*, New Hampshire, U.S.A.; mnfs.; p. (1950) 15,638.
- Keeper, *mtn.*, Tipperary, Ireland; alt. 2,265 ft.
- Keewatin, *dist.*, N.W. Terr., Canada; chiefly "barren lands"; a. 228,160 sq. m.
- Kei Is., group, off Coast of New Guinea, Indonesia; rice and pearl fishing; p. 50,648.
- Keighley, *t.*, mun. bor., W.R. Yorks., Eng.; in Aire valley, 15 m. N.W. of Leeds; worsteds, woollens, weaving machinery; p. (1951) 56,938.
- Keith, *burgh*, Banff, Scot.; on Isla R.; mftg. industries; in agr. dist.; p. (1951) 4,265.
- Kelantan, *st.*, Fed. of Malaya; rice, coconuts, rubber; a. 5,720 sq. m.; cap. Kota Bharu; p. (1947) 448,572.
- Kellogg, *c.*, N.E. Idaho, U.S.A.; lead mines; p. (1950) 4,913.
- Kells, *mkt. t.*, urb. dist., Meath, Ireland; on R. Blackwater; p. 2,141.
- Kelowna, *t.*, Brit. Columbia, Canada; p. (1951) 8,517.
- Kelso, *burgh*, Roxburgh, Scot.; at confluence of Rs. Teviot and Tweed; fishing tackle; p. (1951) 4,119.
- Kelvin, *R.*, Scotland, flows S.W. to Clyde at Partick; length 21 m.
- Kemerovo, *t.*, Siberia, U.S.S.R.; S.E. of Tomsk; iron, chemicals; p. (1939) 132,978.
- Kemi (Kymmene), *dep.*, Finland; a. 3,537 sq. m.; cap. *K.*; p. (1940) 628,300.
- Kempsey, *t.*, N.S.W., Australia; p. (1947) 6,330.
- Kempston, *urb. dist.*, Bedford, Eng.; on R. Ouse; 3 m. S.W. of Bedford; p. (1951) 3,641.
- Kempton, *t.*, Bavaria, Germany; nr. L. Constance; p. 37,080.
- Ken, *R.*, N. India, flows to the Jumna; length 230 m.
- Kena, *see* Qena.
- Kendal, *mkt. t.*, mun. bor., Westmorland, Eng.; on R. Kent; shoes, pencils, woollens; p. (1951) 18,543.
- Kendallville, *c.*, N.E. Ind., U.S.A.; light engineering; p. (1950) 6,119.
- Kenilworth, *mkt. t.*, urb. dist., Warwick, Eng.; 4 m. S.W. of Coventry; ruined cas.; p. (1951) 10,738.
- Kenmare, *rural dist.*, *t.*, Kerry, Ireland; p. (1946) 9,007.
- Kenmore, *t.*, N.Y., U.S.A.; p. (1950) 20,066.
- Kennebec, *R.*, Maine, U.S.A.; flows to Atlantic; length 200 m.
- Kennet, *R.*, Wilts and Berks, Eng.; trib. of R. Thames; followed by main rly. London to W. of England; length 44 m.
- Kennington, *S. sub.*, London, Eng.
- Kenosha, *t.*, Wisconsin, U.S.A., on W. shore of L. Michigan; mnfs.; p. (1950) 54,368.
- Kensal Green, *dist.*, Middx., Eng.; sub. N.W. London.
- Kensington, *metropolitan bor.*, W. London, Eng.; mainly residtl.; contains K. Palace and Gardens; p. (1951) 168,054.
- Kent, *maritime co.*, S.E. Eng.; agr., stock-raising, hops and cherries; co. *t.* Maidstone; a. 1,525 sq. m.; p. (1951) 1,563,286.
- Kentish Town, *residtl. industl. dist.*, N.W. London, Eng.
- Kenton, *t.*, Ohio, U.S.A.; onions; quarries, foundries; novelty mnfs.; p. (1950) 8,475.
- Kent's Cavern, *cave*, nr. Torquay, Devon, Eng.; 650 ft. long.
- Kentucky, *E. central st.*, Mississippi basin, U.S.A.; agr., mining, mnfs.; cap. Frankfort; largest c. Louisville, at falls of Ohio R.; a. 40,395 sq. m.; p. (1950) 2,944,306.



- Kentucky, R., U.S.A.; flows from Cumberland Mtns. to the Ohio R.; length 350 m.
- Kenya, *Brit. col., protectorate*, E. Africa: coastal strip (protectorate) flat, interior (col.) elevated and peopled by Whites; climate varies according to elevation; vegetation, tropical; forests on coastal belt, semi-desert and grasslands on uplands; races chiefly Bantu Negroes, Indians, and Arabs; agr., maize, sugar, coconuts, sisal, cotton, coffee, pyrethrum; cattle, sheep; bamboo, pencil cedar, hardwoods; gold; cap. Nairobi; a. 224,960 sq. m.; p. (1952) 5,761,000 (inc. 30,000 Europeans).
- Kenya, *Mt., volcanic pk.*, Kenya; 17,040 ft.
- Keokuk, *indust., c.*, N.E. Iowa, U.S.A.; on the Mississippi R.; p. (1950) 16,144.
- Keos (Chios), Aegean Is., Greece; cap. Keos; p. (1940) 78,428.
- Kephallenia (Cephalonia), one of the Ionian Is., Greece; currants, olive oil; cap. Argostolion; devastated by earthquake 1953; a. 315 sq. m.; p. (1951) 47,311.
- Kepno, *t.*, Central Poland; p. 7,810.
- Kerch, *spt., Krim*, U.S.S.R.; p. (1939) 104,471.
- Kergulen, *French archipelago*, dependency of Madagascar, S. of Indian Ocean; whaling and fishing station; a. 1,400 sq. m.
- Koriya, *t.*, Chinese Turkestan; nr. Khotan; trade centre; p. 12,250.
- Kerki, *t.*, S.E. Turkmen, S.S.R., U.S.S.R.; caravan and tr. centre; p. 7,000.
- Kérkyra (Corfu), the largest and most N. of Ionian Is., Greece; a. 274 sq. m.; mountainous; p. (1951) 105,226.
- Kérkyra, *spt., cap.*, Kérkyra I., Greece; wine, fruits, olives; p. (1940) 33,508.
- Kermadec Is., S. Pac. Oc., group belonging to New Zealand, 600 m. N.N.E. of New Zealand; a. 13 sq. m.; meteorological stn. on Sunday I. (largest of group); p. 28.
- Kerman, *prov.*, Persia; on Persian G.; cap. Kerman; carpet mfg.; p. (estd. 1949) 53,000.
- Kermanshah, *c.*, cap. Kermanshah prov., Persia; S. of Kurdistan; ch. product wool; p. (estd. 1949) 106,000.
- Kern, *L.*, S. Cal., U.S.A.; once centre of inland drainage in S. of Central Californian Valley, 20 m. W. of Bakersfield; now permanently dry; feeding rs. diverted for irrigation.
- Kerrville, *t.*, Texas, U.S.A.; cattle, cotton, mkt., resort; p. (1950) 7,691.
- Kerry, *maritime co.*, Munster, Ireland; a. 1,816 sq. m.; cap. Tralee; p. (1951) 126,622.
- Kesteven, *administrative div.*, Lincoln, Eng.; ch. ts. Grantham, Stamford and Sleaford; a. 724 sq. m.; p. (1951) 131,566.
- Keswick, *mkt. t., urb. dist.*, Cumberland, Eng.; on Greta R.; at N. end of L. Derwentwater; tourist centre; woollens; p. (1951) 4,868.
- Ketchikan, *t.*, Alaska, U.S.A.; halibut, salmon; p. (1950) 4,623.
- Ketrzyna (Rastenburg), *t.*, N.E. Poland; nr. Olsztyn; p. 8,000.
- Kettering, *mkt. t., mun. bor.*, Northants, Eng.; at foot of Northampton Heights, nr. Wellbeingborough; iron, boots, shoes; p. (1951) 36,799.
- Kevelaer, *t.*, Rhine prov., Germany; p. 9,000.
- Kew, *sub. London*, Surrey, Eng.; on R. Thames opp. Brentford; contains Kew Gardens. (Kew Observatory is in Old Deer Park, Richmond.)
- Kewanee, *t.*, N.W. Ill., U.S.A.; agr.; coal, engineering; p. (1950) 16,821.
- Keyport, *bor.*, N.J., U.S.A.; fishing; shipyards; mufe.; p. (1950) 5,888.
- Key West, *c.*, Florida, U.S.A.; on sm. island same name about 100 m. from the mainland; naval stn. and cigar factories; nearest U.S.A. port to the Panama Canal; p. (1950) 26,433.
- Khabarovsk, *t.*, U.S.S.R.; on Amur R.; cath.; sable furs; p. (1939) 199,364.
- Khairpur, *st.*, N. of Sind, Pakistan; a. 6,050 sq. m.; p. (estd. 1951) 320,000.
- Khalkidhiki (Chalcidice), *prefecture*, Macedonia, Greece; cap. Polivicos; p. (1951) 75,801.
- Khalkis, *t.*, Evvoia (Euboea), Greece; p. (1951) 26,097.
- Khamgaon, *t.*, Berar, Madhya Pradesh, India; cotton; p. 20,000.
- Khanagin, *t.*, Iraq; nr. E. frontier; new oil fields; p. 5,000.
- Khandwa, *t.*, Madhya Pradesh, India; S. of Indore; cotton, oil-pressing; p. 27,000.
- Khania (Canea), *prefecture*, I. of Crete; cap. Khania; p. (1951) 127,624.
- Khania (Canea), *sm. fishing spt.*, Khania pref., I. of Crete; in sheltered bay on N.W. coast; p. (1951) 35,237.
- Khanka Lake, *L.*, on Manchurian border, U.S.S.R.
- Khar, *sm. fertile prov.*, Persia; the ancient Choara.
- Kharan, *dist.*, Baluchistan, Pakistan; a. 18,508 sq. m.; p. (estd. 1951) 54,000.
- Kharkov, *c.*, Ukraine, U.S.S.R.; on R. Donets; univ., cath.; rly. centre, woollens, sugar, farm implements; p. (1939) 833,452.
- Khartoum, *prov.*, Anglo-Egyptian Sudan; a. 5,700 sq. m.; p. (1947) 329,000.
- Khartoum, *cap.*, Anglo-Egyptian Sudan; at confluence of White and Blue Niles; the Gov.-General's Palace and the Gordon College (now a part of the Univ. Coll. of Khartoum) are about a mile N.E.; the Gov.-General's Palace stands where Gordon fell; ivory, gum, ostrich feathers; p. (estd. 1951) 82,700.
- Khartoum North, *t.*, Anglo-Egyptian Sudan; p. (1947) 30,350.
- Khasi Hills, Assam, N.E. India; form abrupt S. edge to middle Brahmaputra valley; very heavy monsoon rains on S.-facing slopes; lower slopes forested; middle slopes constitute impt. tea-growing region; rise to over 6,000 ft.
- Khaskovo, *t.*, Bulgaria; woollens, carpets, silk, tobacco; p. 27,294.
- Khelat, *see* Kalat.
- Kherson, *t.*, Ukraine, U.S.S.R.; 10 m. up R. Dnieper from Black Sea; in prolific grain-growing dist.; timber, wool; p. (1939) 97,186.
- Khingon, *Gr. and Little*, *mtn. ranges*, Mongolia and Manchurias; separating the plateau from the plains.
- Khios, *I.*, Aegean Is., Greece; wines, figs, fruits, marble; cap. Khios; p. (1951) 66,549.
- Khiva, *originally vassal st. of Russia*; now part of Uzbekistan, U.S.S.R.
- Khiva, *t.*, Kara Kalpak, Uzbekistan, U.S.S.R.; silks, cottons, carpets; p. 19,866.
- Kholm, *see* Chelm.
- Khorramshahr, *spt., cap.*, Khuzistan, W. Persia; tr. oil; p. 30,000.
- Khotin, *formerly prov.*, Bessarabia, Romania, ceded to U.S.S.R. 1940 and now part of Ukrainian S.S.R.
- Khurasan, *prov.*, Persia; W. of Afghanistan; ch. product wool; cap. Meshed.
- Khurja, *t.*, Uttar Pradesh, India; cotton, pottery; p. 25,000.
- Khyber, *difficult mtn. pass*, between W. Punjab, Pakistan and Afghanistan; followed by route from Peshawar to Kabul, traversed by Alexander the Great and by two British expeditions.
- Kiama, *t.*, N.S.W., Australia; agr.; coal; artificial harbour; p. (1947) 2,426.
- Kiang-si, *inland prov.*, China; S. of the Yangtze-Kiang; cap. Nanchang; rice, wheat, tea, silk, cotton; a. 66,600 sq. m.; p. (estd. 1947) 13,794,000.
- Kiangsu, *maritime prov.*, China; exports much silk; a. 42,085 sq. m.; cap. Chinkiang; p. (estd. 1947) 36,469,000.
- Kiaochow Bay, *inlet* on S. side of Shantung Peninsula, China.
- Kicking Horse Pass, *mtn. pass*, over the Rocky Mtns., Brit. Columbia, Canada; used by Canadian Pacific Rly.
- Kidderminster, *t., mun. bor.*, Worcester, Eng.; on R. Stour 4 m. above its confluence with R. Severn; carpets; p. (1951) 37,423.
- Kidsgrave, *mfg. t., urb. dist.*, "Potteries," Staffs., Eng.; 3 m. N.W. of Stoke-on-Trent; coal, ironworks; p. (1951) 16,231.
- Kidwelly, *mun. bor.*, Carmarthen, Wales; on cat., 7 m. N.W. of Llanelly; coal; p. (1951) 3,007.
- Kiel, *spt.*, Schleswig-Holstein, Germany; Baltic naval port, shipbuilding, and allied industries; p. (1950) 254,449.
- Kiel Canal (Kaiser Wilhelm Canal), Germany; 61 m. long, connects N. Sea with the Baltic; opened in 1895, reconstructed 1914.
- Kielce, *co.*, Central Poland; minerals, agr.; cap. K.; a. 18,053; p. (estd. 1950) 1,674,268.
- Kielce, *t.*, Central Poland; ropes, dyes, cotton; p. 49,960.
- Kiev, *c.*, cap., Ukraine, U.S.S.R.; on R. Dnieper; once cap. of Muscovite Empire; cath.; machinery, grain, in vicinity of rich mineral deposits; p. (1939) 846,293.

- Kigoma**, *impt. tr. t.*, Tanganyika, Africa; W. terminus of the Central Rly. on L. Tanganyika; p. 14,000.
- Kikladhes**, *prefecture and group* of approx. 200 Is., Grecian arch.; ch. t. Hermoupolis (Sira); a. (total) 1,023 sq. m.; p. (1940) 131,654.
- Kilauea**, *volcano*, Hawaii; largest active crater in the world; 2 m. diameter; alt. 4,088 ft.
- Kilbarchan**, *par.*, Renfrew, Scot.; S.W. of Glasgow; textiles; p. (1951) 8,193.
- Kilbride**, *E.*, *par.*, E. Lanark, Scot.; p. (1951) 6,591.
- Kilbride**, *W.*, *par.*, Ayr, Scot.; nr. Ardrossan; (1951) 4,243.
- Kilburn**, *sub.*, N.W. London, Eng.
- Kildare**, *inland co.*, Leinster, Ireland; a. 654 sq. m.; p. (1951) 66,426.
- Kildare**, *mkt. t.*, *cap.*, Kildare, Ireland; cath.; close by is the famous racecourse, the Curragh of Kildare; p. (1946) 1,753.
- Kilimanjaro**, *volcanic mtn.*, Tanganyika, E. Africa; highest peak in the continent; alt. 19,321 ft.
- Kilindini**, *spt.*, Kenya; adjoins Mombasa; the finest harbour on E. coast of Africa.
- Kilkenny**, *inland co.*, Leinster, Ireland; *cap.* Kilkenny; pastoral farming, coal, black marble; a. 796 sq. m.; p. (1951) 65,133.
- Kilkenny**, *t.*, *cap.* Kilkenny, Ireland; on R. Nore; local mkt.; p. (1946) 10,291.
- Kilkieran Bay**, *lge. intricate indentation*, Galway, Ireland.
- Kilkis**, *prefecture*, Macedonia, Greece; *cap.* Kilkis; p. (1951) 88,928.
- Killarney**, *t.*, *urb. dist.*, Kerry, Ireland; local mkt. and tourist centre; p. (1946) 5,943.
- Killarney**, *Is. of*, Lower, Middle and Upper; celebrated for their beauty; attractive tourist resorts.
- Killiecrankie**, *Pass of*, Perth, Scot.; on R. Garry; at S. approach to Drumochter Pass; used by main rly. Perth to Inverness.
- Kill van Kull**, *channel* between N.J. and Staten I., N.Y. c., U.S.A.
- Killybegs**, *t.*, Donegal, Ireland; on Donegal Bay.
- Killyleagh**, *t.*, on Stangford L., Down, N. Ireland; p. (1951) 1,461.
- Kilmacolm**, *par.*, Renfrew, Scot.; on Gryfe Water; p. (1951) 4,651.
- Kilmarnock**, *rly. centre*, burgh., Ayr, Scot.; on R. Irvine, 11 m. N.E. of Ayr; carpet factories, textile and ironworks; p. (1951) 42,120.
- Kilmore**, *t.*, Victoria, Australia; 30 m. N. of Melbourne; in impt. gap between Grampian Mtns. and Australian Alps.
- Kilo-Moto**, *goldfield*, Belgian Congo, Central Africa; in N.E. of colony, 50 m. W. of L. Albert; linked by motor road to R. Congo (Stanleyville) and L. Albert (Kasenyi).
- Kilosa**, *t.*, Tanganyika Terr., E. Africa; on rly.; p. 4,500.
- Kilpatrick**, *New*, *par.*, Dunbarton, Scot.; on left bank of R. Clyde; p. (1951) 54,931.
- Kilpatrick**, *Old*, *par.*, Dunbarton, Scot.; on bank of R. Clyde, 9 m. N.W. of Glasgow; lowest ferry across Clyde; p. (1951) 49,248.
- Kilrenny** and *Anstruther*, burgh., Fife, Scot.; at entrance to Firth of Forth; p. (1951) 2,991.
- Kilrush**, *spt.*, *urb. dist.*, S.W. Clare, Ireland; on R. Shannon; p. (1940) 3,348.
- Kilsyth**, burgh., Stirling, Scot.; at S. foot of Campsie Fells, 10 m. W. of Falkirk; whinstone quarries; p. (1951) 9,915.
- Kilwinning**, burgh., N. Ayr, Scot.; 5 m. E. of Ardrossan; p. (1951) 6,553.
- Kimberley**, *t.*, C. of Good Hope, S. Africa; on R. Vaal; centre of Griqualand West, diamond-mining dist.; p. (1951) 62,212.
- Kimberley**, *goldfield dist.*, W. Australia.
- Kimberly**, *t.*, B.C., Canada; on R. Kootenay in deep valley between Selkirk Range and Rocky Mtns.; site of Sullivan Mine, one of world's lgst. lead-zinc mines; ores smelted at Trail.
- Kimry**, *t.*, E. Kalinin, U.S.S.R.; nr. Volga Reservoir; leather; shoe industry; p. 25,000.
- Kincardine**, *maritime co.*, E. Scot., between Forfar and Aberdeen; agr. and fishing; co. t. Stonehaven; a. 383 sq. m.; p. (1951) 47,341.
- Kinchinjunga**, *mtn.*, Himalayas, India; on bdy. between Sikkim prov. and Nepal; alt. 23,145 ft.
- Kinder Scout**, *mtn.*, N. Derby, Eng.; highest point of the Peak dist.; alt. 2,088 ft.
- Kindu**, *t.*, Belg. Congo, Central Africa; on R. Congo; p. 10,628.
- Kineshma**, *t.*, U.S.S.R.; N.W. of Gorki; p. (1939) 75,378.
- Kineton**, *mkt. t.*, Warwick, Eng.; nr. Stratford-on-Avon.
- King George's Sound**, W. Australia; nr. Albany; fine harbour and bay.
- Kinghorn**, burgh., Fife, Scot.; on Firth of Forth, 3 m. S. of Kirkcaldy; p. (1951) 2,337.
- Kingsbridge**, *mkt. t.*, *urb. dist.*, S. Devon, Eng.; at head of Kingsbridge estuary, 10 m. S.W. of Dartmouth; p. (1951) 3,153.
- Kingstbury**, *dist.*, Middlesex, Eng.; N.W. sub. of London; on R. Brent; p. 16,636.
- Kingsclere and Whitechurch**, *mkt. t.*, *rural dist.*, N. Hants, Eng.; on R. Test, 10 m. S.W. of Basingstoke; p. (rural dist. 1951) 18,530.
- Kings Langley**, *t.*, Herts., Eng.; 5 m. N. of Watford; paper, light engineering.
- King's Lynn**, *spt.*, *mun. bor.*, Norfolk, Eng.; on R. Ouse, 3 m. above its mouth; fishing, agr. machinery; p. (1951) 26,173.
- King's Norton** (with Northfield), *indust. t.*, Worcester, Eng.
- King's River**, California, U.S.A.; flows from Sierra Nevada to L. Tulare.
- Kingsport**, *t.*, N.E. Tenn., U.S.A.; varied mnfs.; p. (1950) 19,571.
- Kingston**, *c.*, Ontario, Canada; on E. end of L. Ontario; old fort and thriving port; p. 30,126.
- Kingston**, *cap.*, Jamaica, W. Indies; p. (1943) 109,056.
- Kingston**, *t.*, N.Y., U.S.A.; tobacco mftg.; p. (1950) 28,817.
- Kingston**, *t.*, Penns., U.S.A.; p. (1950) 21,096.
- Kingston-upon-Hull**, *see* Hull.
- Kingston-upon-Thames**, *co. t.*, *mun. bor.*, Surrey, Eng.; on R. Thames, 12 m. West of London Bridge; residt.; with Royal Park; p. (1951) 40,168.
- Kingstown**, *see* Dun Laoghaire.
- Kingstown**, *spt.*, *cap.*, St. Vincent, W. Indies; cath.; botanic gardens; p. (1946) 4,833.
- Kingsville**, *t.*, Texas, U.S.A.; in ranching area; agr., light industries; p. (1950) 16,898.
- Kingswood**, *urb. dist.*, Gloucester, Eng.; nr. Bristol; p. (1951) 18,921.
- Kington**, *mkt. t.*, *urb. dist.*, N.W. Hereford, Eng.; 12 m. W. of Leominster; p. (1951) 1,890.
- Kingussie**, burgh., Inverness, Scot.; between Cairngorm Mtns. and Monadhliath Mtns., on R. Spey; summer resort; p. (1951) 1,067.
- King William I.**, off Boothia peninsula in Arctic Ocean, Canada.
- King William's Town**, *t.*, C. of Good Hope, S. Africa; on Buffalo R., nr. E. London; p. 6,165.
- Kinhwa**, *c.*, Chekiang, China; in fertile, intensively cultivated basin, 85 m. S.W. of Hangchow; p. (estd. 1947) 211,140.
- Kinibala**, *mtn.*, North Borneo; alt. 13,455 ft.
- Kinlochleven**, *vil.*, Argyll, Scot.; at head of Loch Leven; hydro-electric power station, aluminium smelting; p. (1931) 1,060.
- Kinnaird Head**, *promontory*, nr. Fraserburgh, on N.E. Aberdeen c., Scot.
- Kinross**, *sm. inland co.*, Scot.; between Fife and Perth; hilly; oats, potatoes, sheep, cattle; a. 78 sq. m.; p. (1951) 7,418.
- Kinross**, *co. burgh.*, Kinross, Scot.; on Loch Leven, 16 m. N.E. of Alloa; coal, linen mnfs.; p. (1951) 2,495.
- Kinsale**, *spt.*, *urb. dist.*, on K. Harbour, Cork, Ireland; p. (1948) 2,086.
- Kinta Valley**, S.E. Perak, Malaya; very impt. deposits of alluvial tin.
- Kintyre**, *peninsula*, Argyll, Scot.; length 40 m., greatest breadth 11 m.; S. point the Mull of Kintyre.
- Kioga**, L., Uganda Protectorate, Brit. E. Africa; on R. Nile midway between L. Victoria and L. Albert; very shallow, fringed with marsh; some land reclamation.
- Kjölen** or *Kjölen*, *mtn. range*, Scandinavia; highest point Mt. Sulitelma; alt. 6,150 ft.
- Kirgiz Steppes**, *or. plains and uplands*, Kirghizia S.S.R., U.S.S.R.; N. of the Caspian and Aral Seas, inhabited by the wandering Mongolian Tatar race numbering nearly 3,000,000.
- Kirghizia**, *constituent rep.*, U.S.S.R.; S.W. of Siberia; livestock breeding, mineral resources; a. 75,900 sq. m.; *cap.* Frunze; p. (1939) 1,533,439.



- Kirin**, *prov.*, Manchuria, China; S. of the Sungari R. and N. of Korea and the Liaoting Peninsula; cap. Changchun; a. 34,616 sq. m.; p. (1947) 5,122,000.
- Kirin**, *c.*, Kirin, Manchuria, N. China; on Sungari R. at outlet of Sungari reservoir; impt. position on rly. from Changchun to pt. of Rashin; lumbering; p. (estd. 1946) 239,325.
- Kirkburton**, *urb. dist.*, W.R. Yorks, Eng.; S.E. of Huddersfield; woollens; p. (1951) 17,961.
- Kirkby in Ashfield**, *t.*, *urb. dist.*, Notts, Eng.; 10 m. N.W. of Nottingham; coal; p. (1951) 20,131.
- Kirkby Moorside**, *mkt. t.*, *rural dist.*, N.R. Yorks, on R. Dove; Eng.; (1951 rural dist.) p. 4,785.
- Kirkby Stephen**, *mkt. t.*, Westmorland, Eng.; on R. Eden, 7 m. S.E. of Appleby; p. 1,542.
- Kirkcaldy**, *spt. t.*, *burgh*, Fife, Scot.; on N. side of Firth of Forth; shipping; linoleum, potteries, linen bleaching, engineering; p. (1951) 49,037.
- Kirkcubright**, *maritime co.*, S.W. Scot.; abutting on Irish Sea and Solway Firth; chiefly agr.; a. 909 sq. m.; p. (1951) 30,742.
- Kirkcubright**, *co. burgh*, Kirkcubright, Scot.; on Kirkcubright Bay, Solway Firth, 25 m. S.W. of Dumfries; p. (1951) 2,498.
- Kirkenes**, *t.*, Finnmark, N. Norway; on S. arm of Varanger Fjord, nr. Norway-U.S.S.R. bdy.; iron ore mines.
- Kirkham**, *t.*, *urb. dist.*, Lancs., Eng.; between Preston and Blackpool; mnfs.; p. (1951) 6,874.
- Kirkintilloch**, *burgh*, Dunbarton, Scot.; on Forth and Clyde Canal; iron, coal-mining; p. (1951) 14,824.
- Kirkland Lake**, *sm. t.*, Ontario, Canada; on rly. nr. Quebec-Ontario bdy., 45 m. N. of Cobalt; centre of impt. gold-mining district.
- Kirkstone Pass**, *mtn. pass*, Westmorland, Eng.; used by main road between Ullswater and Windermere Lakes.
- Kirksville**, *industl. t.*, Missouri, U.S.A.; p. (1950) 11,110.
- Kirkuk**, *t.*, Mosul, Iraq; mart for Arab horses; lge. oil-field with pipelines to Tripoli, Haifa and Banias; p. (1947) 148,349.
- Kirkwall**, *burgh*, Pomona I., Orkneys, Scot.; off the N.E. Scottish cst.; p. (1950) 4,348.
- Kirkwood**, *sub.*, St. Louis, Mo., U.S.A.; p. (1950) 18,640.
- Kirov**, *t.*, Siberia, U.S.S.R.; on trans-Siberian Rly., W. of Molotov; p. (1939) 143,181.
- Kirovabad**, *t.*, W. Azerbaijan, U.S.S.R.; copper, manganese mines; textiles, wines; p. (1939) 93,743.
- Kirovograd**, *t.*, Urals; copper; p. 25,000.
- Kirovograd**, *t.*, Ukraine, U.S.S.R.; p. (1939) 100,331.
- Kirovsk**, *t.*, U.S.S.R.; on Kola Peninsula; apatite, p. 50,000.
- Kirriemuir**, *burgh*, Angus, Scot.; on N. margin of Strathmore, 5 m. W. of Forfar; linen factories; p. (1951) 3,570.
- Kiruna**, *t.*, N. Sweden; inside Arctic Circle, 170 m. N.W. of Lulea; linked by rly. to Narvik (Norway); impt. deposits of iron ore; p. 11,700.
- Kishinev**, *cap.*, Moldavian S.S.R., U.S.S.R.; vineyards, etc.; p. (1939) 114,896.
- Kislovodsk**, *t.*, Caucasus, U.S.S.R.; spa; p. (1939) 51,289.
- Kissimee R.**, Florida, U.S.A., flows to L. Okeechobee; length 90 m.
- Kissingen**, *vat. pl.*, Bavaria, Germany; p. 15,006.
- Kistna**, *R.*, S. India; rises in W. Ghats, flows E. across Deccan plateau into Bay of Bengal; lower valley and delta under intensive rice cultivation; densely populated; length 850 m.
- Kisumu**, *spt. cap.*, Nyanza prov., Kenya, Brit. E. Africa; at head of Kavirondo G. on L. Victoria; original W. terminus of rly. from Mombasa; still handles bulk of cotton from Buganda and coffee from N. Tanganyika for transshipment E. by rail.
- Kitchener**, *c.*, Ontario, Canada; p. 37,657.
- Kittanning**, *bor.*, Penns., U.S.A.; on Allegheny R.; p. (1950) 7,731.
- Kittatinny Mtns. or Blue Mtns.**, range in Penns. and New Jersey, U.S.A.; a continuation of the Appalachian system.
- Kiukiang**, *c. former treaty pt.*, Kiangsi, China; Yangtze-Kiang; p. (estd. 1946) 137,106.
- Klungchow**, *c. cap.*, Hainan Is., China; on N. cst.; former treaty port; p. 46,000.
- Kivu**, *L.*, Central Africa; N. of L. Tanganyika by which it is joined by Russisi R.; length 55 m.; a. 1,100 sq. m.
- Kizil-Irmak** (or Red River), the largest R. of Turkey in Asia; rising in the Kizil Dagh, flowing past Sivas to the Black Sea; length 600 m.
- Kjölén**, see Kiölen.
- Kladno**, *mining t.*, Czechoslovakia; 10 m. N.W. of Prague; p. (1947) 60,692.
- Kladzko** (Glatz), *t.*, Lr. Silesia, Poland; on R. Nisa (Neisse); p. 22,814.
- Klagenfurt**, *t. cap.*, Carinthia, Austria; whitelead, tobacco, and silk factories; p. (1951) 62,792.
- Klaipeda** (Memel), *spt.*, Lithuania, U.S.S.R.; nr. N. extremity Kurisches Haff; exports timber; p. 41,189.
- Klamath**, *L.*, California and Oregon, U.S.A., discharges by K. R. (275 m.) to Pacific.
- Klamath Falls**, *t.*, Oregon, U.S.A.; p. (1950) 15,875.
- Klang**, *t.*, Selangor, Malaya; coffee, rubber; p. 33,506.
- Klatovy**, *t.*, S.W. Bohemia, Czechoslovakia; mkt.; rose-growing area; p. 14,083.
- Klerksdorp**, *t.*, S. Transvaal, S. Africa; gold, diamonds; p. 18,289.
- Klondyke**, *R.*, Yukon, Canada; small trib. of Yukon in gold-mine region.
- Kluczbork** (Kreuzburg), *t.*, Upper Silesia, Poland; N.E. of Opole; p. 10,000.
- Knaresborough**, *mkt. t.*, *urb. dist.*, W.R. Yorks., Eng.; on Nidd R. 3 m. N.E. of Harrogate; p. (1951) 8,393.
- Knighton**, *mkt. t.*, *urb. dist.*, Radnor, Wales; on R. Teme; p. (1951) 3,245.
- Knockmealdown Mtns.**, cos. Waterford and Tipperary, Ireland; highest pt. 2,609 ft.
- Knossos**, *ruined c.*, *cap.* of anc. Crete; S.E. of Candia; centre of Cretan Bronze Age culture, c. 1800 B.C.
- Knottingley**, *t.*, *urb. dist.*, W.R. Yorks., Eng.; on R. Aire, 12 m. S.E. of Leeds; p. (1951) 9,989.
- Knoxville**, *c.*, Tennessee, U.S.A.; univ.; textiles; coal-mining, iron, copper, marble; p. (1950) 124,769.
- Knoxville**, *t.*, Iowa, U.S.A.; p. (1950) 7,625.
- Knutsford**, *mkt. t.*, *urb. dist.*, Cheshire, Eng.; 6 m. N.E. of Northwich; p. (1951) 6,619.
- Kobe**, *t.*, *spt.*, Honshu, Japan; at E. end of Inland Sea; silk-weaving; great tr.; p. (1950) 765,435.
- Koblenz** (Coblentz), *t.*, W. Germany; at junction of Rs. Rhine and Moselle; fine buildings, wine, pianos, paper, machinery; p. 91,000.
- Kocaeli**, *spt.*, Turkey; on G. of Sea of Marmara.
- Kodiak I.**, N. Pac. Oc.; the largest I. of W. Alaska; (90 m. long); fur-trading, extensive salmon fishing, canning; ch. settlement St. Paul, on Chiniak R.; p. 864.
- Koesfeld**, *t.*, N. Rhine, Germany; p. 12,934.
- Kofu**, *c.*, Honshu, Japan; silk, vegetables, grapes; p. (1950) 121,645.
- Kohat**, *t.*, N.W. Pakistan; on trib. of Indus; military town; p. (1941) 44,277.
- Koh-i-Baba Mtns.**, Afghanistan, spur of the Hindu Kush; highest pt. 17,640 ft.
- Kokand**, *t.*, Uzbekistan, U.S.S.R.; silk; p. (1939) 84,665.
- Kokkola** (Gamlia Karleby), *t.*, Finland; on cst. G. of Bothnia; p. 10,555.
- Kokomo**, *c.*, Indiana, U.S.A.; on Wild Cat R.; steel, glass, agr. reg.; p. (1950) 38,672.
- Koko-Nor**, *salt L.*, Mongolia, China; a. 2,040 sq. m.; no outlet.
- Kola Peninsula**, U.S.S.R.; extension of Lapland.
- Kola**, *t.*, U.S.S.R.; nr. Murmansk, on Kola Peninsula.
- Kolar Gold Fields**, Mysore, India; p. (1951) 159,084.
- Kolding**, *mkt. t.*, Vejle, Denmark; good harbour; p. 27,660.
- Kolguev**, *I.*, Arctic Oc.; at entrance of Cheshsk G. N.E. of Arkhangelsk.
- Kolkapur**, *t.*, Bombay, India; bauxite; p. (1951) 136,835.
- Kolyma R.**, flows into E. Siberian Sea, U.S.S.R.
- Köln**, see Cologne.
- Kolo**, *t.*, Poland; on an island of the Warta; pottery.

- Kolobrzeg (Kolberg)**; *spt.* W. Pomerania, Poland; fishing, foundries, machinery, distilling; p. 33,580.
- Kolomyia**, *t.*, Bukovina, Ukraine, U.S.S.R.; p. (1939) 75,139.
- Kolyvan**, *t.*, W. Siberia, U.S.S.R.; *impt. tr.*; p. 13,700.
- Komarno**, *indust. t.*, Czechoslovakia; on R. Danube; cereals, timber, dairying; p. 15,561.
- Kometene**, *cap.*, Rhodope, Thrace, Greece; p. (1951) 32,906.
- Komsomolsk**, *c.*, S. Khabarovsk terr., U.S.S.R.; built by volunteer youth labour, after 1932; heavy *indust.* development; p. (1939) 70,746.
- Kong**, *t.*, Fr. Ivory Coast, W. Africa; indigo, kola nuts; p. 15,000.
- Königgrätz**, *see* Kralove Hradec.
- Königsberg**, *see* Kaliningrad.
- Königshütte**, *see* Chorzow.
- Königswinter**, *summer resort*, Germany; on R. Rhine, at foot of the Drachenfels.
- Konin**, *t.*, Lodz, Poland; *mkt.*, textiles; p. 10,390.
- Konstantinovka**, *indust. t.*, Ukraine S.S.R., U.S.S.R.; in heart of Donbas *indust.* region, 38 m. N. of Stalino; heavy engineering; p. (1939) 95,087.
- Konya**, *t.*, Turkey; well wooded; opium; *ch. t.* K. (the ancient Iconium); *impt. tr.*; p. (1945) 667,268.
- Konstanz**, *see* Constance.
- Kootenay R.** (Flat Bow R.), *trib.* of the Columbia R. flowing in Montana, U.S.A., and Brit. Columbia; length 450 m.
- Koppaberg**, *co.*, Sweden; a. 11,649 sq. m.; p. (1950) 267,096.
- Korat (Nakhon Ratsina)**, *walled t.*, Siam; busy *tr.* and *ry.* centre; p. 12,000.
- Korce (Koritsa)**, *prefecture*, Albania; p. (1930) 147,536.
- Korce**, *t.*, S.E. Albania; *cap.* of K. *prefecture*; *agr. mkt.*; carpets, textiles; p. (1930) 22,787.
- Korčula**, *spt.*, on island of same name off Yugoslavia; p. 6,500.
- Kordofan**, *prov.*, Anglo-Egyptian Sudan, Africa; a. 146,930 sq. m.; *cap.* El-Obeid; p. (estd. 1951) 1,671,600.
- Korea**, *rep.*, *penin.*, E. Asia; extending between Yellow Sea and Sea of Japan; annexed by Japan in 1910; after 2nd world war separated into 2 zones along 38th parallel, N. under Russian influence, the S. under American.
- Korea**, *N.*; a. 48,468 sq. m.; mainly *agr.*; *ch. t.* Pyonyang; p. 8,229,000.
- Korea**, *S.*; a. 36,760 sq. m.; mainly *agr.*; *cap.* Seoul; p. 20,300,000.
- Korneuburg**, *t.*, Austria; on R. Danube, N. of Vienna; p. 3,817.
- Korsør**, *spt.*, Sjælland I., Denmark; fine harbour; p. 10,667.
- Kortrijk (Courtrai)**, *t.*, W. Flanders, Belgium; 25 m. S.W. of Ghent; linen, lace; p. (1947) 39,813.
- Kos (Cos)**, *I.*, Dodecanese Is., Greece; *ch. t.*, Kos; p. (1940) 20,982.
- Kosice**, *co.*, Slov., Czechoslovakia; commercial centre, Gothic cath.; p. (1947) 53,089.
- Koskiusko**, *t.*, Mississippi, U.S.A.; p. (1950) 6,753.
- Koskiusko**, *peak*, Australian Alps, N.S.W., Australia; highest peak in Gr. Dividing Range; alt. 7,328 ft.
- Koslin**, *see* Koszalin.
- Kosova (Kosovo)**, *prefecture*, Albania; p. (1930) 49,081.
- Kostroma**, *c.*, U.S.S.R.; at confluence of Rs. Volga and Kastromo; *univ.*; p. (1939) 121,205.
- Kostrzyn (Küstrin)**, *t.*, W. Poland; on R. Oder; machinery, hardware.
- Koszalin**, *t.*, Poland; N.E. of Szczecin; p. 17,115.
- Kotah**, *t.*, Rajasthan, India; on R. Chambal; muslins; p. 32,000.
- Kotka**, *spt.*, on Gulf of Finland; wood pulp; p. (1950) 24,050.
- Kotor (Cattaro)**, *spt.*, Montenegro, Yugoslavia; p. 5,402.
- Kotri**, *t.*, Pakistan; on R. Indus, opposite Hyderabad; barrage 4½ m. N. of the *t.*, started to help irrigate Sind; p. 7,617.
- Kottayam**, *t.*, W. Travancor, India; p. (1941) 25,236.
- Kottbus**, *indust. t.*, Mecklenberg, Germany; on R. Spree; cloth, machinery, brandy; p. 50,432.
- Koulikoro**, *t.*, Fr. Sudan, Fr. W. Africa; on upper course of R. Niger; *mkt.* for ground-nuts, gum-arabic, sisal; linked by river to Timbuktu and Gao; terminus of *ry.* (760 m.) from Dakar.
- Kovel**, *t.*, W. Ukraine, U.S.S.R.; on R. Turia, *trib.* of Pripyat.
- Kovrov**, *t.*, U.S.S.R.; on Gorki *ry.* line, and R. Klyazma; *impt. agr. export* centre; p. (1939) 67,163.
- Kowloon**, *spt.*, S.E. China; on mainland opp. Hong Kong I.; *tr. centre*; p. (estd. 1948) 547,200.
- Kozani**, *prefecture*, Macedonia, Greece; *cap.* Kozani; p. (1951) 177,513.
- Kozhikode** formerly Calicut, *spt.*, *mftg. t.*, Malabar coast of Madras, India; exports coffee, spices; p. (1951) 153,724.
- Kozlev**, *t.*, U.S.S.R.; on R. Eyesnoi Voronezh; agricultural export centre.
- Kragerø**, *spt.*, Telemark, Norway; exports ice, timber, wood-pulp, etc.; p. 3,965.
- Kragujevac**, *t.*, central Serbia, Yugoslavia; *cath.*, college, arsenal, garrison; p. (1948) 32,878.
- Kra**, *Isthmus* of, between G. of Siam and Indian Ocean; connects Malaya with Asia mainland.
- Krakatau**, *volcanic I.*, Strait of Sunda, Indonesia; greater part destroyed by eruption, 1883.
- Kraków**, *prov.*, Poland; *cap.* Kraców; a. 6,367 sq. m.; p. (estd. 1950) 2,167,660.
- Kraków**, *t.*, Poland; machinery, chemicals, farm implements; p. (estd. 1950) 347,043.
- Kramatorsk**, *c.*, E. Ukraine, U.S.S.R.; new *industries*; metallurgy; p. (1939) 93,350.
- Kraslice**, *t.*, N.W. Czechoslovakia; nr. German border; p. 13,558.
- Krasnodar**, *t.*, U.S.S.R.; on R. Kuban; tobacco, glass-making; p. (1939) 203,946.
- Krasnovodsk**, *ch. t.*, of K. reg., U.S.S.R.; cotton, fruit; p. 10,022.
- Krasnoyarsk**, *Siberia*, U.S.S.R.; on Trans-Siberian *Rly.* at crossing of R. Yenesei; *impt. machine building* centre; p. (1939) 189,999.
- Krefeld**, *t.*, North Rhine-Westphalia, Germany; silk, rayon; p. (1950) 171,375.
- Kremenchug**, *t.*, U.S.S.R.; on R. Dnieper; centre for timber, grain, tobacco, etc.; p. (1939) 89,553.
- Kremenets (Krzemieniec)**, *t.*, W. part of Ukrainian S.S.R. (Volhynia), U.S.S.R.
- Krems**, *indust. t.*, Austria; on R. Danube; vinegar, white lead; p. 28,440.
- Kreuzburg**, *see* Kluczborok.
- Kreuznach**, *wat. pl.*, on R. Nahe; N. Rhine-Westphalia, Germany.
- Kristiansand**, *spt.*, Norway; 160 m. S.W. of Oslo; p. (1946) 24,110.
- Kristianstad**, *co.*, Sweden; a. 2,485 sq. m.; p. (1950) 253,309.
- Kristianstad**, *fortfd. t.*, Sweden; 10 m. from the Baltic; p. (1951) 24,036.
- Kristiansund**, *spt.*, W. coast Norway; p. (1946) 12,853.
- Kristinehamn**, *L. pt.*, Sweden; on L. Vänern; *mftg.*; p. 15,236.
- Krivoi Rog**, *t.*, Ukraine, U.S.S.R.; on R. Ingulats; rich coal and iron dist.; p. (1939) 197,621.
- Krkonose (Riesengebirge)**, range between Polish Silesia and Bohemia; highest peak Sneška (Schneekoppe) 5,275 ft.
- Kroměříž**, *t.*, Moravia, Czechoslovakia; *mfts.*; p. 17,781.
- Kronoberg**, *co.*, Sweden; a. 3,828 sq. m.; p. (1950) 157,713.
- Kronstadt**, *spt. (strongly fortfd.)*, on I. in G. of Finland; chief Baltic port and naval st., U.S.S.R.; scene of naval mutiny which precipitated the Russian Revolution; p. 25,000.
- Kroonstad**, *t.*, Orange Free State, S. Africa; on R. Valseh; p. 20,398.
- Kropotkin**, *t.*, E. Krasnodar terr., U.S.S.R.; grain; engineering; p. 31,091.
- Krotoszyn**, *commune*, Posen, Poland; *ry.* junction; *indust.* development; p. 14,000.
- Krugersdorp**, *t.*, Transvaal, S. Africa; named after President Kruger; gold-mining; p. (1946) 75,325.
- Krumlov**, *t.*, Bohemia, Czechoslovakia; on N. slopes of Böhmer Wald; graphite-mines.
- Krusevac**, *t.*, Yugoslavia; *mkt.*; munitions; p. 11,054.



- Kuala Lumpur, cap.**, Selangor and administrative cap., Fed. of Malaya; p. (1947) 175,961.
- Kuangchou, see Canton.**
- Kuban, region of R.S.F.S.R., U.S.S.R.;** produces wheat, maize, sunflowers; stock-raising.
- Kubango (Okovango), R.,** flows from Angola into L. Ngami, Bechuanaland.
- Kuching, cap.,** Sarawak, Borneo, E. Indies; p. (1947) 37,954.
- Kuchinoerabu, I., Japan;** S. of Kyushu; mtns.
- Kudamatsu, c., S.W. Honshu, Japan;** oil-refining; p. (1947) 34,045.
- Kufra, oasis, Libya.**
- Kulbyshew, t., U.S.S.R.;** on R. Volga; at head of central Asian and Siberian rlys.; thriving commercial centre with gr. trade and milling industry; p. (1939) 390,267.
- Kulm, see Chelmino.**
- Kulmse, see Chelmsa.**
- Kumamoto, spl., W. Kyushu, Japan;** p. (1950) 267,506.
- Kumasi, cap., Ashanti, Gold Coast;** p. (1948) 78,483.
- Kumbakonam, t., sacred c., Madras, India;** Cauvery delta; silks, cottons; p. 67,000.
- Kumta, t., Bombay, India;** on sea cst.; sandalwood; carving.
- Kunene (Cunene), R., S.W. Africa;** forming bdy. between Angola and Brit. S.W. Africa, and mainly in Portuguese terr.; length 700 m.
- Kungar, t., S.E. Molotov reg., U.S.S.R.;** agr.; leather; kaolin; p. 19,803.
- Kun Lun (Kwen Lun), mtns., Tibet;** extend 1,800 m. E. from Pamirs along N. edge of high plateau of Tibet; drained N. into inland drainage basin of Lop Nor; alt. frequently exceeds 18,000 ft.
- Kuopio, dep., Finland;** a. 13,806 sq. m.; p. (1950) 470,114.
- Kuopio, t., Finland;** on L. Kalki; p. (1950) 33,345.
- Kur, R., Transcaucasia, U.S.S.R.;** flows to Caspian S.; length 520 m.
- Kurdistan (Country of the Kurds), Persia and Turkey.**
- Kure, c., S.W. Honshu, Japan;** spl. and naval base; engineering; p. (1950) 187,775.
- Kurgan, t., U.S.S.R.;** on the Trans-Siberian Rly. nr. Tobolsk; flourishing trade in cattle and foodstuffs; p. (1939) 53,224.
- Kuria Muria Is.,** part of Brit. col. of Aden off S. Arabia, consisting of 5 islands.
- Kuril Is., chain of sm. Is., N. Pacific, U.S.S.R.;** extending from Kamchatka to Hokkaido; mainly mtns.
- Kurisches Haff (Kuršu Martos), shallow lagoon,** Baltic coast of Lithuanian S.S.R., U.S.S.R.; receives water of R. Nemen; narrow entrance to Baltic Sea at N. end of lagoon commanded by pt. of Klaipėda (Memel); length, 60 m., maximum width, 20 m.
- Kurisches Nehrung, sandspit, Baltic Sea;** almost cuts off Kurisches Haff from Baltic Sea; length, 55 m.
- Kuroshio (Japan Current), ocean current,** flows N.E. along Pacific cst. of Kyushu, Shikoku and S. Honshu; relatively warm water; exerts slight warming influence on this cst. in winter.
- Kursk, region, adj. N. Ukraine, R.S.F.S.R., U.S.S.R.**
- Kursk, t., Ukraine, U.S.S.R.;** in fruit-growing dist., with thriving manf.; gr. annual fair; p. (1939) 119,972.
- Kustendil, t., Bulgaria;** on trib. of R. Struma; fruit-growing dist.
- Kütahya, t., W. Anatolia, Turkey;** on trib. of R. Sakarya; impt. tr.; p. (1945) 19,359.
- Kutaisi, c., Georgia, U.S.S.R.;** on R. Rion; thriving tr. and industries; silks, fruit; p. (1939) 81,479.
- Kutch, penin., N.W. cst., India;** suffered much in famine 1899-1900 also from plague; famous for silver filigree work; p. (1951) 567,606.
- Kutch, Rann of, desert reg.,** covered with salt, but flooded during monsoons.
- Kutchan, t., S.W. Hokkaido, Japan;** 45 m. N.W. of Muroran; centre of second lgst. iron-ore field in Japan; ore smelted at Muroran.
- Kutno, t., Central Poland;** nr. Lodz; p. 20,000.
- Kuwait, sheikdom, Arabia;** on N.W. cst. of Persian G.; impt. oil wells; est. p. 160,000.
- Kuwana, spl., S. Honshu, Japan;** rice; p. (1947) 8,952.
- Kuzbas (Kuznetsk Basin), industr. region, Siberia, U.S.S.R.;** lies just S. of Trans-Siberian Rly. in upper valleys of Rs. Ob and Tom; second largest coal output in U.S.S.R.; iron and steel mfg., varied heavy metallurgical indy.; ch. ts., Novosibirsk, Stalinsk, Kemerovo, Leninak-Kuznetsky.
- Kwangchow, spl., Kwantung, China;** on S. cst. opp. Hainan I.
- Kwangsi, prov., China;** cap. Kirin; sugar, tobacco, rice, indigo, silk; a. 85,452 sq. m.; p. (estd. 1947) 14,861,000.
- Kwangtung, prov., China;** cap. Canton; rice, tea, sugar, silk; a. 85,447 sq. m.; p. (estd. 1947) 32,339,000.
- Kwanto Plain, S.E. Honshu, Japan;** lgst. area of continuous lowland in Japan, extends 80 m. inland from Tokyo; composed of: (1) low, badly-drained alluvial plain devoted to intensive rice cultivation; (2) higher, drier terraces under mulberry, vegetables, tea, tobacco; very dense rural population, especially on lower ground; lge. number of urban centres, inc. Tokyo, Yokohama; a. 5,000 sq. m.
- Kwanza (Cuanza), R., Angola, W. Africa;** rises in Bihé and flows to Atlantic; length 700 m.
- Kweichow, prov., S.W. China;** cap. Kweiyang; cereals, silk, timber, gold, silver, mercury; a. 68,139 sq. m.; p. (estd. 1947) 10,557,000.
- Kwidzyn (Marienwerder), t., Polish Pomerania;** nr. Gdańsk; p. 7,986.
- Kyle of Lochalsh, vil., sm. spl., Ross and Cromarty, Scot.;** at entrance to Loch Alsh, facing S. end of I. of Skye; terminus of rly. across Highlands from Dingwall; ch. pt. for steamers serving N.W. cst., I. of Skye, Outer Hebrides; p. (1931) 350.
- Kyles of Bute, sound, between Argyll cst. and N. Bute, Scot.**
- Kyoto, c., cap. Kyoto prefecture, Honshu, Japan;** univ., temples; former cap. of Japan; p. (1950) 1,101,354.
- Kyrenia, t., Cyprus;** on N. cst.; p. 2,960.
- Kzyl Orda, R., Kazakhstan, U.S.S.R.;** large dam being constructed to irrigate rice plantations.
- Kythera (Cerigo), I., S. of Peloponnesos, Greece;** a. 107 sq. m.
- Kyushu, one of the lge. Is. of Japan;** W. of Shikoku; mtns.; rice, wheat, tea, hemp, coal, copper; ch. t. Nagasaki; a. 16,247 sq. m.
- Kyustendil, t., Bulgaria;** nr. Yugoslav border; p. 19,309.

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- La Barca, t., Jalisco st., Mexico;** maize, sugar; mkt.; p. (1940) 13,247.
- La Bassée, t., Nord, France;** p. 4,415.
- La Ceiba, spl., Honduras;** on Atlantic cst.; p. (1945) 12,185.
- La Coruña, prov., N.W. Spain;** cap. La Coruña; a. 3,051 sq. m.; p. (1949) 975,759.
- La Coruña, spl., cap. La Coruña prov., N.W. Spain;** fishing; import trade; p. (1950) 133,844.
- La Crosse, t., W. Wis., U.S.A.;** mkt., agr.; light mnfs.; rubber; p. (1950) 47,535.
- La Estrada, c., N.W. Spain;** mineral springs; agr., cattle; p. 27,240.
- La Goulette, spl., Tunisia;** on cst. 4 m. from Tunis; resort; p. 4,000.
- La Grange, t., Georgia, U.S.A.;** p. (1950) 25,025.
- La Grange, t., Ill., U.S.A.;** p. (1950) 12,002.
- La Guaira, see Guaira, La.**
- La Hague, see Hague.**
- La Libertad, dep., Peru;** a. 10,206 sq. m.; ch. t. Trujillo; p. (1947) 453,523.
- La Mancha, see Mancha, La.**
- La Pampa, terr., Argentina;** a. 55,669 sq. m.; cap. Santa Rosa; p. (1947) 166,929.
- La Paz, dep., Bolivia;** traversed by the Andes; cap. La Paz; cocoa, coffee, rubber, minerals; a. 40,686 sq. m.; p. (1950) 948,446.
- La Paz, t., Bolivia,** seat of govt., Sucre is legal cap.; impt commercial centre; copper, alpaca wool, cinchona; p. (1950) 321,073.
- La Paz, t., Lower California, Mexico;** pearl fishing; p. (1940) 10,501.
- La Plata (Eva Perón), c., spl., Argentina;** cap. Buenos Aires prov.; univ.; cattle, agr. trade; p. (1947) 217,738.

- La Plata, Rio de (R. Plate),** *lge. estuary*, between Argentina, Uruguay, S. America; receives water of Rs. Parana, Uruguay; est. provides sites for lge. spts. Buenos Aires, La Plata, Montevideo; length 200 m., max. width 50 m.
- La Porte, t., Indiana, U.S.A.;** flour, iron and steel, woollens; p. (1950) 20,414.
- La Puebla, t., Majorca, Balearic Is.;** p. 10,147.
- La Rioja, prov., Argentina;** a. 33,394 sq. m.; cap. La R.; p. (1947) 109,386.
- La Rochelle, t., spt., cap.,** Charante-Maritime, France; glass, sugar, fish; cath.; p. (1946) 48,923.
- La Salle, c., Ill., U.S.A.;** coal; p. (1950) 12,083.
- La Serena, cap.,** Coquimbo prov., Chile; cath.; p. 36,055.
- La Tuque, t., S. Quebec, Canada;** R. pt.; lumbering; resort; p. 7,919.
- La Union, t., Spain;** nr. Cartagena; iron, manganese, sulphur; p. 25,000.
- Laaland, I., Danish, Baltic Sea;** a. 462 sq. m.; forests; cap. Maribo.
- Labe, R., see Elbe.**
- Labinskaya, t., S.E. Krasnodar terr., U.S.S.R.;** coal, manganese mining; p. (1939) 28,830.
- Labrador, peninsula, Newfoundland, Canada;** sterile, climate severe, fisheries; cap. Battle Harbour; a. 110,000 sq. m.; p. 5,528.
- Labuan, Brit. I., N.W. Borneo;** rubber, rice, coconuts; cap. Victoria; a. 35 sq. m.; p. (1951, prelim.) 8,759.
- Laccadive, Is., Arabian Sea;** about 200 m. off Malabar est., India; part of Madras state; coir, coconuts; p. 15,230.
- Lachine, t., Quebec, Canada;** at head of L. rapids; summer resort, timber, bridge-building, wire, rope; p. (1951) 27,410.
- Lachine Canals, Quebec, E. Canada;** skirt Lachine Rapids on St. Lawrence R. immediately above Montreal; give access to Montreal from Gr. lakes for steamers of 14 ft. draught; length 9 m.
- Lachlan, R., N.S.W., Australia;** trib. R. Murrumbidgee; length 700 m.
- Lackawanna, t., N.Y., U.S.A.;** on L. Erie; iron and steel; p. (1950) 27,658.
- Laconia, div. of Peloponnesus, Greece;** cap. Sparta; p. (1951) 130,939.
- Laconia, G., S. Peloponnesus, Greece.**
- Laconia, c., New Hampshire, U.S.A.;** hosiery, rly. wks.; p. (1950) 14,745.
- Lacroma, I., Jugoslavia;** holiday resort, chateau, monastery.
- Lacrosse, c., Wisconsin, U.S.A.;** rly. centre, flour, timber; p. (1950) 47,535.
- Ladakh, dist., of the Upper Indus, Kashmir;** agr. in valleys, some gold; cap. Leh (q.v.).
- Ladoga, L., nr. Leningrad, U.S.S.R. (largest in Europe);** a. 7,100 sq. m.; drained to G. of Finland by R. Neva.
- Ladrones, see Marianas Is.**
- Ladybank, burgh, Fife, Scot.;** 5 m. S.W. of Cupar; rly. wks., malt, linen; p. (1951) 1,149.
- Ladysmith, t., Natal, S. Africa;** rly. wks., coal; besieged by Boers 1899-1900; p. 13,064.
- Ladysmith, t., N.W. Wis., U.S.A.;** food, lumber; p. (1950) 3,924.
- Lafayette, c., Indiana, U.S.A.;** univ.; timber, farm implements; p. (1950) 35,568.
- Lafayette, t., Louisiana, U.S.A.;** timber, cottonseed, oil; p. (1950) 33,541.
- Lafayette, peak, White mtns. range, New Hampshire, U.S.A.;** alt. 5,259 ft.
- Lagan, R., N. Ireland;** flows into Belfast Lough; length 35 m.
- Lagoa dos Patos, L., Brazil;** drained by Rio Grande do Sul; length 140 m.
- Lagoa Mirim, L., on bdy. between Brazil and Uruguay;** drains N.; length 110 m.
- Lagos, spt., cap., Nigeria;** good natural harbour; exports palm oil and kernels, cocoa, groundnuts, hides; imports machinery, cotton piece goods; rly. wks.; p. (1948) 176,000.
- Lagos, t., Jalisco, Mexico;** p. (1940) 12,490.
- Laguna, t., Tenerife, Canary Is.;** fruit centre.
- Laguna, district, Durango st., Mexico;** former L. bed irrigated by R. Nazas and Aguanaival; ch. cotton growing region in Mexico; ch. t., Torreón; a. 100,000 sq. m.
- Laguna Dam, see Imperial Valley.**
- Laguna de Terminos, inlet, Campeche, Mexico;** 70 m. by 40 m.
- Laguna Madre, lagoon, Texas, U.S.A.;** 110 m. by 14 m.
- Lahn, R., Germany;** enters R. Rhine at Koblenz; length 135 m.
- Lahore, div., W. Punjab, Pakistan;** ch. t. Lahore; p. (est. 1951) 5,340,000.
- Lahore, cap., W. Punjab, Pakistan;** univ., cath., temples, mosques; textiles, pottery, carpets; p. (1951) 849,476.
- Lahr, t., Germany;** tobacco, textiles, cardboard; p. 18,090.
- Lahti, t., S. Finland;** p. (1950) 44,759.
- Laibach, see Ljubljana.**
- Laichow, spt., Shantung, China;** G. of Pohai; p. 60,020.
- Laiyang, t., Shantung, China;** nr. Chefoo; p. 51,120.
- Lake Charles, t., Louisiana, U.S.A.;** oil, rice, timber; holiday resort; p. (1950) 41,272.
- Lake City, t., Florida, U.S.A.;** holiday resort; p. (1950) 7,571.
- Lake District, mountainous dist., Cumberland and Westmorland, Eng.;** tourist resort, beautiful scenery, inc. Ls. Windermere, Ullswater, Derwentwater, etc.
- Lake Forest, t., Ill., U.S.A.;** on L. Michigan; p. (1950) 7,819.
- Lake of the Woods, L., E. of Winnipeg, Ontario, Canada;** on bdy. between Canada and U.S.A.
- Lake Success, vil., N.Y., U.S.A.;** temporary headquarters of U.N.O. since 1946.
- Lakeland, t., Florida, U.S.A.;** agr., fruit centre, phosphates; holiday resort; p. (1950) 30,851.
- Lakewood, t., N.J., U.S.A.;** winter resort; p. (1950) 9,970.
- Lakewood, t., Ohio, U.S.A.;** sub. of Cleveland; grapes; p. (1950) 68,071.
- Lalin, t., N.W. Spain;** agr. centre, paper, tanning; p. 18,620.
- Lambay, I., off est. Dublin co., Ireland.**
- Lambayeque, dep., N. Peru;** sugar, cotton, tobacco; cap. Chiclayo; a. 4,613 sq. m.; p. (1947) 225,657.
- Lambersart, commune, Nord, France;** sub. Lille; spinning; p. 14,377.
- Lambeth, metropolitan bor., London, Eng.;** pottery, chemicals; L. Palace, residence of Archbishop of Canterbury; p. (1951) 230,015.
- Lambzellec, t., Finistère, France;** trade centre; p. (1948) 19,227.
- Lambourn, par., Berks, Eng.;** agr.; training stables; p. 2,316.
- Lamesa, t., N.W. Texas, U.S.A.;** cotton, maize, cattle; p. (1950) 10,704.
- Lamia, cap., Phthiotis and Phocis prefecture, Greece;** p. (1951) 26,843.
- Lammernuir Hills, E. Lothian, Scot.;** highest peak Lammer Law, alt. 1,733 ft.
- Lampedusa, I., Mediterranean;** S. of Malta.
- Lampeter, mkt. t., mun. bor.,** Cardigan, N. Wales; on R. Teifi; St. David's College; p. (1951) 1,800.
- Lampong, dist. at S. extremity Sumatra, Indonesia;** a. 11,113 sq. m.; p. (1930) 361,563.
- Lamu, I. off est. of Kenya Protectorate;** p. 3,576 (non-African).
- LANAI, one of the Hawaiian Is.;** fruit, sugar, cotton, livestock; a. 141 sq. m.; p. 3,360.
- Lanark, co., Scot.;** coal, iron, steel, textiles, shipbuilding; co. t. Lanark; a. 897 sq. m.; p. (1951) 1,614,125.
- Lanark, burgh, co. t., Lanark, Scot.;** in Clyde valley 22 m. S.E. of Glasgow; lace, footwear, weaving; p. (1951) 6,219.
- Lancashire, mfta. dist., indust. co., N.W. Eng.;** Liverpool most important spt.; Manchester centre of the world's cotton trade; mnfs. inc. textiles, engineering products, chemicals, foodstuffs; coal mining; co. t. Lancaster; a. 1,875 sq. m.; p. (1951) 5,116,013.
- Lancaster, mun. bor., co. t., Lancs, Eng.;** 6 m. up R. Lune; cas.; textiles, machinery; p. (1951) 51,650.
- Lancaster, t., Ohio, U.S.A.;** in natural gas region; agr.; flour, machinery, glass; p. (1950) 24,180.
- Lancaster, bor., Penns., U.S.A.;** agr. centre; mnfs. light and heavy iron and steel products; p. (1950) 63,774.
- Lancaster, sound, N.W. Terrs., Canada;** 50 m. wide.
- Lanchow, c., cap., Kansu, China;** on R. Hwang-Ho; silk, tobacco, grain, tea-tr. centre; p. (estd. 1946) 156,468.



- Lanciano, *t.*, Abruzzi e Molise, Italy: wine, fruit, oil, silk, linen; p. 22,450.
- Lancing, *t.*, Sussex, Eng.: on S. est., 2 m. E. of Worthing; seaside resort; college; chemicals; p. 4,006.
- Landau, *t.*, Germany: on R. Queich; cigar mfgt., wine, corn tr.; here the carriages called Landaus were first made; p. 14,486.
- Landes, *dep.*, S.W. France: on Atlantic cat.; agr., vineyards, resin; cap. Mont-de-Marson; a. 3,604 sq. m.; p. (1946) 248,395.
- Landes, *Les. coastal sub-region*, Aquitaine, S.W. France: fringes Bay of Biscay from Pointe de Grave to Biarritz; coastal sand dunes and lagoons backed by low, flat plain of alternate sandy tracts and marsh; reclaimed by drainage and afforestation, now over half area covered by pine forests; turpentine, timber; length 150 m., maximum width of dune belt 7 m., of plain 40 m.
- Landrecies, *t.*, Nord, France; on R. Sambe.
- Land's End, extreme S.W. point of Eng. on Cornish est.
- Landshut, *t.*, Germany: on R. Isar; cas.; brewing, machinery; p. 43,381.
- Landskröna, *spl.*, Sweden; rly. centre, agr. produce; sugar, flour, dairy; p. (1951) 25,089.
- Lañett, *t.*, E. Ala., U.S.A.; textile mills; p. (1950) 7,434.
- Langanes, *C.*, N.E. est., Iceland.
- Langebergen, *mtns.*, C. of Gd. Hope, Union of S. Africa; extend 150 m. E. to W. parallel to S. est. of Africa; form barrier to access from est. plain to Little Karoo, broken across by valley of R. Gouritz; max. alt. exceeds 4,500 ft.
- Langeftell, *mtn. group*, Romsdal, Norway; highest peak 8,101 ft.
- Langeland, *I.*, Gr. Belt, Denmark; a. 111 sq. m.
- Langensalza, *mfg. t.*, Germany; N. of Gotha; p. 11,979.
- Langholm, *mkt. burgh*, Dumfries, Scot.; on R. Esk; 18 m. N. of Carlisle; cloth mills, tanning; p. (1951) 2,403.
- Langley, *indust. dist.*, nr. Birmingham, Worcs. Eng.
- Langnau, *t.*, Switzerland; ch. t. of the Emmen-thal; p. 8,300.
- Langreo, *t.*, Asturias, Spain; hilly, agr. and fruit-growing dist. colliery and iron-wks.; p. (1950) 49,140.
- Langres, *fortifd. t.*, Haute-Marne, France; the ancient Andematumnum; cath.; grain, livestock, cutlery, wine; p. 6,000.
- Languedoc, *prov.*, S. France; wine.
- Languedoc, *canal*, S. France; unites Mediterranean with R. Garonne at Toulouse, France.
- Lannemazan, *sub-region*, Aquitaine, S.W. France; belt 50 m. wide stretches over 100 m. along foot of Pyrenees W. of Toulouse; consists of immense deltas of glacial gravel deeply cut by tribs. of Rs. Garonne and Adour; valleys liable to severe floods in summer, intervening plateaux dry, bare; scantily populated.
- Lansdowne, *t.*, *sub.*, Philadelphia, S.E. Penns., U.S.A.; p. (1950) 12,169.
- Lansford, *bor.*, Penns., U.S.A.; p. (1950) 1,487.
- Lansing, *cap.*, Mich., U.S.A.; tr., mnfs. iron goods; motor cars; chemicals; p. (1950) 92,129.
- Lanzarote, *I.*, Canary Is.; volcanic, mountainous; grapes, cochineal; cap. Arrecife; p. 17,000.
- Laosag, *t.*, N. Luzon I., Philippines; cereals, tobacco, cotton, sugar; p. 40,800.
- Laoghis or Leix Co., Leinster, Ireland; mtns. and bog; inland pasture and tillage; cap. Port Laoighise (Maryborough); a. 664 sq. m.; p. (1951) 48,423.
- Laon, *cap.*, Aisne, France; fort, cath.; metal, linen mfgt.; p. (1946) 19,125.
- Laos, *kingdom*, Indo-China, former associate st. of French Union; a. 89,320 sq. m.; inhabitants mainly Moslems; cereals, sugar, cotton, cattle, some minerals; adm. cap. Vientiane; p. 1,189,000.
- Lapeer, *t.*, E. Mich., U.S.A.; wooden products; p. (1950) 6,143.
- Lapländ, *terr.*, N. Europe, in Norway, Sweden, Finland, and U.S.S.R., extending from the Norwegian est. to the White Sea; mainly mtn. and moorland, with many lakes; a. 130,000 sq. m.; p. 100,000.
- Lappli (Lappland), *dep.*, N. Finland; a. 36,308; p. (1950) 166,740.
- Laptev Sea (Nordenskiöld Sea), *inlet* of Arctic Ocean; between Severnaya Zemlya and N. Siberian Is., U.S.S.R.
- Larache, *spl.*, Spanish Morocco; on Atl. est. 40 m. S. of Tangier; cork; p. (1945) 41,286.
- Laramie, *c.*, Wyoming, U.S.A.; univ., cattle; p. (1950) 15,581.
- Larbert, *par.*, Stirling, Scot.; coal, rly. junction; p. 13,763.
- Larchmont, *residh. vil.*, N.Y., U.S.A.; p. (1950) 6,330.
- Laredo, *c.*, Texas, U.S.A.; frontier c. on Rio Grande; iron, steel, oil, bricks, hides, wool; p. (1950) 51,910.
- Largo, *par.*, Fife, Scot.; fishing, holiday resort, coal, corn.; Alexander Selkirk, inspirer of Defoe's *Robinson Crusoe*, born here 1676; p. (1951) 2,499.
- Largs, *burgh*, Ayr, Scot.; on Firth of Clyde opposite Is. of Bute and Cumbrae; seaside resort, fishing, weaving; battle 1263; p. (1951) 8,606.
- Larissa, *prefecture*, Thessaly, Greece; cap. Larissa; p. (1951) 206,829.
- Larissa, *t.*, Thessaly, Greece; silk, cotton goods; p. (1951) 43,163.
- Laristan, *prov.*, S. Persia; on Persian G.; mainly mtns., camels, silk; cap. Lar.
- Lark, *R.*, Cambridge, Eng.; trib. of R. Ouse; length 26 m.
- Larkhall, *t.*, Lanark, Scot.; coal, bricks, tiles; p. 14,055.
- Larksville, *bor.*, Penns., U.S.A.; coal-mining; p. (1950) 6,360.
- Larnaka, *spl.*, Cyprus; the ancient Citium; grain, cotton, fruit; p. (1946) 14,915.
- Larne, *spl.*, *mun. bor.*, Antrim, N. Ireland; at entrance to Larne Lough, 18 m. N. of Belfast; linen, flour; seaside resort; p. (1951) 11,976.
- Larvik, *spl.*, Norway; S.W. of Oslo; seaside resort; timber, shipbuilding; p. 9,725.
- Las Bela, *dist.*, Baluchistan, Pakistan; a. 7,132 sq. m.; p. (estd. 1951) 76,000.
- Las Cruces, *t.*, N.M., U.S.A.; agr. with irrigation; lead, fluorspar mining; p. (1950) 12,325.
- Las Palmas, *Spanish prov.*, Canary Is.; comprising Gran Canaria, Lanzarote, Fuerteventura and smaller is.; bananas, potatoes, tomatoes, fishing; a. 1,565 sq. m.; p. (1950) 375,227.
- Las Palmas, *t.*, Gran Canaria, Canary Is.; cap. of Las Palmas prov.; p. (1950) 138,441.
- Las Tres Marias, *Is.*, off W. est. Mexico.
- Las Vegas, *t.*, Nevada, U.S.A.; p. (1950) 24,624.
- Las Vegas, *t.*, N. Mexico, U.S.A.; E. of Santa Fé; p. (1950) 7,994.
- Las Villas, *prov.*, Cuba; a. 8,264 sq. m.; p. (1943) 938,531.
- Lashio, *t.*, Burma; on R. Salween; end of the Burma Road to China; p. 4,638.
- Lashkar, *see* Gwalior.
- Lasithi, *prefecture*, Crete; cap. Ayios Nikolaos; p. (1951) 73,748.
- Lasswade, *see* Bonnyrigg and Lasswade.
- Latacunga, *cap.*, Cotopaxi prov., Ecuador; trade centre; p. (1938) 17,800.
- Latakia, *spl.*, Syria; tobacco, olive oil, sponges; p. (estd. 1950) 100,462.
- Latina, *see* Littoria.
- Latium, *see* Lazio.
- Latrobe, *t.*, Tasmania, Australia; on N. est.
- Latrobe, *t.*, S.E. Penns., U.S.A.; p. (1950) 11,311.
- Latronico, *t.*, Potenza, Italy; p. 5,175.
- Latvia, *constituent S.S. rep.*, U.S.S.R., on the Baltic Sea; former independent st.; mainly agr.; cap. Riga; principal spts. Ventspils, Liepaya; a. 24,800 sq. km.; p. (1939) 1,950,000.
- Lauban, *see* Luban.
- Lauder, *burgh*, Berwick, Scot.; in Lauderdale 8 m. N. of Melrose; sm. mkt. t.; p. (1951) 623.
- Lauenburg, *see* Leborg.
- Launceston, *t.*, *mun. bor.*, Cornwall, Eng.; in upper Tamar valley, 18 m. N.W. of Plymouth; agr. mkt., iron; p. (1951) 4,467.
- Launceston, *c.*, Tasmania, Australia; holiday centre, fruit; p. (1947) 40,449.
- Laurel, *t.*, Mississippi, U.S.A.; p. (1950) 25,038.
- Laurencetown, *mkt. t.*, burgh, S. Kincardine, Scot.; at N.E. end of Strathmore; linen; p. (1951) 1,485.

- Laurens, t., S.C., U.S.A.; cotton, glass; p. (1950) 8,658.
- Laurentide, escarpment of Laurentian plateau, E. Canada.
- Laurium, hills, dist., Greece; silver and lead.
- Laurium (formerly Calumet), vil., Mich., U.S.A.; copper; p. (1950) 3,211.
- Lausanne, cap., Vaud, Switzerland; nr. L. Geneva; cath., univ.; rly. junction, iron, chocolate, paper; p. (1950) 106,807.
- Lauterbrunnen, vil., Bern can., Switzerland; highest and most famous of its waterfalls (Staubbach 980 ft.); tourist centre; p. 2,958.
- Lautoka, spt., Viti Levu, Fiji Is.; sugar centre.
- Lauven, R., Norway; length 200 m.
- Lavagna, t., Genoa, Italy; shipbuilding, marble; p. 8,100.
- Laval, t., cap., Mayenne, France; cotton, paper, machinery, marble; p. (1946) 32,544.
- Lawrence, c., Kansas, U.S.A.; st. univ., paper, machinery; p. (1950) 23,351.
- Lawrence, c., Mass., U.S.A.; on Merrimack R., N.W. of Boston; textiles, paper, footwear, engineering; p. (1950) 80,536.
- Lawrenceburg, t., Tenn., U.S.A.; textiles, cheese, phosphates; p. (1950) 5,442.
- Lawton, t., Oklahoma, U.S.A.; p. (1950) 34,757.
- Laxey, vil., I. of Man; lead-mining.
- Lazio, region, Italy; a. 6,634 sq. m.; p. inc. Vatican City and Rome; p. (1951) 3,346,918.
- Le Cateau, t., Nord, France; textiles, sugar, brewing, metal work; p. (1946) 8,747.
- Le Creusot, commune, Saône-et-Loire, France; mining, ironworks; p. (1946) 24,106.
- Le Havre, see Havre, Le.
- Le Maire, strait, between Staten I. and Tierra del Fuego, S. America.
- Le Mans, cap., Sarthe, France; cath.; linen, ironmongery, chemicals, motor cars, aeroplanes; p. (1946) 100,455.
- Lea, R., Eng.; rises in Chiltern Hills nr. Luton, flows E. and S. into R. Thames; length 46 m.
- Lead, t., S.D., U.S.A.; gold, mnfs. jewellery, mining equipment; tourist resort; p. (1950) 6,422.
- Leader Water, R., Scot.; trib. of R. Tweed, which it joins nr. Melrose; length 21 m.
- Leadgate, t., Durham, Eng.; 2 m. N.E. of Consett; coal, mftg.
- Leadhills, mining vil., S.W. Lanark, Scot.
- Leadville, c., Colorado, U.S.A.; in Arkansas valley; mining centre; p. (1950) 4,081.
- Leaf, R., flowing into Ungava Bay, Labrador, Canada.
- Leam, R., Warwick, Eng.; trib. of R. Avon; length 25 m.
- Leamington, t., Ont., Canada; tobacco; p. 5,858.
- Leamington (Royal Leamington Spa), t., mun. bor., Warwick, Eng.; on R. Leam, 24 m. S.E. of Birmingham; fashionable spa; gen. (engin.) industries; p. (1951) 36,345.
- Leatherhead, t., urb. dist., Surrey, Eng.; on R. Mole to N. of gap through N. Downs; brick and tile, brewing, mftg.; p. (1951) 27,203.
- Leavenworth, c., Kansas, U.S.A.; on Missouri rly. centre and military post, furniture, machinery, bricks, coal; p. (1950) 20,579.
- Lebanon, rep., S.W. Asia; mountainous; mainly agr.; sm. industries, cotton and cement; cap. Beirut; a. 3,400 sq. m.; p. (estd. 1953) 1,300,000.
- Lebanon, min. range, Lebanon st. and N. Israel; highest peaks Dahr-el-Khadef (10,052 ft.) and Timarum (10,539 ft.).
- Lebanon, t., Penns., U.S.A.; coal, iron, steel, mnfs.; rubber, food, tobacco; p. (1950) 28,156.
- Lebork (former German Lauenburg), t., Poland; p. 11,000.
- Lebu, spt., Chile; prov. cap.; p. 3,827.
- Lecco, t., Apulia, Italy; cas.; p. (1951) 63,783.
- Lecco, t., Italy; on L. Como; silk, cotton, copper, iron; p. 33,850.
- Lech, R., Germany; trib. of Danube; length Lechhausen, industr. t., Germany; p. 10,660.
- Leczycza, t., Poland; p. 20,996.
- Ledbury, t., urb. dist., Hereford, Eng.; at W. foot of Malvern Hills; mkt., fruit preserving, tanning; p. (1951) 3,639.
- Ledeberg, t., Belgium; nr. Ghent; industr. p. 11,754.
- Lee, R., Cork, Ireland; flows past Cork c. to Cork harbour; length 50 m.
- Lee-on-Solent, t., Hants, Eng.; on Southampton Water; p. 4,000.
- Leeds, co. bor., W.R. Yorks, Eng.; on R. Aire; at E. margin of Pennines; univ.; lge. clothing industry, varied engin. mnfs., chemicals, tanning; p. (1951) 504,594.
- Leek, mkt., t., urb. dist., Staffs, Eng.; 6 m. N.E. of Stoke-on-Trent; silk mnfs.; p. (1951) 19,358.
- Lees, urb. dist., Lancs, Eng.; p. (1951) 4,160.
- Leeston, t., S.I., New Zealand; on Canterbury Plain, nr. Christchurch; agr. centre; p. (1951) 733.
- Leete's I., Conn., U.S.A.; on Long I. sound.
- Leeuwarden, prov. cap., Friesland, Netherlands; agr.; iron, metal goods, bicycles; p. (1951) 79,134.
- Leewin, C., S.W. point of Australia.
- Leeward Is., Brit. col., W. Indies; includes Antigua, Barbuda, Redonda, Montserrat, Virg. Is., St. Kitts, Nevis, Anguilla, Sombroero; ch. products, sugar, fruit; Is. cap. St. John's, Antigua; total a. 423 sq. m.; p. (1952) 119,700.
- Leeward Is. (Dutch), part of Netherlands Antilles, consisting of St. Maarten (a. 34 sq. m.; p. 1,697), St. Eustatius (a. 31 sq. m.; p. 945), Saba (a. 9 sq. m.; p. 1,150).
- Leeward Is. (French), E. Pacific, includes Huahiné, Raiatea, Tahaa, Bora-Bora-Maupiti; p. (1946) 12,445.
- Leghorn or Livorno, prov., Italy; a. 133 sq. m.; p. (1951) 281,028.
- Leghoro or Livorno, spt., prov. cap., Italy; on W. cst., 10 m. S. of mouth of R. Arno; shipbuilding, glass, wire, olive oil, hats, marble; p. (1951) 140,722.
- Legnago, t., Lombardy, Italy; on R. Adige; fort, sugar, cereals; p. 20,175.
- Legnano, t., Lombardy, Italy; N.W. of Milan; cotton, silk, machinery; p. 29,900.
- Legnica (Liegnitz), t., Silesia, Poland; cloth, machinery; p. 24,000.
- Leh, ch. t., Ladakh, Kashmir, India; on R. Indus; caravan centre.
- Lehigh, R., Penns., U.S.A.; trib. of Delaware R.; length 120 m.
- Leighton, bor., Penns., U.S.A.; anthracite; p. (1950) 6,565.
- Leicester, co. t., co. bor., Leics., Eng.; on R. Soar; footwear, hosiery, pottery, distilleries; p. (1951) 285,061.
- Leicestershire, co., Eng.; mainly agr.; co. t. Leicester; a. 832 sq. m.; p. (1951) 630,893.
- Leicester, t., Mass., U.S.A.; p. (1950) 6,029.
- Leichhardt, W., sub. of Sydney, N.S.W., Australia; p. 31,500.
- Leiden (Leyden), t., S. Holland, Netherlands; printing, textiles, medical apparatus; univ.; p. (1951) 90,673.
- Leigh, t., mun. bor., S.W. Lancs, Eng.; 5 m. S.E. of Wigan; mkt.; coal mining; silks, cottons, brass, iron; p. (1951) 48,714.
- Leigh-on-Sea, t., Essex, Eng.; on N. est. of Thames estuary, 2 m. W. of Southend; holiday resort, fishing.
- Leigh's L., Wyoming, U.S.A.; links with Snake R.
- Leighton Buzzard, t., urb. dist., Bedford, Eng.; at N.E. end of Vale of Aylesbury; mkt.; timber, wheat, paper; p. (1951) 9,023.
- Leine, R., N.W. Germany; trib. of R. Aller; length 130 m.
- Leinster, S.E. prov., Ireland; a. 7,620 sq. m.; agr.; p. (1951) 1,334,754.
- Leipa, t., Czechoslovakia; on R. Polzen; industr.
- Leipzig, c., Germany; at junction of Rs. Pleisse, Elster, and Parde; univ.; commerce, publishing, metal, textile, chemical mftg.; European fur mkt.; famous fairs; p. (1946) 607,655.
- Leisnig, t., Saxony, Germany; on R. Mulde; p. 7,520.
- Leiston-cum-Sizevell, t., urb. dist., E. Suffolk, Eng.; on cst., 4 m. E. of Saxmundham; agr. implements; p. (1951) 4,055.
- Leith, spt., Midlothian, Scot.; Edinburgh sub.; shipbuilding, timber, whisky; p. 81,618.
- Leith Hill, Surrey, Eng.; nr. Dorking; alt. 993 ft. Leithmeritz, see Litoměřice.
- Letrim, co., Connacht, Ireland; agr.; cap. Carrick-on-Shannon; a. 613 sq. m.; p. (1951) 41,309.
- Leix, co., see Laoighis.
- Leixões, spt., Portugal; at mouth of R. Douro.
- Lek, (Neder Rijn), R., Netherlands; more northerly of two branches by which Rhine enters N. Sea; leaves main R. 16 m. above



- Arnhem, flows through Rotterdam, enters N. Sea by three mouths; length 110 m.
- Leland, *t.*, Miss., U.S.A.; cotton, vegetables, nuts; p. (1950) 4,736.
- Lema, *Is.*, Sea of Hong Kong in China Sea.
- Leman L., *see* Geneva L.
- Lemgo, *t.*, Germany; pipe-making; p. 12,390.
- Lenmos, *I.* (Greek), Aegean Sea; 20 m. long; fertile valleys; tobacco, fruit, sheep, goats; cap. Kastron; p. 4,000.
- Lemvig, *spt.*, Jutland, Denmark; p. 5,245.
- Lena, *gr. R.*, Siberia, U.S.S.R.; rising in mtns. W. of Lake Baikal and flowing N. to the Arctic Ocean; length 2,800 m.
- Lena, *commune*, N.W. Spain; iron, coal, mercury; meat packing; p. 15,532.
- Lenin Dam (Dnieper Dam), *see* Zaporozhe.
- Leninabad, *t.*, Tadzhikistan, U.S.S.R.; on R. Syr Darya, S. of Tashkent; cottons, silk, fruit-preserving; p. (1939) 37,258.
- Leninakan, *t.*, Armenia, U.S.S.R.; silk; p. (1939) 67,707.
- Leninograd, *c.*, U.S.S.R.; at mouth of R. Neva; cath., palaces, univs.; gr. mnfs., including textiles, leather, corn, flax, hemp; founded by Peter the Great as St. Petersburg; p. (1939) 3,191,304.
- Leninsk-Kuznetski (Charjul), *t.*, Siberia, U.S.S.R.; heavy engineering, power-station, coal, gold; p. (1939) 81,980.
- Lenkoran, *spt.*, S.E. Azerbaijan, U.S.S.R.; on Caspian Sea; lumber, fish; p. 11,873.
- Lennox, *ancient Scottish div.*, comprising Dunbarton, parts of Stirling, Perth, and Renfrew.
- Lennox Hills, *mtn. range*, between Dunbarton and Stirling, Scot.
- Lennoxtown, *t.*, Stirling, Scot.; coal-mining, bleaching, print and alum wks.; p. 2,590.
- Lennoxville, *t.*, Quebec, Canada; on St. Francis R.; univ.; p. 1,927.
- Lenoir, *t.*, N.C., U.S.A.; cotton, lumber; tourist resort; p. (1950) 7,888.
- Lens, *t.*, Pas de Calais, France; on canal of same name; ironwks., soap, sugar; p. (1946) 34,342.
- Lentini or Leontini, *t.*, Sicily, Italy; on plain of Catania; cereal, oil, wine; p. 23,150.
- Leoben, *old mining t.*, Styria, Austria; walls and tower; p. (1951) 35,319.
- Leobschütz, *see* Glubczyce.
- Leominster, *t.*, *mun. bor.*, Hereford, Eng.; 13 m. N. of Hereford; rly. junction, mkt., cider, cattle, agr. tools; p. (1951) 6,289.
- Leominster, *t.*, Mass., U.S.A.; wood products, light mnfs.; p. (1950) 24,075.
- Leon, *t.*, Nicaragua; cath., univ.; footwear, textiles; p. (1947) 40,000. [p. (1950) 140,000.]
- Leon, *t.*, Mexico; textiles, leather, gold, silver.
- Leon, *prov.*, Spain; agr., live-stock, coal, iron; cap. Leon; a. 5,937 sq. m.; p. (1950) 544,779.
- Leonforte, *t.*, Sicily, Italy; sulphur-mines, cattle, oil, wine; p. 19,400.
- Leonidion, *t.*, Greece; on G. of Nauplia; p. 3,452.
- Leonora, *sm. t.*, W. Australia; 140 m. N. of Kalgoorlie; gold-mines.
- Leopoldville, *cap.*, Belg. Congo; above the cataracts on R. Congo; founded by Stanley; p. (1950) 208,662.
- Lepava, *spt.*, Latvia, U.S.S.R.; timber, grain, hides, dairy produce; p. 57,098.
- Lequeitio, *coastal t.*, Spain, nr. Bilbao.
- Lercara, *t.*, Sicily, Italy; macaroni, mftg., sulphur mines; p. 11,000.
- Lerici, *coastal t.*, Italy; nr. Spezia; macaroni mftg.; old cas.
- Lérida, *prov.*, Spain; wine, olive oil, livestock, wool, timber; a. 4,656 sq. m.; p. (1950) 324,062.
- Lérída, *t.*, *cap. of L. prov.*, Spain; on R. Segre; 2 cath.; textiles, leather, glass; p. (1950) 52,181.
- Lerins, *Is.* (French), in Mediterranean; nr. Cannes.
- Leros, *Is.*, Dodecanese, Greece.
- Lerwick, *cap.*, Shetland Is., Scot.; on Mainland; herrings, woollens; p. (1951) 5,538.
- Les Baux, *commune*, Bouches-du-Rhône, France; bauxite first discovered here; not impt. now.
- Les Causses, *see* Causses, Les.
- Les Landes, *see* Landes, Les.
- Les Lilas, *commune*, Seine, France; glass, chemicals, metallurgy; p. (1946) 19,500.
- Les Sables d'Olonne, *commune*, Vendée, France; shipbuilding; fish, canning; p. 17,650.
- Lesbos, *see* Mytilene I.
- Leskovac, *t.*, Serbia, Yugoslavia; on R. Morava; hemp, flax, tobacco; p. (1948) 21,773.
- Leslie, *burgh*, Fife, Scot.; 7 m. N. of Kirkcaldy; paper, flax, bleaching; p. (1951) 2,612.
- Lesser Antilles, *see* Antilles.
- Lesser Slave, *L.*, Central Alberta, Canada.
- Lesvos (Lesbos), *Greek prefecture and I. in Aegean Sea*; cap. Mitilini (Mytilene); p. (1940) 161,822.
- Leszno, *commune*, W. Poland; engineering, distilling, tobacco; p. 20,881.
- Letchworth (Garden City), *t.*, *urb. dist.*, Herts, Eng.; at foot of Chiltern Hills, 2 m. N.E. of Hitchin; model residt. and indust. t.; p. (1951) 20,321.
- Lethbridge, *t.*, Alberta, Canada; coal; oil; p. (1951) 22,947.
- Letterkenny, *t.*, Donegal, Ireland; on Lough Swilly; tourist centre, flax; p. (1946) 2,308.
- Leucadia, *see* Levkas.
- Levanger, *spt.*, Norway; at N. end of Trondheim Fjord; p. 1,675.
- Levant, French and Italian name for E. cst. of Mediterranean.
- Leven, *burgh*, Fife, Scot.; on N. side of Firth of Forth, 10 m. N.E. of Kirkcaldy; linen, coal; p. (1951) 8,868.
- Leven, *L.*, Kinross, Scot.; associated with escape of Mary Queen of Scots from Castle I., 1568.
- Leven, *salt-water L.*, Argyll, Inverness, Scot.
- Levenshulme, *indust. t.*, Lancs. Eng.; sub. of Manchester.
- Levin, *t.*, N.I., New Zealand; p. (1951) 4,728.
- Levis, *t.*, Quebec, Canada; on St. Lawrence R., opposite Quebec; rly. terminus, landing place for Transatlantic passengers; p. 11,724.
- Levkas (Santa Maura), *Ionian Is.*, Greece; ch. t. and spt. L.; mtns.; grapes, currants; a. 110 sq. m.; p. (1951) 37,712.
- Levoča, *t.*, Czechoslovakia; N.W. of Kosice; indust.
- Lewes, *co. t.*, *mun. bor.*, E. Sussex, Eng.; on R. Ouse at N. entrance to gap through S. Downs; mkt., agr. centre; old buildings; p. (1951) 13,104.
- Lewis, *I.*, Outer Hebrides, Scot.; fishing, tweeds; ch. t. Stornoway; a. 770 sq. m.; p. 31,687.
- Lewisham, *metropolitan bor.*, London, Eng.; residt.; p. (1951) 227,551.
- Lewiston, *t.*, Idaho, U.S.A.; gold, silver, lead; agr., lumber; p. (1950) 12,985.
- Lewiston, *c.*, Maine, U.S.A.; textiles, machinery, timber; p. (1950) 40,974.
- Lexington, *c.*, Kentucky, U.S.A.; univ.; tobacco, horse-rearing; p. (1950) 55,534.
- Lexington, *t.*, Mass., U.S.A.; nr. Boston; mftg.; first battle in American War of Independence, 1775; p. (1950) 17,335.
- Leyburn, *t.*, N.R. Yorks, Eng.; in lower Wensleydale; mkt.; lead, lime; p. 1,440.
- Leyden, *see* Leiden.
- Leyland, *t.*, *urb. dist.*, Lancs, Eng.; 5 m. S. of Preston; motors, cotton; p. (1951) 14,722.
- Leyre, *R.*, S.W. France; length 40 m.
- Leyte, *I.*, Philippines; a. 2,785 sq. m.; p. 727,600.
- Leytha (Leitha), *R.*, Austria; flowing to the Danube below Vienna.
- Leyton, *mun. bor.*, Essex, Eng.; E. sub. of London; residt., engineering; p. (1951) 105,183.
- Leytonstone, *t.*, part of Leyton, Essex, Eng.
- Lhasa, *c.*, *cap.*, Tibet; "forbidden" c.; Buddhist centre, temple, monasteries, shrines; caravan tr. in carpets, silk, lace, gold, tea; p. 15,000.
- Liao Ho, *R.*, Manchuria, N. China; rises in mtns. of Jehol, flows E. and S. across Plain of Manchuria into G. of Liaoting, Yellow Sea; too shallow for lge. ships; length approx. 1,000 m.
- Liaoning, *prov.*, Manchuria, China; a. 29,200 sq. m.; cap. Shenyang; p. (estd. 1947) 12,460,000.
- Liaopel, *prov.*, China; a. 40,498 sq. m.; cap. Liaoyuan; p. (estd. 1947) 4,030,000.
- Liaotung, *peninsula*, Manchuria, China; nr. G. of same name.
- Liaoyang, *c.*, Liaoning, N. China; at foot of Changshai Shan 50 m. S.W. of Shenyang (Mukden); p. (estd. 1941) 102,478.
- Libai, *see* Lepaya.
- Liberal, *t.*, S.W. Kan., U.S.A.; natural gas, flour, machinery; p. (1950) 7,134.
- Liberec, *t.*, Czechoslovakia; on R. Neisse; textiles, tr. centre; p. (1947) 52,798.
- Liberia, *rep.*, W. Africa; coffee, palm oil, ivory, sugar; cap. Monrovia; a. 43,000 sq. m.; p. ca. 2,500,000 (including 60,000 civilised

- coast Negroes and ca. 15,000 Americo-Liberians).
- Libertad** (New San Salvador), *spt.*, Salvador, Central America; p. (1946) 37,879.
- Libmanan**, *municipality*, Luzon, Philippine Is.; hemp, rice; p. 23,000.
- Libourne**, *t.*, Gironde, France; on R. Dordogne; vineyards, brandy, sugar, woollens; p. (1946) 20,166.
- Libreville**, *cap.*, Gabun terr., Fr. Equatorial Africa; at mouth of R. Ogoewe; spt. coaling-stn.; p. 17,868.
- Libya**, *independent st.*, former Italian col., N. Africa; joint caps. Tripoli, Benghazi; some agr., fruits, fishing; a. 679,358 sq. m.; p. (1938) 888,401.
- Libyan Desert**, part of the Sahara, Africa.
- Licata**, *spt.*, Sicily, Italy; on R. Salso; sulphur; p. 29,675.
- Lichfield**, *c. mun. bor.*, Staffs, Eng.; 7 m. N.W. of Tamworth; cath.; brewing; p. (1951) 10,624.
- Lichtenstein-Callenberg**, *t.*, Saxony, Germany; cas.; textiles; p. 11,829.
- Lick Observatory**, on Mt. Hamilton, nr. San José, California, U.S.A.
- Lickey Hills**, Worcester, Eng.; 4 m. S.W. of Birmingham; sm. island of ancient rocks; largely wooded; used for recreational purposes by industr. ts. around Birmingham; rise to 956 ft.
- Licking**, *R.*, Kentucky, U.S.A.; trib. of Ohio R.; length 220 m.
- Licosia**, *C.*, Italy; S. side of G. of Salerno.
- Liddel**, *R.*, Roxburgh-Dumfries, Scot.; trib. of R. Esk.; valley used by "Waverley Route" rly. from Carlisle to Edinburgh.
- Lidköping**, *t.*, Sweden; on L. Wener; p. 9,296.
- Liechtenstein**, *sm. principality*, Europe; between Austria and Switzerland; agr., cattle; cap. Vaduz; a. 62 sq. m.; p. (1950) 13,757.
- Liège**, *prov.*, Belgium; minerals; cap. Liège; a. 1,525 sq. m.; p. (1947) 963,851.
- Liège**, *c. prov. cap.*, Belgium; at junction of Rs. Meuse and Ourthe; cath., univ.; textiles, machinery, coal; p. (1947) 156,208.
- Liegnitz**, see Legnica.
- Lier**, *t.*, Belgium; textiles, mftg.; p. (1947) 28,932.
- Liestal**, *cap. of the half-can.*, Basel-Stadt, Switzerland; p. 7,211.
- Liévin**, *mftg. t.*, Pas-de-Calais, France; adjoining Lens; coal-mining; p. (1946) 26,693.
- Lièvres**, *R.*, Quebec, Canada; trib. of St. Lawrence R.
- Lifey**, *R.*, Ireland; flows from Wicklow to Dublin Bay; length 50 m.
- Lifu**, *I.* (French); Loyalty Is., Pacific.
- Ligao**, *t.*, Luzon, Philippine Is.; sugar, rice.
- Ligny**, *t.*, Meuse, France; nr. Bar-le-duc; p. (1946) 5,121.
- Liguria**, *region*, N.W. Italy; includes provs. of Genoa and Porto Maurizio; a. 2,089 sq. m.; p. (1951) 1,557,833.
- Ligurian Sea**, Mediterranean; N. of Corsica.
- Lika**, *R.*, Jugoslavia; partly underground; length 30 m.
- Likiang**, *c.*, Yunnan, China; great tr.; p. 45,000.
- Lille**, *cap.*, Nord, France; on R. Deule; univ.; linens, cottons, rayon, iron, sugar, chemicals; p. (1946) 188,871.
- Lillehammer**, *t.*, Norway; in R. Lagen valley; agr., lumbering; p. 6,472.
- Lim**, *Fjord*, shallow strait, Jutland, Denmark; connects N. Sea with Kattegat; length 100 m.
- Lima**, *dep.*, Peru; a. 15,048 sq. m.; p. (1947) 1,093,780.
- Lima**, *cap.*, Peru; univ.; commerce centre, textiles, leather, furniture; spt. Callao; p. (estd. 1950) 835,468.
- Lima**, *c.*, Ohio, U.S.A.; on Ottawa R.; rly. wks., oil, car bodies, refrigerators; p. (1950) 50,246.
- Limassol**, *spt.*, Cyprus; wine, grapes, raisins; p. (1946) 23,196.
- Limavady**, *t.*, *urb. dist.*, Londonderry, N. Ireland; mkt.; linen; p. (1951) 3,179.
- Limbach**, *t.*, Germany; hosiery, textiles, machines; p. 18,153.
- Limbe**, *t.*, Nyasaland, Africa; in the Shire Highlands; p. 7,140.
- Limburg**, *prov.*, Belgium; agr., livestock, gin, sugar-beet, mftg.; cap. Hasselt; a. 930 sq. m.; p. (1947) 464,313.
- Limburg**, *prov.*, Netherlands; drained by R. Maas (Meuse); cap. Maastricht; agr., cattle, coal, iron; a. 846 sq. m.; p. (1948) 691,493.
- Limburg**, *t.*, Germany; on R. Lahn; p. 12,000.
- Limehouse**, *par.*, Stepney, E. London, Eng.; on R. Thames; p. 31,000.
- Limerick**, *co.*, Munster, Ireland; agr., livestock, fishing; a. 1,064 sq. m.; p. (1951) 141,251.
- Limerick**, *co. bor.*, *spt.*, *cap.*, Limerick, Ireland; at head of Shannon estuary; bacon, tanning, shipbuilding; p. (1951) 50,323.
- Limmat**, *R.*, Switzerland; trib. of R. Aar; length 80 m.
- Limoges**, *ch. t.*, Haute-Vienne, France; porcelain, kaolin paste; p. (1946) 107,857.
- Limón**, *prov.*, Costa Rica, Central America; p. (1946) 41,077.
- Limón**, *prov. cap.*, *spt.*, Costa Rica, Central America; commerce centre; p. (1950) 41,360.
- Limousin**, *old prov. and natural division* ("pays"), Central France; located W. of Auvergne; plateau, average alt. 1,000 ft., composed of old crystalline rocks; exposed, damp climate; rich pasture favours raising of dairy cattle, horses; kaolin deposits; ch. t., Limoges.
- Limpopo**, or Crocodile R., S. Africa.
- Linares**, *prov.*, Chile; a. 3,790 sq. m.; cap. L.; p. (1952) 146,729.
- Linares**, *t.*, Spain; lead-mining and mftg.; p. (1950) 52,811.
- Lincoln**, *agr. co.*, Eng.; divided into 3 administrative dists.; Holland, p. (1951) 101,545; Kesteven, p. (1951) 131,566; Lindsey, p. (1951) 473,463.
- Lincoln**, *c.*, *co. bor.*, *co. t.*, Lincoln, Eng.; on R. Witham in gap through Lincoln Wolds; cath.; agr. trade, iron, farm tools; p. (1951) 69,412.
- Lincoln**, *c.*, Ill., U.S.A.; coal; agr.; pottery; p. (1950) 14,362.
- Lincoln**, *cap.*, Nebraska, U.S.A.; rly. centre, flour; p. (1950) 93,884.
- Lincoln**, *t.*, R.I., U.S.A.; limestone, textiles; p. (1950) 11,270.
- Lincoln Edge**, *hill ridge*, Lincolnshire, Eng.; runs N. from Ancaster through Lincoln to Humber; narrow ridge with steep scarp slope to W., broken across by R. Witham at Lincoln; composed of limestone, little surface drainage; iron-ore deposits worked in N. nr. Scunthorpe; sheep, barley; rarely exceeds 300 ft. alt.
- Lincoln Wolds**, *low plateau*, Lindsey, Lincolnshire, Eng.; runs N. 45 m. from Wash to Humber; chalk covered with glacial deposits; mixed farming, grains, roots, sheep; lge. farm units; scantily populated; rise to approx. 450 ft.
- Lindau**, *t.*, Bavaria, Germany; tr. centre in agr. reg.; resort; p. 13,532.
- Linden**, *t.*, New Jersey, U.S.A.; p. (1950) 30,644.
- Lindsey**, *N. div.*, Lincoln, Eng.; ch. ts. Lincoln, Grimsby; a. 1520 sq. m.; p. (1951) 473,463.
- Linea** (la Linea), *t.*, Spain; nr. Gibraltar; vegetables, fruit; p. 38,188.
- Lingen**, *t.*, Germany; p. 11,585.
- Linköping**, *t.*, S.E. Sweden; tobacco, cloth mftg., valves; p. (1951) 54,552.
- Linlithgow**, *burgh*, *co. t.*, W. Lothian, Scot.; 15 m. W. of Edinburgh; shoe, leather, paper mfts.; p. (1951) 3,929.
- Linnhe**, *L.*, Argyll, Scot.; 21 m. long; entrance to Caledonian canal.
- Linosa**, *I.* (Italian), Mediterranean, W. of Malta.
- Linslade**, *t.*, *urb. dist.*, Bucks, Eng.; 1 m. N.W. of Leighton Buzzard; p. (1951) 3,269.
- Linyu**, *t.*, N.E. Hopeh, China; on G. of Liaotung, E. end of Great Wall; p. 30,000.
- Linz**, *c.*, *cap.*, Upper Austria; on Danube; boats, brewing, printing, iron, steel, textiles; cath.; p. (1951) 185,177.
- Lions**, *G. of*, Mediterranean, S. France.
- Lipa**, *t.*, Luzon, Philippine Is.; sugar, tobacco, cocoa, maize; p. 45,175.
- Lipari Is., Italy; volcanic, Stromboli 3,155 ft.; a. 45 sq. m.; olives, grapes, wine, sulphur; largest I. and cap. L.; p. 19,500.**
- Lipetsk**, *indust. t.*, U.S.S.R.; on the R. Voronezh; p. (1939) 66,625.
- Lippe**, *R.*, Germany; trib. of Rhine; length 110 m.
- Lippstadt**, *t.*, Germany; on R. Lippe; farm tools, brandy, tobacco, tiles; p. 18,498.
- Liri**, *R.*, Central Italy; rises in Alban Hills, flows S.E. to Cassino and then S.W. to G. of Gaeta; valley followed by main road from Rome to Naples; length 105 m.



- Lisbon, *spt., cap.*, Portugal; on R. Tagus; cas., cath.; cotton, silk, gold, silver, chemicals; p. (1950) 790,434.
- Lisburn, *t., urb. dist.*, Antrim, N. Ireland; on R. Lagan, 6 m. S.W. of Belfast; linen mftg.; p. (1951) 14,778.
- Lisieux, *t.*, Calvados, France; cath.; flannel, dairying, footwear, machinery; p. (1946) 16,362.
- Liskeard, *mkt. t., mun. bor.*, Cornwall, Eng.; on R. Looe at S. edge of Bodmin Moor; mining, tanning; p. (1951) 4,391.
- Lisle, *t.*, Tasmania; gold.
- Lismore, *mkt. t., rural dist.*, on R. Blackwater, Waterford, Ireland; p. 9,667.
- Lismore, *Scot., I.*, 12 m. long in Loch Linnhe near Oban; p. 200.
- Lismore, *t.*, N.S.W., Australia; dairying, sugar-refining, maize, potatoes; p. (1947) 15,214.
- Lissa, *I.*, Jugoslavia; wine.
- Listowel, *urb. dist.*, Kerry, Ireland; on R. Feale; cas. ruins; p. (1946) 3,309.
- Listowel, *indust. t.*, S.E. Ont., Canada; p. 3,013.
- Litchfield, *c., Ill.*, U.S.A.; natural gas, oil; p. (1950) 7,208.
- Litherland, *urb. dist.*, Lancs, Eng.; N. sub. of Liverpool; residtl. match mftg.; p. (1951) 22,197.
- Lithgow, *t.*, N.S.W., Australia; coal-mining, ironwks., potteries; p. (1947) 14,461.
- Lithuania, *constituent rep.*, U.S.S.R.; former independent st.; agr., livestock, timber; cap. Vilnius; a. 31,600 sq. m.; p. (1940) 2,879,070.
- Litomerice, *t.*, Czechoslovakia; on R. Elbe; brewing, agr. centre; p. 18,509.
- Little Bahama, one of the Bahama Is., W. Indies.
- Little Belt, *strait*, separating Jutland from I. of Fyn, Denmark.
- Little Cayman, *I.*, see Cayman Is.
- Little Colorado, *R.*, Arizona, U.S.A.; trib. of Colorado R.
- Little Falls, *c., Minn.*, U.S.A.; on R. Mississippi; timber; p. (1950) 6,717.
- Little Falls, *t., N.Y.*, U.S.A.; on Mohawk R.; paper, leather, bicycles, knitted goods; p. (1950) 9,541.
- Little Lever, *urb. dist.*, Lancs, Eng.; residtl. and industri.; p. (1951) 4,703.
- Little Rock, *t.*, Arkansas, U.S.A.; on Arkansas R.; oil, cotton-seed cakes, cotton, machinery; p. (1950) 102,213.
- Little Sioux, *R.*, Iowa, U.S.A.; trib. of Missouri; length 300 m.
- Littleborough, *t., urb. dist.*, Lancs, Eng.; 3 m. N.E. of Rochdale; cottons, woollens, dyeing; p. (1951) 10,982.
- Littlehampton, *t., urb. dist.*, W. Sussex, Eng.; on S. est. at mouth of R. Arun; holiday resort, small spt.; p. (1951) 13,948.
- Littleport, *mkt. t.*, Cams, Eng.; N. of Ely; agr.; p. (par.) 4,709.
- Littleton, *t.*, New Hampshire, U.S.A.; mftg.; p. (1950) 3,819.
- Littoria (Latina), *t.*, Lazio, Italy; in centre of reclaimed area of Pontine Marshes, 38 m. S.E. of Rome; mkt. centre on which planned road system converges; built since 1932; p. (1951) 35,115.
- Liverpool, *c., spt., co. bor.*, Lancs, Eng.; on N. bank at entrance to Mersey estuary; lge. shipping, commerce centre, shipbuilding, engineering, sugar-refining, rayon; cath., univ.; p. (1951) 789,532.
- Liverpool, *t.*, N.S.W., Australia; poultry farming, dairying, mkt. gardening; p. (1947) 12,642.
- Liverpool, *t.*, S.W. Nova Scotia, Canada; fish, lumber, shipbuilding; mftg.; p. 3,170.
- Liversedge, *t.*, W.R. Yorks, Eng.; woollens, chemicals, machinery; p. 15,000.
- Livingston, *t.*, Montana, U.S.A.; industri.; p. (1950) 7,683.
- Livingstone, *t.*, N. Rhodesia; on Zambesi R. where the rly. bridges the r., stands at 3,000 ft.; former cap.; impt. saw-mills centre; p. 7,690.
- Livingstone, *mtns.*, Tanganyika, highest point, 9,600 ft.
- Livingstone Falls, cataracts on R. Congo, Africa.
- Livny, *t.*, U.S.S.R.; on R. Sosna; mftg., farming, leather p. 21,000.
- Livorno, see Leghorn.
- Lizard, *The, C.*, Cornwall, Eng.; S. point of Eng.
- Ljubljana, *cap.*, Slovenia, Jugoslavia; on Laibach R.; textiles, chemicals, bell mftg.; p. (1948) 59,767.
- Llanberis, *t.*, Caernarvon, Wales; tourist centre at base of Snowdon; p. 2,370.
- Llanberis, *pass*, Caernarvon, N. Wales; between mtns. Snowdon and Clyder Fawr; road carries heavy tourist traffic; summit alt. 1,168 ft.
- Llandaff, *c.*, Glamorgan, S. Wales; part of Cardiff; cath.; p. 13,227.
- Llandarcy, *vil.*, Glamorgan, S. Wales; on est. Swansea Bay, Bristol Channel; lge. oil-refinery.
- Llandilo, *t., urb. dist.*, E. Carmarthen, Wales; on R. Towy, 10 m. E. of Carmarthen; agr. mkt.; p. (1951) 2,003.
- Llandovery, *t., mun. bor.*, N.E. Carmarthen, Wales; on R. Towy, 8 m. N.E. of Llandilo; coal, lead-mining; p. (1951) 1,856.
- Llandrindod Wells, *t., urb. dist.*, mid-Radnor, Wales; medicinal waters; p. (1951) 3,213.
- Llandudno, *t., urb. dist.*, Caernarvon, Wales; between Gr. and Little Orme's Head; holiday resort; p. (1951) 16,712.
- Llanelli, *spt. mun. bor.*, Carmarthen, Wales; on N. est. of Loughor estuary; coal-mining, copper, tin-plate wks.; p. (1951) 34,329.
- Llanera, *commune*, N.W. Spain; horticulture; coal; p. 11,424.
- Llanfairfechan, *t.*, N. Caernarvon, Wales; under Penmaenmawr Mt.; seaside resort; p. 3,200.
- Llanfair Caereinion, *t.*, Montgomery, Wales; mkt., flannel; p. 1,665.
- Llanfyllin, *t., mun. bor.*, Montgomery, Wales; 11 m. S.W. of Oswestry; brewing, malting; Roman remains; p. (1951) 1,419.
- Llangefni, *t., urb. dist.*, Anglesey, Wales; in centre of Anglesey I.; mkt., woollens, malting, tanning; p. (1951) 2,225.
- Llangollen, *t., urb. dist.*, Denbigh, Wales; on R. Dee; mkt., tourist centre, flannel mftg.; p. (1951) 3,275.
- Llanidloes, *t., mun. bor.*, Montgomery, Wales; on R. Severn; tourist centre, lead, flannel; p. (1951) 2,341.
- Llanos, *lowland region*, Venezuela and Colombia, S. America; drained by R. Orinoco and tribs.; high temperatures throughout year, but rain chiefly in summer; ch. vegetation, coarse grass which withers during dry season (December to May); little developed, some cattle-rearing.
- Llanos de Urgel, *upland region*, Lerida, N.E. Spain; semi-arid; formerly steppe-land, now irrigated by R. Segre; vine, olive, maize, tobacco.
- Llanquihue, *prov.*, Chile; a. 7,005 sq. m.; p. (1952) 130,011.
- Llanrwst, *t., urb. dist.*, Denbigh, Wales; on R. Conway; 10 m. S. of Conway; mkt., tourist centre; p. (1951) 2,592.
- Llanstephan, *vil.*, Carmarthen, Wales; cas.
- Llantrisant, *rural dist.*, Glamorgan, Wales; iron, coal; p. (rural dist. 1951) 25,561.
- Llanwrtyd Wells, *t., urb. dist.*, Brecknock, Wales; iron, farming; p. (1951) 560.
- Llerena, *old walled t.*, Badajoz, Spain; p. 4,778.
- Lleyn, *peninsula, rural dist.*, Caernarvon, N. Wales; extends W. from Snowdonia to Bardsey I., separates Cardigan Bay from Caernarvon Bay; crystalline rocks form hills in E., otherwise low, undulating; pastoral farming, sheep, cattle; settlements mainly on est., fishing vils. and sm. seaside resorts; ch. t., Pwllheli; a. 180 sq. m., p. rural dist. (1951) 17,660.
- Llchwyr, *urb. dist.*, Glam., S. Wales; p. (1951) 25,737.
- Loa, *R.*, N. Chile.
- Loanda or São Paulo de Loanda, *c., spt.*, Angola, Africa; exports rubber, coffee, palm oil, coconuts, rum, ivory; p. 23,000.
- Loango, *spt.*, Fr. Equatorial Africa; N. of mouth of R. Congo; rubber, palm-oil exports.
- Loanhead, *burgh*, Midlothian, Scot.; 5 m. S.E. of Edinburgh; coal, iron ore; p. (1951) 4,886.
- Löbau, *indust. t.*, Germany; p. 12,635.
- Lobaye, *R.*, Middle Congo, Fr. Eq. Africa.
- Lobito, *spt.*, Angola, Africa; N. of Benguela; exports copper; rly. terminus; p. 13,592.
- Lobitos, *t.*, Piura dep., Peru; on est. 20 m. N. of Talara; oil-wells.
- Locarno, *t.*, Switzerland; on L. Maggiore; tourist centre; L. treaty 1925; p. 5,500.
- Lochaber, *mountainous dist.*, S. Inverness, Scot.; contains Ben Nevis.
- Lochalsh, see Kyle of Lochalsh.

- Lochgelly, burgh, Fife, Scot.;** nr. Dumfermline; ironwks., coal-mining; p. (1951) 9,102.
- Lochgilphead, burgh, Argyll, Scot.;** on arm of Loch Fyne; at E. entrance to Crinan Canal; tourist centre; p. (1951) 1,229.
- Lochmaben, burgh, Dumfries, Scot.;** in Annandale, 7 m. N.E. of Dumfries; p. (1951) 1,127.
- Lochy, Loch, Inverness, Scot.;** used by Caledonian Canal; 10 m. long; R. Lochy flows 8 m. to Fort William from S. end of the loch.
- Lockerbie, burgh, Dumfries, Scot.;** in Annandale 10 m. E. of Dumfries; sheep mkt.; p. (1951) 2,623.
- Lockhart, t., Texas, U.S.A.;** cotton, petroleum, agr.; p. (1950) 5,573.
- Lock Haven, c., Penns., U.S.A.;** on Susquehanna R.; timber; p. (1950) 11,381.
- Lockport, t., Ill., U.S.A.;** rly centre; p. (1950) 4,955.
- Lockport, c., N.Y., U.S.A.;** on Erie canal; machinery, paper pulp, fruit; p. (1950) 25,133.
- Locle, Le, t., Switzerland;** watch-making; p. 11,336.
- Loddon, R., Victoria, Australia;** rises in Gramplan Mtns., flows N. into R. Murray at Swan Hill; water used for irrigation in N. Victoria; length approx. 200 m.
- Lodève, t., Hérault, France;** cloth mftg.; cath.; p. (1946) 6,629.
- Lodi, c., Italy;** on R. Adda; cheese, majolica ware; cath.; p. 29,000.
- Lodi, t., Cal., U.S.A.;** in San Joaquin valley; agr., esp. grapes; packing plants; p. (1950) 13,798.
- Lodi, t., New Jersey, U.S.A.;** p. (1950) 15,392.
- Lodore, waterfall, nr. Keswick, Cumberland, Eng.**
- Lodz, prov., Central Poland;** a. 7,904 sq. m.; p. (estd. 1950) 1,474,108.
- Lodz, t., central Poland;** the "Manchester of Poland"; textiles; p. (1948) 606,778.
- Lofoten Is., storm-swept group, off N.W. cst. Norway;** stretching 175 m.; mainly mtns.; cod and herring fishing.
- Loftus, t., urb. dist., N.R. Yorks, Eng.;** on N.E. flank of Cleveland Hills; stone quarries; p. (1951) 7,423.
- Logan, c., Utah, U.S.A.;** p. (1950) 16,832.
- Logan, t., Ohio, U.S.A.;** coal, natural gas, oil; leather, wood mnfs.; p. (1950) 5,972.
- Logan, mtn., S.E. Yukon, Canada;** alt. 19,850 ft.
- Logansport, c., Indiana, U.S.A.;** on Wabash and Erie canal; timber, fruit, grain, machinery, woollens; p. (1950) 2,103.
- Logroño, prov., N. Spain;** cap. Logroño; a. 1,946 sq. m.; p. (1950) 229,791.
- Loir, R., France;** trib. of R. Sarthe; length 150 m.
- Loire, R., France;** largest in cty., flows from Cévennes Mtns. to Atlantic; length 620 m.
- Loire, dep., France;** agr. (potatoes, vineyards), mining, mftg.; cap. St. Etienne; a. 1,853 sq. m.; p. (1946) 631,591.
- Loire, Haute, dep., France;** cap. Le Puy; a. 1,930 sq. m.; p. (1946) 228,076.
- Loire Inférieure, dep., W. France;** cap. Nantes; a. 2,695 sq. m.; p. (1946) 665,004.
- Loiret, dep., France;** agr., vineyards, distilling, mftg.; cap. Orléans; a. 2,630 sq. m.; p. (1946) 346,918.
- Loir-et-Cher, dep., Central France;** cap. Blois; a. 2,479 sq. m.; p. (1946) 242,419.
- Loja, prov., Ecuador;** cap. Loja; a. 3,705 sq. m.; p. (1950) 216,802.
- Lokeren, t., Belgium;** textiles, chemicals, tobacco; p. (1947) 25,492.
- Lokoja, t., Nigeria;** at confluence of Rs. Niger and Benue; military stn.; importance decreased since rlys. opened; p. 2,122.
- Lombardy, reg., N. Italy;** in R. Po Valley; a. 9,190 sq. m.; p. (1951) 6,560,721.
- Lombardy, Plain of, N. Italy;** extensive lowland flanked by Alps, Apennines, Adriatic Sea; built up by alluvium from R. Po, its tribes, and R. Adige; zone bounding main Rs. liable to floods, elsewhere irrigation necessary on account of hot summers; intensively cultivated, rice, maize, flax, clover, lucerne, wheat, apples, dairy cattle, mulberry; densely populated; many industr. ts., Turin, Milan, Verona, etc.; length 250 m., width varies from 50 to 120 m.
- Lombok, one of the lesser Sunda Is., Indonesia, Malay Archipelago;** mtns., peak of Lombok 11,810 ft., volcanic; Wallace's Line passes
- between Lombok and Bali; ch. t. Mataram; p. 701,298.
- Lomé, spl., cap., Togo Trust Terr., Fr. W. Africa;** p. (estd. 1949) 31,500.
- Lomme, commune, Nord, France;** spinning, hats; p. (1946) 20,684.
- Lomond, L., between Dunbarton and Stirling cos., Scot.;** contains 30 is.; largest loch in Scot.; length 20 m.; a. 27 sq. m.
- Lomond Hills, Kinross and Fife, Scot.;** alt. 1,713 ft. and 1,471 ft.
- Lomza, t., Poland;** on Narew R.; grain, timber; p. 13,772.
- London, cap. c., spl., Eng.;** on R. Thames; includes 28 metropolitan bors.; tourist centre, large tr., commerce, mftg.; many historic buildings; p. (1951) 8,346,137 (Greater London); (1951) 3,348,336 (co.); (1951) 5,268 (c.).
- London, t., Ontario, Canada;** on R. Thames, 65 m. W. of Hamilton; rly. centre, agr., chemicals; univ.; p. (1951) 95,612.
- Londonderry, co., N. Ireland;** a. 816 sq. m.; p. (excl. co. bor.) (1951) 105,421.
- Londonderry (or Derry), co. bor., N. Ireland;** on left bank of R. Foyle, 4 m. upstream from Lough Foyle; shirt mftg.; p. (1951) 50,099.
- Londonderry, C., jutting into Timor Sea, W. Australia.**
- Long Beach, t., California, U.S.A.;** p. (1950) 250,767.
- Long Beach, t., Long I., N.Y., U.S.A.;** holiday resort; p. (1950) 15,586.
- Longbenton, t., urb. dist., Northumberland, Eng.;** 3 m. N.E. of Newcastle; coal-mining; p. (1951) 28,071.
- Long Branch, c., New Jersey, U.S.A.;** seaside resort; p. (1950) 23,090.
- Long Eaton, t., urb. dist., Derby, Eng.;** on R. Trent, 5 m. S.W. of Nottingham; rly. wks., lace mftg.; p. (1951) 28,638.
- Longford, co., Leinster, Ireland;** extensive peat bogs; dairy farming; a. 421 sq. m.; p. (1951) 34,567.
- Longford, t., co. t. Longford, Ireland;** agr. centre; p. (1946) 4,019.
- Long Forties Bank, submarine sandbank, N. Sea;** 80 m. E. of Aberdeen; valuable fishing-grounds; depth of water, from 25 to 40 fathoms.
- Long I., part of N.Y., U.S.A.;** separated from mainland by East R.; contains Queens and Brooklyn, bors. of New York City; mkt. gardening, fisheries, oysters, holiday resorts; a. 1,682 sq. m.
- Long I., Bahamas Is., W. Indies;** p. (1943) 4,564.
- Long I. City, part of Queen's bor., N.Y., U.S.A.;** industr. centre; food, engineering, leather.
- Long, Loch, arm of sea, between Dunbarton and Argyll, Scot.;** length 17 m.
- Longmeadow, t., S.W. Mass., U.S.A.;** residtl.; p. (1950) 6,508.
- Longreach, t., Queensland, Australia;** in centre of Gr. Australian (artesian) basin, 400 m. W. of Rockhampton; where rly. from cst. crosses R. Thompson; collecting and forwarding centre for cattle and wool.
- Longridge, t., urb. dist., Lancs, Eng.;** 6 m. N.E. of Preston; cotton, nails; p. (1951) 4,314.
- Long's Peak, mtn., Colorado, U.S.A.;** alt. 14,271 ft.
- Longtown, mkt. t., Cumberland, Eng.;** on R. Esk; agr.; p. 6,676.
- Longview, t., Texas, U.S.A.;** p. (1950) 24,502.
- Longview, t., Washington, U.S.A.;** p. (1950) 20,339.
- Longwy, t., Meurthe-et-Moselle, France;** fortfd.; iron, porcelain; p. (1946) 12,150.
- Longxuyen, t., S.W. Cochinchina;** rich mkt. t.; p. 143,000.
- Lons-le-Saunier, cap., Jura, France;** salt springs; wine, agr.; livestock; p. (1946) 15,568.
- Loe, t., sm. spl., urb. dist., Cornwall, Eng.;** on both sides of Loe estuary, 10 m. W. of Plymouth Sound; fishing, holiday resort; p. (1951) 3,801.
- Lookland, t., S.W. Ohio, U.S.A.;** chemicals, paper, light mnfs.; p. (1950) 5,736.
- Loos, t., Pas-de-Calais, France;** coal-mining; p. (1946) 14,678.
- Lop Nor, marsh, Sinkiang, W. China;** in Tarim Basin at foot of Altyn Tagh; centre of inland drainage, receives water from R. Tarim; almost uninhabited.



- Lorain, t.**, Ohio, U.S.A.; on I. Erie; shipbuilding, steelwks, fisheries; p. (1950) 51,202.
- Lorca, t.**, Murcia, Spain; agr. products, woollens, chemicals; bishop's palace; p. (1950) 70,998.
- Lord Howe I.**, Australian I. S. Pac. Oc., length 7 m., width 1½ m.; abt. 436 m. N.E. of Sydney; p. (1947) 179.
- Lordsburg, t.**, N.M., U.S.A.; mining; tourists; p. (1950) 3,525.
- Lorena, c.**, S.E. Brazil; cotton, coffee; p. 10,262.
- Loreto, t.**, Ancona, Italy; pilgrim centre; p. 6,700.
- Loreto, dep.**, Peru; rubber; cap. Iquitos; a. 119,270 sq. m.; p. (1947) 346,499.
- Lorient, spt.**, Morbihan, France; on Bay of Biscay; government dockyards and arsenal; fishing; p. (1946) 11,853.
- Lörrach, c.**, Baden, Germany; textiles, iron goods, tobacco; p. 16,011.
- Lorraine, prov.**, France; agr., wine, iron.
- Los Angeles, c.**, S. California, U.S.A.; winter resort, fruit, clothing, steel, oil refining, film centre; p. (1950) 1,970,358.
- Los Angeles, cap. c.**, Bio Bio, Chile; p. (1940) 20,979.
- Losinj, I.**, Jugoslavia; summer resort, trade.
- Los Rios, prov.**, Ecuador, S. America; a. 2,295 sq. m.; cap. Babahoyo; p. (1952) 150,260.
- Los Santos, prov.**, Panama, Central America; cap. Las Tablas; p. (1950) 61,422.
- Lossiemouth, burgh.**, Moray, Scot.; on Moray Firth, 5 m. N. of Elgin; boat building, fishing; p. (1951) 5,596.
- Lostwithiel, t.**, mun. bor., Cornwall, Eng.; at head of Fowey estuary; mkt., timber wks.; p. (1951) 2,165.
- Lot, R.**, S. France; trib. of Garonne R.; length 272 m.
- Lot, dep.**, S.W. France; livestock, wine, cereals, coal, iron; a. 2,018 sq. m.; cap. Cahors; p. (1946) 154,897.
- Lota, t.**, Chile, on cst.; p. 34,445.
- Lot-et-Garonne, dep.**, S.W. France; agr. (cereals, vines, fruit); cap. Agen; a. 2,079 sq. m.; p. (1946) 265,449.
- Lothians, Scottish dist.**, S. of Firth of Forth, cos. Mid Lothian, W. Lothian, and E. Lothian.
- Lötschberg, rly. tunnel.**, Switzerland; penetrates Bernese Alps on main rly. route from Berne to Milan; length 9 m.
- Loughborough, t.**, mun. bor., Leicester, Eng.; on R. Soar 10 m. N. of Leicester; hosiery, engineering, brick mfgt.; college; p. (1951) 34,731.
- Loughor, R.**, Glamorgan, S. Wales; rises in Black Mtns., flows S.W. into Bristol Channel; lower valley submerged to form estuary, length 8 m., width 4 m., around which cluster steel-works and zinc refineries of Llanelli, Bynea, Gorseinon, Gwerton, etc.
- Loughrea, mkt. t.**, Galway, Ireland; p. 2,891.
- Loughton, t.**, Essex, Eng., on border of Epping Forest; residt.; p. 15,000.
- Louisiana, st.**, U.S.A.; agr., tobacco, cotton, sugar, timber, minerals, and mfgt.; cap. Baton Rouge; ch. spt. New Orleans; a. 48,523 sq. m.; p. (1950) 2,683,516 (one-half coloured).
- Louisville, c.**, Kentucky, U.S.A.; on Ohio R.; univ.; largest tobacco mkt. in world; iron, tanning, furniture mfgt.; p. (1950) 369,129.
- Loulé, t.**, Portugal; esparto-grass centre; porcelain, leather; p. 23,000.
- Lourdes, t.**, France; on R. Pau; great pilgrim centre; slate, marble; p. (1946) 13,974.
- Lourenço Marques, cap.**, spt., Mozambique, Port. E. Africa; rly. terminus, coaling-stn.; p. (1950) 93,516.
- Louth, t.**, mun. bor., Lindsey, Lincoln, Eng.; on E. edge of Lincoln Wolds; mkt., flour, woollens; abbey ruins; p. (1951) 11,128.
- Louth, maritime co.**, Leinster, Ireland; mountains, bog and barren land; salmon fishing; cap. Dundalk; a. 816 sq. m.; p. (1951) 68,747.
- Louvain, t.**, Belgium; univ.; lace, brewing, tobacco mfgt.; p. (1947) 36,640.
- Louviers, t.**, Eure, France; on R. Eure; cloth mfgt.; p. (1946) 10,239.
- Loveland, t.**, N. Col. U.S.A.; beet-sugar refined, vegetables, fruit canning; p. (1950) 6,773.
- Low Archipelago, see** Tuamotu Is.
- Low Countries.** Name applied to Belgium and The Netherlands. See under separate headings.
- Lowell, c.**, Mass., U.S.A.; at junction of Merrimack and Concord R.s.; 30 m. N. of Boston; textiles, machinery, chemicals, carpets; James Whistler, the artist, born here; p. (1950) 97,249.
- Lower Austria, prov.**, Austria; industri., agr.; ch. t. Vienna; a. 7,098 sq. m.; p. (1948) 1,281,301.
- Lower Saxony, Land.**, Germany; a. 18,226 sq. m. p. (1950) 6,797,379.
- Lowestoft, spt.**, mun. bor., Suffolk, Eng.; on E. Anglian cst. 9 m. S. of Gt. Yarmouth; holiday resort, fishing centre; p. (1951) 42,337.
- Lowther Hills, mtns.**, between Dumfries and Lanark, Scot.; highest point 2,403 ft.
- Loyalty Is.**, S. Pac. Oc.; included in French administration of New Caledonia; copra; largest Is., Maré, Lifou, Uvéa; a. about 800 sq. m.
- Lozère, dep.**, S.E. France; traversed by Cevennes Mtns.; agr., silkworm-rearing, stock-raising; cap. Mende; a. 1,996 sq. m.; p. (1946) 90,523.
- Lualaba, R.**, Belgian Congo, Central Africa; rises nr. Elisabethville in Katanga prov., flows N. approx. 500 m. to Kikondja, where joined by R. Lufira to form R. Congo; name also applied to main stream of R. Congo as far downstream as Ponthierville.
- Luang Prabang, c.**, Laos, Indo-China; on Mekong R.; silk, ivory, rubber; pagoda; p. 25,000.
- Luban, (Lauban) t.**, Lower Silesia, Poland; p. 8,149.
- Lubao, t.**, Luzon, Philippine Is.; sugar, alcohol.
- Lübben, t.**, Germany; on R. Spree; gherkins; p. 5,000.
- Lubbock, t.**, N. Texas, U.S.A.; p. (1950) 71,747.
- Lübeck, spt.**, Germany; cap. Schleswig-Holstein; on R. Trave; shipbuilding, machinery, chemicals, brewing; p. (1950) 238,276.
- Lublin, prov.**, E. Poland; agr.; a. 10,834 sq. m.; p. (estd. 1950) 1,655,179.
- Lublin, t.**, prov. cap., Poland; textiles, agr. trade; cath., 2 univs.; p. (estd. 1950) 101,888.
- Lubnaig, Loch.**, Perth, Scot.; drains to E. Teith by the R. Leny.
- Lubny, t.**, Ukraine, U.S.S.R.; on rly. E. of Kiev; p. 23,332.
- Lubsko, t.**, W. Poland (formerly German); p. 10,578.
- Lucca, c.**, cap. Lucca, Tuscany, Italy; nr. Pisa; cath., many churches; jute mfgt., tobacco, silk, cotton, and oil-refining industries; p. (1951) 87,454.
- Lucena, t.**, Cordoba, Spain; brandy, wine, textiles, pottery; p. 23,000.
- Lucena, commune.**, S. Spain; metallurgy; leather, pottery, linen; horse-breeding; p. 32,687.
- Lucenec, t.**, Czechoslovakia, on Hungarian border; industr.
- Lucera, t.**, Apulia, Italy; 8 m. W. of Foggia; cas., cath.; silk mfgt.; p. 17,000.
- Lucerne (Luzern), can.**, Switzerland; agr., pastoral, vineyards; cap. Lucerne, a. 576 sq. m.; p. (1950) 223,249.
- Lucerne (Luzern), t.**, cap., Lucerne can., Switzerland; at W. end of L. Lucerne, 45 m. E. of Berne; light industries; impt. tourist centre; p. (1950) 60,526.
- Lucerne, L.**, Switzerland; also known as Lake of the Four Cantons; length 23 m.
- Luckenwalde, t.**, Germany; on R. Nuthe; S. of Berlin; iron, brewing, cloth, hats; p. 24,791.
- Lucknow, c.**, Uttar Pradesh, India; on R. Gumbi; rly. centre, muslin embroidery, brocade mfgt.; famous defence of L. in Indian Mutiny 1857; p. (1951) 496,861.
- Lüdenscheid, t.**, Westphalia, Germany; S.E. of Barmen; hardware; p. 33,000.
- Lüderitz, t.**, S.W. Africa; on cst. of Kalahari desert; linked by rly. to S. African rly. system at De Aar; diamonds; p. 3,307.
- Ludhiana, t.**, E. Punjab, India; nr. R. Sutlej, W. of Simla; p. (1951) 153,795.
- Ludington, t.**, Michigan, U.S.A.; on Lake M.; wood-working; p. (1950) 9,506.
- Ludlow, mkt. t.**, mun. bor., Salop, Eng.; at foot of Cleve Hills on R. Teme; flour, tanning; p. (1951) 6,455.
- Ludwigsburg, t.**, Germany; N. of Stuttgart; arsenal; iron, chemicals, textiles; p. 49,635.
- Ludwig's Canal.**, Germany; unites Rs. Danube and Main; length 110 m.
- Ludwigshafen, t.**, Germany; on R. Rhine, opposite Mannheim; chemicals, marine diesel engines; p. (1950) 123,869.
- Lufkin, c.**, Texas, U.S.A.; lumber, engineering; food products; p. (1950) 15,135.

**Lug.**, trib. of R. Wye, Hereford, Eng.  
**Lugano**, *t.*, Ticino, Switzerland; on L. Lugano; tourist centre, silk, paper; p. (1941) 17,030.  
**Lugano**, *L.*, Italy-Switzerland; length 16 m.  
**Lugansk**, see Voroshilovgrad.  
**Lugau**, *t.*, Saxony, Germany; coal, iron smelting, chemicals, textiles; p. 10,619.  
**Lugnaquilla**, *mtn.*, Wicklow, Ireland; highest point in Wicklow Mtns., alt. 3,039 ft.  
**Lugo**, *prov.*, N.W. Spain; fisheries, leather; cap. Lugo; a. 3,815 sq. m.; p. (1950) 508,916.  
**Lugo**, *t.*, *prov. cap.*, Spain; on R. Minho; tanning, textiles; p. (1950) 53,743.  
**Lukow**, *t.*, Poland; E. of Lodz; p. 8,513.  
**Lukuga**, intermittent outlet of L. Tanganyika, Africa, linking with R. Congo.  
**Luleå**, *spt.*, N. Sweden; on Lule R. at head of G. of Bothnia; exports iron ore, timber, leather (reindeer hides); p. (1951) 22,514.  
**Lulworth Cove**, *sm. inlet*, Dorset Eng.; on S. est., 9 m. E. of Weymouth; formed by sea breaching hard coastal rocks and eroding softer rocks behind; tourists.  
**Lumbira**, *t.*, on N. shore of L. Nyasa, Tanganyika.  
**Lund**, *t.*, Sweden; nr. Malmö; ironwks., sugar refining; univ.; p. (1951) 33,954.  
**Lundy I.**, Bristol Channel; 12 m. N.W. of Hartland Point, N. Devon, Eng.; 2½ m. long by 1 m. wide.  
**Lune**, *R.*, Lancs and Westmorland, Eng.; flows 45 m. to Irish Sea.  
**Lüneburg**, *t.*, Germany; S.E. of Hamburg, on Ilmenau R.; cement, salt, beer, chemicals; old buildings; p. 28,899.  
**Lünen**, *c.*, Westphalia, Germany; coal, iron foundries; p. 23,782.  
**Lunenburg**, *t.*, *spt.*, Nova Scotia, Canada; shipbuilding, fishing; p. (1941) 2,727.  
**Luneville**, *t.*, Meurthe-et-Moselle, France; S.E. of Nancy, on R. Meurthe; cottons, woollens, hosiery, porcelain; p. (1946) 24,668.  
**Lungchow**, *t.*, Kwangsi, China; nr. Vietnam frontier; military stn.; p. 13,600.  
**Lungi**, *t.*, Sierra Leone, Brit. W. Africa; nr. Free-town; only civil airport in colony.  
**Lunkiang**, see Tsitsihar.  
**Lupata Gorge**, Mozambique, Port. E. Africa; narrow pass occupied by R. Zambesi.  
**Lurgan**, *t.*, *mun. bor.*, Armagh, N. Ireland; textiles, tobacco mfg.; p. (1951) 16,181.  
**Luristan**, *prov.*, W. Persia; grain, carpets.  
**Lusaka**, *t. cap.*, N. Rhodesia; p. (1950) 26,100.  
**Lushan**, see Port Arthur.  
**Lüta**, Manchuria, China; joint name for Dairen and Port Arthur; see also under separate headings; p. (estd. 1952) 1,054,000.  
**Luton**, *t.*, *mun. bor.*, Beds, Eng.; in Chiltern Hills nr. source of R. Lea; hat-making, cars, light engineering products; p. (1951) 110,370.  
**Lutsk**, *t.*, Ukraine, U.S.S.R.; commerce centre, mnfs.; p. 15,760.  
**Luxembourg**, *prov.*, S.E. Belgium; on French border; wooded and hilly; a. 1,705 sq. m.; cap. Arlon; p. (1947) 213,297.  
**Luxembourg**, *grand duchy*, Europe; on borders of France, Germany, Belgium; upland, much over 1,000 ft.; very impt. deposits of iron ore; cap. Luxembourg; a. 999 sq. m.; p. (1950) 298,578.  
**Luxembourg**, *t.*, *cap.*, Luxembourg; in S. of Grand Duchy; iron and steel, heavy engineering, leather, paper industries; p. (1948) 61,996.  
**Luxor**, *vil.*, Upper Egypt; on E. bank of R. Nile; site of Thebes; ruined temples; p. 5,000.  
**Luzern**, see Lucerne.  
**Luzerne**, *bor.*, Penns., U.S.A.; on Susquehanna R.; p. (1950) 6,176.  
**Luzon**, *I.*, largest in Philippines; mtns.; cotton, coffee, sugar, cereals, coal, copper; cap. Manila; a. 40,420 sq. m.; p. 4,000,000.  
**Lvov**, *c.*, Ukraine, U.S.S.R.; ceded by Poland 1939; univ., 3 cath.; iron goods, leather, liquor mfg.; p. (1939) 312,231.  
**Lyallpur**, *t.*, W. Punjab, Pakistan; agr., cotton mnfs.; p. (1951) 179,144.  
**Lyck**, see Elk.  
**Lydd**, *mkt. t.*, *mun. bor.*, Kent, Eng.; on Romney Marsh, 4 m. S.W. of New Romney; malting. "lyddite" shells; p. (1951) 2,774.  
**Lydda**, *t.*, Israel; rly. junc., airport; p. (1946) 20,000.  
**Lydenburg** (Leydenburg), *t.*, Transvaal, S. Africa; gold, farming (cotton, wheat, sheep); p. 3,832.

**Lydford**, *par. and vil.*, Devon, Eng.; old stannary centre for Devon; p. 2,200.  
**Lydney**, *par.*, Gloucester, Eng.; in Forest of Dean; iron, coal; p. 4,158.  
**Lyell**, *mtn.*, Stanley Range, N.S.W., Australia; alt. 2,000 ft.  
**Lyell**, *mtn.*, California, U.S.A.; in Sierra Nevada; alt. 13,190 ft.  
**Lyme Regis**, *spt.*, *mun. bor.*, Dorset, Eng.; on bdy. between Devon and Dorset; holiday resort, lime, cement; p. (1951) 3,191.  
**Lymington**, *t.*, *mun. bor.*, Hants, Eng.; on The Solent at mouth of R. Beaulieu; small spt., yachting; p. (1951) 22,674.  
**Lynton**, *t.*, *urb. dist.*, Cheshire, Eng.; 5 m. W. of Altrincham; residt.; p. (1951) 6,410.  
**Lyndbrook**, *t.*, Long I., N.Y., U.S.A.; p. (1950) 17,314.  
**Lynchburg**, *c.*, Virginia, U.S.A.; footwear, agr. implements, tobacco; p. (1950) 47,727.  
**Lyndhurst**, *t.*, N.J., U.S.A.; synthetic perfumery; p. (1950) 19,980.  
**Lynher**, *R.*, Cornwall, Eng.; length 26 m.  
**Lynn**, *spt.*, Mass., U.S.A.; footwear, electrical appliances; p. (1950) 99,738.  
**Lynn Canal**, *fiord*, Alaska, U.S.A.; continuation of Chatham strait.  
**Lynton**, *t.*, *urb. dist.*, N. Devon, Eng.; 17 m. W. of Minehead on Bristol channel; seaside *t.*, tourist centre; p. (1951) 2,123.  
**Lynwood**, *t.*, S.W. Cal., U.S.A.; engineering; p. (1950) 25,823.  
**Lyons**, *c.*, Iowa, U.S.A., on Mississippi R.; p. (1950) 15,267.  
**Lyons**, *R.*, Perth, Scot.; trib. of R. Tay; length 38 m.  
**Lyonnais**, *mtns.*, France; W. of Lyons.  
**Lyons**, *c.*, *cap.*, Rhône dep., France; at confluence of R. Saône and Rhône; commerce centre, silk, rayon, chemicals, engineering; univ.; p. (1946) 460,748.  
**Lyons**, *t.*, N.Y., U.S.A.; on Erie canal; p. (1950) 4,217.  
**Lys**, *R.*, Belgium and France, trib. of R. Scheldt; length 100 m.  
**Lysterfiord**, N.E. arm of the Sogne fiord, Norway; length 26 m.  
**Lytham St. Annes**, *t.*, *mun. bor.*, N. Lancs, Eng.; on N. est. of Ribble estuary, 4 m. S. of Blackpool; holiday centre, shipbuilding; p. (1951) 30,298.  
**Lyttelton**, *spt.*, S.I., New Zealand; on N. est. of Banks Peninsula; ch. pt. of Canterbury Plain; exports mutton, wool, wheat; p. (1951) 3,686.  
**Lyublin**, *t.*, U.S.S.R.; S. of Moscow; p. (1939) 64,332.

## M

**Ma'an**, *t.*, Jordan, connected by good road to Amman; p. 8,000.  
**Maas**, *R.*, Dutch name for the R. Meuse after it has entered the Netherlands.  
**Maasin**, *municipality*, S.W. Leyte, Philippine Is.; coast tr.; hemp; p. 29,264.  
**Maastricht**, *t.*, *cap.*, Limburg, Netherlands; on R. Meuse; pottery, glass, textiles, brewing; p. (1951) 79,490.  
**Mabelthorpe and Sutton**, *t.*, *urb. dist.*, Lindsey, Lincs, Eng.; on E. est., 15 m. N. of Skegness; holiday resort; p. (1951) 5,394.  
**Macao**, *Port. terr.*, S. China; consists of peninsula and 2 sm. Is. (Taipa and Colôane) to S. of estuary of Canton R.; a. 6 sq. m.; p. (1950) 187,772 (inc. 2,719 Europeans).  
**Macao**, *c.*, Macao terr., S. China; occupies peninsula section of the terr.; impt. fisheries; p. (1950) 166,544.  
**Macapá**, *cap.*, Amapá St., Brazil; at mouth of R. Amazon; p. 1,012.  
**Macará**, *t.*, Ecuador; p. 10,262.  
**Macassar**, *ch. t.*, *pt.*, Celebes, Indonesia; p. 84,900.  
**Macassar**, *strait*, Indonesia; separates Borneo from Celebes; 240 m. wide.  
**Macau**, *spt.*, Rio Grande do Norte, Brazil; p. 6,656.  
**Macclesfield**, *t.*, *mun. bor.*, Cheshire, Eng.; at foot of Pennines, 10 m. S. of Stockport; on It. Bollin; mkt., silk mfg. centre; cotton, coal, slate; p. (1951) 35,981.



- Macdonnell Range**, *mtns.*, Northern Terr., Australia; highest part of desert tableland, centrally situated within the continent; some gold and mica mines, but development hampered by aridity and isolation; highest alt. 4,482 ft.
- Macduff**, *spt. burgh*, Banff, Scot.; 2 m. E. of Banff; fishing; p. (1951) 3,322.
- Macedonia**, *dist.*, Greece; cereals, tobacco, fruit, opium, fishing; p. (1951) 1,690,455.
- Macedonia**, *federal unit*, Yugoslavia; cap. Skopje; a. 10,598 sq. m.; p. (1948) 1,152,054.
- Maceio**, *spt., cap.*, Alagoas St., Brazil; cotton, sugar; p. (1950) 124,544.
- Macequece**, *t.*, Manica *dist.*, Mozambique; p. 9,284.
- Macerata**, *prov.*, Italy, a. 1,070 sq. m.; p. (1951) 300,963.
- Macerata**, *prov. cap.*, Italy; cath., univ.; terracotta, glass, chemicals; p. (1951) 31,423.
- Macgillivuddy's Reeks**, *mtns.*, Kerry, Ireland; highest peak, Carruntuohill, alt. 3,414 ft.
- Machala**, *t.*, S.W. Ecuador; cocoa, coffee, leather; gold; p. (1938) 7,730.
- Machynlleth**, *t., urb. dist.*, Montgomery, Wales; on R. Dovey; tourist centre; p. (1951) 1,875.
- Macintyre**, *R.*, N.S.W., Australia; forms border between Queensland and N.S.W.; trib. of R. Darling; length 350 m.
- Mackay**, *spt.*, Queensland, Australia; on R. Pioneer; gold, sugar, dairying and banana centre; p. (1947) 13,500.
- Mackenzie**, *dist.*, N.W. Terrs., Canada; a. 527,490 sq. m.; forests and tundra; oil, radium, uranium; furs and timber.
- Mackenzie**, *R.*, N.W. Terrs., Canada; rises in Rocky Mts. as Athabaska R. and flows into L. Athabaska, leaves as Slave R. and thence into Gr. Slave L. which its leaves as M. R. into Beaufort Sea; length 2,350 m.
- Mackinac Sound**, connects Ls. Michigan and Huron N. America.
- Mackinney**, *c.*, N.E. Texas, U.S.A.; cotton centre; p. (1950) 10,560.
- Macleod**, *t.*, S. Alberta, Canada; agr., livestock, coal; p. (1941) 1,649.
- Macmillan**, *R.*, N.W. Terrs., Canada; trib. of Yukon R.
- Macnean**, *L.*, cos. Leitrim and Fermanagh, Ireland.
- Macomb**, *c.*, Ill., U.S.A.; industri.; p. (1950) 10,592.
- Macon**, *t., cap.*, Saône-et-Loire, France; on R. Saône; ruined cath.; agr. implements, wines, rope, copper; p. (1946) 21,073.
- Macon**, *t.*, Georgia, U.S.A.; on Ocmulgee R.; univ.; rly. junction, ironwks., cotton mftg.; p. (1950) 70,252.
- Macon**, *t.*, E. Miss., U.S.A.; cotton, dairying, lumbering; p. (1950) 4,152.
- Macquarie**, *I.*, Australian I., S. Pacific; 900 m. S.E. of Tasmania, Australia; seal fishery stn.; length 20 m.
- Macquarie**, *R.*, N.S.W., Australia; trib. of R. Darling; length 350 m.
- Macroon**, *t.*, Cork, Ireland; on R. Sullane; agr. trade, fishing; p. 2,230.
- Mactan**, *I.*, off Cebu, Philippine Is.; mangroves, coconuts; a. 24 sq. m.; p. 40,103.
- Madagascar**, *I.*, lge. French I. off E. est. of Africa; agr., livestock; cap. Tananarive; ch. spt. Tamatave; a. 241,094 sq. m.; p. (1948) 4,295,372 (including Mayotte and Comoro Is.).
- Madang**, *t.*, Papua-New Guinea; copra cen.; p. 500.
- Madawaska**, *t.*, Me., U.S.A.; spt.; lumber, pulp, paper-mills; p. (1950) 2,975.
- Madawaska**, *R.*, Ontario, Canada; trib. of Ottawa R.; length 230 m.
- Maddalena**, *I.*, off N.E. est. of Sardinia, Italy.
- Maddaloni**, *t.*, Naples, Italy; p. 21,975.
- Madeira**, *Portuguese I.*, Atlantic Ocean; wine, sugar, fruits; holiday resort; cap. Funchal; a. 315 sq. m.; p. (1950) 269,179.
- Madeira**, *R.*, Brazil; trib. of R. Amazon; length 780 m.
- Madeley**, *t.*, Salop, Eng.; on R. Severn; mkt., coal and iron mining; p. 7,300.
- Madera**, *t.*, central Cal., U.S.A.; agr., lumber, wines; p. (1950) 10,497.
- Madhya Bharat**, *state Union*, Indian Union; comprises Gwalior, Indore, Malwa; a. 46,710 sq. m.; p. (1951) 7,941,642.
- Madhya Pradesh**, *state*, Indian Union; formerly Central Provinces and Berar; upland and plains, includes Vindhya range; rice, jute, pulses, oilseeds, cotton; forests; manganese, coal, marble, limestone; cotton textiles; cap. Nagpur; a. 130,323 sq. m.; p. (1951) 21,327,898.
- Madinet El Faiyum**, *see El Faiyum*.
- Madison**, *c.*, Indiana, U.S.A.; on Ohio R.; mftg.; p. (1950) 7,506.
- Madison**, *t.*, Ill., U.S.A.; heavy engineering wks.; p. (1950) 7,963.
- Madison**, *cap.*, Wisconsin, U.S.A.; univ.; agr. tools, machinery, footwear; p. (1950) 96,056.
- Madisonville**, *t.*, Kentucky, U.S.A.; p. (1950) 11,132.
- Madoc**, *t.*, Ontario, Canada; on Deer R.; p. 1,059.
- Madras**, *state*, India; cereals, cotton, tobacco, ground-nuts, iron ore, gold, silver; ch. ts. Madras, Madurai, Trichinopoly; a. 50,362 sq. m.; p. (1951) 35,734,489.
- Madras**, *c.*, *spt.*, *cap.*, Madras, S. India; on S.E. (Coromandel) est.; cath., univ.; commerce centre, cottons, tanning, brewing, potteries; p. (1951) 1,416,056.
- Madre de Dios**, *dep.*, E. Peru; ch. t. Maldonado; forested; gold, silver; a. 58,827 sq. m.; p. (1947) 4,950.
- Madre de Dios**, *R.*, Bolivia; trib. of R. Madeira; rises in Peru.
- Madrid**, *cap.*, Spain; on R. Manzanares; univ., cath., palace; gold and silver work; leather goods; chemicals, furniture mftg.; p. (1950) 1,609,524.
- Madrid**, *prov.*, Spain; agr., freestone, granite, gypsum quarried; a. 3,089 sq. m.; cap. M.; p. (1949) 1,926,311.
- Madron**, *t.*, Cornwall, Eng.; 3 m. N.E. of Penzance; p. 3,276.
- Madura**, *I.*, Indonesia; off N.E. of Java; cereals, coconuts, fishing, cattle rearing, salt; a. 1,770 sq. m.; p. (1930) 1,962,462.
- Madura**, *c.*, Madras, India; univ.; coffee, muslin, brasswork, wood carving; p. (1951) 361,781.
- Maebashi**, *c.*, Houshu, Japan; mulberry trees, silk production; p. (1947) 79,732.
- Maelstrom**, *whirlpool*, N.W. est., Norway.
- Maentwrog**, *vil.*, Merioneth, N. Wales; in Vale of Festiniog, 2 m. E. of Festiniog; ch. hydro-electric power-station in N. Wales.
- Maesteg**, *t.*, *urb. dist.*, Glamorgan, Wales; 5 m. E. of Port Talbot; coal-mining, iron, tin-wks.; p. (1951) 23,124.
- Mafeking**, *t.*, C. Prov., S. Africa; famous siege, 1899-1900; p. 5,813.
- Magadam**, *spt.*, Khabarovsk, U.S.S.R.; on N. side of Sea of Okhotsk; new development; p. 10,000.
- Magallanes**, *prov.*, Chile; sheep-rearing; cap. Punta Arenas; a. 52,271 sq. m.; p. (1925) 55,136.
- Magdalen**, *Is.*, G. of St. Lawrence, Canada.
- Magdalena**, *dep.*, Colombia; coffee, cotton, rubber; cap. Santa Marta; a. 20,813 sq. m.; p. (1947) 426,390.
- Magdalena**, *R.*, Colombia; length 1,000 m.
- Magdeburg**, *t.*, Germany; on R. Elbe; cath.; rly. centre; beet-sugar, cereals, chemicals, silk, pottery; p. (1946) 236,326.
- Magelang**, *t.*, Java, Indonesia; trade centre; p. 52,944.
- Magellan**, *strait*, between Tierra del Fuego and Chile, S. America.
- Magenta**, *t.*, N. Italy; nr. Milan; silk, matches; p. 12,650.
- Maggiore**, *L.*, N. Italy-Switzerland; a. 82 sq. m.; contains Borromean is.; tourist resort.
- Magione**, *commune*, Cent. Italy; olives, hides; p. 10,611.
- Maglie**, *commune*, S.E. Italy; citrus fruits; p. 11,297.
- Magnet Mtn.**, *S.*, Urals, U.S.S.R.; v. rich deposit of magnetite iron ore; smelted at Magnitogorsk, and in Kuzbas region.
- Magnitogorsk**, *t.*, U.S.S.R.; at S. end of Ural Mtns.; iron, steel, engineering; p. (1939) 145,870.
- Magog**, *t.*, S. Quebec, Canada; textiles, mnfs.; p. (1941) 9,034.
- Mahabaleshwar**, *t.*, Bombay, India; in W. Ghats at alt. 4,500 ft.; health resort; p. 4,900.
- Mahad** Al-Dahab, *t.*, Hejaz, Saudi-Arabia; between Mecca and Medina; gold-mining.
- Mahalla El Kubra**, *t.*, Lower Egypt; p. (1947) 115,509.

- Mahanadi, R., India;** flows from Orissa to B. of Bengal; length 520 m.
- Mahanoy City, t., Penns., U.S.A.;** anthracite; p. (1950) 10,934.
- Mahé, former French prov., S. India;** united with India 1954; cap. Mahé; p. (1948) 18,293.
- Mahé, t., cap., Mahé, S. India;** on Malabar cst., 30 m. N. of Calicut; vanilla, fishing; p. (1948) 14,092.
- Mahon, spt. cap., Minorca, Balearic Is., Spain;** cheese; p. 18,220.
- Maidenhead, t., mun. bor., Berks, Eng.;** on R. Thames, 9 m. above Windsor; mkt., flour, brewing; p. (1951) 27,125.
- Maidens, The, group of dangerous rocks, nr. Larne,** off Antrim cst., N. Ireland.
- Maidstone, co. t., mun. bor., Kent, Eng.;** on R. Medway; hops, fruit centre; brewing, paper, agr. tools, bricks, cement; p. (1951) 54,026.
- Malkop, t., Adygeysk, U.S.S.R.;** oil-refineries; p. (1939) 67,302.
- Main, R., Germany;** trib. of R. Rhine; length 304 m.
- Main, Hudson Bay Co's. fort, at mouth E. Main R., Labrador, Canada.**
- Maine, st., New England, U.S.A.;** mtns., with much forest; potatoes, fisheries, textiles; cap. Augusta; ch. spt. Portland; a. 33,215 sq. m.; p. (1950) 913,774.
- Maine, R., France;** formed by junction of Sarthe and Mayenne, flows 7 m. to R. Loire at Angers.
- Maine-et-Loire, dep., France;** agr., vineyards; cap. Angers; a. 2,811 sq. m.; p. (1946) 496,068.
- Mainz, t., Germany;** at confluence of Rs. Rhine and Main; R. pt.; machinery, chemicals, furniture, leather, printing; p. 153,971.
- Maiquetia, spt., wal. pt., N. Venezuela;** airport; p. 13,216.
- Maison-Carée, commune, N. Algeria;** 5 m. E. of Algiers; airport; p. 24,341.
- Maisons-Alfort, S.E. sub., Paris, France;** p. 36,485.
- Maitland West, t., N.S.W., Australia;** on R. Hunter, nr. Newcastle; agr., pastoral centre, coal-mining; p. (1947) 19,151.
- Makzuru, c., spt., Honshu, Japan;** naval base; p. (1947) 29,303.
- Majorca or Mallorca, see Balearic Is.**
- Majunga, spt., Madagascar;** on N.W. cst., at mouth of R. Ikopa; p. (1946) 27,076.
- Makeyevka, t., E. Ukraine, U.S.S.R.;** industr.; p. (1939) 240,145.
- Makhachkala, spt., Azerbaijan, U.S.S.R.;** oil; machinery, engineering; p. (1939) 86,847.
- Makó, t., Hungary;** agr.; flour milling; p. (1948) 35,814.
- Makran, dist., Baluchistan, Pakistan;** a. 26,000 sq. m.; p. (estd. 1951) 143,000.
- Makurdi, t., Nigeria, Brit. W. Africa;** on R. Benue, 150 m. upstream from confluence with R. Niger at Lokoja; mkt. for palm products, ground-nuts; site of rly. bridge across R. Benue on E. main rly. from Pt. Harcourt to Kaduna.
- Makwar, vil., Anglo-Egyptian Sudan, N.E. Africa;** on R. Blue Nile, 200 m. upstream from Khartoum; site of Sennar Dam.
- Malabar Coast, India;** name applied to W. cst. of peninsula India S. of Goa; sand dunes backed by lagoons; coastlands intensively cultivated, rice, spices, rubber, coconuts; ch. pt. Cochin.
- Malacca, terr., Malaya;** a. 640 sq. m.; cap. M.; p. (1947) 239,356.
- Malacca, strait, separates Sumatra from Malay Peninsula.**
- Maladetta, with Pic d'Anethou, highest pt. in the Pyrenées;** alt. 11,168 ft.
- Malaga, Mediterranean prov., S. Spain;** agr., exports wine, fruits, olive oil; a. 2,813 sq. m.; p. (1950) 750,115.
- Malaga, spt., cap. Malaga, Spain;** cotton, sugar, leather; p. (1950) 276,222.
- Malakal, cap., Upper Nile, Anglo-Egyptian Sudan;** p. (estd. 1949) 13,000.
- Malakoff, t., S.W. Paris, France;** residtl.; p. (1946) 27,459.
- Malang, t., Java, Indonesia;** p. 86,646.
- Malange, t., central Angola, Africa;** p. 5,299.
- Mälär, L., S.E. Sweden;** connected with the Baltic by Södertelge can., has 1,260 ls.; length 80 m.; a. 477 sq. m.
- Malatya, t., cent. Turkey;** fruit, opium; p. (1945) 41,559.
- Malay Archipelago, extensive group of tropical Is.** extending 4,800 m. from the Nicobar Is. in Bay of Bengal to the Solomon Is. in the Pacific; includes Sumatra, Java, Borneo, the Celebes, the Philippines, New Guinea, the Bismarck Archipelago.
- Malay Peninsula, the most S. portion of the continent of Asia;** a. about 70,000 sq. m.
- Malaya Federation of, consists of the sts. of the Malay peninsula, and settlements of Penang and Malacca, does not include Singapore, which is a crown colony. Each st. is autonomous under British High Commissioner; ch. industries:** rice cultivation, rubber, mining, fishing; Fed. cap. Kuala Lumpur; a. 50,690 sq. m.; p. (1953) 5,706,000.
- Malbork (Marienburg), t., Poland;** on R. Nogat; timber, sugar, agr. tools; cas.; p. 10,000.
- Malden, c., Mass., U.S.A.;** mfgt. sub. of Boston; rubber goods, hosiery, furniture; p. (1950) 59,804.
- Malden, t., Mo., U.S.A.;** mkt., agr., cotton processing centre; p. (1950) 3,396.
- Malden I., (British) in Pacific Ocean;** a. 35 sq. m.; guano, uninhabited.
- Malden and Coombe, mun. bor., Surrey, Eng.;** nr. Kingston-on-Thames; light industries; p. (1951) 45,559.
- Maldiva Is., Rep., under protection of Brit. Gov., Indian Ocean;** group of 12 Coral atolls, 400 m. S.W. of Ceylon, cap. Malé; fishing, millet, fruit, nuts; a. 115 sq. m.; p. (1952) 87,000.
- Maldon, t., mun. bor., Essex, Eng.;** at head of Blackwater estuary; yachting centre, brewing, ironwks.; p. (1951) 9,721.
- Maldonado, dep., Uruguay;** a. 1,587 sq. m.; p. Maldonado, spt., Uruguay; 60 m. E. of Montevideo; p. 7,000.
- Malham Cove, W. Riding, Yorks., Eng.;** in Craven dist. of N. Pennines, 10 m. N.W. of Skipton; semi-circular amphitheatre surrounded by limestone cliffs from base of which emerges R. Aire.
- Main Head, Donegal, Ireland;** most northerly point.
- Malinao, municipality, Luzon, Philippine Is.;** hemp; p. 15,089.
- Malindi, spt., Kenya;** once cap. of Port. E. Africa; p. 1,677.
- Malines (Mechelen), c., Belgium;** on R. Dyle; cath.; rly. centre, furniture, textiles; p. (1947) 60,288.
- Malita, t., Mindanao, Philippines;** p. 30,755.
- Mallaig, vil., S.W. Inverness, Scot.;** on Sound of Sleat; rly. term.; fish; p. 1,000.
- Mallico, prov., S. Chile;** cap. Angol; a. 5,511 sq. m.; p. (1952) 156,638.
- Mallee, regions, especially N.W. Victoria, Australia;** once covered with dense eucalyptus scrub, now largely under farms.
- Malling, t., rural dist., Kent, Eng.;** 8 m. W. of Maidstone; mkt., fruit centre; p. (rural dist. 1951) 36,334.
- Mallow, mkt. t., Cork, Ireland;** on R. Blackwater; agr., fishing, flour mills, tanneries, condensed milk; p. (1946) 5,217.
- Malmédy, t., Belgium;** transferred to Belgium from Germany after the First World War; tanning, dyeing, paper-wks.; p. 5,702.
- Malmesbury, t., mun. bor., Wilts, Eng.;** on R. Avon, 8 m. N. of Chippenham; mkt.; abbey; lace, silk mfgt., brewing; p. (1951) 2,609.
- Malmesbury, t., Victoria, Australia;** on R. Campaspe, 20 m. S.E. of Bendigo; dam across R. provides water for domestic and mining purposes to Bendigo.
- Malmesbury, t., S.W. Cape Prov., S. Africa;** mineral springs; p. 5,731.
- Malmö, spt., S. Sweden;** on The Sound; exports bacon, matches; industr.; p. (1951) 192,498.
- Malmöhus, co., Sweden;** a. 1,872 sq. m.; p. (1950) 582,422.
- Malo-les-Bains, sub. of Dunkerque, Nord, France;** seaside resort; p. (1946) 10,296.
- Malone, t., N.Y., U.S.A.;** iron-mining; p. (1950) 9,051.
- Malstadt Burbach, t., Germany;** on R. Saar; ironwks.; p. 36,000.
- Malta, I., internally self-governing British col. in the Mediterranean, 60 m. S. of Sicily;** cap. Valetta; strongly fortified, arsenal, dockyard.



- military stn.: Malta received George Cross for heroism under bombing and blockade in Second World War; a. (Inc. Gozo and Comino) 122 sq. m.; p. (1952) 315,000.
- Malby**, *urb. dist.*, W. Riding, Yorks, Eng.; p. (1951) 12,485.
- Malton**, *mkt. t., urb. dist.*, N.R. Yorks, Eng.; on R. Derwent, in S.W. of Vale of Pickering; brewing, ironwks.; p. (1951) 4,235.
- Maluti**, *mtn. range*, Basutoland, S. Africa; highest peak Machacha, alt. 10,990 ft.
- Malvern or Great Malvern**, *t., urb. dist.*, Worcester, Eng.; at E. foot of Malvern Hills; spa; scholastic centre; well-known dramatic festival held yearly; p. (1951) 21,681.
- Malvern Hills**, *narrow ridge* forming bdy. between Worcester and Hereford, Eng.; rises very abruptly from Severn Valley to over 1,000 ft. between Malvern and Bromsberrow; moorland, woodland on lower slopes; length, 8 m., width, under 1 m., maximum alt., 1,395 ft.
- Malverne**, *t.*, N.Y., U.S.A., on Long I.; residtl. sub. of New York; p. (1950) 8,086.
- Malwa**, *t.*, Poland; tanning, grain, agr. implements; p. 14,000.
- Mamaronck**, *t.*, N.Y., U.S.A.; textiles, mnfs. oils; p. (1950) 15,016.
- Mammola**, *t.*, Reggio, S. Italy; p. 9,925.
- Mammouth Caves**, Kentucky, U.S.A.; Green R.; stalactite formations in avenues aggregating 150 m. long.
- Mamore or Rio Grande**, *R.*, Bolivia; trib. of R. Beni; length 500 m.
- Mam Soul**, *mtn.*, Ross and Inverness, Scot.; alt. 3,862 ft.
- Man**, I. of, in Irish Sea; 30 m. from England (Cumberland) and N. Ireland (Down), 20 m. from Scotland (Wigtown); tourist centre; agr., sheep, lead, zinc; ch. t. Douglas; old cap. Castletown; administered according to own laws; a. 227 sq. m.; p. (1951) 55,213.
- Mana**, *R.*, Fr. Guiana, S. America; length 175 m.
- Manabi**, *prov.*, Ecuador; on W. slope of the Andes; cap. Puertoviejo; cacao, sugar; a. 7,891 sq. m.; p. (1950) 401,378.
- Manacor**, *t.*, Majorca, Spain; 30 m. from Palma; artificial pearls, wine; 7 m. from its sp. Porto Cristo; stalactite caves of Drach and Hams; p. 19,060.
- Manado**, *spt.*, Celebes, Indonesia; coffee, rice, jungle products; p. (1930) 27,544.
- Managua**, *cap.*, Nicaragua; nr. Lake M.; univ., palace; coffee; p. (1950) 107,444.
- Manama**, *cap.*, Bahrain, Is., Persian Gulf; p. (1950) 39,648.
- Mananjary**, *t.*, E. Madagascar; sugar, coffee; p. 5,000.
- Manar**, *G.*, with Palk Strait separates India from Ceylon.
- Manasarowar**, *sacred L.*, Tibet.
- Manatee**, *t.*, Fla., U.S.A.; lumber, fruit and vegetable canning; p. (1950) 3,582.
- Manaus** (Manaos), *t., cap.*, Amazonas, Brazil; at confluence of R. Negro with R. Amazon; univ.; rubber tr.; p. (1950) 142,372.
- Mancha**, *La*, *plain*, Cuidad-Real prov., S. Spain; in shallow depression on central plateau, average alt. between 1,500 and 3,000 ft., drained by headstreams of R. Guadiana; semi-arid climate with hot summers, cold winters; widespread salt deposits; Merino sheep, esparto grass; Spain's lgst. grape-growing reg.
- Manche**, *maritime dep.*, N.W. France; on English Channel; agr. and dairying; cap. Saint Lo; ch. port Cherbourg; a. 2,475 sq. m.; p. (1946) 435,468.
- Manche**, *La*, see English Channel.
- Manchester**, *c., spt., co. bor.*, S. Lancs., Eng.; on R. Irwell (which separates it from Salford); inland terminus of Manchester Ship Canal; centre of cotton trade and industry; also engineering, paper, foodstuffs and many other industries; gr. commercial, cultural and recreational cap. of N.W. England; p. (1951) 703,175.
- Manchester**, *t.*, E. Iowa, U.S.A.; tr. centre; flour milling; woollen goods; p. (1950) 3,987.
- Manchester**, *c.*, New Hampshire, U.S.A.; at Amoskeag Falls, on the Merrimac R.; textiles, footwear, machinery; p. (1950) 82,732.
- Manchester**, *t.*, Conn., U.S.A.; textiles (silk); p. (1950) 34,116.
- Manchester Ship Canal**, *ship canal*, S. Lancs., Ches., Eng.; joining Manchester to Mersey estuary at Eastham; can be used by ocean steamers; length 35½ m.
- Manchuria**, *Chinese outer terr.*, comprises nine provs.—Liaoning, Kirin, Heilungkiang, Liaopoh, Nunkiang, Hsingan, Sunkiang, Hokiang, and Antung; mountainous, N.W. and E.; drained to N. by Sungari and S. by Liao Ra.; forested; soya-beans, wheat, coal, iron, gold, silver; a. 503,013 sq. m.; cap. Changchun; p. (1940) 42,283,954.
- Mandal**, *t.*, Norway; p. 3,975.
- Mandalay**, *c.*, Upper Burma; on the R. Irrawaddy, 400 m. N. of Rangoon; formerly cap. of kingdom; silk, old carved wooden palace, and many pagodas; p. (1941) 163,587.
- Mandaue**, *t.*, Cebu, Philippines; rice.
- Manduria**, *t.*, Italy; tr. centre; p. 17,675.
- Mandvi**, *spt.*, Kutch, India; p. (1941) 22,638.
- Manfalut**, *t.*, Upper Egypt; on R. Nile; p. 5,000.
- Manfredonia**, *spt.*, Foggia, Italy; cath.; cereals, fruit; p. 18,600.
- Mangaldan**, *t.*, Luzon, Philippines; rice.
- Mangalore**, *spt.*, Madras, India; exports coffee, coconuts, rice, spices; p. (1951) 117,093.
- Mangerton**, *mtn.*, Kerry, Ireland.
- Mangum**, *t.*, S.W. Okla., U.S.A.; mkt., flour, mills, cotton; granite; p. (1950) 4,271.
- Manhattan**, *I.*, N.Y., U.S.A.; at mouth of Hudson R.; a. 22 sq. m., forms major part of bor. of Manhattan (p. (1950) 1,938,551) of N.Y. City.
- Manica and Soiala**, *prov.*, Mozambique; comprises dists. of Beira and Tete; cap. Beira.
- Manihiki**, Cook Is., New Zealand; p. 454.
- Manila**, *ch. t., spt.*, Luzon, Philippines; univ., cath.; tobacco, clothing, liquor; tr. centre; p. (1948) 1,024,557.
- Manipur**, centrally administered area, India; rice, cotton, fruits; cap. Imphal; a. 8,620 sq. m.; p. (1951) 579,058.
- Manisa**, *t.*, Turkey; commerce centre, cotton, silk; p. (1945) 32,142.
- Manistee**, *c.*, Mich., U.S.A.; on L. Michigan; timber, salt, fruit; p. (1950) 8,642.
- Manistique**, *t.*, Mich., U.S.A.; on M. R.; p. (1950) 5,086.
- Manitoba**, *prov.*, Canada; wheat, minerals, furs; cap. Winnipeg; a. 246,512 sq. m.; p. (1951) 776,541.
- Manitowoc**, *c.*, Wisconsin, U.S.A.; on L. Michigan; shipbuilding, iron, aluminium goods, flour; p. (1950) 27,598.
- Manizales**, *cap.*, Caldas dep., Colombia; coffee; p. (1951) 94,826.
- Mankato**, *c.*, Minn., U.S.A.; agr. tools, flour, brewing; p. (1950) 18,809.
- Mannar**, Gulf of, see Manar.
- Mannheim**, *t.*, Germany; on R. Rhine; commerce centre, machinery, motors, glass, carpets, electro-technical industry; p. (1950) 245,634.
- Manningtree**, *mkt. t.*, Essex, Eng.; at head of Stour estuary; p. 790.
- Manopello**, *t.*, Pescara, Italy; p. 5,750.
- Manorhamilton**, *t.*, Leitrim, Ireland; rly. wks.; p. 1,012.
- Manresa**, *t.*, Spain; textiles, paper, chemicals ironwks.; p. 36,381.
- Mans**, *Le*, see Le Mans.
- Mansel**, *I.*, Hudson Bay, Canada; S.E. of Coats I.
- Mansfield**, *t., mun. bor.*, Notts, Eng.; on E. flank of Pennines, 12 m. N. of Nottingham; iron, coal, hosiery, lace, footwear mftg.; p. (1951) 51,343.
- Mansfield**, *t.*, Mass., U.S.A.; textiles, engineering; confectionery; p. (1950) 4,808.
- Mansfield**, *c.*, Ohio, U.S.A.; machinery, farm tools, paper, rubber goods; p. (1950) 43,564.
- Mansfield Woodhouse**, *t., urb. dist.*, Notts, Eng.; 2 m. N. of Mansfield; stone quarries; Roman remains; p. (1951) 17,819.
- Mansura**, *t.*, Lower Egypt; cotton mftg.; p. (1947) 102,709.
- Mantes**, *t.*, Seine-et-Oise, France; on R. Seine; cath.; agr. produce, hosiery, musical instruments; p. (1946) 13,131.
- Mantiqueira**, *mtn. range*, Brazil; N.W. of Rio de Janeiro; highest peak Itatiaia 9,255 ft.
- Mantua**, *prov.*, Italy; a. 903 sq. m.; p. (1951) 423,609.
- Mantua**, *t.*, N. Italy; on R. Mincio; ironwks.; p. (1951) 53,693.
- Manukau Harbour**, N.I., New Zealand; lge. shallow inlet on W. cst. of Auckland Peninsula

- which is here less than 6 m. wide; provides additional harbour facilities for spt. of Auckland, but shallow water limits usefulness; mainly used for recreational sailing.
- Manyach, R.,** U.S.S.R.; trib. of R. Don; length 300 m.; canal is being built through R. to the Caspian to provide through connection with Black Sea.
- Manzala (Menzala), lagoon,** Mediterranean est., Egypt, N.E. Africa; extends E. from Damietta mouth of Nile to Pt. Said; fringed by salt marsh; a. 800 sq. m.
- Manzanares, R.,** Spain; trib. of R. Jarama.
- Manzanares, t.,** Spain; 30 m. E. of Ciudad Real; soap, bricks, pottery mfg., agr. produce; p. 13,451.
- Manzanillo, spt.,** Cuba; exports sugar, tobacco, timber and beeswax; commerce centre; p. (1943) 79,349.
- Manzanillo, spt.,** Colima, Mexico; p. (1940) 6,331.
- Maaka, spt.,** W. Sakhalin I., U.S.S.R.; ice-free in winter; p. 17,879.
- Mar, ancient dist.,** Aberdeen, Scot.; between Rs. Don and Dee.
- Maracaibo, spt., cap.,** Zulia st., Venezuela; on W. of narrow entrance to L. Maracaibo; oil, coffee, cocoa, and hide exports; shipbuilding; p. (1950) 232,488.
- Maracaibo, G. and L.,** Zulia st., Venezuela, S. America; lge. fresh-water lake, 120 m. long, 60 m. wide; too shallow for lge. ships; oil-wells on fringes and drilled into lake floor.
- Maracay, t.,** W. Venezuela; centre of the civil service; p. (1950) 65,761.
- Maragha, t.,** Persia; on N. end of L. Urmia; p. 15,300.
- Marajó, I.,** at mouth of the Rs. Amazon and Pará, Brazil; a. 173 sq. m.
- Maranhão, st.,** N.E. Brazil; rice, cotton, sugar, tobacco, coffee, cattle, gold, copper; cap. São Luiz; a. 129,271 sq. m.; p. (1950) 1,600,396.
- Marañon, R.,** see Amazon, R.
- Marans, t.,** Charente Inférieure, France; industr.; p. (1946) 3,707.
- Maras, t.,** S. cent. Turkey; tr. in Kurdish carpets; p. (1945) 36,404.
- Marathon, plain,** Greece; battle between Greeks and Persians 490 B.C.
- Marazion, mkt. t.,** Cornwall, Eng.; on Mount's Bay; pilchard fisheries; p. 1,100.
- Marbella, spt.,** Malaga, Spain; cas.; porcelain mfg., exports fish, fruits, cork; p. 8,932.
- Marble, I.,** Keewatin, N.W. Terrs., Canada.
- Marble Bar, t.,** W. Australia; located 85 m. inland by rail from Pt. Hedland; centre of gold-mining area.
- Marblehead, spt.,** Mass., U.S.A.; holiday resort, footwear; p. (1950) 13,765.
- Marburg, t.,** Hesse, W. Germany; univ.; engineering, pottery, tobacco; p. 27,900.
- Marcaraia, t.,** Italy; on R. Oglio; industr.; p. 10,475.
- March, mkt. t., urb. dist.,** I. of Ely, Eng.; in Fens, 12 m. N.W. of Ely; impt. rly. junction; mkt., farm tools; p. (1951) 12,993.
- Marchena, t.,** Spain; on R. Guadalquivir; mftg.; p. 12,500.
- Marches, The, region,** Italy; on Adriatic est. between Abruzzi and Emilia; embracing provs. of Marcerata, Ascoli-Piceno, Ancona, and Pesaro and Urbino; maize, wine, tobacco, silk, paper; a. 3,744 sq. m.; p. (1951) 1,361,517.
- Marchienne-au-Pont, t.,** Belgium; on R. Sambre; tr. centre.
- Marq-en-Barœul, commune,** sub. Lille, Nord, France; textiles, foundries; p. (1946) 19,163.
- Marcus Hook, t.,** Del., U.S.A.; on right bank of R. Del. 15 m. below Philadelphia.
- Mar del Plata, t.,** Argentina; on C. Corrientes; p. (1947) 104,513.
- Mardin, t.,** Turkey; agr., textiles; p. (1945) 18,519.
- Marée, L.,** Ross and Cromarty, Scot.; length 12½ m., breadth 2½ m.; contains many islands.
- Maréotis or Birket-et-Mariut, L.,** Lower Egypt; separated from Mediterranean by ridge of sand on which stands Alexandria; length 50 m., width 20 m.
- Margam, vil.,** Glamorgan, S. Wales; on est. of Swansea Bay, 4 m. S.E. of Pt. Talbot; lge. new steel-works, lgst. steel-rolling mill in Europe.
- Margarita, I.,** Venezuela; in the Caribbean S.; pearl fisheries; a. 450 sq. m.; cap. Asuncion.
- Margate, t., mun. bor.,** Kent, Eng.; W. of N. Foreland, in the Isle of Thanet; seaside resort; p. (1951) 42,487.
- Margelan, t.,** E. Uzbek S.S.R.; agr. centre, tr. esp. cotton and silk; p. 44,000.
- Mari, autonomous Soviet Socialist rep.,** U.S.S.R.; cap. Ioshkar Ola; p. 607,374.
- Maria Elena, t.,** Antofagasta, N. Chile; nitre processing; p. (1940) 9,215.
- Mariana, t.,** Minas Gerais, Brazil; tr. centre.
- Marianas, archipelago, N. Pacific;** 14 Is.; a. 246 sq. m.; administrative centre, Saipan; p. (1935) 39,728 Japanese, 4,297 natives.
- Mariánské Lázně (Marienbad), t.,** Czechoslovakia; spa; p. 8,417.
- Maribor, t.,** Slovenia, Yugoslavia; fruit centre, leather goods, wine, rly. works; p. (1948) 33,149.
- Marie Galante, I.,** Lesser Antilles group; Fr. possession; sugar-cane; p. (1946) 29,349.
- Marienberg, see** Malbork.
- Marienburg, see** Kwidzyn.
- Marietta, t.,** Ohio, U.S.A.; on confluence of Muskingum R. with Ohio R.; timber, ironwks., coal, oil, natural gas; p. (1950) 16,006.
- Marigliano, t.,** Campagna, Italy; p. 14,165.
- Mariinsk Canal, U.S.S.R.;** system of canals and canalised Rs. linking R. Volga nr. Rybinsk with L. Onega; with Stalin Canal and Moscow-Volga Canal it gives through access by inland waterway from Moscow to Leningrad; overall length of canal approx. 350 m.
- Marin, spt.,** N.W. Spain; fishing; textiles; p. 16,294.
- Marinette, t.,** Wisconsin, U.S.A.; on L. Michigan; paper, pulp, timber; p. (1950) 14,178.
- Marino, t.,** Sicily, Italy; p. 6,625.
- Marion, c.,** Indiana, U.S.A.; natural gas, iron, paper, glass, wireless sets; p. (1950) 30,081.
- Marion, t.,** Ohio, U.S.A.; agr. implements, steam shovels, tractors; p. (1950) 33,317.
- Marion, c.,** S. Ill., U.S.A.; fruit; coal; engineering; p. (1950) 10,459.
- Maritime Alps, mtn. ranges, S. France-Italy.**
- Maritime Provinces, embraces** Canadian provs. of Nova Scotia, New Brunswick, Pr. Edward I.
- Maritsa, R.,** Bulgaria and Greece; length 260 m.
- Maritzburg, see** Pietermaritzburg.
- Mariupol, see** Zhdanov.
- Marken, f., nr. Amsterdam,** Netherlands; tourist centre.
- Market Deeping, t.,** Lincoln, Eng.; on R. Welland; brewing, rope; p. 876.
- Market Drayton, t., urb. dist.,** Salop, Eng.; on R. Tern 5 m. S. of Newcastle-under-Lyme; ironwks., agr. implements, brewing; p. (1951) 5,638.
- Market Harborough, t., urb. dist.,** Leicestershire, Eng.; on R. Welland, 8 m. N.W. of Kettering; footwear, rubber, hosiery; p. (1951) 10,401.
- Market Rasen, t., urb. dist.,** Lindsey, Lincoln, Eng.; 14 m. N.E. of Lincoln; agr. centre, brewing; p. (1951) 2,133.
- Market Weighton, t.,** N.R. Yorks, Eng.; malting, iron; p. 1,735.
- Markinch, burgh, Fife, Scot.;** 8 m. N. of Kirkcaldy; paper mftg.; p. (1951) 2,306.
- Marks (Marktadt), t.,** U.S.S.R.; on R. Volga; agr. centre; p. 12,457.
- Mariboro, c.,** Mass., U.S.A.; boot mnf.; p. (1950) 15,756.
- Marlborough, t., mun. bor.,** Wilts, Eng.; on R. Kennet in heart of Marlborough Downs; agr., tanning, brewing; public school; p. (1951) 4,556.
- Marlborough, prov. dist.,** S.I., New Zealand; pastoral; a. 4,220 sq. m.; cap. Blenheim; p. (1951) 22,918.
- Marlborough Downs, hills,** Wilts, Eng.; chalk; highest point, Milk Hill, 976 ft.
- Marlin, t.,** Texas, U.S.A.; hot artesian water; oil; cotton; dairying; p. (1950) 7,099.
- Marlow, t., urb. dist.,** Bucks, Eng.; on R. Thames; mkt., tourist centre; lace, chair mftg.; p. (1951) 6,480.
- Marmande, t.,** Lot-et-Garonne, France; on R. Garonne; brandy, liqueur, woollens, iron; p. (1946) 12,101.
- Marmara, sea,** separates Europe from Anatolia.
- Marmolata, highest point of** Dolomite Alps, S. Tyrol, Italy; alt. 11,045 ft.



- Marne, R., Central France: rises in Plateau de Langres, flows N.W. and W. across Champagne Humide, Champagne Pouilleuse, and Beauce, joins R. Seine just above Paris; with Marne-Rhine and Marne-Saône Canals it forms impt. inland waterway linking Seine with Rhine and Rhône valleys; length (approx) 325 m.
- Marne, *dep.*, N.E. France; agr., wines, textiles, minerals; cap. Châlons-sur-Marne; a. 3,168 sq. m.; p. (1946) 386,926.
- Marne, Haute, *dep.*, France; a. 2,420 sq. m.; cap. Chaumont; p. (1946) 181,840.
- Maros, R., Hungary; trib. of R. Theiss; length 400 m.
- Marple, *t.*, *urb. dist.*, Cheshire, Eng.; 3 m. E. of Stockport; cotton, mftg.; p. (1951) 13,063.
- Marquesas, *island group* (French), Pacific Ocean; a. 480 sq. m.; largest is. Nukuhiva and Hiva-oa; bananas, sugar-cane, copra.
- Marquette, *c.*, Mich., U.S.A.; on L. Superior; iron-ore deposits, timber, rly. wks.; p. (1950) 17,202.
- Marradi, *t.*, Italy; p. 8,275.
- Marrakesh, *c.*, Fr. Morocco; tourist centre, leather goods; p. (1946) 237,800.
- Marree, *sm. t.*, S. Australia; 70 m. S. of L. Eyre on rly. from Pt. Augusta to Alice Springs; terminus of overland stock route from Queensland.
- Marsala, *spt.*, Sicily, Italy; wine centre; p. 71,295.
- Marsciano, *t.*, Umbria, Italy; industri.; p. 16,725.
- Marseilles, *t.*, N. Ill., U.S.A.; paper, bricks; p. (1950) 4,514.
- Marseilles, *c. spt.*, cap. Bouches-du-Rhône, S. France; cath., univ., palace; commercial port, coal, iron, bauxites, marine engineering, aircraft, glass, agr. produce, wines; p. (1946) 636,264.
- Marshall, *c.*, Missouri, U.S.A.; p. (1950) 8,850.
- Marshall, *c.*, Texas, U.S.A.; rly. wks., canning, foundries; p. (1950) 22,327.
- Marshall, *spt.*, W. Liberia, W. Africa; exports rubber; p. 1,000.
- Marshall, *Is. group*, N. Pac. Oc.; U.S.A. trusteeship, formerly Japanese mandate; total a. 150 sq. m.; sugar-cane, copra; ch. I. Jaluit; p. 10,050.
- Marshalltown, *t.*, Iowa, U.S.A.; on I. R.; iron, steel, machinery, food canning; p. (1950) 19,821.
- Marshfield, *spt.*, Ore., U.S.A.; fishing, lumber, mining; p. (1950) 5,218.
- Marshfield, *t.*, Wisconsin, U.S.A.; mnf. centre in timber region; p. (1950) 12,394.
- Martaban, *t.*, Burma; on R. Salween.
- Martha's Vineyard, *I.*, Mass., U.S.A.; holiday resort, ch. ta. Vineyard Haven, Oak Bluffs, Edgartown; 21 m. long.
- Marti, *t.*, Cuba; sugar, sisal; p. 5,060.
- Martigny, *t.*, Valais, Switzerland; peaches, tourist resort; p. (1941) 4,307.
- Martignes, *t.*, Bouches-du-Rhône, France; nr. Marseilles; p. (1946) 11,295.
- Martina, *t.*, Italy; industri., tr. centre; p. 38,325.
- Martinborough, *t.*, S. of N. I. New Zealand; p. (1951) 970.
- Martinez, *c.*, W. Cal., U.S.A.; industri., oil refineries, copper smelting; p. (1950) 8,468.
- Martiniqne, *I.*, (French) W. Indies; cap. Fort-de-France; sugar, rum; a. 385 sq. m.; p. (1946) 261,955.
- Martinsburg, *c.*, W. Virginia, U.S.A.; in Shenandoah valley; rly. wks., cider, textiles; p. (1950) 15,621.
- Martin's Ferry, *t.*, Ohio, U.S.A.; on O.R., iron and steel mftg., coal-mining; p. (1950) 13,220.
- Marton, *t.*, N.I. New Zealand; p. 2,810.
- Martos, *t.*, Andalusia, Spain; agr. centre, wines, sulphur springs; p. 27,131.
- Marus, *t.*, Turkey; p. (1945) 36,404.
- Mary, *t.*, Turkmenistan, U.S.S.R.; cereals, fruit, livestock, carpets; p. (1939) 19,099.
- Maryborough, *t.*, Queensland, Australia; fruit centre; gold, coal, timber, sugar; p. (1947) 14,409.
- Maryborough, *t.*, Victoria, Australia; rly. centre; agr. pastoral; gold; p. (1947) 6,198.
- Maryborough, *see* Port Loughish, Ireland.
- Maryland, *st.*, U.S.A.; coal, minerals, agr. livestock, textiles, metal goods; cap. Annapolis; largest *c.* Baltimore; a. 10,577 sq. m.; p. (1950) 2,343,001.
- Marylebone, *see* St. Marylebone.
- Maryport, *mkt. t.*, *urb. dist.*, *spt.*, Cumberland, Eng.; on the Irish Sea; shipbuilding, coal, iron; p. (1951) 12,237.
- Marysville, *t.*, California, U.S.A.; fruit; p. (1950) 7,326.
- Marysville, *t.*, Kan., U.S.A.; rly. centre in rich agr. reg.; p. (1950) 3,866.
- Marysville, *t.*, Ohio, U.S.A.; mkt., grass seed, livestock; p. (1950) 4,256.
- Marvilles, *c.*, E. Tenn., U.S.A.; lumber; clothes; quarries; p. (1950) 7,742.
- Masai Land, *dist.*, S. Kenya, Africa.
- Masaya, *cap. c.* of M. dep., S.W. Nicaragua; agr., tobacco; p. (1947) 22,722.
- Masbate, *I.*, Philippines; a. 1,262 sq. m.; p. 108,800.
- Mascara, *t.*, Algeria; wine, oil, cereals; p. (1948) 35,078.
- Mascarene Is., collective name of Mauritius, Rodriguez, and Réunion, in Indian Ocean.
- Masena, *t.*, Fr. W. Africa; nr. L. Chad; cap. of Bhagirmi.
- Masham, *t.*, N.R. Yorks, Eng.; on R. Ure; 9 m. N.W. of Ripon; mkt., sheep fair; p. 1,702.
- Mashonaland, *dist.*, S. Rhodesia; gold.
- Masira, *I.*, off east of Oman, Arabia.
- Mask, *L.*, Mayo and Galmay, Ireland; length 12 m., width 2-4 m.
- Mason City, *t.*, Iowa, U.S.A.; on the Sheel Rock R.; cement, bricks, sugar-beet; p. (1950) 27,980.
- Massa or Massa e Carrara, *t.*, Italy; olive oil, paper, tobacco, marble; p. (1951) 50,192.
- Massachusetts, *st.*, New England, U.S.A.; fisheries, agr., textiles, footwear, iron and steel goods; cap. Boston; a. 8,257 sq. m.; p. (1950) 4,690,514.
- Massafra, *t.*, Italy; industri.; p. 12,275.
- Massarosa, *commune*, Tuscany, Italy; agr.; p. 12,546.
- Massawa, *spt.*, Eritrea; pt. for Ethiopia; pearl fishing; p. 17,169.
- Massena, *t.*, N.Y., U.S.A.; p. (1950) 13,137.
- Massillon, *c.*, Ohio, U.S.A.; coal, machinery, glass, aluminium ware; p. (1950) 29,594.
- Masterton, *t.*, N.I., New Zealand; p. (1951) 11,542.
- Masulipatam, *spt.*, Kistna dist., Madras, India; on the Coromandel est.; cotton mftg., rice; p. (1941) 59,146.
- Matabeleland, *dist.*, S. Rhodesia; cereals, sugar, cotton, gold.
- Matadi, *port*, Belg. Congo; nr. mouth of R. Congo; p. 23,000.
- Matagalpa, *indust. t.*, Nicaragua; p. (1947) 52,073.
- Matale, *t.*, Ceylon; Buddhist monastery; p. (1941) 14,090.
- Matamoros, *t.*, Mexico, on Rio Grande; livestock trade centre; p. (1950) 118,215.
- Matanzas, *prov.*, Cuba; sugar, tobacco, rice; a. 3,259 sq. m.; p. (1943) 361,079.
- Matanzas, *spt.*, *prov.*, cap., Cuba; exports sugar, cigars; p. (1943) 73,749.
- Matapan, *C.*, W. side of G. of Laconia, Greece.
- Matara, *spt.*, S. Ceylon; p. 22,908.
- Mataro, *spt.*, Spain; nr. Barcelona; fisheries, textiles, chemicals, paper; p. 24,000.
- Mathuala, *t.*, central Mexico; in mining reg.; p. (1940) 16,548.
- Matera, *t.*, Italy; N.W. of Taranto; trade centre, leather, oil; p. (1951) 30,411.
- Matlock, *t.*, *urb. dist.*, Derby, Eng.; on R. Derwent; 15 m. N. of Derby; health resort, tourist centre, paper mftg.; p. (1951) 17,770.
- Mato Grosso, *st.*, Brazil; cap. Cuiaba; a. 487,482 sq. m.; p. (1950) 528,451.
- Mato Grosso, *plateau*, Mato Grosso *st.*, Brazil; average alt. 3,000 ft., acts as divide between Amazon and Parana-Paraguay R. systems; reserves of gold, diamonds, manganese but largely undeveloped.
- Matsue, *t.*, Honshu, Japan; p. (1947) 57,401.
- Matsumoto, *t.*, Japan; silkworm tr.; p. (1947) 79,133.
- Matsuyama, *t.*, Japan; p. (1950) 163,859.
- Matrah, *t.*, Muscat and Oman, Arabia; tr. route centre; p. 8,500.
- Matterhorn, German name for (Fr.) Mt. Cervin, (It.) Monte Cervino; Pennine Alps, Switzerland; alt. 14,782 ft. (*see* Zermatt).
- Mattoon, *c.*, Ill., U.S.A.; ironwks., flour, bricks, agr. trade; p. (1950) 17,547.
- Maturin, *t.*, Venezuela; commerce; p. (1947) 10,705.

- Mauban, *spt.***, Luzon, Philippine Is.; coast tr.; p. 14,832.
- Maubeuge, *t.***, Nord, France; metal, glassworks; p. (1946) 20,359.
- Mauch Chunk, *bor.***, E. Penns., U.S.A.; coal, carnottite, clothing; p. (1950) 2,959.
- Mauchline, *par.***, Ayr, Scot.; associated with Robert Burns; p. 4,000.
- Mau, *t.***, Hawaiian Is.; a. 728 sq. m.; p. (1948) 45,336.
- Maule, *prov.***, Chile; a. 2,172 sq. m.; p. (1952) 71,617.
- Maumee, *R.***, Indiana, U.S.A.; flows to L. Eire; length 180 m.
- Mauna Kea, *volcano***, Hawaii; alt. 13,823 ft.
- Mauna Loa, *volcano***, Hawaii; alt. 13,675 ft.
- Mauritania, *Saharan col.***, Fr. W. Africa; livestock, gum, salt; a. 323,310 sq. m.; p. (1945) 497,000.
- Mauritius, *I.***, Brit. col., Indian Ocean; 500 m. E. of Madagascar; sugar, rum; cap. Port Louis; a. 720 sq. m.; p. (1952) 500,000.
- Mawddach, *R.***, *estuary*, Merioneth, Wales; length 19 m.
- Maxwelltown, *t.***, Dumfries, Scot.; on R. Nith; textiles, timber.
- May, *I.***, Firth of Forth, Fife, Scot.
- Mayaguana I.**, Bahamas, W. Indies; p. (1943) p. 591.
- Mayaguez, *spt.***, Puerto Rico; sugar, coffee, tobacco; p. (1950) 53,244.
- Mayari, *municipality***, E. Cuba, W. Indies; sugar; mining; p. 45,126.
- Maybole, *burgh***, Ayr, Scot.; 8 m. S. of Ayr; footwear, agr. implements; p. (1951) 4,766.
- Mayen, *c.***, Rhine prov., Germany; mftg., brewing; leather; quarries; p. 14,327.
- Mayence, *see* Mainz.**
- Mayenne, *dep.***, N.W. France; pastoral and agr.; cap. Laval; a. 1,987 sq. m.; p. 256,317.
- Mayenne, *R.***, France; trib. of R. Sarthe; length 125 m.
- Mayfield, *t.***, S.W. Ky., U.S.A.; tobacco; dairy products; clothing; p. (1950) 8,990.
- Maynard, *t.***, Mass., U.S.A.; p. (1950) 6,690.
- Maynooth, *t.***, Kildare, Ireland; Roman Catholic College; p. (1946) 886.
- Mayo, *maritime co.***, Connacht, Ireland; broken cst., much barren mtn. land, many large lakes; agr., fishery; co. t. Castlebar, a. 2,126 sq. m.; p. (1951) 141,896.
- Mayotte, *chief I.***, Fr. col., Comoro Archipelago, Mozambique Channel; sugar-cane, vanilla, cacao, a. 140 sq. m.; p. 18,000.
- Maywood, *t.***, Ill., U.S.A.; adjoining Chicago; residt., some mnfs.; p. (1950) 27,473.
- Mazagan, *spt.***, Fr. Morocco; grain and wool tr.; p. (1946) 40,318. p. (1946) 15,083.
- Mazamet, *t.***, Tarn, France; tanning, leather wks.; p. (1946) 40,318.
- Mazanderan, *prov.***, N. Persia; on Caspian Sea; wool, tobacco; a. 10,460 sq. m.; p. 200,000.
- Mazar-i-Sharif, *t.***, Afghanistan; fortress; p. 30,000.
- Mazarron, *t.***, Murcia, Spain; metal wks., flour, soap; p. 18,000.
- Mazatenango, *t.***, S.W. Guatemala; coffee, cacao, sugar, fruit; p. 14,227.
- Mazatlan, *spt.***, W. cst. Mexico; hides, minerals, fruit; p. (1940) 63,298.
- Mazzara, *t.***, Sicily, Italy; cath., ruined cas.; agr. products; p. 24,250.
- Mazzarino, *t.***, Sicily, Italy; mftg.; p. 21,580.
- M'babane, *t.***, Swaziland; alt. 3,800 ft.; administrative centre; p. (European) 500.
- McAlester, *t.***, Oklahoma, U.S.A.; coal-mining centre, rly. wks.; p. (1950) 17,878.
- McClintock Channel, *strait***, between Prince of Wales's land and Victoria I., Arctic Canada.
- McComb, *t.***, Mississippi, U.S.A.; p. (1950) 10,041.
- McKeesport, *c.***, Penns., U.S.A., on Monongahela R.; coal-mining, iron and steel mftg.; p. (1950) 51,502.
- McKees Rocks, *t.***, Penns., U.S.A.; on Ohio R.; iron, glass; p. (1950) 16,241.
- McPherson, *t.***, Yukon, Canada; on Peel R.
- McPherson, *t.***, Kan., U.S.A.; in oil-field reg.; refining plants; p. (1950) 8,639.
- M'Clure, *strait***, between Banks's I. and Melville I., Canada.
- Mead, *L.***, Cal., U.S.A.; on R. Colorado behind Boulder (Hoover) Dam; world's 1st. reservoir; stores water for irrigation in Imperial Valley and Yuma district; length 170 m.
- Meadville, *c.***, Penns., U.S.A.; on French Creek; univ.; rly. wks., rayon yarn; p. (1950) 18,972.
- Mealfuaruon, *mtn.***, on side of L. Ness, Scot.; alt. 2,284 ft.
- Meath, *trim***, *Meath co.*, Leinster, Ireland; pastoral; co. t., Trim, a. 906 sq. m.; p. (1951) 66,343.
- Meathus Truim, *see* Edgeworthstown.**
- Meaux, *t.***, Seine-et-Marne, France; on R. Marne; cath.; dairying; p. (1946) 14,223.
- Mecca, *holy c.***, Saudi Arabia; Mohammedan pilgrim centre; p. 150,000.
- Mechanicsburg, *bor.***, S. Penns., U.S.A.; steel; clothes; p. (1950) 6,786.
- Mechelen, *see* Malines.**
- Mecklenburg, *Land***, Soviet Zone, Germany; bordering on Baltic Sea; a. 22,938 sq. m.; cap. Schwerin; p. (1946) 2,139,640.
- Medan, *cap.***, E. Sumatra, Indonesia; rubber, tobacco; p. (1930) 76,584.
- Medellin, *c.***, Colombia, S. America; univ.; textiles, tobacco, coffee, hides, precious metals; p. (1951) 329,965.
- Medford, *t.***, Mass., U.S.A.; sub. of Boston; residt.; chemicals, machinery, textiles; p. (1950) 66,113.
- Medicina, *commune***, N. Italy; textiles, agr.; leather; p. 14,903.
- Medicine Bow, *mtns.***, Colorado and Wyoming, U.S.A.
- Medicine Hat, *t.***, Alberta, Canada; on S. Saskatchewan R.; rly. junction; coal, natural gas, flour; p. (1951) 16,364.
- Medina, *c.***, N.Y., U.S.A.; on Erie Canal, sandstone quarries; p. (1950) 6,179.
- Medina, *t.***, N. Ohio, U.S.A.; bees, honey, beeswax; p. (1950) 5,097.
- Medina, *c.***, Saudi Arabia; tomb of Mohammed; dates; p. 45,000.
- Medinia-Sidonia, *t.***, Spain; agr. produce; p. 12,486.
- Medinet-el-Fayum, *see* El Fayûm.**
- Mediterranean, *great inland sea***, almost tideless, dividing Europe from Africa; and communicating with the Atlantic by the Strait of Gibraltar and Black Sea by the Dardanelles, Sea of Marmara, and Bosphorus, E. part touches Asia in the Levant; total length W. to E. 2,200 m.; greatest width of sea proper about 700 m.; water a. 900,000 sq. m.; greatest depth 14,895 ft.; ch. Is.; Corsica, Sardinia, Sicily, Crete, Cyprus, and the Balearic, Lipari, Maltese, Ionian grps., also Grecian Archipelago.
- Médoc, *old dist.***, Gironde, France, extending for about 48 m. along Garonne R.; noted for wines.
- Medveditsa, *R.***, U.S.S.R.; trib. of R. Don; length 330 m.
- Medway, *R.***, Kent, Eng.; length 70 m.
- Meenen, *t.***, Belgium; on Lys R.; tobacco tr., textiles, rubber goods, soap; p. (1947) 22,031.
- Meerut, *c.***, United Provs., India; scene of outbreak of Indian Mutiny, 1857; p. (1951) 233,183.
- Megara, *t.***, Greece; p. (1940) 13,360.
- Mehsana, *t.***, Bombay, India; rice, cotton, tobacco; p. (1941) 15,762.
- Méhuin, *t.***, Cher, France; ruined cas.; p. (1946) 5,337.
- Meiktila, *dist.***, Upper Burma; teak forests; cap. M.; p. (of t.) 2,830.
- Meiling Pass, on bdy.** between Kwangtung, Kiangsi, S. China; provides historic routeway across Nanling mtns., followed by old imperial highway from Nanking to Canton; alt. approx. 1,000 ft.
- Meiningen, *t.***, Thuringia, Germany; on R. Werra; brewing, pottery, paper; p. 22,300.
- Meiringen, *t.***, Switzerland; nr. to Aar Gorge; resort; p. 3,285.
- Meissen, *t.***, Saxony, Germany; on R. Elbe; cath.; porcelain, textiles, matches; p. 48,300.
- Mejillones, *spt.***, Chile; saltpetre; p. 1,065.
- Meknes, *c.***, Fr. Morocco, N. Africa; one of the caps. of M.; agr. centre, olives; p. (1946) 159,600.
- Mekong, *R.***, S.E. Asia; rises in Tibet and separates Laos and Siam; length 2,800 m.
- Melanesia, *chain of Is. groups***, S. Pacific; comprises New Britain, Solomon, Sta Cruz, New Hebrides, New Caledonia, Loyalty, and other archipelagos.
- Melbourne, *spt. cap.***, Victoria, Australia; at mouth of Yarra R.; univ., cath., gold, wool, agr. produce; p. (1947) 1,226,409.



- Meld, *t.*, Potenza, Italy; cath.: p. 14,300.
- Melfort, *t.*, Sask., Canada; mkt., rly. centre; lumber, wheat; p. (1946) 2,005.
- Melilla, *spt.*, Spanish Morocco, N. Africa; exports iron ore; convict settlement; p. (1949) 95,841.
- Melipilla, *t.*, central Chile; agr., dairy products; p. (1940) 9,316.
- Melipopol, *t.*, Ukraine, U.S.S.R.; p. (1939) 75,735.
- Melksham, *t.*, *urb. dist.*, Wilts, Eng.; on R. Avon, 5 m. N.E. of Bradford-on-Avon; mkt. milk processing, woollens; p. (1951) 6,727.
- Mělník, *t.*, Czechoslovakia; p. 11,251.
- Melrose, *burgh*, Roxburgh, Scot.; on R. Tweed; 4 m. E. of Galashiels; ruined abbey, dist. associated with Sir Walter Scott.; p. (1951) 2,146.
- Meltham, *t.*, *urb. dist.*, W.R. Yorks, Eng.; 4 m. S.W. of Huddersfield; woollen textiles; p. (1951) 5,107.
- Melton Mowbray, *t.*, *urb. dist.*, Leicester, Eng.; on Lincoln Heights, 15 m. N.E. of Leicester; mkt., ironwks., famous pork pies, hunting dist.; p. (1951) 14,032.
- Melun, *t.*, cap. Seine-et-Marne, France; on R. Seine; agr. tools and produce; p. (1946) 17,573.
- Melville, *t.*, S.E. Sask., Canada; rly. centre; wheat; p. 4,011.
- Melville I., off N. est., Arnhem Land, Australia.
- Melville I., N.W. Terrs., Arctic Canada.
- Memel, *see* Klaipėda.
- Memmingen, *t.*, Germany; machinery, textiles; p. 24,586.
- Memphis, *ancient c.*, Egypt; on R. Nile; 10 m. S. of Cairo; nearby are Sakkara ruins.
- Memphis, *c.*, Tennessee, U.S.A.; on R. Mississippi; rly. centre, timber, cotton seed, ironwks., oil; p. (1950) 396,000.
- Mena, *t.*, W. Ark., U.S.A.; lumber, bricks, cotton, flour; tourist resort; p. (1950) 4,445.
- Menado, *t.*, Celebes, Indonesia; p. 27,544.
- Menai Bridge, *urb. dist.*, Anglesey, Wales; p. (1951) 1,855.
- Menai Strait, separates Isle of Anglesey from Caernarvon, Wales; crossed by Britannia rly. and Menai suspension bridges; 14 m. long,  $\frac{1}{2}$  m. to 2 m. wide.
- Menam, *R.*, China-Indo-China; length 800 m.
- Menasha, *t.*, Wisconsin, U.S.A.; on L. Winnebago; mnfs.; p. (1950) 12,385.
- Mende, *t.*, cap. Lozère, France; on R. Lot; serge mftg.; p. (1946) 6,000.
- Menden, *c.*, Westphalia, Germany; metallurgy, electr. products; p. 13,677.
- Menderes, *R.*, Anatolia, Turkey; length 200 m.
- Mendip Hills, Somerset, Eng.; limestone range containing many karst features inc. Cheddar Gorge and Wookey Hole; length 20 m.; highest point 1,067 ft.
- Mendota, *c.*, Ill., U.S.A.; nr. Chicago, mftg.; p. (1950) 5,129.
- Mendoza, *prov.*, W. Argentina; wheat, stock-raising; cap. Mendoza; a. 57,445 sq. m.; p. (1947) 590,548.
- Mendoza, *t.*, cap. Mendoza prov., Argentina; on Transandine Rly.; wine-producing dist.; p. (1947) 105,328.
- Menfi, *t.*, Sicily, Italy; industr.; p. 10,225.
- Mengtsz, *c.*, Yunnan, China; ruined in Tai-ping rebellion; tin and opium trade; p. 193,004.
- Menin, *see* Meenen.
- Menominee, *c.*, Mich., U.S.A.; on M. R.; timber, iron goods, paper, sugar; p. (1950) 11,151.
- Menominee, *c.*, Wisconsin, U.S.A.; on Red Cedar R.; grain, timber; p. (1950) 8,245.
- Menteth, *t.*, of S.W. Perth, Scot.; between Rs. Forth and Teith; a. 2 $\frac{1}{2}$  sq. m.
- Mentone, *t.*, Alpes-Maritimes, S. France; on Mediterranean est.; health resort, olive oil, wines, perfumes; p. (1946) 20,000.
- Meppel, *t.*, Netherlands; nr. Zuyder Zee, ship-building; p. 12,138.
- Mequinez, *see* Meknès.
- Merano, *t.*, Tyrol, N. Italy; health resort; p. 30,350.
- Merced, *t.*, California, U.S.A.; p. (1950) 15,278.
- Mercedes, *cap.*, Soriano dept., Uruguay; p. (1942) 24,000.
- Mercedes, *t.*, S. Texas, U.S.A.; cotton, oil, fruit; veg. canning; p. (1950) 10,081.
- Merchantville, *t.*, N.Y., U.S.A.; on Hudson R.; p. (1950) 7,385.
- Merchantville, *bor.*, N.J., U.S.A.; paper, lead mnfs.; p. (1950) 4,183.
- Mergui, *archipelago*, Burma; teak, rice, pearl fishing.
- Mergui, *t.*, Tenasserim, Lower Burma; on Bay of Bengal; pearl fishing; p. 20,405.
- Merida, *t.*, Badajoz, Spain; on R. Guadiana; agr. dist., textiles; p. 16,000.
- Merida, *cap.*, Yucatán, Mexico; univ.; sisal-hemp ropes, cigars, brandy; p. (1950) 155,899.
- Meriden, *c.*, Conn., U.S.A.; hardware mftg.; p. (1950) 44,083.
- Meridian, *t.*, Mississippi, U.S.A.; in cotton growing region; p. (1950) 41,893.
- Merignac, *commune*, Gironde dept., S.W. France; cattle mkt.; p. (1946) 15,363.
- Merioneth, *maritime co.*, N. Wales; pastoral and mining; co. t., Dolgelly; a. 660 sq. m.; p. (1951) 41,456.
- Meriti, *c.*, S.E. Brazil; 10 m. N. Rio de Janeiro; p. (1947) 38,645.
- Merom, *Waters of*, L., modern Hule L., Upper Galilee, Israel.
- Merrick, *mtn.*, Kirkcudbright, Scot.; highest peak in S. Uplands of Scot.; alt. 2,764 ft.
- Merill, *t.*, N. Wis., U.S.A.; wooden goods, paper, knitwear; p. (1950) 8,951.
- Merrimack, *R.*, New Hampshire and Massachusetts, U.S.A.
- Merse, *geographical sub-region*, S.E. Scot.; comprises lower valleys of Rs. Tweed and Teviot below Melrose and Hawick; glacial deposits form low hillocks *en échelon*, which largely influence the pattern of streams, roads, settlements, etc.; most favoured part of Scotland for crop growing, wheat, barley, root crops (for feeding to cattle, sheep); ch. ts. Hawick, Kelso, Berwick-on-Tweed (England); a. approx. 220 sq. m.
- Mersea, *I.*, at mouth of R. Colne, Essex, Eng.; oysters; holiday resort; length 5 m., width 2 m.
- Merseburg, *t.*, Germany; on R. Saale; cath., cas.; beer, metalwks., tanning, mkt. gardening; p. 38,000.
- Mersey, *R.*, between Lancs and Cheshire, Eng.; enters Irish Sea by fine estuary at Liverpool; length 68 m.
- Merseyside, *lge. conurbation*, S.W. Lancashire and N. Cheshire, Eng.; comprises: (1) a spt. and industr. area either side of lower Mersey estuary; (2) residt. area of W. Wirral Peninsula; a. 150 sq. m.; p. (1951) 1,332,244. *See also under* Bebington, Birkenhead, Bootle, Crosby, Ellesmere Pt., Hoylake, Huyton, Litherland, Liverpool, Neston, Wallasey, Wirral.
- Mersin, *spt.*, Turkey; textiles, fruit, cereals, timber; p. (1945) 33,086.
- Merthyr Tydfil, *t.*, *co. bor.*, Glamorgan, S. Wales; in narrow valley of R. Taft, 22 m. N.W. of Cardiff; coal-mining, iron, steel; p. (1951) 61,093.
- Merton and Morden, *urb. dist.*, Surrey, Eng.; residt. and light industry; p. (1951) 74,602.
- Meru, *mtn.*, Tanganyika Terr., Brit. E. Africa; extinct volcano overlooking E. arm of Gr. Rift valley; coffee plantations at alt. 5,000 ft. to 6,000 ft., some rubber below 4,000 ft.; alt. summit 14,953 ft.
- Merv, *see* Mary.
- Mesabi Range, *hills*, N.E. Minn., U.S.A.; abt. 100 m. long, alt. 200-500 ft.; vast iron ore deposits.
- Mesagna, *t.*, S. Italy; mnfs.; p. 17,300.
- Meshed, *c.*, Khurasan, Persia; nr. Kashaf Rud R.; trade, pilgrim centre; silks, carpets; p. (estd. 1950) 191,000.
- Mesopotamia, *see* Iraq.
- Messina, *c.*, *spt.*, Sicily, Italy; opposite Reggio; univ.; exports fruit, wine, silk, oil; silk mnf.; p. (1951) 218,906.
- Messina, *strait*, between Sicily and Italian mainland; length 22 m., minimum width 3 m.
- Messinia, *prefecture*, Peloponnese, Greece; cap. Kalamai; p. (1951) 227,648.
- Mesta, *R.*, Bulgaria Greece; rises in Rhodope Mtns., flows S.E. into Aegean Sea 15 m. E. of Kavála; valley famous for tobacco; approx. length 175 m.
- Mestre, *t.*, Italy; on lagoon at landward end of causeway linking Venice to mainland; p. 11,750.
- Mesurado, *R.*, Liberia, Africa; 300 m. long.
- Meta, *R.*, Colombia and Venezuela; navigable for 400 m.; trib. of R. Orinoco; length 750 m.

- Metaline, t.**, Wash., U.S.A.; on R. Columbia nr. Canada-U.S.A. bdy.; lead-zinc mines.
- Metemma, t.**, Anglo-Egyptian Sudan; opposite Shendi, on R. Nile.
- Methil, t.**, Fife, Scot.; on Firth of Forth; united with Buchhaven.
- Methuen, t.**, Mass., U.S.A.; textiles, footwear; p. (1950) 24,477.
- Metkovic, t.**, Yugoslavia; on R. Narenta; mkt.; p. (1947) 5,723.
- Metropolis, c.**, Ill., U.S.A.; on R. Ohio; p. (1950) 6,093.
- Mettmann, t.**, Germany; nr. Düsseldorf; mnfs.; p. 13,112.
- Metuchen, bor.**, N.J., U.S.A.; residtl., chemicals, needles, rubber; p. (1950) 9,879.
- Metz, c.**, cap. Moselle, France; on R. Moselle 25 m. N. of Nancy; cath.; wines, leather goods, preserved fruits; p. (1946) 78,767.
- Metzingen, t.**, Germany; on R. Neckar, nr. Stuttgart.
- Mendon, t.**, Seine-et-Oise, France; nr. Versailles; observatory; glass, linen, ammunition; p. 18,000.
- Meurthe, R.**, France; length 70 m.
- Meurthe-et-Moselle, dep.**, E. France; agr., vineyards, mining; cap. Nancy; a. 2,037 sq. m.; p. (1946) 528,805.
- Meuse, dep.**, N.E. France; livestock, mining, wine; cap. Bar-le-Duc; a. 2,408 sq. m.; p. (1946) 188,786.
- Meuse (Maas), R.**, France; rises in Haute-Marne, flows past Verdun into Belgium past Namur and Liège into the Netherlands and joins the Waal, left arm of the Rhine; length 570 m.
- Meuselwitz, c.**, Thuringia, Germany; coal, textiles, engineering; p. 11,671.
- Mevagissey, vil.**, Cornwall, Eng.; fishing, tourist resort; p. 1,739.
- Mexborough, t.**, urb. dist., W.R. Yorks, Eng.; on R. Don, 10 m. above Doncaster; potteries, iron; p. (1951) 18,965.
- Mexcala, R.**, S. Mexico; flows into Pacific; length 500 m.
- Mexia, t.**, Texas, U.S.A.; rly. centre; cotton, oil, engineering; p. (1950) 6,627.
- Mexicali, cap.**, N. Terr., Lower California, Mexico; p. (1950) 141,189.
- Mexico, federal republic**, S. of N. America; contains much forest, fertile land and mtn. dists.; rich in minerals, silver, copper, arsenic, oil, zinc, lead; stock-raising and agr. are the ch. occupations in the N. States; cap. Mexico City; a. 783,944 sq. m.; p. (1950) 25,715,350.
- Mexico City, cap. c.**, Mexico; in plain, alt. 7,460 ft. above sea-level; fine Houses of Congress, many large public buildings, extensive tr. and industries; p. (1953) 3,795,567.
- Mexico, st.**, Mexico; a. 8,267 sq. m.; cap. Toluca; p. (1950) 1,389,892.
- Mexico, c.**, Missouri, U.S.A.; firebrick and shoe factories; p. (1950) 11,623.
- Mexico, G. of**, large inlet of the Atlantic (1,000 m. E. to W. by 800 m. N. to S.) lying S. of U.S.A. and E. of Mexico. Communicates by Florida Strait with the Atlantic and by Channel of Yucatán with the Caribbean Sea.
- Meycauayan, mun.**, Luzon, Philippines; rice, sugar, maize; p. 16,082.
- Mézières, t.**, Ardennes, France; on R. Meuse; nails, hardware, type-founding; p. (1946) 10,816.
- Mezőkövesd, t.**, Hungary; industri.; p. 20,838.
- Mezőtúr, t.**, Hungary; mkt., flour, pottery; p. 25,835.
- Mhow, t.**, Madhya Bharat, India; cotton; p. (1941) 31,177.
- Miagao, t.**, Panay, Philippines; tr. centre, mnfs.
- Miami, t.**, Florida, U.S.A.; winter resort, fruits, fishing; p. (1950) 249,276.
- Miami, t.**, Okla., U.S.A.; tr. centre, agr., cattle; packing, mining; p. (1950) 11,801.
- Miamisburg, t.**, Ohio, U.S.A.; p. (1950) 6,329.
- Miani, t.**, N.W. Punjab, Pakistan; salt; p. abt. 6,000.
- Mianwali, dist.**, W. Punjab, Pakistan; p. (estd. 1951) 550,000.
- Michigan, st.**, U.S.A.; in valley of Great Lakes; agr., minerals; cap. Lansing; a. 58,216 sq. m.; p. (1950) 6,371,766.
- Michigan, L.**, N. America; in basin of St. Lawrence R., enclosed by two peninsulas of the State of M. and by Wisconsin, Illinois, and Indiana; a. 23,900 sq. m.; discharges by Straits of Mackinac to L. Huron.
- Michigan City, t.**, Indiana, U.S.A.; on L. M.; rly. wks., furniture, hosiery; p. (1950) 28,395.
- Michipicoten, R.**, Ontario, Canada; flows 125 m. to L. Superior.
- Michoacan, st.**, Mexico; on the Pacific; mountainous and rich in minerals; cap. Morelia; a. 23,200 sq. m.; p. (1950) 1,416,681.
- Michurinsk, t.**, U.S.S.R.; N.W. of Tambov; p. (1939) 70,202.
- Micronesia, groups of small Is.**, S. Pacific; includes Carolines, Marianas (Ladrones), Marshall, Peleus, etc.
- Middelburg, t.**, cap. Zeeland, Netherlands; on Walcheren I. nr. Flushing; margarine, timber; p. (1951) 21,417.
- Middelburg, t.**, Transvaal, S. Africa; coal, iron, copper, cobalt; p. 7,995.
- Middelfart, t.**, Fyn, Denmark; off Fredericia; p. 3,089.
- Middleboro, t.**, Mass., U.S.A.; agr. centre; p. (1950) 5,889.
- Middle Congo, col.**, Fr. Equatorial Africa; a. 166,069 sq. m.; cap. Brazzaville; p. (1946) European 3,624, Africa 626,000.
- Middlesboro, t.**, Kentucky, U.S.A.; p. (1950) 14,482.
- Middlesbrough, spt. co. bor.**, Cleveland dist., N.R. Yorks, Eng.; on S. side of Tees estuary; impt. iron and steel industry, heavy engineering, shipbuilding and coal exports; p. (1951) 147,336.
- Middlesex, co.**, S.E. Eng.; N. of R. Thames; in effect continuous with London; thickly populated, residtl., industri.; a. 232 sq. m.; p. (1951) 2,268,776.
- Middleton, mkt. t.**, Durham, Eng.; on R. Tees.
- Middleton, t.**, mun. bor., S.E. Lancs, Eng.; mkt.; textiles, soap, ironwks.; p. (1951) 32,602.
- Middleton, urb. dist.**, Cork, Ireland; mkt.; p. (1946) 2,791.
- Middletown, c.**, Conn., U.S.A.; on C. R.; univ.; p. (1950) 29,711.
- Middletown, c.**, N.Y., U.S.A.; on Walkill R.; ironwks.; p. (1950) 22,586.
- Middletown, c.**, Ohio, U.S.A.; on Miami and Erie canal; p. (1950) 33,695.
- Middletown, bor.**, Penns., U.S.A.; on Susquehanna R.; p. 7,046.
- Middlewich, t.**, urb. dist., Cheshire, Eng.; on R. Weaver, 5 m. N. of Crewe; salt, chemicals; p. (1951) 6,734.
- Midhurst, t.**, Sussex, Eng.; on R. Rother; mkt., agr. centre; p. 1,812.
- Midland, t.**, Mich., U.S.A.; chemicals, salt, oil; p. (1950) 14,285.
- Midland Junction, t.**, W. Australia.
- Midlothian, co.**, Scot.; dairying, coal-mining, paper, brewing, fishing; a. 362 sq. m.; p. (1951) 565,746.
- Midnapore, t.**, W. Bengal, India; silkworm tr.; p. (1941) 32,021.
- Midway, Is.**, Pac. Oc.; calling-place on air-routes between San Francisco and Asia, midway between Asia and U.S.A.
- Miechowice, t.**, S.W. Poland; coal, iron foundries; p. 14,608.
- Miedzyrzecz (Mieseritz), t.**, E. Poland; agr., leather; p. 16,837.
- Mieres, t.**, Spain; on R. Leno, nr. Oviedo; minerals, agr. produce; p. (1950) 58,310.
- Mikkeli (St. Michel), dep.**, Finland; a. 6,750 sq. m.; p. (1950) 241,671.
- Milan, c.**, N. Italy; on R. Olona; cath., univ.; textiles, machinery, motors, chemicals, porcelain; commercial centre; p. (1951) 1,268,994.
- Milas, t.**, S.W. Turkey in Asia; agr., fruit; carpets; p. 3,322.
- Milazzo, spt.**, Sicily, Italy; fruits, wines, olive oil, sulphur; p. 19,141.
- Mildenhall, t.**, W. Suffolk, Eng.; on R. Lark, 10 m. N.W. of Bury St. Edmunds; mkt., flour; p. 3,235.
- Mildura, c.**, Victoria, Australia; on R. Murray; irrigation centre, fruit; p. (1947) 9,527.
- Miles City, c.**, Montana, U.S.A.; on Yellowstone R.; cattle; p. (1950) 9,243.
- Milford, t.**, Conn., U.S.A.; residtl., resort; fish; light engineering; p. (1950) 26,870.
- Milford, t.**, Delaware, U.S.A.; p. (1950) 5,179.



- Milford, t., Mass., U.S.A.;** boot mnfs.; p. (1950) 14,396.
- Milford Haven, *spt., urb. dist.*, Milford Haven, Pembroke, Wales;** on N. Shore of Milford Haven; shipbuilding, coal, fishing; p. (1951) 11,717.
- Milford Sound, *inlet*, at S. extremity of S.I., New Zealand;** tourist resort.
- Millanah, t., Algeria;** tr. centre; p. 5,000.
- Millitello, t., Sicily, Italy;** agricl. interests; p. 10,770.
- Milk, R., Montana, U.S.A.;** trib. of Missouri R.; length 500 m.
- Millau, t., Aveyron, France;** on R. Tarn; glove mnfs.; p. (1946) 17,678.
- Millbrook, t., Hants, Eng.;** at mouth of R. Test, nr. Southampton.
- Milbury, t., Mass., U.S.A.;** p. (1950) 8,347.
- Millersburg, *bor.*, Penns., U.S.A.;** machinery, shoes; p. (1950) 2,861.
- Millinocket, t., Me., U.S.A.;** paper; p. (1950) 5,755.
- Millom, t., Cumberland, Eng.;** on N.W. cst. of Duddon estuary; iron-ore mining, ironwks.; p. 8,708.
- Millport, *burgh*, Bute, Scot.;** on Gr. Cumbræ I., in Firth of Clyde; resort; cath.; quarries; p. (1951) 2,012.
- Milltown Malby, t., Clare, Ireland;** mkt.; p. 995.
- Millvale, *bor.*, Penns., U.S.A.;** p. (1950) 7,287.
- Millville, c., New Jersey, U.S.A.;** on Maurice R.; glass, iron, cotton; p. (1950) 16,041.
- Milngavie, *burgh*, Dunbarton, Scot.;** 5 m. N.W. of Glasgow; textiles; p. (1951) 7,883.
- Milnrow, t., *urb. dist.*, S.E. Lancs, Eng.;** sub. of Rochdale; p. (1951) 8,585.
- Milos, I., Cyclades, Greece;** volcanic; length 13 m.; fruits, gypsum, sulphur; famous statue of Venus found here in 1820.
- Milspe, *commune*, Westphalia, Germany;** ironwks.; p. 11,291.
- Millstin, *peak*, Atlas Mtns., Morocco, N. Africa;** alt. 11,400 ft.
- Milton, t., Mass., U.S.A.;** sub. of Boston; p. (1950) 22,395.
- Milton, t., Penns., U.S.A.;** on Susquehanna R.; ironwks.; p. (1950) 8,578.
- Milton, t., S.I., New Zealand;** p. (1951) 1,672.
- Milverton, t., Somerset, Eng.;** 6 m. W. of Taunton; mkt.
- Milwaukee, c., Wisconsin, U.S.A.;** on L. Michigan, 70 m. E. of Chicago; univ.; rly. centre, motor cars, meat canning, agr. tools, machinery; p. (1950) 637,392.
- Minab, t., S. Persia;** orchards; p. abt. 10,000.
- Minas Basin, *E. arm*, Bay of Fundy, Nova Scotia, Canada.**
- Minas Gerais, st., Brazil;** extensive mining, diamonds, gold, iron, manganese, agr.; cap. Belo Horizonte; a. 224,701 sq. m.; p. (1950) 7,839,792.
- Minas Novas, t., Minas Gerais, Brazil.**
- Minatitlán, t., E. Mexico;** petroleum refineries; p. (1940) 18,639.
- Minch, *The*, *channel* between the Outer and Inner Hebrides;** 24 m. to 40 m. wide.
- Minchinhampton, t., Gloucester, Eng.;** in Cotswold Hills, 4 m. S.E. of Stroud; mkt., woollens, brewing; p. 3,500.
- Mincio, R., Italy;** trib. of R. Po; drains L. Garda; length 38 m.
- Mindanao, 2nd largest I. of Philippines;** rice, coffee, tobacco, coal, minerals; ch. t. Zamboanga; a. 36,537 sq. m.; p. 560,000.
- Minden, t., Germany;** on R. Weser; cath.; glass, tobacco, soup; p. 30,000.
- Minden, t., La., U.S.A.;** exports cotton; petroleum, natural gas; p. (1950) 9,787.
- Mindoro, I., Philippines, S. of Luzon;** a. 3,769 sq. m.; p. 100,000.
- Minehead, t., *urb. dist.*, Somerset, Eng.;** at N. foot of Exmoor, on Bristol Channel cst.; mkt., holiday resort; p. (1951) 7,400.
- Mineo, t., Sicily, Italy;** mftg.; p. 11,400.
- Mineola, t., N.Y., U.S.A.;** sub. N.Y. c.; glass, packing; p. (1950) 14,331.
- Minersville, *bor.*, Penns., U.S.A.;** on Schuylkill R.; p. (1950) 7,783.
- Minervino, t., S. Italy;** industr.; p. 18,375.
- Minho, *prov.*, N. Portugal;** fruit-growing, cattle, textiles; a. 1,889 sq. m.; p. (1940) 741,510.
- Minho, R., separates Portugal from Spain in N.W.;** length 170 m.
- Minhow, *see* Foochow.**
- Minia, t., Egypt;** on R. Nile; cotton, trade centre; p. (1947) 44,325.
- Minneapolis, c., Minn., U.S.A.;** on Mississippi R.; at Falls of St. Anthony; univ.; flour, timber, machinery, linseed oil; p. (1950) 521,718.
- Minnesota, st., U.S.A.;** agr., flour, timber, meat, mining; cap. St. Paul; a. 84,068 sq. m.; p. (1950) 2,982,483.
- Minnick, Water of, R., Ayr and Kirkcudbright, Scot.;** trib. of R. Cree; length 15 m.
- Minorca (Menorca), Spanish I., Balearic Is., Mediterranean Sea;** fruits, olives, cereals, cattle, minerals; cap. Mahon; a. 233 sq. m.; p. 42,000.
- Minot, t., N. Dakota, U.S.A.;** p. (1950) 22,032.
- Minsk, *cap.*, White Russia, U.S.S.R.;** machinery, leather, flour; p. (1939) 238,772.
- Minusinsk, t., S.W. Krasnovarsk Terr., Siberia, U.S.S.R.;** on R. Yenisei; wheat, lumber, sugar-beet, coal, copper, antimony; p. (1939) 20,403.
- Minya Konka, *mtn.*, Sikiang, China;** at E. end of Plateau of Tibet; highest mtn. in China; alt. approx. 23,000 ft.
- Miosvano, L., Norway;** length 24 m.
- Miquelon, I., French, off S. cst. Newfoundland, Canada;** fisheries.
- Mira, t., Italy;** on Brenta Morta; p. 19,600.
- Miranda, st., N. Venezuela;** pastoral and agr.; cap. Los Teques; p. (1941) 227,604.
- Miranda, t., N.E. Spain;** on R. Ebro; p. 15,166.
- Mirandola, t., Modena, Italy;** p. 20,875.
- Mirano, t., N. Italy;** p. 14,600.
- Mirfield, *urb. dist.*, W.R. Yorks, Eng.;** on R. Calder, 3 m. S.W. of Dewsbury; woollens; p. (1951) 11,885.
- Miri, t., Sarawak;** oil centre; p. 10,000.
- Mirim, L., Brazil and Uruguay;** 115 m. long, 20 m. wide.
- Mirzapur, t., Uttar Pradesh, India;** on R. Ganges; carpets, brassware; p. (1941) 70,944.
- Mishawaka, c., Indiana, U.S.A.;** on St. Joseph R.; agr. implements; p. (1950) 32,913.
- Misilmeri, t., Sicily, Italy;** p. 11,420.
- Misiones, *terr.*, Argentina;** farming and stock-raising; cap. Posadas; a. 11,749 sq. m.; p. (1947) 244,123.
- Miskolcz, t., Hungary;** flour, leather, porcelain; p. (1949) 103,724.
- Misol, I., N. of Ceram, Indonesia;** length 50 m.
- Mission, t., S. Texas, U.S.A.;** fruit, cotton, vegetables; engineering; p. (1950) 10,765.
- Mississinewa, R., Indiana, U.S.A.;** trib. of Wabash R.; length 140 m.
- Mississippi, st., U.S.A.;** maize, tobacco, cotton; cap. Jackson; a. 47,716 sq. m.; p. (1950) 2,178,914.
- Mississippi, R., Canada;** trib. of Ottawa R.; length 100 m.
- Mississippi, R., U.S.A.;** total length 2,547 m., navigable for 2,000 m.
- Missolonghi, c., *spt., cap.*, Aetolia and Acarnania, Greece;** currents; p. (1951) 13,837.
- Missoula, c., Montana, U.S.A.;** on Klark R.; univ.; rly. wks., agr., fruit, oil refining; p. (1950) 22,485.
- Missouri, st., U.S.A.;** live-stock, maize, coal, iron; cap. Jefferson City; ch. t. St. Louis; a. 69,874 sq. m.; p. (1950) 3,954,653.
- Missouri, R., U.S.A.;** trib. of Mississippi R.; length (including the Madison) 3,047 m., navigable 2,400 m.
- Missouri Coteau, *hill ridge*, N. America;** runs N.W. to S.E. across prairies of Saskatchewan (Canada), N. and S. Dakota (U.S.A.); rises abruptly from 1,600 to 2,000 ft.
- Missouri, Little, R., U.S.A.;** trib. of M. R.; length 450 m.
- Mistassini, L., Quebec, Canada;** 100 m. long.
- Misterbianco, *commune*, E. Sicily;** lava, sulphur; agr.; p. 11,387.
- Mistretta, t., Sicily, Italy;** mnfs.; p. 10,800.
- Misurata, t., Tripolitania, Libya, N. Africa;** on cst. of Mediterranean, 110 m. E. of Tripoli mkt. for local agr. produce; fishing; p. (1938) 45,097.
- Mitau, *see* Jelgava.**
- Mitcham, *mun. bor.*, Surrey, Eng.;** nr. Croydon; lavender, peppermint growing, paper mftg.; residtl.; p. (1951) 67,273.
- Mitchell, *dist.*, N.S.W., Australia;** silver mining.
- Mitchell, R., Queensland, Australia;** flows into G. of Carpentaria.

- Mitchell, *t.*, Ind., U.S.A.; cement; p. (1950) 3,245.  
 Mitchell, *dist.*, Queensland, Australia; p. 1,358.  
 Mitchell, *t.*, S. Dakota, U.S.A.; univ.; farming; p. (1950) 12,123.  
 Mitchell, *mtn. pk.*, Black Mtns., N. Carolina, U.S.A.; alt. 6,684 ft.; also called the "Black Dome."  
 Mitchellstown, *t.*, Cork, Ireland; nr. Fermoy; p. (1946) 2,153.  
 Mitidja, *plain*, Algeria, N. Africa; borders Mediterranean 25 m. E. and W. of Algiers; intensive cultivation of vine; ch. ts. Algiers, Blida.  
 Mitrovica, *t.*, Yugoslavia; on R. Sava; livestock, mkt.; p. 12,000.  
 Mittelland Canal, *inland waterway system*, N. Germany; system of canals and canalised rivers; links Dortmund-Ems Canal nr. Rheine through Minden, Hanover, Magdeburg, Berlin to R. Oder at Frankfurt-on-Oder; makes use of natural E.-W. troughs across the N. German Plain.  
 Mittweida, *t.*, Saxony, Germany; metallurgy, textiles; p. 19,278.  
 Mitzensk, *t.*, U.S.S.R.; on R. Zusha; mnfs.; p. 19,120.  
 Miyako, *spt.*, Japan; p. 32,879.  
 Milzen Head, *C.*, S. Ireland; W. of C. Clear.  
 Mjosa, *largest L.*, Norway; 55 m. long.  
 Mlada Boleslav (Jungbunzlau), *t.*, Bohemia, Czechoslovakia; religious centre; p. 19,604.  
 Mlawa, *t.*, Warsaw, Poland; tanning, grain, agr. implements; p. 14,000.  
 Milet, *I.*, Adriatic Sea; part of Yugoslavia.  
 Moate, *t.*, W. Meath, Ireland; p. 1,334.  
 Moberly, *c.*, Missouri, U.S.A.; rly. wks., grain, iron, hosiery, footwear; p. (1950) 13,115.  
 Mobile, *c.*, *spt.*, Alabama, U.S.A.; on R. M.; ship-building, cotton export; p. (1950) 129,009.  
 Mocha, *fort.*, *spt.*, Yemen, Arabia; on Red Sea; coffee; p. 5,000.  
 Modane, *t.*, S.E. Savoy, France; commands routes via Mont Cenis Pass and tunnel; p. (1946) 3,418.  
 Modder, *R.*, C. Prov., S. Africa; trib. of Orange R.  
 Modena, *t.*, *prov. cap.*, Italy; cath. univ.; textiles, fruit, grain, leather; p. (1951) 111,094.  
 Modesto, *t.*, California, U.S.A.; fruit, vegetables; p. (1950) 17,389.  
 Modica, *t.*, Sicily, Italy; cheese, macaroni, grain, wines; p. (1948) 43,500.  
 Modjokerto, *t.*, E. Java, Indonesia; sugar; fossil man discovered 1934; p. 23,600.  
 Mödling, *t.*, Austria; on R. Brühl, metalwks., sulphur-baths; p. 19,000.  
 Moffat, *burgh*, Dumfries, Scot.; in Annandale, 15 m. N.W. of Lockerbie; health resort; p. (1951) 2,623.  
 Moffat Tunnel, *Col.*, U.S.A.; carries trunk rly. from Chicago to San Francisco under Rocky Mtns. between Denver and Salt Lake City; length 6½ m.  
 Mogadishu, *cap.*, former Italian Somaliland protectorate, N.E. Africa; p. (estd. 1948) 74,000.  
 Mogador, *spt.*, Fr. Morocco, N. Africa; cereals, almonds, gum-arabic; p. (1946) 28,620.  
 Mogilev, *c.*, U.S.S.R.; on R. Dnieper; agr. products; commercial centre; p. (1939) 99,440.  
 Mogilev Podolski, *t.*, Ukraine, U.S.S.R.; on Dniester R.; tr., flour, sugar refining; p. (1939) 22,271.  
 Mogi Mirim, *t.*, Brazil; tr. centre; p. 8,449.  
 Mohács, *t.*, Hungary; on R. Danube; R. port; flour, brewing; p. 17,228.  
 Mohawk, *R.*, N.Y., U.S.A.; trib. of Hudson R.; followed by impt. road, rly. and canal routes across Appalachian Mtns.; length 175 m.  
 Moidart, *L.*, *est. dist.*, S.W. Inverness, Scot.  
 Moisie, *R.*, Labrador, Canada, flows S. into G. of St. Lawrence.  
 Moissac, *t.*, France; on R. Tarn; abbey; p. 7,435.  
 Mojave, *desert*, California, U.S.A.  
 Moji, *spt.*, Kyushu, Japan; exports coal, cement, timber, sugar, cotton, thread; p. (1950) 124,399.  
 Mokuau, *R.*, S.I., New Zealand.  
 Mokpo, *spt.*, W. est. S. Korea; centre of food-processing and cotton-ginning; p. (1949) 111,128.  
 Mola di Bari, *spt.*, Apulia, Italy; grain, livestock, olives, wine; p. 18,775.  
 Mola di Gaeta, *t.*, Italy; p. 15,950.  
 Mold, *co. t.*, *urb. dist.*, Flint, N. Wales; on R. Alyn; coal-mining; p. (1951) 6,436.  
 Moldau, *see* Vltava.  
 Moldavia, *constituent rep.*, U.S.S.R.; cereals, fisheries; cap. Kishenev; a. 13,200 sq. m.; p. (1940) 2,200,000.  
 Moldavia, *prov.*, Romania; a. 14,660 sq. m.; wife; ch. t. Iasi; p. 2,850,068.  
 Molde, *spt.*, Dovre Fjord, Norway; p. 1,820.  
 Mole, *R.*, Surrey, Eng.; rises in central Weald, flows N. into R. Thames nr. Molesey; cuts; impt. gap through N. Downs between Dorking and Leatherhead; length approx. 50 m.  
 Molenbeek-Saint-Jean, *t.*, Belgium; nr. Brussels; large mftg. centre; p. (1947) 65,000.  
 Molesey, *E. and W. t.*, Surrey, Eng.; at junction of R. Mole and Thames; residt.; p. 8,500.  
 Molfetta, *spt.*, Apulia, Italy; olive oil, macaroni, wine; p. (1948) 53,493.  
 Molina de Segura, *commune*, S.E. Spain; paper mftg.; p. 13,721.  
 Moline, *c.*, Ill., U.S.A.; on Mississippi R.; agr. implements, ironwks., flour; p. (1950) 37,397.  
 Mollendo, *spt.*, Peru; copper; p. (1947) 14,893.  
 Malmö, *c.*, S.W. Sweden; paper, textiles; margarine; p. (1951) 20,357.  
 Molokai, *I.*, Hawaiian Is.; a. 260 sq. m.; p. 5,258.  
 Molotov (Perm), *t.*, U.S.S.R.; on R. Kama, N.W. of Sverdlovsk; p. (1939) 255,196.  
 Molsheim, *t.*, Bas-Rhin, France; W. of Strasbourg; sword and bayonet making.  
 Molucca or Spice Is., Indonesia; between Celebes and New Guinea; spices, sago, timber, pearls, rice, copra; a. 191,681 sq. m.; p. (1930) 893,400.  
 Mombassa, *spt.*, Kenya; ch. harbour, Kilindini; rly. terminus; exports tropical produce (ivory, hides, rubber, etc.); p. 102,000.  
 Mön, *I.*, off est. of Zealand, Denmark; a. 90 sq. m.; cap. Stege; p. 14,000.  
 Mona Passage, *strait*, Caribbean Sea; separates Hispaniola from Puerto Rico.  
 Monaca, *bor.*, Penns., U.S.A.; glass, light engineering; p. (1950) 7,415.  
 Monaco, *principality*, S. France; divided into three sections, Monaco Ville, La Condamine, and Monte Carlo (famous Casino); tourist resort, olive oil, perfumes; a. 8 sq. m.; p. (1951) 20,202.  
 Monadhliath Mtns., Inverness, Scot.; on W. side Strathspye; highest peak Carn Mairg, 3,087 ft.  
 Monaghan, *inland co.*, Ireland; mainly pastoral and agr.; a. 500 sq. m.; p. (1951) 55,362.  
 Monaghan, *co. t.*, Monaghan, Ireland; on the Ulster Canal; cath.; p. (1946) 4,673.  
 Monaro, *mtn. plateau*, N.S.W., Australia; a. 8,335 sq. m.  
 Monastir, *see* Bitolj.  
 Moncalieri, *commune*, Piedmont, N.W. Italy; on R. Po; industri.; p. 21,181.  
 Mönch or "The Monk", *mtn.*, Bernese Alps, Switzerland; alt. 13,468 ft.  
 Monchique, *t.*, Algarve, Portugal; spa; wine, oil, chestnuts; p. 10,000.  
 Monclova, *t.*, N.E. Mexico; coffee; copper, silver, zinc, lead mines; p. (1941) 7,181.  
 Moncton, *t.*, New Brunswick, Canada; rly. centre, textiles; p. (1951) 27,334.  
 Mondego, *R.*, Portugal; length 130 m.  
 Mondogedo, *t.*, Galicia, Spain; cath.; p. 10,750.  
 Mondovì, *t.*, Cuneo, Italy; porcelain, paper, silk; p. 20,900.  
 Monessen, *t.*, Penns., U.S.A.; steel, tinplate, wire; p. (1950) 17,896.  
 Monfalcone, *commune*, N.E. Italy; chemicals, shipbuilding, cotton mills; p. (1948) 19,634.  
 Monforte, *t.*, Galicia, Spain; soap, linen; p. 13,200.  
 Monghyr, *dist.*, Bihar, India; a. 3,927 sq. m.; agr., mica; p. 2,000,000.  
 Mongol-Buryat, A.S.S.R., U.S.S.R.; E. of L. Baikal; cattle breeding.  
 Mongolia, *rep.*, N. of China; a. approx. 1,000,000 sq. m.; deserts, mtns., cattle, minerals; ch. t. Ulan Bator (Urga); p. approx. 5,390,000.  
 Monmouth, *co.*, Eng.; coal, iron, steel, agr.; a. 546 sq. m.; p. (1951) 424,647.  
 Monmouth, *co. t.*, *mun. bor.*, Monmouth, Eng.; at confluence of R. Wye and Monnow; chemicals, tin-plate; p. (1951) 5,432.  
 Monmouth, *t.*, Ill., U.S.A.; mnfs., coal; p. (1950) 10,193.  
 Monnow, *R.*, Monmouth and Hereford, Eng.; trib. of R. Wye; length 28 m.



- Monongahela, R., W. Virginia, U.S.A.; joins Allegheny R. at Pittsburgh to form Ohio R.
- Monongahela City, Penns., U.S.A.; mining, natural gas; p. (1950) 8,922.
- Monopoli, *spt.*, Apulia, Italy; oil, wine, fruit, flour tr.; p. 26,725.
- Monreale, *t.*, Sicily, Italy; cath.; fruit, almonds; p. 18,625.
- Monroe, c., Louisiana, U.S.A.; cotton centre, natural gas, paper, printing ink; p. (1950) 38,572.
- Monroe, *t.*, Michigan, U.S.A.; paper, machinery; p. (1950) 21,467.
- Monroe, *t.*, N.C., U.S.A.; marble quarries; mnfg.; p. (1950) 10,140.
- Monroe, *t.*, Wis., U.S.A.; tr. centre for agr. reg.; cheese; p. (1950) 7,037.
- Monrovia, *cap.*, *spt.*, Liberia, Africa; at mouth of R. St. Paul; exports rubber, palm oil; p. 18,000.
- Mons, *t.*, Belgium; on R. Trouville; cath.; rly. junction; coal, cotton, rayon, iron, engineering, glass mfg.; p. (1947) 25,661.
- Monselice, *t.*, Italy; mnfs.; p. 4,143.
- Monserat or Montserrat, *mtn.*, Spain; alt. 4,000 ft.
- Monsummano, *t.*, Italy; N.W. of Florence; health resort; some mnfs.; p. 9,125.
- Montagnana, *t.*, Italy; p. 12,100.
- Montargis, *commune*, Loiret, France; mnfg.; p. (1946) 14,615.
- Mont Blanc, *mtn.*, Alps; on the confines of Italy and France; highest peak in Europe except the Caucasus; alt. 15,781 ft.
- Mont Canis Pass, W. Alps; on bdy. between France and Italy; approached from W. by Isère-Arc valleys, from E. by Dora Riparia; alt. 6,876 ft.
- Mont Canis Tunnel, W. Alps; on bdy. between France and Italy; carries main rly. from Lyons to Turin under Col de Fréjus; approached from W. by Isère-Arc valleys, from E. by Dora Riparia; opened 1871; length  $7\frac{1}{2}$  m.
- Mont d'Or, *mtns.*, France; highest peak, 6,188 ft.
- Mont Genève, *mtn.*, Cottian Alps, France; alt. 6,100 ft.
- Mont St. Michel, *I.*, N. France; tourist centre.
- Montalcino, *t.*, Italy; industri.; p. 9,925.
- Montana, *st.*, U.S.A.; *cap.* Helena; Rocky Mtns.; copper, silver, gold, lead; pastoral, agr.; a. 147,138 sq. m.; p. (1950) 501,024.
- Montargis, *t.*, Loiret, France; hosiery, chemicals, rubber; p. (1946) 14,615.
- Montauban, *t.*, Tarn-et-Garonne, France; on R. Tarn; cath.; silk, agr. produce, wines; p. (1940) 36,281.
- Montbéliard, *t.*, Doubs, France; S. of Belfort; watch, textiles, mnfs., agr. trade; p. (1946) 14,301.
- Montrbrison, *t.*, Loire, France; on R. Vizézy; textiles; p. (1946) 7,000.
- Montceau-les-Mines, *t.*, Saône-et-Loire, France; coal, textiles, metal-working; p. (1946) 28,173.
- Montclair, *t.*, N.J., U.S.A.; residtl. suburb of New York; paper goods mnfs.; p. (1950) 43,927.
- Monte Bello Is., group, off N.W. coast Australia, about 85 m. N. of pt. of Onslow; first British atomic weapon exploded here 3rd Oct. 1952.
- Monte Carlo, *t.*, Monaco; tourist resort, casino; p. 11,000.
- Monte Corno, *mtn.*, Italy; in Central Apennines; alt. 9,583 ft.
- Monte Gargano, *peninsula*, S. Italy; projects into Adriatic Sea nr. plain of Foggia; formed by limestone plateau, alt. over 3,000 ft.; pasture on upper slopes, woodland on lower slopes; a. approx. 400 sq. m.
- Monte Maggiore, *t.*, Sicily, Italy; agricl. interests; p. 5,575.
- Monte Motterone, *mtn.*, Italy; alt. 4,800 ft.
- Monte Perdu, *mtn.*, Pyrenees, Spain; alt. 10,997 ft.
- Monte Rosa, *group*, Pennine Alps, on border of Italy and Switzerland; highest peak 15,217 ft.
- Monte Rotondo, *highest mtn.*, Corsica; alt. 9,071 ft.
- Monte Sant'Angelo, *t.*, Italy; pilgrim centre; p. 24,550.
- Monte Viso, *mtn.*, Cottian Alps, France; alt. 12,615 ft.
- Montecatini, *t.*, Italy; nr. Volterra; saline mineral baths; p. 9,125.
- Montecristi, *t.*, W. Ecuador; Panama hats; copra mkt.; p. (1938) 8,614.
- Montefrio, *t.*, Spain; W. of Granada; cas.; alcohol, soap, cotton mnfs.; p. 12,000.
- Montegnée, *commune*, Liège prov., E. Belgium; mnfg. sub. Liège; p. 10,555.
- Montego Bay, *spt.*, Jamaica; p. (1947) 11,547.
- Monteleone di Calabria, *t.*, Italy; cas.; p. 15,675.
- Montelimar, *t.*, Drôme, France; nr. R. Rhône; bricks, tiles, "nougat" coal-mining; p. (1946) 15,972.
- Montella, *t.*, Italy; mnfs.; p. 7,075.
- Montepulciano, *t.*, Italy; on R. Arno; p. 7,550.
- Montenegro, *dist.*, Yugoslavia; former kingdom; agr., pastoral; *cap.* Cetinje; a. 13,837 sq. m.; p. (1948) 376,573.
- Montereau, *t.*, Seine-et-Marne, France; on R. Seine; agr. tools, footwear, brick mnfg.; p. 10,000.
- Monterrey, *t.*, *cap.*, Nuevo Leon, Mexico; cath.; textiles, brewing, ironwks., minerals; p. (1950) 339,634.
- Montespertoli, *t.*, Italy; S.W. of Florence; mkt. *t.*; p. 11,850.
- Montevarchi, *t.*, Italy; on R. Arno; industri.; p. 15,300.
- Montevideo, *spt.*, *cap.*, Uruguay; on N. cst. of La Plata estuary; univ.; livestock products mnfs. and export; p. (estd. 1949) 784,000.
- Montezuma, *t.*, Ga., U.S.A.; mkt. for winter mkt. garden produce, cottonseed oil; p. (1950) 2,921.
- Monferrato, *low hills*, Piemonte, N. Italy; lie S. and S.E. of Turin between valleys of R. Po and R. Tanaro; celebrated vineyards, produce Asti Spumante wines; alt. never exceeds 1,500 ft.
- Montgomery, *co.*, N.E. Wales; *cap.* Montgomery; a. 797 sq. m.; p. (1951) 45,989.
- Montgomery, *co. t.*, *mun. bor.*, Montgomery, N.E. Wales; in upper Severn valley, 8 m. N.E. of Newtown; agricl. mkt.; p. (1951) 904.
- Montgomery, *c.*, *cap.*, Alabama, U.S.A.; cotton, timber, fertilisers; commercial centre; rly. wks.; p. (1950) 106,525.
- Montgomery, *t.*, W. Punjab, Pakistan; tr. livestock; leather, cotton; p. (1941) 28,345.
- Montichiari, *commune*, Lombardy, N. Italy; mfg.; p. 11,650.
- Montignies-sur-Sambre, *t.*, Belgium; coal, ironwks.; p. (1947) 25,000.
- Montigny-les-Metz, *commune*, Moselle, France; residtl. sub. Metz; botanic gardens; p. (1947) 16,739.
- Montilla, *commune*, S. Spain; agr., wines; textiles, pottery, soap; p. 22,527.
- Montluçon, *t.*, Allier, France; on R. Cher; agr. centre; machinery, cutlery, chemicals, mirrors; p. (1946) 46,826.
- Montmédy, *t.*, Meuse, France; on R. Chiers; fort; p. 2,023.
- Montoro, *c.*, S.W. Spain; on R. Guadalquivir; agr. products, olive oil; p. 18,000.
- Montpellier, *t.*, *cap.* Hérault, France; univ., wines, fruit, silk, chemicals, agr.; p. (1946) 93,102.
- Montreal, *c.*, *spt.*, Quebec, Canada; at confluence of Ottawa and St. Lawrence Rs.; caths., univ.; rly. centre; brewing, tobacco, footwear, etc.; commercial centre; largest c. and *spt.* in Canada; p. (1953) 1,646,000.
- Montreuil-sous-Bois, *E. sub.*, Paris, France; mnfs., fruit; p. (1946) 70,450.
- Montreux, *t.*, Switzerland; on L. Geneva; health resort; p. 19,000.
- Montrose, *spt.*, *burgh*, Angus, Scot.; on E. cst. at mouth of S. Esk R.; chemicals, and rope wks., linen, fisheries; p. (1951) 10,760.
- Montrouge, *sub.*, S. Paris, France; paper, perfumes, precision tools; p. (1946) 34,735.
- Montserrat, *I.*, Leeward Is., W. Indies; limes, fruits, carrots and onions; ch. t. Plymouth; a. 32 sq. m.; p. (1952) 13,400.
- Montville, *t.*, S.E. Conn., U.S.A.; paper, textiles; p. (1950) 4,766.
- Monza, *t.*, Lombardy, Italy; cath.; commerce, textiles, leather, hats; p. (1948) 60,950.
- Moonta, *t.*, S. Australia; on E. side of Spencer's G., 70 m. S. of Pt. Pirie; once imp't. copper-mines, now declining.
- Moore, *one of the ch. Is.*, the Société group, Pacific Ocean; a. 50 sq. m.; p. (1946) 2,833.
- Moortfoot Hills, *range*, Peebles and Midlothian, Scot.; alt. 2,136 ft.

- Moorhead, t., W. Minn., U.S.A.: potatoes, dairying, poultry; p. (1950) 14,870.
- Moose R., Ontario, Canada; flows to James Bay.
- Moosehead, L., Maine, U.S.A.: source of Kennebec R.; 35 m. long, 10 m. wide.
- Moose Jaw, c., Saskatchewan, Canada; rly. junction; agr. centre, agr. implements; p. (1951) 24,336.
- Moquegua, dep., S. Peru; cotton, maize, fruit; cap. M.; a. 5,549 sq. m.; p. (1947) 40,311.
- Moquegua, t., Peru; wines; p. 5,000.
- Mora, t., Spain; industr.; p. 10,441.
- Morar, c., Gwalior, Rajasthan, Central India.
- Moratala, t., Spain; N.W. of Murcia; cloth, alcohol, wines; p. 14,536.
- Moratuwa, t., Ceylon; p. (1946) 50,700.
- Morava, R., Czechoslovakia and Austria; trib. of R. Danube; length 212 m.
- Morava, R., Yugoslavia; rises in Crna Gora (S. of Dinoric Alps), flows N. into R. Danube 50 m. below Belgrade; valley used by trunk rly. from Belgrade to Thessaloniki (Salonika) and Athens, Sofia and Istanbul (Constantinople); length approx. 350 m.
- Moravská Ostrava, t., Czechoslovakia; coal and iron; chemicals; p. (1947) 180,960.
- Moravia, old prov., Czechoslovakia; agr., forestry, cloth, textiles; ch. t. Brno; a. 10,351 sq. m.; p. 3,135,180.
- Moray, co., N.E. Scot.; cereals, fisheries, distilling, woollens; co. burgh, Elgin; a. 482 sq. m.; p. (1951) 48,211.
- Moray Firth, arm of N. Sea; on Scottish E. est., between Ross and Cromarty, and Nairn, Moray cos.
- Morbihan, dep., France; on Bay of Biscay; agr. (apples), mining, fishing; cap. Vannes; a. 2,739 sq. m.; p. (1946) 506,834.
- Morcenx, t., Landes, France; p. 2,921.
- Mordov, A.S.S.R., U.S.S.R.; between Rs. Oka and Volga; agriculture; a. 9,843 sq. m.; p. (1939) 1,243,282.
- Morea, see Peloponnisos.
- Morecambe and Heysham, t., mun. bor., N. Lancs, Eng.; on S. shore of Morecambe Bay; Morecambe, holiday resort; Heysham, port for N. Ireland; p. (1951) 37,000.
- Moree, t., N.S.W., Australia; in agr. and grazing reg.; mkt.; p. (1947) 4,361.
- Morelia, c., cap., Michostán, Mexico; cath.; textiles, sugar; p. (1950) 103,516.
- Morelos, inland st., Mexico; mtns., forested; cap. Cuernavaca; a. 1,916 sq. m.; p. (1950) 272,803.
- Møre Og Romsdal, dist., Norway; a. 5,812 sq. m.; p. (1950) 191,438.
- Morez, t., S.E. Jura, France; precision instruments, optical equipment, winter sports; p. (1946) 5,020.
- Morgan, t., R.pt., S. Australia; on R. Murray, where it suddenly turns S. approx. 150 m. from its mouth; handles transhipment of Murray and Darling r. traffic to rail for despatch to Adelaide.
- Morgantown, t., W. Va., U.S.A.; coal, oil, gas fields; chemicals, heavy ind.; p. (1950) 25,525.
- Morioka, c., N. Honshu, Japan; textiles, ironwks.; p. (1950) 117,578.
- Moriaix, spt., Finistère, France; tobacco, paper, brewing, agr.; p. (1946) 15,121.
- Morley, t., mun. bor., W.R. Yorks, Eng.; 3 m. S.W. of Leeds; woollens, machinery, coal-mining; p. (1951) 39,783.
- Morocco, sultanate, N.W. Africa; includes French, Spanish, Prots., and International zone; fruits, cereals, livestock, and minerals; a. 172,104 sq. m.
- Morocco, French Protectorate, N.W. Africa; cap. Fez; a. 153,870 sq. m.; p. (1947) 8,175,000 Moroccans, 324,997 non-Moroccans.
- Morocco, Spanish protectorate; ch. t. Tetuan; a. 18,454 sq. m.; p. (1945) 1,082,009.
- Morocco, International Tangier Zone; a. 225 sq. m.; p. (1941) about 100,000.
- Morogoro, t., Tanganyika Terr., Brit. E. Africa; on E. edge of Central African plateau, alt. approx. 3,000 ft., 110 m. by rail W. of Dar-es-Salaam; centre of sisal- and cotton-growing area.
- Moron de la Frontera, commune, S.W. Spain; old church; olives; iron ore; marble; p. 26,575.
- Morotai I., N. of Molucca, Indonesia.
- Morpeth, mun. bor., Northumberland, Eng.; nr. Newcastle; coal-mining, tanning, malting, woollens; p. (1951) 10,797.
- Morrinsville, t., N.I. New Zealand; agr. centre; p. (1951) 2,820.
- Morrison, vil., Glamorgan, S. Wales; on R. Tawe, 2 m. N.E. of Swansea; zinc smelting and refining.
- Morristown, t., N.J., U.S.A.; holiday centre, fruit; p. (1950) 17,124.
- Morrisville, bor., Penns., U.S.A.; on Delaware R.; rubber products; p. (1950) 6,787.
- Morro Velho, mining dist., Minas Geraes, Brazil; in Serra do Espinhaço, 10 m. S. of Belo Horizonte; deep but rich gold-mines; ch. t. Nova Lima.
- Mors, l., N. Jutland, Denmark; a. 138 sq. m.; p. 26,186.
- Mortlake, t., Surrey, Eng.; on R. Thames; residtl. sub. of London; brewery.
- Morven, mtn., Aberdeen, Scot.; nr. Ballater; alt. 2,862 ft.
- Morven, mtn., Caithness, Scot.; nr. Berriedale; alt. 2,313 ft.
- Moscow, c., cap., U.S.S.R.; on R. Moskva; cath., univ., Kremlin, palaces; commercial centre; textiles, leather, tobacco, machinery, printing; p. (1939) 4,137,018.
- Moscow Sea (Ucha Reservoir), artificial lake, U.S.S.R.; created behind dam on R. Volga at Ivankovo; supplies water to Moscow, maintains level on Moscow-Volga Canal, and supplies water to eight hydro-electric power-stations; a. 127 sq. m.
- Moscow-Volga Canal, U.S.S.R., links R. Volga at Ivankovo with Khimki suburb of Moscow; forms part of Leningrad-Moscow inland waterway; opened 1937; length 80 m.
- Moselle, dep., N.E. France; cap. Metz; a. 2,403 sq. m.; p. (1946) 622,145.
- Moselle, R., France and Germany; trib. of R. Rhine; length 328 m.
- Mosgiel, t., S.I. New Zealand; woollens; p. (1951) 3,133.
- Moshi, t., Tanganyika Terr., Brit. E. Africa; on S.E. flank of Mt. Kilimanjaro; centre of coffee-growing district at alt. approx. 5,500 ft.; despatches coffee by rail to Tanga or Mombasa.
- Mosjøen, spt., W. Norway; p. 3,143.
- Mos va, R., U.S.S.R.; trib. of R. Oka; length 249 m.
- Moss, spt., Norway; shipbuilding, timber; p. (1946) 17,008.
- Mossamedes, spt., Angola, Africa; exports rubber; fishing, fertilisers; p. 8,977.
- Mossel Bay, spt., C. Prov., S. Africa; oysters, whaling; p. 10,000.
- Mossend, t., Lanark, Scot.; nr. Glasgow; iron and steel; p. 6,000.
- Mossley, mun. bor., Lancs, Eng.; 3 m. E. of Oldham; mkt., textiles, iron and steel; p. (1951) 10,415.
- Most, t., Czechoslovakia; sugar, brewing, chemicals; (1947) 35,330.
- Mostaganem, t., Algeria; vineyards, flour, leather; p. (1948) 53,464.
- Mostar, t., Herzegovina, Yugoslavia; on R. Neretva; fruit, wine, tobacco centre; p. (1948) 23,239.
- Mosul, c., prov. cap., Iraq; on R. Tigris; commercial centre, petroleum, flour, agr. products, livestock; p. (1947) 279,361.
- Motala, t., on L. Vattern, Sweden; p. (1951) 24,723.
- Motherwell and Wishaw, burgh, Lanark, Scot.; in Clyde valley, 15 m. S.E. of Glasgow; coal, iron, steel; p. (1951) 63,137.
- Motovilika, c., Molotov reg., W. U.S.S.R.; industr. sub. of Molotov; motors; p. (1939) 33,110.
- Motril, spt., Spain; minerals, cotton, sugar, fruits; p. 13,000.
- Motueka, t., S.I., New Zealand; fruit, tobacco; p. (1951) 2,469.
- Moulins, t., cap. Allier, France; on R. Allier; cath., ruined château; timber wks., brewing; p. (1946) 23,284.
- Moulmein, spt., Burma, on R. Salween; rice, timber; p. (1941) 71,181.
- Moundsville, c., W. Virginia, U.S.A.; on Ohio R.; coal, glass, zinc; p. (1950) 14,772.
- Mount Adams, peak, White Mtns., New Hampshire, U.S.A.; alt. 5,679 ft.



- Mount Carmel, *bor.*, Penns., U.S.A.; on Wabash R.; coal-mining, clothing mfr.; p. (1950) 14,222.
- Mount Clemens, *t.*, Mich., U.S.A.; on Clinton R.; mineral springs; p. (1950) 17,027.
- Mount Desert, *I.*, Maine, U.S.A.; a. 100 sq. m.; mtns.; summer resort.
- Mount Gambier, *t.*, S. Australia; pastoral, agr. centre; p. (1947) 6,787.
- Mount Holly, *t.*, N.J., U.S.A.; textiles, clothes, leather; p. (1950) 8,206.
- Mount Isa, *t.*, W. Queensland, Australia; in Selwyn Range 80 m. W. of Cloncurry, linked by rly. through Cloncurry to E. cst. at Townsville; silver-lead mines.
- Mount Loftly Range, *mtn. range*, S. Australia; lies immediately E. of Adelaide approx. 5 m. from St. Vincent G.; forms barrier to routes leaving Adelaide N.E. and E.; lower slopes support vineyards and outer suburbs of Adelaide; rises to over 3,000 ft.
- Mount Morgan, *t.*, Queensland, Australia; gold-mining; p. (1947) 3,799.
- Mount Morris, *t.*, New York, U.S.A.; p. (1950) 3,450.
- Mount Pleasant, *t.*, Mich., U.S.A.; oil, lumber, sugar-beet, dairy products; p. (1950) 11,393.
- Mount Vernon, *c.*, Ill., U.S.A.; timber, flour, woollens, coal; p. (1950) 15,600.
- Mount Vernon, *c.*, Indiana, U.S.A.; on Ohio R.; rly. centre; p. (1950) 6,150.
- Mount Vernon, *c.*, N.Y., U.S.A., on Bronx R.; sub. of N.Y.; residtl.; p. (1950) 71,899. Takes its name from George Washington's house on the Potomac, in Virginia, 15 m. S. of Washington, D.C.
- Mount Vernon, *c.*, Ohio, U.S.A.; on Kokosing R.; timber goods, mfrs.; p. (1950) 12,185.
- Mountain Ash, *urb. dist.*, Glamorgan, Wales; in narrow valley 3 m. S.E. of Aberdare; coal; p. (1951) 31,528.
- Mountain Province, *prov.*, N. Luzon, Philippines; rice, metal working; a. 5,458 sq. m.; p. 296,874.
- Mountmellick, *t.*, Laoighis, Ireland; mkt., tanning, malting; p. (1946) 2,739.
- Mount's Bay, *inlet*, S. cst. Cornwall, Eng.; 20 m. wide.
- Mourne Mtns., Down, N. Ireland; highest peak, 2,798 ft.
- Mouscron, *t.*, Belgium; cotton- and wool-weaving; p. (1947) 36,354.
- Moose or Souris, *R.*, Canada and U.S.A.; trib. of Assiniboine R.; length 500 m.
- Moy, *R.*, Mayo and Sligo, Ireland; length 35 m.
- Mozambique, *Portuguese col.*, E. Africa; sugar, oil-nuts, cotton, maize; cap. Lourenço Marques; a. 297,731 sq. m.; p. (1950) 5,732,767.
- Mozambique Channel, *strait*, Indian Ocean; separates Madagascar from mainland of Africa; length 1,000 m., width from 250 to 600 m.
- Mozambique Current, *ocean current*, flows N. to S. along E. cst. of Mozambique and Natal, E. Africa; relatively warm water.
- Mozdok, *t.*, U.S.S.R.; on Rostov-Baku rly.; oil pipe-lines; p. 14,008.
- Mpwapwa (Mpapua), *t.*, Tanganyika Terr.; tr. centre; p. 1,000.
- Much Wenlock, *see* Wenlock.
- Muck, *I.*, Inner Hebrides, Scot.; S. of Elgg.
- Mudgee, *t.*, N.S.W., Australia; p. (1947) 4,169.
- Mühlhausen, *t.*, Germany; on R. Ulstrut; textiles, chemicals; p. 44,300.
- Muir Kirk, *vil.*, Ayr, Scot.; coal-mining, iron; p. 4,358.
- Muizenberg, *t.*, S.W. Cape Prov., S. Africa; tourist resort; p. 10,000.
- Mukachevo (Munkács), *t.*, W. Ukraine, U.S.S.R.; mkt., textiles; iron; p. (1939) 26,123.
- Mukden (Moukden), *see* Shenyang.
- Mula, *t.*, Spain; tr. centre; p. 14,312.
- Mulde, *R.*, Germany; trib. of R. Elbe; length 130 m.
- Mulhacén, *mtn.*, Sierra Nevada range, Spain; alt. 11,663 ft.
- Mülheim-am-Rhein, *t.*, Germany; textiles, chemicals, brewing, tobacco, tanning; p. 52,070.
- Mulheim-an-der-Ruhr, *t.*, Land N. Rhine-Westphalia, Germany; on R. Ruhr; textiles, brewing, tanning; p. (1950) 149,589.
- Mulhouse, *t.*, Haut-Rhin, France; textiles, chemicals, machinery; p. (1946) 87,655.
- Mull, *I.*, Argyll, Scot., included in Hebrides; a. 357 sq. m.; granite, pastoral farming; ch. t. Tobermory.
- Mull of Galloway, S. point of Wigtown, Scot.
- Mullet, *The, peninsula*, W. cst. Mayo, Ireland.
- Mullingar, *co. t.*, Westmeath, Ireland; on Brosna R.; mkt., agr. centre, tanning; p. (1946) 5,443.
- Multan, *div.*, W. Punjab, Pakistan; ch. t., Multan; p. (estd. 1951) 8,340,000.
- Multan, *t.*, W. Punjab, Pakistan; on R. Chenab; carpets, silks, pottery; p. (1951) 190,122.
- Mumbles, *holiday resort, residtl. dist.*, Glamorgan, S. Wales; within Swansea bor.; p. 10,000.
- München, Gladbach, *see* Gladbach.
- Muncie, *t.*, Indiana, U.S.A.; on White R.; iron, steel, glass and paper; p. (1950) 58,479.
- Munden, *t.*, Germany; on R. Weser; ruined cas.; timber, rubber, leather; p. 12,000.
- Munhall, *t.*, Penns., U.S.A.; p. (1950) 16,437.
- Munich, *c.*, Land Bavaria, Germany; on R. Isar; univ., cath., palace, museum; commercial centre; scientific instruments; machinery, gold, silver-ware, brewing; p. (1950) 831,937.
- Munster, *t.*, Haut-Rhin, France; calico mftg.; p. (1946) 4,641.
- Münster, *t.*, N. Rhine-Westphalia, Germany; cath., univ.; textiles, brewing, printing, wood carving; p. (1950) 118,496.
- Munster, *prov.*, S.W. Ireland; includes cos. Waterford, Kerry, Cork, Limerick, Clare, Tipperary; a. 9,475 sq. m.; p. (1951) 898,861.
- Muonio, *R.*, part of boundary between Finland and Sweden; flows into G. of Bothnia.
- Mur, *R.*, Austria; trib. of R. Drava; length 250 m.
- Murau, *t.*, Austria; p. 2,000.
- Murchinson, *C.*, Hall Peninsula, Baffin I., Canada.
- Murchison, *R.*, W. Australia; length 800 m.
- Murchison, *peak*, Rocky Mtns., British Columbia, Canada; alt. 13,500 ft.
- Murchison Falls, on Victoria Nile, Uganda.
- Murcia, *prov.*, S.E. Spain; former kingdom; minerals, cereals, fruit; cap. Murcia; a. 4,369 sq. m.; p. (1950) 756,721.
- Murcia, *c.*, cap., Murcia, Spain; on R. Segura; cath., univ.; silk, glass, hats, gloves; p. (1950) 218,375.
- Murfreesboro, *c.*, Tennessee, U.S.A.; p. 9,495.
- Murg, *R.*, Germany; trib. of R. Rhine; length 40 m.
- Murgab or Murghab, *R.*, Afghanistan; flows 250 m. to desert swamps.
- Murmansk, *spt.*, R.S.F.S.R., U.S.S.R.; on Kola peninsula; ice-free throughout year; fishing; p. (1939) 117,054.
- Murom, *t.*, U.S.S.R.; S.W., Gorki; mkt.; industr.; textiles; p. 22,621.
- Muroran, *t.*, Hokkaido, Japan; on W. cst.; p. (1950) 110,443.
- Muros, *commune*, N.W. Spain; agr., flour, soap, textiles; fishing; p. 10,475.
- Murphysboro, *c.*, Ill. U.S.A.; on Bi Muddy R.; p. (1950) 9,241.
- Murray, *R.*, separates N.S.W. and Victoria, Australia; largest r. in continent, length 1,600 m.
- Murray, *R.*, dist., N.E. Victoria, Australia.
- Murray, *t.*, N. Utah, U.S.A.; sub. Salt Lake City; lead smelting; p. (1950) 9,006.
- Murrumbidgee, *R.*, N.S.W., Australia; trib. of R. Murray; length 1,350 m.
- Murshidabad, *t.*, W. Bengal, India; silk, weaving, ivory carving, gold and silver embroidery; p. (1941) 11,000.
- Murtoza, *t.*, Portugal; fishing centre; p. 8,570.
- Murviadro, *spt.*, Spain; on E. cst., N. of Valencia.
- Murwillumbah, *t.*, N.S.W., Australia; dairying, fruit, timber.
- Murzuk, *t.*, Libya, N. Africa; in Fezzan Oasis; tr. centre; p. 1,000.
- Mus, *t.*, Turkey; W. of L. Van in I. of same name; p. (1945) 82,518.
- Musa Jebel, *mtn.*, Egypt; alt. 7,375 ft.; identified with the Biblical Sinai.
- Musardu, *t.*, Fr. W. Africa; old cap. of Mandingo nation.
- Muscat and Oman, *sultanate*, Arabia; agr., fruit (dates); cap. Muscat; a. 82,000 sq. m.; p. 550,000.
- Muscat, *a. cap.*, Muscat and Oman, Arabia; on S. cst. of G. of Oman; sm. tr.; pearl fisheries; p. 5,500.
- Muscataine, *c.*, Iowa, U.S.A.; on Mississippi R.; meat packing, timber industry; p. (1950) 19,041.

- Muscle Shoals, rapids**, in Tennessee R., U.S.A.; site of Wilson dam.
- Musgrave Range, mtns.**, on bdy. between S. Australia and N. Terr., Australia; isolated highland in centre of continent; arid; rise to over 3,000 ft.
- Muskegon, c.**, Michigan, U.S.A.; engineering; motor cars; accessories; aeroplane engines; p. (1950) 48,429.
- Muskingum, R.**, Ohio, U.S.A.; trib. of Ohio R.; length 240 m.
- Muskogee, t.**, Oklahoma, U.S.A.; rly. wks., oil refining, cotton, flour; p. (1950) 37,289.
- Musselburgh, burgh**, Midlothian, Scot.; on S. side of Firth of Forth at mouth of R. Esk; seaside sub. of Edinburgh; fishing, twine, paper; p. (1951) 17,012.
- Mussel Shell, R.**, Montana, U.S.A., trib. of Missouri R.
- Mussomeli, t.**, Sicily; agr. interests; p. 12,500.
- Muttra or Mathura, t.**, Uttar Pradesh, India; on R. Jumna; Hindu centre; p. (1941) 80,532.
- Muz Tagh, mtn. pass**, Karakoram Mtns., E. Turkestan; alt. 18,980 ft.
- Muzaffarpur, t.**, Bihar, India; p. (1941) 54,009.
- Muzo, municipality**, central Colombia; emerald mining; p. (1947) 3,000.
- Mwanza, t.**, N. Tanganyika, E. Africa; port on L. Victoria; rly. ter.; p. 6,000.
- Mweelra, mtn.**, Mayo, Ireland; alt. 2,688 ft.
- Mweru, L.**, between Belg. Congo and N. Rhodesia; a. 2,700 sq. m.
- Myaungmya, dist.**, Lower Burma; ch. t. Patanawa; p. 7,773.
- Mycenae, ancient c.**, Greece; ruined.
- Myerstown, bor.**, Penns., U.S.A.; industr.; p. (1950) 3,050.
- Mykonos, I.**, N. Cyclades, Greece; p. 4,138.
- Mymensingh, t.**, Bengal, Pakistan; rice, jute; p. (1941) 52,950.
- Mynyddislwyn, t.**, urb. dist., Monmouth, Eng.; in narrow valley of W. Ebbw R., 7 m. N.W. of Newport; coal mining; p. (1951) 14,418.
- Mynydd-Mawr, mtn.**, N. Wales; alt. 2,293 ft.
- Myslowice, t.**, Poland; nr. Katowice; rly. junction, coal, flax mills, bricks; p. 24,000.
- Mysore, st.**, S. India; coffee, gold, rice, cotton; a. 29,458 sq. m.; p. (1951) 9,071,678.
- Mysore, cap.**, Mysore, India; univ.; carpets, commercial centre; p. (1951) 244,323.
- Mytho, t.**, Viet-Nam, Indo-China; p. 7,010.
- Mytholmroyd, t.**, W. Riding, Yorks, Eng.; worsteds; p. 4,500.
- Mytilene, I.** (Lesbos), Greece, in Aegean Sea; highest point 3,080 ft.; olives, figs, lemons, oranges, grapes; antimony and marble; ch. t. Mytilene; a. 618 sq. m.; p. (1951) 154,683.
- Mytilene, cap.**, *spt.*, M.I., Greece; p. (1951) 27,125.
- Mzombe, R.**, Kenya; trib. of Ruaha R.; length 110 m.
- Mzymta, R.**, U.S.S.R.; flows to Black Sea; length 80 m.
- N**
- Naab, R.**, Bavaria, Germany; joins R. Danube nr. Ratisbon; length 90 m.
- Naarden, t.**, N. Holland, Netherlands; nr. Amsterdam; destroyed by Spaniards 1572.
- Naas, mkt. t.**, *cap.*, Kildare, Ireland; former cap. Leinster; p. (1946) 3,774.
- Nabad, t.**, Persia; on Persian G., S. of Shiraz.
- Nabeul, t.**, Tunisia, N. Africa; winter resort; p. 15,000.
- Nabi Saleh, I.**, forming part of st. of Bahrein, Arabia; about 2 m. in circumference.
- Nablus, c.**, Palestine; N. of Jerusalem; the ancient Shechem or Sychar, and later Neapolis; former cap. Samaria; soap mfg.; Jacob's Well and Mt. Gerizim adjacent; p. (1946) 24,660.
- Nabua, t.**, Luzon; Philippines; mkt. for agr. produce.
- Nachod, t.**, Czechoslovakia; on R. Mettaj at entrance to Lewin Nachod Pass; Prussian victory over Austrians 1866; cotton spinning, dyeing; p. 13,876.
- Nacogdoches, t.**, Texas, U.S.A.; lignite; mkt.; mfg.; p. (1950) 12,327.
- Nadiad, t.**, Bombay, India; good tr.; p. (1941) 18,753.
- Naestved, mkt. t.**, Zealand, Denmark; medicinal t. hall; p. 15,104.
- Naga Hills, dist.**, Assam, India; sparse population; inhabited by a semi-wild race; a. 5,710 sq. m.
- Nagano, c.**, central Honshu, Japan; on R. Sinanogawa, 100 m. S.W. of Niigata; silk mfg.; p. (1950) 101,426.
- Nagaoka, t.**, N.W. Honshu, Japan; large oil production centre; p. (1947) 33,274.
- Nagasaki, c.**, *flourishing spt.*, Kyushu, Japan; engineering, shipbuilding, enamelled and lacquer ware; second city to be destroyed by atomic bomb in Second World War; since rebuilt; p. (1950) 241,638.
- Nagh Hamadi (Nag' Hammadi), t.**, Upper Egypt, N. Africa; on R. Nile 160 m. above Asyut; site of barrage (opened 1930) to regulate Nile flood and ensure irrigation of Girga prov.; barrage carries Cairo-Sheila rly. across Nile; junction for light rly. to Kharga Oasis.
- Nagina, t.**, Uttar Pradesh, India; sugar; p. (1941) 26,077.
- Nagoya, t.**, Owari, Honshu, Japan; thriving cap. great tr., ch. ceramic industry centre, also cotton and silk factories; p. (1950) 1,030,635.
- Nagpur, cap.**, Madhya Pradesh, India; chiefly noted for its Hindu temples; salt, grain, cotton; p. (1951) 449,099.
- Nagy Banja, mining t.**, Romania; gold, silver, lead.
- Nagy Becskerek, industr. t.**, Yugoslavia; on R. Bega.
- Nagyenyed, t.**, Transylvania, Romania; on R. Maros; wood carving, educational centre, famous for wine in Middle Ages.
- Nagykanizsa, t.**, Hungary; distilling, milling; p. 30,794.
- Nagyikikinda, t.**, Torontál, Yugoslavia; flour and fruit tr.
- Nagykörös, industr. t.**, Hungary; wine; p. 29,899.
- Naha, spt.**, Ryukyu Is., Japan; mkt., textiles; p. (1950) 75,725.
- Nahe, R.**, Germany, flows 69 m. to R. Rhine, nr. Bingen.
- Nailsworth, t.**, urb. dist., Gloucester, Eng.; in Cotswold Hills, 4 m. S. of Stroud; woollens; p. (1951) 3,523.
- Nain, settlement**, Moravian Brethren, E. est. Labrador.
- Nairn, mar. co.**, Scot., on Moray F. between Moray and Inverness; considerable moorland; farming, quarries, fishing; a. 200 sq. m.; p. (1951) 8,719.
- Nairn, burgh**, Nairn, Scot.; on S. side of Moray Firth 13 m. N.E. of Inverness; resort fishing; p. (1951) 4,700.
- Nairobi, c. cap.**, Kenya, E. Africa; 327 m. from Mombasa; Uganda Rly. centre; big-game shooting; p. (1948), 118,976.
- Naiyasha, L.**, Kenya; located on floor of Gr. African Rift Valley; alt. 6,000 ft.
- Najibabad, t.**, Uttar Pradesh, India; tr. in timber, sugar, metal mnfs.
- Nakhichevan, t.**, Azerbaidjan, U.S.S.R.; founded by Armenian emigrants; flourishing tr., smelting, cottons, silks; p. 12,000.
- Nakhon Ratchasima, t.**, Siam; copper, mkt.; p. 12,000.
- Nakshov, spt.**, Laaland I., Denmark; sugar refining; p. 15,505.
- Namangan, industr. t.**, Uzbekistan, U.S.S.R.; on the Syr Daria; p. (1939) 77,351.
- Namaland or Namaqualand, region**, S.W. Africa; extends between Walvis Bay and the Orange R., reaching from Atlantic est. to Kalahari Desert; semi-arid; a. 100,000 sq. m.; administered by Union of S. Africa; copper, diamonds.
- Nambour, t.**, Queensland, Australia; butter, sugar, bananas, pineapples, citrus fruit and timber products; p. (1947) 2,251.
- Nam Dinh, impt. tr. t.**, Tongking, Viet-Nam, Indo-China; p. 25,000.
- Namoi, R.**, in N.S.W. Australia; trib. of Darling R.; 270 m.
- Nampula, ch. t.**, Mozambique, Port. E. Africa; p. 5,000.
- Namsos, spt.**, central Norway; on Folda Fjord lumber, fish canning; textiles; copper; p. (1946) 3,796.
- Namur, prov.**, Belgium; bordering on France; collieries, iron ore, woodland; a. 1,413 sq. m.; p. (1947) 356,090.
- Namur, fort.**, c., Belgium; at confluence of Meuse and Sambre Rs.; p. (1947) 31,444.



- Nanaimo, *t.*, Brit. Columbia, Canada: coal, timber, brewing; p. (1941) 6,700.
- Nanao, *t.*, Honshu, Japan; p. (1947) 29,987.
- Nanchang, *c.*, Kiangsi, China; on Kan-Kiang; tea, rice, cotton; p. (estd. 1946) 205,101.
- Nancy, *ch. t.*, Meurthe-et-Moselle, France; old cap. Lorraine; gr. industr. activity, cottons, woollens, chemicals, embroidery; p. (1946) 113,477.
- Nanda Devi, *mtn.*, Tibet, nr. Indian frontier; alt. 25,645 ft.
- Nander, *t.*, Hyderabad, India; on R. Godavari; Muslims and tr. centre; p. (1941) 10,000.
- Nanga Parbat, *mtn.*, N.W. Kashmir, India, in W. Himalayas; alt. 26,660 ft.
- Nanhai, *see* Fatsan.
- Nanking, *gr. c.*, Kiangsu, China; on Yangtze-Kiang; cap. during Kuomintang régime, 1928-49; famous seat of learning; cotton cloth, silk, ink; contains tombs of founders of the Ming dynasty; p. (estd. 1952) 1,020,000.
- Nanling (Nanshan), *mtns.*, S. China; form divide between Rs. flowing N. to Yangtze-Kiang and S. to Si Kiang; crossed by historic Cheling and Melling Passes; alt. mainly below 6,000 ft.
- Nanning, *c.*, former treaty port, Kwangsi, China; on the Yu-Kiang; ch. mkt. on S. frontier; p. (1931) 68,110.
- Nan Shan, *mtns.*, Central China; between Yangtze-Kiang basin and that of the Si Kiang.
- Nanterre, *t.*, Seine, France; nr. Paris; noted for cakes; aluminium mfg.; p. (1946) 41,860.
- Nantes, *t.*, cap. Loire-Inférieure, France; on R. Loire; biscuit mfg., wood pulp, bell foundries, machine wks., chemicals, sugar, oil, textiles, stained glass, nursery gardens; p. (1946) 200,265.
- Nanticoke, *t.*, Penns., U.S.A.; on Susquehanna R.; anthracite, canning; p. (1950) 20,160.
- Nantucket, *i.*, Mass., U.S.A.; official W. end of trans-Atlantic sea-crossing; summer resort; p. (1950) 2,901.
- Nantung, *c.*, Kiangsu, China; on N. bank of Yangtze-Kiang estuary 20 m. N.W. of Hai-men; p. (estd. 1935) 133,326.
- Nantwich, *mkt. t., urb. dist.*, Cheshire, Eng.; on R. Weaver, 3 m. S.W. of Crewe; brine baths, cheese, ironwks., fox-hunting centre; p. (1951) 8,340.
- Nantyglo and Blaina, *urb. dist.*, Monmouth, Eng.; in narrow valley 2 m. N. of Abertillery; coal, ironwks.; p. (1951) 11,427.
- Nao, *C.*, E. coast Spain; opposite Balearic Is.
- Napier, *c.*, cap., Hawkes Bay, N.I., New Zealand; fine esplanade, suffered great damage by earthquake 1931, rebuilt by 1933; exports frozen meat; p. (1951) 24,535.
- Naples, (Napoli), *c.*, *spt.*, Campania, S. Italy; on Bay of N., at foot of Vesuvius, opposite site of ancient Pompeii; sanctuary of Madonna di Pompeii; grotto of Pozzuoli, Castel del Ovo, grand cath.; votive church of San Francesco di Paola; monastery of San Martino; subject to earthquakes and volcanic eruptions; impt. shipping; mnfs.; macaroni, vermicelli, wine, olive-oil, ship-building; p. (1951) 1,011,919.
- Napo, *R.*, Ecuador; trib. of Amazon; length 800 m.
- Napoleon, *t.*, N.W. Ohio, U.S.A.; light mnfs.; p. (1950) 5,335.
- Nara, *t.*, Honshu, Japan; S. of Kyoto; shrines and temples, colossal image of Buddha; old cap. of Japan; p. (1947) 70,731.
- Narbada or Nerbudda, *R.*, India; flowing from Rewa to the G. of Cambay, in the Arabian Sea; length 800 m.
- Narbeth, *t., urb. dist.*, Pembroke, Wales; nr. head of Milford Haven; coal; p. (1951) 1,053.
- Narbonne, *t.*, Aude, France; wines, sulphur, tiles; p. (1946) 22,975.
- Nardo, *t.*, Lecce, Italy; textiles; p. 20,553.
- Narenta, *R.*, Yugoslavia; flowing 140 m. to Adriatic.
- Narew, *R.*, Poland; flows to R. Bug, nr. Warsaw; length 200 m.
- Narino, *dep.*, Colombia, S. America; a. 11,545 sq. m.; cap. Pasto; p. (1947) 537,410.
- Narni, *t.*, Perugia, Italy; linoleum.
- Narón, *t.*, N.W. Spain; nr. Corunna; p. 13,319.
- Narrabri, *t.*, N.S.W., Australia; S. of Moree; p. (1947) 3,328.
- Narragansett Bay, *inlet* of the Atlantic off east. of Rhode I., U.S.A.
- Narrandera, *t.*, New South Wales, Australia; on E. Murrumbidgee on N. margin of Riverina district; collecting centre for wool, mutton, wheat, and fruits produced in irrigated area fringing Murrumbidgee from Narrandera to Hay.
- Narrogin, *t.*, W. Australia; p. (1947) 2,558.
- Narva, *t.*, Estonia, U.S.S.R.; founded in 1223 by the Danes; cath.; textile factories; p. 24,444.
- Narvacan, *t.*, Luzon, Philippines; in fertile valley; cotton mnfs.
- Narvik, *t.*, N.W. Norway; opposite Lofoten Is.; ice-free throughout year, linked by riv. to impt. iron-ore fields in N. Sweden; exports iron ore; p. (1946) 10,233.
- Nashua, *c.*, New Hampshire, U.S.A.; cotton, paper, carpets, ironwks.; p. (1950) 34,669.
- Nashville, *c.*, *cap.*, Tennessee, U.S.A.; on Cumberland R.; fine capitol and other public buildings; gr. timber tr.; univs. and colleges; mnfs. flour, cotton, soap, farm implements; p. (1950) 174,307.
- Nasik, *t.*, Bombay, India; on R. Godavari; Hindu pilgrim centre; metal work, cotton weaving; p. (1941) 55,524.
- Nasirabad, *t.*, E. Bengal, Pakistan; on Brahmaputra R.
- Naso, *t.*, nr. Messina, Sicily; industr.; p. 8,000.
- Nassau, *I.*, Cook Is., S. Pac. Oc.; New Zealand terr.; uninhabited.
- Nassau, *t.*, cap. Bahamas, W. Indies; all impt. Is. of the Bahamas connected with N. by radio telegraphy; resort; pearls, sponges, fruit; p. (1943) 29,391.
- Nässjö, *t.*, S. Sweden; lumber, leather, light mnfs.; p. (1947) 11,422.
- Natal, *cap.*, Rio Grande do Norte, Brazil; rubber; p. (1947) 51,936.
- Natal, *prov.*, Union of S. Africa; sub-tropical coastal climate; products: sugar-cane, tea, cereals, minerals (especially coal); cap. Pietermaritzburg; a. (inc. Zululand) 35,284 sq. m.; p. (1951) 2,408,433 (inc. 274,468 Europeans).
- Natanz, *prov.*, Persia; in hill country between Kashan and Isafahan; famous for pears and other fruit.
- Natchez, *c.*, Mississippi, U.S.A.; in rich cotton-growing dist.; p. (1950) 22,740.
- Natchitoches, *t.*, Louisiana, U.S.A.; on Red R.; p. (1950) 9,914.
- Natick, *t.*, Mass., U.S.A.; boots, shoes; p. (1950) 19,838.
- Natick, *t.*, R.I., U.S.A.; cotton, light mnfs.; p. 3,660.
- Naturaliste, *C.*, N.E. Tasmania.
- Naturaliste, *C.*, S. of Geopraphe Bay, W. Australia.
- Naucratis, *ancient c.*, between Cairo and Alexandria; excavated by Flinders Petrie and Gardiner.
- Naugatuck, *industr. t.*, Conn., U.S.A.; mnfs. rubber, iron castings; p. (1950) 17,455.
- Nauheim or Bad Nauheim, *vat. pl.*, Hessen, Germany; p. 12,981.
- Naumburg, *t.*, Saxony, Germany; on R. Saale; annual Hussite feast; mnfs.; p. 37,000.
- Nauplia, *see* Navplion.
- Nauru, *I.*, S. Pac. Oc.; 26 m. S. of Equator; administered jointly by Gt. Britain, Australia, and New Zealand; phosphate industry; a. 8 sq. m.; p. (1951) 3,434.
- Nauta, *t.*, Peru; on confluence of Rs. Marañon and Ucayali.
- Navan (An Uamh), Meath, Ireland.
- Navanagar, *t.*, Saurashtra, India; on G. of Kutch; silk and gold embroidery; p. (1941) 42,000.
- Navarino or Neocastro, *spt.*, Greece; on W. coast. Morea; Turkish-Egyptian fleet destroyed in the harbour by allied English, French, and Russians in 1827.
- Navarra, *prov.*, old kingdom, N. Spain; bounded by the Pyrenées; cap. Pamplona; grain, fruits, olives, wines, cattle-rearing, copper, silver, lead; a. 4,055 sq. m.; p. (1950) 382,932.
- Navasota, *t.*, E. Texas, U.S.A.; mkt., cotton processing mills; p. (1950) 5,188.
- Navpaktos, *spt.*, Greece; at head of G. of Corinth; p. (1940) 4,100.
- Navplion, *t.*, Peloponnesos, Greece; on G. of Nauplion; p. (1951) 8,456.
- Nawabri, *t.*, S.W. Baroda, W. Indian Union; cotton, leather, metal-work; p. (1941) 24,397.
- Naxos, *I.*, Greece; largest of the Cyclades; a. 164 sq. m.; famous for wine and fruit.

- Nayarit, *st.*, Mexico; a. 10,444 sq. m.; cap. Tepic; p. (1940) 216,698.
- Nazare, *t.*, Brazil; p. 13,492.
- Nazareth, *t.*, Israel; nr. Acre; p. (1946) 15,540.
- Naze, The, *c.*, S. point of Norway.
- Nazilli, *t.*, S.W. Turkey; on R. Menderes; agr., esp. olives; p. (1945) 18,877.
- Ndola, *t.*, N. Rhodesia, Central Africa; nr. bdy. with Katanga prov., Belgian Congo, 110 m. by rail N. of Broken Hill; centre of rich copper-mining area, less important lead- and zinc-mining; minerals despatched by rail E. to Beira and W. to Lobito Bay.
- Neagh, Lough, *L.*, N. Ireland; largest in British Is.; a. 153 sq. m.; drained by R. Bann.
- Neath, *t.*, *mun. bor.*, Glamorgan, Wales; 6 m. up R. Neath from Swansea Bay; coal, iron, copper, tin and chemical wks., shipping, engineering; p. (1951) 32,305.
- Nebraska, *st.*, U.S.A.; mainly prairie; cap. Lincoln; farming, meat-packing, oats, wheat, maize, hay, potatoes, sugar-beet, apples, wool, livestock, potash; a. 77,227 sq. m.; p. (1950) 1,325,510.
- Nebraska, *R.*, trib. of Missouri R., U.S.A.
- Nebraska City, *t.*, S.E. Neb., U.S.A.; mkt. in agr. and cattle area; starch, canning; p. (1950) 6,872.
- Neckar, *R.*, Germany; rising between the Swabian Jura, nr. Schwenningen, and the Black Forest; through Württemberg-Baden to the Rhine at Mannheim; length 240 m.
- Neder Rijn, *see* Lek.
- Needham, *t.*, Mass., U.S.A.; nr. Boston; mnfs.; p. (1950) 16,313.
- Needham Market, *t.*, Suffolk, Eng.; on R. Gipping; p. 1,349.
- Needles, *group of rocks*, jutting out at W. extrem. I. of Wight, Eng.
- Neenah, *c.*, Wisconsin, U.S.A.; timber yards, flour and paper mills; summer resort; p. (1950) 12,437.
- Negapatam, *t.*, Madras, India; at mouth of R. Vettar; rly. terminus; cotton, tobacco, ground-nuts; p. (1941) 52,937.
- Negev, *reg.*, S. Israel, pioneering area.
- Negoiul, *mtn.*, Transylvanian Romania; 8,346 ft.
- Negombo, *spl. urb. dist.*, N.W. prov., Ceylon; native work in metal, leather; p. (1946) 32,479.
- Negotin, *t.*, E. Yugoslavia; on Romanian border; p. 6,633.
- Negri Sembilan, *st.*, Federation of Malaya; a. 2,580 sq. m.; cap. Kuala Pilah; p. (1947) 267,668.
- Negritos, *t.*, Piura dep., Peru; on est., 15 m. S. of Talara; impt. oil-field.
- Negro, Rio, *prov.*, Argentina; a. 77,610 sq. m.; cap. Viedma; p. (1947) 132,726.
- Negro Rio, *R.*, Argentina; flows into G. of St. Matias.
- Negro, Rio, Brazil, Colombia, S. America; one of the ch. tribs. of R. Amazon; rises in Colombia, joins the Amazon in N. Brazil.
- Negros, *I.*, Philippine; S. of Mindanao; a. 4,905 sq. m.; p. 1,260,000.
- Nehbandan Range, *mtns.*, E. Persia.
- Neheim, *t.*, Westphalia, Germany; mnfs. metal goods; p. 12,309.
- Neilston, *par.*, nr. Glasgow, Renfrew, Scot.; bleachfields, cotton, coal.
- Neisse or Nisa, *R.*, tribs. of R. Oder, (1) Western Neisse now frontier between Poland and Germany to Czechoslovak frontier, (2) Eastern Neisse in E. Silesia.
- Neiva, *t.*, Colombia, S. America; on R. Magdalena; cattle, coffee; p. (1947) 15,096.
- Nejd, *dist.*, Central Arabia; with Hejaz, forms kingdom of Saudi Arabia; mainly desert; impt. oil wells, horses, camels, dates, various fruits; cap. Riyadh; p. 4,000,000 (estimated).
- Nellore, *t.*, Madras, India; dyeing; rice; p. (1941) 56,315.
- Nelson, *mfto. t.*, *mun. bor.*, Lancs., Eng.; on N. flank of Rossendale 3 m. N.E. of Burnley; cotton, silk, coal, engineering; p. (1951) 34,368.
- Nelson, *prov.*, S.I. New Zealand; cap. Nelson; a. 10,870 sq. m.; p. (1951) 67,680.
- Nelson, *c.*, S.I. New Zealand; nr. head of Tasman Bay; fruit packing, timber; p. (1951) 20,492.
- Nelson, *t.*, Brit. Columbia, Canada; silver; p. 6,000.
- Nelson, *R.*, Canada; drains L. Winnipeg to Hudson Bay; length (with its gr. trib., the Saskatchewan) 1,450 m.
- Nelsonville, *t.*, Ohio, U.S.A.; on R. Hocking; colliery region; p. (1950) 4,845.
- Nemours, *t.*, Seine-et-Marne, France; glass factories; p. (1946) 5,118.
- Nemunas, *R.*, U.S.S.R.; flowing to the Kurisches Haif, S.E. Kaliningrad; length 50 m.
- Nen, *R.*, Lincoln, Eng.; flows to the Wash; length 70 m.
- Neenagh, *mkt. t.*, *urb. dist.*, Tipperary, N. Riding, Ireland; p. (1946) 4,517.
- Neosho, *R.*, Kansas, U.S.A.; trib. of Arkansas R.; length 450 m.
- Neosho, *t.*, S.W. Mo., U.S.A.; mkt., lumber, agr., lead-mining; p. (1950) 5,790.
- Nepal, *ind. kingdom*, Himalayas; bounded on N. by Tibet, on E. by Sikkim, on S. and W. by India; exports cattle, hides and skins, opium and other drugs; cap. Katmandu; a. about 54,000 sq. m.; p. (1941) 6,282,000.
- Nephin, *mtn.*, Mayo, Ireland; alt. 2,646 ft.
- Nerbudda, *see* Narbada.
- Nerchinsk, *t.*, U.S.S.R.; on Nertcha R.; p. 6,350.
- Nerchinski Zavod, *t.*, Chita Reg., U.S.S.R.; rich mineral deposits, little developed; p. 3,153.
- Ness, Loch, *L.*, Inverness, Scot.; occupies N.E. end of Glenmore; forms link in Caledonian Canal; very deep; 2½ m. long.
- Neston, *t.*, *urb. dist.*, Cheshire, Eng.; on N. side of Dee estuary; residt.; p. (1951) 9,727.
- Nesvizh, *t.*, W. Byelorussia, U.S.S.R.; p. 10,000.
- Netherlands, *kingdom*, W. Europe; divided into eleven provinces; bounded by the N. Sea, Germany, and Belgium; ch. cs.: Amsterdam (capital), Rotterdam (ch. port), The Hague (seat of Government), Utrecht, Haarlem, Groningen; country low-lying, cst. protected by dykes; fertile and productive; agr., butter- and cheese-making, mkt. gardening, distilling and various mnfs., shipbuilding, machinery, tobacco, sugar, diamond-cutting, commerce; a. 12,868 sq. m.; p. (1950) 10,200,280.
- Netherlands Antilles (Curaçao), groups of Is., Caribbean Sea; off N. Coast of Venezuela; consist of the Netherlands Windward Is. and the Netherlands Leeward Is.; a. 403 sq. m.; cap. Willemstad; p. (1948) 143,530.
- Netze, *see* Netec.
- Neuchâtel, *can.*, Switzerland; mountainous dist., Jura Mtns.; cattle, cheese, chocolate, watches, cutlery, cottons, hosiery; a. 309 sq. m.; p. (1950) 128,152.
- Neuchâtel, *t.*, *cap.*, Neuchâtel, Switzerland; on N.W. shore of Lake N.; watchmaking, jewellery, condensed milk; p. (1941) 23,799.
- Neuchâtel, *L.*, Switzerland; at S.E. foot of Jura Mtns. at the W. end of the central Swiss plateau; drains N.E. to R. Aar; length 36 m., width 3-5 m.
- Neufchâteau, *t.*, Vosges, France; nr. E. Meuse; p. (1946) 4,059.
- Neugersdorf, *t.*, Saxony, Germany; ironwks., textiles; p. 11,165.
- Neuhaldensleben, *t.*, Saxony, Germany; light mnfs., gloves; p. 10,882.
- Neuhausen, *commune*, N. Switzerland; aluminium wks.; p. (1941) 6,355.
- Neuilly-sur-Seine, *sub.*, W. of Paris, France; fine bridge and cas.; p. (1946) 60,172.
- Neumünster, *t.*, Germany; nr. Hamburg; tanning, cloth, mnfs.; p. 54,000.
- Neunkirchen, *t.*, Saar, Germany; iron, coal; p. 40,000.
- Neuquén, *terr.*, Argentina; agr. and stock-raising; a. 37,245 sq. m.; cap. Neuquén; p. (1947) 84,738.
- Neu-Ruppin, *t.*, Germany; on L. Ruppin; mnfs.; p. 21,291.
- Neusalz, *see* Nowa Sól.
- Neusandetz, *see* Nowy Sącz.
- Neusatz (Novi Sad), *t.*, Yugoslavia; on R. Danube; formerly a royal free city; almost destroyed by the Austrians in 1849; literary and commercial centre.
- Neuse, *R.*, N. Carolina, U.S.A.; flows to Pamlico Sound; length 300 m.
- Neuss, *t.*, Rhine prov., Germany; mnfs. iron goods, chemicals, textiles, paper; p. 44,890.
- Neustadt, *see* Wiener-Neustadt.
- Neu-Stettin, *see* Szczecinek.



- Neu-Strelitz, t.** Mecklenburg, Germany; iron work, furniture; p. 26,000.
- Neutitscheim, see** Novy Jičín.
- Neutra, see** Nitra.
- Neuwied, t.** Rhineland, Germany; on R. Rhine; ironwork, sugar, buttons; p. 21,600.
- Neva, R., U.S.S.R.;** drains L. Ladoga S.W. through Leningrad to G. of Finland; length 40 m.
- Nevada, mtn. st., U.S.A.;** between Utah, Oregon, and Idaho, and bounded S. and W. by California; arid, but rich in minerals, silver, lead, chrome, copper, etc., though production is greatly diminishing; cap. Carson City; a. 110,540 sq. m.; p. (1950) 160,033.
- Nevada, c., Missouri, U.S.A.;** zinc-mining and smelting; p. (1950) 8,009.
- Nevers, c., cap. Nièvre, France;** on R. Loire; cath.: the Roman Noviodunum; porcelain and falence industry; iron goods; farm implements; aircraft; p. (1946) 34,036.
- Neves, t., S.E. Brazil;** sugar, coffee; p. (1947) 34,603.
- Nevis, I., Leeward Is., W. Indies;** ch. product, cotton; ch. t. Charlestown; a. 50 sq. m.; p. 11,383.
- Nevis, Loch, arm of sea, off est. of Inverness, Scot.;** 14 m. long.
- New Albany, c., Indiana, U.S.A.;** on R. Ohio; glass, furniture, leather, iron and steel, car bodies; p. (1950) 29,346.
- New Amsted, t., Netherlands;** nr. Amsterdam; mnfs.; p. (1948) 21,892.
- New Amsterdam, t., Brit. Guiana;** on Berbice R.; p. 9,578.
- New Amsterdam, t., Manhattan I., U.S.A.,** taken by English from Dutch, 1664, and renamed New York.
- New Antwerp, t., on Congo R., Belg. Congo.**
- New Bedford, c., spt., Mass., U.S.A.;** on estuary of R. Acushnet; whale-fishery centre; mnfs. cottons, cordage, glass, shoes; p. (1950) 109,189.
- New Bern, N. Carolina, U.S.A.;** tr. in timber, tobacco, cotton, etc.; p. (1950) 15,812.
- New Braunfels, c., Texas, U.S.A.;** cotton goods, leather; lime; beauty spot; p. (1950) 12,210.
- New Brighton, t., Cheshire, Eng.;** at entrance to Mersey estuary; residtl.; resort.
- New Brighton, t., N.Y., U.S.A.,** on Staten Is.; warehouses and factories.
- New Brighton, bor., Penns., U.S.A.;** coal-mining; p. (1950) 9,535.
- New Brighton, t., S.I., seaside resort, nr. Christchurch, New Zealand.**
- New Britain, largest I., Bismarck Archipelago, Papua-New Guinea;** a. (with adjacent Is.) 14,000 sq. m.; p. 94,318.
- New Britain, c., Conn., U.S.A.;** iron and brass mnfs.; p. (1950) 73,726.
- New Brunswick, prov., Dominion of Canada;** largely forest-clad mtns. with many lakes; farming, lumbering, fishing, canning, coal, gypsum, natural gas; cap. Fredericton; a. 27,985 sq. m.; p. (1951) 515,697.
- New Brunswick, c., New Jersey, U.S.A.;** on Raritan R.; chemicals, motor lorries, motor parts, leather, hosiery and hardware; p. (1950) 38,811.
- New Caledonia, I., Fr. Col., S. Pacific;** coffee, copra, chrome ore, nickel; cap. Nouméa; a. 8,548 sq. m.; p. (1947) 61,250.
- New Castle, former prov., Spain.**
- New Castle, t., Delaware, U.S.A.;** p. (1950) 5,396.
- New Castle, t., Ind., U.S.A.;** steel mnfs., motor parts; p. (1950) 18,271.
- New Castle, t., Penns., U.S.A.;** tinplate, glass, steel wire, iron, coal; p. (1950) 48,834.
- New Cumberland, bor., Penns., U.S.A.;** tobacco, clothes; p. (1950) 6,204.
- New Cumnock, par., Ayr, Scot.;** coal.
- New Dongola or Maraka, t., Nubia, Anglo-Egyptian Sudan;** on R. Nile, Africa; p. 10,000.
- New England, the six N.E. Atlantic States of U.S.A.**
- New Forest, woodland region, Hants, Eng.;** a. 93,000 acres; ch. t. Lyndhurst; Brockenhurst and Beaulieu (with ruined abbey) are villages of note.
- New Forest, rural dist., Hants, Eng.;** p. (1951) 44,956.
- New Galloway, burgh, Kirkcudbright, Scot.;** on R. Dee, 12 m. N.W. of Castle Douglas; p. (1951) 305.
- New Glasgow, spt., Nova Scotia, Canada;** p. (1951) 9,933.
- New Granada, former name of the United States of Colombia, S. America.**
- New Guinea (Australian), see** Papua-New Guinea.
- New Guinea, Netherlands. W. part of the I. of New Guinea;** provisionally adm. by the Netherlands; a. (incl. Ternate), 115,861 sq. m.; p. (estd. 1954) 775,000.
- New Hampshire, st., New England, U.S.A.,** touching the Canadian border; forested and mountainous; agr. and fruit-growing extensively pursued; bulk of inhabitants concerned in various mnfs. and commerce; cottons, boots, shoes, wood-pulp; cap. Concord; ch. spt. Portsmouth; principal mftg. centre Manchester; a. 9,304 sq. m.; p. (1950) 533,242.
- New Haven, c., pt., Conn., U.S.A.;** on New Haven Harbour, inlet of Long I. Sound; Yale Univ.; firearms, clocks, tools, paper; meat-packing; p. (1950) 164,443.
- New Hebrides Condominium, I., Pac., Oc.;** roughly 500 m. W. of Fiji and 250 m. N.E. of New Caledonia; administered jointly by France and Britain; copra, cotton, cocoa; a. 5,700 sq. m.; p. (1952) 53,000.
- New Holland, ferry, rly. stn., on R. Humber, Lincoln, Eng.**
- New Hunstanton, t., urb. dist., Norfolk, Eng.;** on S.E. est. of The Wash, 15 m. N.E. of King's Lynn; resort; p. (1951) 3,414.
- New Iberia, t., Louisiana, U.S.A.;** sugar, cotton, and rice-growing; timber trade; p. (1950) 16,467.
- New Ireland, I., Bismarck Archipelago, Papua-New Guinea;** a. (with adjacent Is.) 3,800 sq. m.; p. 40,000.
- New Jersey, Atlantic st., U.S.A.;** adjoining New York; mixed farming, petroleum-refining, smelting, silks, cottons, chemicals, sanitary ware; cap. Trenton; ch. cs.; Newark and Jersey City; a. 7,836 sq. m.; p. (1950) 4,835,329.
- New Kensington, t., Penns., U.S.A.;** p. (1950) 25,146.
- New Lambton, t., N.S.W., Australia;** sub. Newcastle; coal; p. (1947) 6,318.
- New Lexington, t., Ohio, U.S.A.;** coal, oil and natural gas; p. (1950) 4,233.
- New London, c., Conn., U.S.A.;** at mouth of R. Thames; fine harbour; silk and woollen factories; p. (1950) 30,551.
- New Mexico, st., U.S.A.;** N. of the Mexican Rep., and S. of Colorado st.; traversed by the Rocky Mtns.; agr., gold, silver, copper, coal, stock-raising; cap. Santa Fé; a. 121,666 sq. m.; p. (1950) 681,187 (chiefly of Mexican descent).
- New Milford, t., Milford Haven, Pembroke, Wales.**
- New Milford, t., N.W. Conn., U.S.A.;** dairy prods., tobacco, foundries, textiles, chemicals; p. (1950) 2,673.
- New Mills, industr. t., urb. dist., Derby, Eng.;** at W. foot of Pennines 6 m. S.E. of Stockport; cotton textiles; p. (1951) 8,473.
- New Norfolk, t., Tasmania, Australia;** fruit-growing; p. (1947) 7,921.
- New Orleans, c., spt., Louisiana, U.S.A.;** on delta of Mississippi R.; the great cotton mart of America, and a busy commercial and mftg. centre; p. (1950) 570,445.
- New Philadelphia, c., Ohio, U.S.A.;** imp. rly. and canal centre; p. (1950) 12,948.
- New Plymouth, spt., cap., Taranaki, N.I., New Zealand;** on W. est. at N. foot of Mt. Egmont; centre of dairy farming dist.; p. (1951) 24,930.
- New Providence, I., Bahama Is., W. Indies;** contains cap. Nassau; p. (1943) 29,391.
- New Quay, t., urb. dist., Cardigan, Wales;** on est. of Cardigan Bay, 18 m. S.W. of Aberystwyth; p. (1951) 1,093.
- New Radnor, rural dist., co. t., Radnor, Wales;** on slope of Radnor Forest, 6 m. S.W. of Presteign; p. (of dist.) (1951) 2,255.
- New River, artificial aqueduct, Herts to Islington, London, Eng.;** length 36 m.
- New Rochelle, c., N.Y., U.S.A.;** on Long I. Sound; residtl.; p. (1950) 59,725.
- New Romney, t., mun. bor., Kent, Eng.;** nr. S. est. to E. of Dungeness; one of the Cinque Ports, in the rich agr. dist. Romney Marsh; old harbour silted up by shingle, and now a mile from sea; p. (1951) 2,356.
- New Ross, mkt. t., urb. dist., Wexford, Ireland;** brewing and malting; p. (1946) 4,398.
- New Siberian Is., off Arctic est., U.S.S.R.**

- New South Wales, st., S.E. Australia;** much mineral wealth in tablelands and mountains; silver, lead, coal, zinc; agr., corn, potatoes, fruit-growing, sheep, wool, cattle, meat; a. 309,433 sq. m. (exclusive of Australian Capital Terr. of Canberra); p. (1947) 2,984,858.
- New Waterway (Nieuwe Waterweg), ship canal, S. Holland, Netherlands;** connects R. Lek 7 m. below Rotterdam with N. Sea est. at Hook of Holland; length 11 m.
- New Westminster, t., Brit. Columbia, Canada;** at mouth of R. Fraser; former cap. of col.; exports timber, canned salmon; p. (1951) 28,639.
- New York, st., U.S.A.;** one of the original states; touching Canada on the N., and reaching the Atlantic on the S.; known as the "Empire State"; inc. Long I. and Staten I.; mixed agr., timber, iron ore, petroleum, natural gas, gypsum and various mnfs.; Albany is the State cap.; a. 49,576 sq. m.; p. (1950) 14,830,192.
- New York, c., spt., N.Y., U.S.A.;** ch. commercial centre of U.S.A. and Western Hemisphere; originally founded by Dutch settlers as New Amsterdam on Manhattan I.; gr. portion situated on Long Island; fine parks and bridges, skyscrapers, good harbour; ch. industries: cloth, textiles, printing and publishing, iron and steel work, machinery, sugar-refining, meat packing; p. (1950) 7,891,957.
- New York State Barge Canal (Erie Canal), N.Y. st., U.S.A.;** links Tonawanda on Niagara R. with Hudson R. via the Mohawk gap through Appalachian Mtns.; provides through water route from N.Y. to Gr. Lakes; opened as Erie Canal 1825, improved 1918; length 339 m. (with branches 525 m.), depth 12 ft.
- New Zealand, Brit. Dominion, S. Pac. Oc.;** E. of S.E. Australia and Tasmania, just over 1,200 m. from Sydney, N.S.W.; it consists of two main Is., N.I. and S.I. (a. 102,375 sq. m.), Stewart I. (670 sq. m.), Chatham Is. (372 sq. m.), Cook I., and several smaller Is.; the Is. are mountainous and contain numerous Ls., thermal springs, and geysers; the scenery being varied and beautiful, and the climate generally healthy; there are active and dormant volcanoes in N.I.; cap. Wellington; principal exports: wool, butter, frozen meat, cheese, hides, skins and pelts, minerals, and gold; p. (1952) 2,007,508 inc. 114,000 Maoris.
- Newark, t., Delaware, U.S.A.;** univ.; p. (1950) p. 6,731.
- Newark, mkt. t., mun. bor., Notts, Eng.;** on R. Trent 17 m. N.E. of Nottingham; brewing, ironwks., etc.; p. (1951) 22,909.
- Newark, c., N.J., U.S.A.;** fine flourishing mnfs., including chemicals, leather, jewellery; p. (1950) 438,776.
- Newark, c., Ohio, U.S.A.;** on R. Licking; rly., carriage wks. and other mnfs.; p. (1950) 34,275.
- Newark, t., N.Y., U.S.A.;** horticulture, glass, light mnfs.; p. (1950) 10,295.
- Newberry, t., S.C., U.S.A.;** cotton products, dairying; lumbering; p. (1950) 7,546.
- Newbiggin-by-the-Sea, t., urb. dist., on E. est., 4 m. N. of Blyth; sm. seaside resort; Northumberland; Eng.;** p. (1951) 9,727.
- Newbridge, see Droichead Nua.**
- Newburgh, burgh, Fife, Scot.;** on S. side of Firth of Tay, 8 m. E. of Perth; p. (1951) 2,367.
- Newburgh, c., N.Y., U.S.A.;** on Hudson R.; clothing and machinery mfgt.; p. (1950) 31,956.
- Newburn, t., urb. dist., Northumberland, on R. Tyne, 3 m. W. of Newcastle; Eng.;** p. (1951) 21,940.
- Newbury, mkt. t., mun. bor., Berks, Eng.;** on R. Kenney, 19 m. S.W. of Reading; malting, impt. wool mkt.; p. (1951) 17,772.
- Newburyport, c., spt., Mass., U.S.A.;** on Merrimac R.; boot and shoe factories, commerce and fisheries; p. (1950) 14,111.
- Newcastle, spt., urb. dist., on Dundrum Bay; Down, N. Ireland; p. (1951) 3,076.**
- Newcastle, t., W. Natal, S. Africa;** coal, iron, steel, wood, grain, hemp; p. 11,700.
- Newcastle, Greater, c., N.S.W., Australia;** at mouth of R. Hunter; second city of state; gr. coal depot of southern hemisphere and leading provincial industr. centre of Commonwealth; iron and steel, engineering, shipbuilding; p. (1947) 127,138.
- Newcastle Emlyn, urb. dist., Carmarthen, Wales;** on R. Teifi; p. (1951) 763.
- Newcastle-under-Lyme, t., mun. bor., Staffs, Eng.;** 2 m. W. of Stoke-on-Trent, on Lyme Brook; breweries, paper-making, etc.; p. (1951) 70,028.
- Newcastle-upon-Tyne, c., spt., co. bor., Northumberland, Eng.;** on N. bank of R. Tyne, 10 m. from the N. Sea; connected by bridges with Gateshead, Durham; great shipbuilding and colliery port; cath., many fine public buildings; flourishing chemical and many other mnfs.; p. (1951) 291,723.
- Newchwang (Yingkow), c., spt., Manchuria, China;** at head of G. of Chihli; cottons, soap, hosiery, glass; p. (estd. 1936) 106,040.
- Newcomerstown, t., E. Ohio, U.S.A.;** coal, steel, tinplate, bricks; p. (1950) 4,514.
- Newent, mkt. t., rural dist., Gloucester, Eng.;** 8 m. S. of Ledbury; p. (rural dist. 1951) 8,336.
- Newfoundland, I., prov. Canada;** E. of the G. of St. Lawrence; oldest Brit. col. in N. America; In E. low, in W. rugged mtns., many Ls.; coniferous forest; fishing, cod, salmon, halibut, lobster, seal; lumber, wood-pulp, paper; iron deposits; agr. and mining are being extensively developed; climate is severe; cap. St. John's; a. 42,734 sq. m.; p. (1951) 361,416.
- Newhaven, spt., urb. dist., E. Sussex, Eng.;** on S. est. at mouth of R. Ouse, 9 m. E. of Brighton; the passenger port for Dieppe; p. (1951) 7,785.
- Newington, dist., London, Eng.;** S. of Southwark.
- Newlyn, picturesque vil., Cornwall, Eng.;** on Mount's Bay, 1 m. W. of Penzance; fishing; p. 3,902.
- Newmarket, t., rural dist., Suffolk, Eng.;** at foot of E. Anglian Heights, 11 m. N.E. of Cambridge; horse-racing centre; famous Heath; p. (rural dist. 1951) 20,219.
- Newmarket, t., S.E. Ont., Canada;** leather mnfs.; p. 4,026.
- Newmilns and Greenholm, burgh, Ayr, Scot.;** on R. Irvine, 12 m. E. of Kilmarnock; muslin and lace curtain manufacture; p. (1951) 4,043.
- Newport, t., mun. bor., cap. of I., I. of Wight, Eng.;** on R. Medina, in gap through central Chalk ridge; mkt.; brewing and other light industries; p. (1951) 20,426.
- Newport, t., co. bor., Monmouth, Eng.;** on R. Usk, 5 m. from its mouth; shipbuilding, engineering, chemicals; exports coal, iron; p. (1951) 105,285.
- Newport, mkt. t., urb. dist., Salop, Eng.;** 8 m. N.E. of Wellington; p. (1951) 3,744.
- Newport, burgh, Fife, Scot.;** on S. side of Firth of Tay, opp. Dundee; p. (1951) 3,273.
- Newport, c., Kentucky, U.S.A.;** on Ohio R.; a resid. sub. of Cincinnati, with impt. local industries; p. (1950) 31,044.
- Newport, c., Rhode I., U.S.A.;** on Narragansett Bay; fashionable seaside resort; permanent p. (1950) 37,564.
- Newport News, c., spt., Virginia, U.S.A.;** at entrance to Chesapeake Bay; shipbuilding, various mnfs., large tr.; p. (1950) 42,358.
- Newport Pagnell, mkt. t., urb. dist., Bucks, Eng.;** on R. Ouse, 11 m. S.W. of Bedford; p. (1951) 4,366.
- Newquay, t., urb. dist., Cornwall, Eng.;** on N. Cornish est.; seaside resort; p. (1951) 9,928.
- Newry, t., urb. dist., Down, N. Ireland;** at head of Carlingford Lough; machinery, rope, brewing, granite; p. (1951) 13,264.
- Newton, c., Kansas, U.S.A.;** silks, worsted; p. (1950) 11,590.
- Newton, c., Mass., U.S.A.;** on R. Charles; mnfs.; p. (1950) 81,394.
- Newton Abbot, mkt. t., urb. dist., Devon, Eng.;** at head of Teign estuary; rly. junction; pottery; p. (1951) 16,393.
- Newton-le-Willows, t., urb. dist., Lancs, Eng.;** iron foundries, coal, paper, glass; p. (1951) 21,862.
- Newton-Stewart, burgh, Wigtown, Scot.;** on R. Cree, 5 m. N. of Wigtown; p. (1951) 2,000.
- Newtown, c., N.S.W., Australia;** S. sub. Sydney; ironwks., paint; p. (1947) 25,293.
- Newtown and Llanllwchaearn, mkt. t., urb. dist., Montgomery, Wales;** on R. Severn, 8 m. S.W. of Montgomery; p. (1951) 5,427.
- Newtownards, spt., mkt. industr. t., mun. bor., Down, N. Ireland;** 7 m. E. of Belfast; muslin, linen; p. (1951) 12,237.



- Neyland, *t., urb. dist.*, Pembroke, Wales; on Milford Haven; p. (1951) 2,204.
- Nezhin, *t.*, N. Ukraine, U.S.S.R.; rly. junction on Kiev-Moscow line; p. (1939) 37,345.
- Ngami, *L.*, Bechuanaland Protectorate; swamp, the remnant of a much larger lake.
- Ngaurohoe, *min.*, N.I., New Zealand; an active volcano; alt. 7,515 ft.
- Niagara, *R.*, forming part of boundary between Canada and U.S.A.; flows from L. Erie to L. Ontario; has rapids and the famous falls (167 ft.); gr. hydro-electric power-station; length 85 m.
- Niagara Falls, *t.*, Ontario, Canada; opp. the falls; carborundum, canning; p. (1951) 22,735.
- Niagara Falls, *c.*, N.Y., U.S.A.; extending along the summit of cliff for 3 miles; paper, flour, aluminium; p. (1950) 90,372.
- Niaméy, *t.*, Niger col., Fr. W. Africa; one of the termini (the other is Zinder) of the trans-Sahara motor routes; p. 7,000.
- Nias, *I.*, W. of Sumatra, Indonesia; 95 m. long.
- Niassa, *prov.*, Mozambique, Port. E. Africa; ch. t. Nampula.
- Nicaragua, *rep.*, Central America; tropical forest; heavy rain in summer; uniformly hot; coffee, cocoa, sugar, bananas; gold and silver; cap. Managua; a. 57,145 sq. m.; p. (1950) 1,053,189.
- Nicastro, *mtg. t.*, Calabria, Italy; W. of the Apennines; olives, wine; p. 24,869.
- Nice, *c., spl., cap.*, Alpes Maritimes, France; on Mediterranean est., at the foot of the Alps; beautiful climate and surroundings; joins ancient t. of Cimiez; ceded to France in 1860 by Sardinia; winter health resort; fruit and flower exports, perfume mfg.; p. (1946) 241,916.
- Nicobar Is., group in Bay of Bengal, Indian Oc.; between the Andamans and Sumatra, belonging to Dominion of India; total a. 635 sq. m.; coconuts; p. 12,009.
- Nicosia, *c., cap.*, Cyprus; the ancient Ledra; fortified, mosques, hand weaving; cap. of administrative dist. same name; p. (1946) 35,040.
- Nicoya, *G. of, inlet*, Costa Rica.
- Nietheroy, *see* Niteroi.
- Nidd, *R.*, trib. of R. Ouse, W.R. Yorks, Eng.
- Nidwalden, *can.*, Switzerland; a. 106 sq. m.; p. (1950) 19,389.
- Nieder Hemsdorf, *t.*, S.W. Poland; formerly Germany; coal, explosives; p. 11,706.
- Niederwald, *hill*, opposite Bingen-on-the-Rhine, Germany; national monument commemorating German triumph over France 1870-71, and formation of the G. Empire.
- Nieder Wesel or Neizel, *t.*, Germany; below Düsseldorf, on R. Rhine.
- Niemen or Memel, *R.*, Poland and U.S.S.R.; flowing to the Kurisches Haff; length 500 m.
- Nienburg, *indust. t.*, on R. Weser, Germany; p. 11,402.
- Nieuwveld Range, *mtns.*, C. of Gd. Hope, Union of S. Africa; part of S. terminal escarpment of African tableland; overlooks Gr. Karroo to its S.; forms impenetrable barrier to routes; mainly over 5,000 ft., max. alt. 6,276 ft.
- Nieuwport, *spl.*, S. of Ostend, Belgium; p. 5,500.
- Nièvre, *central dep.*, France; traversed by Morvan Mtns.; forests, livestock, coal, iron, steel; cap. Nevers; a. 2,659 sq. m.; p. (1946) 248,559.
- Nigde, *t.*, Turkey; p. 11,855.
- Niger, *gr. R.*, W. Africa; rises nr. the sea in the outer mtn. zone of W. Africa, as the R. Tembi, and sweeps round by Timbuktu to a delta in the G. of Guinea, on a circuitous course of 2,600 m., receiving its gr. trib. the R. Benue, about 250 m. from the mouth; navigable for 1,000 m.
- Niger, *col.*, Fr. W. Africa; sulphate of sodium production, stock-raising, cotton, rice; a. 499,410 sq. m.; p. (1948) 2,010,761.
- Nigeria, *Brit. col. and protectorate*, W. Africa; occupying the lower basin of R. Niger, with the region adjoining up to L. Chad; divided administratively into three groups of provs.; includes terr. of Cameroons for administrative purpose; Lagos seat of central government; Kaduna, cap. of N. provinces, Ibadan of W. provinces and Enugu of E. provs.; ch. products: palm kernels, groundnuts, rubber; total a. 373,250 sq. m.; p. (1953) 31,500,000.
- Nightingale, *I.*, most southerly of Tristan da Cunha group, S. Atlantic.
- Niigata, *c., port.*, Honshu, Japan; coal, petroleum, lacquer ware; p. (1950) 220,901.
- Niihama, *c.*, N. Shikoku, Japan; on est. of Inland Sea 20 m. S.E. of Imabari; refines copper obtained from Beishi Mines 12 m. to the S.; p. (1947) 32,392.
- Niitakayama, *min.*, Formosa I., China; highest mtn. of Niitaka Chain, central Formosa; alt. 12,939 ft.
- Nijar, *t.*, Almería, Spain; fruit, nuts, grain; textiles, porcelain; lead, manganese, iron ore; p. 10,107.
- Nijmegen, *fortd. t.*, S. Netherlands; on R. Waal, nr. Arnhem; univ.; mns. ale, Prussian blue, pottery, metal-work, cigars; p. (1951) 112,799.
- Nijni-Novgorod, *see* Gorki.
- Nikaria, *I.*, Dodecanese Archipelago, Greece.
- Nikko, *t.*, Honshu, Japan; famous temples and shrines; beautiful tourist resort; p. 8,000.
- Nikolayev, *fort. t.*, Ukraine, U.S.S.R.; nr. Kherson, at head of estuary R. Bug; admiralty yards and machinery wks.; iron, flour, tobacco, glass; p. (1939) 167,108.
- Nikolayevsk, *t.*, N.E. Stalingrad Reg., U.S.S.R.; on Volga R.; mfg.; p. 19,230.
- Nikolayevsk, *t.*, Siberia, U.S.S.R.; on R. Amur; p. 7,452.
- Nikopol, *t.*, Ukraine, U.S.S.R.; on R. Dnieper; manganese products; p. (1939) 57,341.
- Nikšić, *t.*, Montenegro, Yugoslavia; N. of Cetinje; p. 6,686.
- Nile, the longest R. in Africa (*see* White Nile (Bahr-el-Abiad) and Blue Nile (Bahr-el-Azrek) flows through a longer stretch of basin (over 2,450 m. in a direct line) than any other R. in the world, and along all its windings measures over 4,000 m.; on Upper Nile navigation is hindered by sudd (floating vegetation); river rises April, overflows September; formerly cultivation entirely dependent on annual floods, but now assisted by dams, at Asyût, Aswan, Sennar, for regulating flow and navigation.
- Niles, *t.*, Ohio, U.S.A.; p. (1950) 16,773.
- Nilgiri Hills, Madras, S. India. (10,000.
- Nimach, *t.*, Gwalior dist., Rajasthan, India; p. Nimes, *t.*, Gard, France; Roman antiquities, educational institutions; silk, cottons, carpets, machinery, wine trade; p. (1946) 104,109.
- Nineveh, celebrated ancient c., Iraq, stood on the E. bank of the upper R. Tigris, opposite the modern Mosul.
- Ningan, *t.*, E. Manchuria; mkt., tobacco, millet, maize; p. 30,000.
- Ningpo, *c., spl.*, Chekiang, China; 100 m. from Shanghai; wood carving, fishing, lace, hardware; principal exports: cotton, tea; p. (estd. 1942) 249,633.
- Ningsia, *prov.*, China; cap. Ningsia; a. 106,143 sq. m.; p. (1947) 724,000.
- Ninh Binh, *t.*, Tongking, Viet-Nam, Indo-China; p. 25,000.
- Ninove, *t.*, Belgium; on R. Dender; industr.; p. (1947) 11,557.
- Niobrara, *R.*, U.S.A.; trib. of Missouri R.; flows from Wyoming to Nebraska; length 450 m.
- Niort, *t.*, Deux-Sèvres, France; noted for its mkt. gardens, and leather manufacture (gloves); p. (1946) 32,752.
- Nipigon, *L.*, in Thunder Bay dist., Ontario, Canada; 70 m. long, 50 m. wide, 1,000 Is.; discharges by N. R. to Lake Superior; 80 m.
- Nipissing, *L.*, Ontario, Canada; 50 m. long, 35 m. wide.
- Niriz, *t.*, Fars prov., S.W. Persia; on old caravan route from Kerman to Shiraz; p. 9,000.
- Niš, *t.*, Yugoslavia; on R. Nishava; p. (1948) 50,663.
- Nisa R., *see* Neisse R.
- Nišava, *R.*, Yugoslavia; rises in Stara Planina, flows N.W. into R. Morava nr. Nis; valley used by trunk rly. from Belgrade to Sofia and Istanbul (Constantinople); length over 100 m.
- Nisicene, *commune*, Caltanissetta prov., Sicily; sulphur, agr.; p. 20,281.
- Nishapur, *prov.*, N. Khurasan, Persia; grows grain, cotton; and contains famous turquoise mines; cap. N., c. with good fruit tr.; mosque with tomb of Omar Khayyâm.
- Niterói, *t., cap.*, Rio de Janeiro st., Brazil; soap, textiles; p. (1950) 190,147.
- Nith, *R.*, S.W. Scot.; flows to Solway Firth, S. of Dumfries; followed by main rly. from Carlisle to Kilmarnock and Glasgow; length 71 m.

- Nitra (Neutra), R., Czechoslovakia;** trib. of R. Waag; length 100 m.
- Nitra, t., Czechoslovakia;** on R. Nitra; p. (1947) 22,589.
- Niue or Savage I., Pac. Oc.;** one of Cook Is., but under separate administration; belongs to New Zealand; ch. pt. Alofi; bananas, copra, etc.; a. 100 sq. m.; p. (1945) 4,253.
- Nivelles, t., Brabant, Belgium;** rly. workshops, paper; p. (1947) 11,865.
- Nivernais, old prov., France,** now forming Nièvre prov. and part of Cher.
- Nizampatam, t., spt., Madras, India;** formerly called Pettipollee after the neighbouring village of Pedapalle; the first trading establishment made by the British in the Madras presidency in 1811.
- Nizhnedinsk, t., W. Irkutsk, U.S.S.R.;** new mfg. t.; p. 10,342.
- Nizhni Tagil, t., U.S.S.R.;** in the Ural Range; thriving mfg.; p. (1939) 159,864.
- Njole, t., Middle Congo terr., Fr. Equatorial Africa;** on R. Ogowe.
- No, L., Bahr-el-Ghazal prov., Anglo-Egyptian Sudan, N.E. Africa;** vast swamp area 350 m. S.W. of Khartoum receiving Rs. Bahr-el-Jebel and Bahr-el-Ghazal (to form White Nile); flow of water blocked by papyrus reed and floating weed (sudd); gr. loss of water by evaporation.
- Noakhali, dist., and t., Chittagong div., Pakistan;** p. (of t.) 13,063.
- Nobi Plain, S. Honshu, Japan;** located at head of Ine Bay; composed of: (1) low, badly drained alluvial plain on W. under intensive rice cultivation, (2) higher, drier terraces on E. under mulberry, vegetables, pine-woods; very dense urban and rural population; ch. textile and pottery mfg. a. in Japan; inc. cities Nagoya, Gifu, Yokkaichi; a. 720 sq. m.
- Noblesville, t., Ind., U.S.A.;** agr., horse breeding; p. (1950) 6,567.
- Nocera Inferiore, t., Italy;** nr. Naples; the ancient Nuceria Alfaterna; p. 30,000.
- Nogent-sur-Marne, t., Seine, France;** S.E. sub. Paris; chemicals, knives; p. (1946) 21,056.
- Nogliusk, t., U.S.S.R.;** nr. Moscow; p. (1939) 81,024.
- Nola, t., Italy;** at foot of Vesuvius, 12 m. N.E. of Naples; was an ancient c. of Campania, noted for its vases; p. 20,253.
- Nombre-de-Dios, t., Mexico;** commercial centre.
- Nome, cst. t., Alaska, U.S.A.;** gold; p. (1950) 1,852.
- Noordoostelijke Polder, land reclaimed from Zuider Zee, Netherlands, 1942,** not yet included in any prov.; a. 185 sq. m.; p. 2,369.
- Noordwijk, resort, W. cst., Netherlands;** p. (1950) 16,686.
- Noranda, t., Quebec, Canada;** 12 m. N.E. of Rouyn; goldmines.
- Norcia, t., Italy;** old walls, cath.: famous for pork and terra-cotta.
- Nord, N. dep., France;** on Belgian frontier and N. Sea; flourishing agr., mining, iron and coal, textile and chemical mfts; cap. Lille; a. 2,229 sq. m.; p. (1946) 1,917,452.
- Norden, t., Hanover, Germany;** gin distilling, yeast factory; p. 12,300.
- Norderney, I., Frisian Is., Germany;** popular seaside resort; p. 4,098.
- Nordhausen, t., Saxony, Germany;** in Harz Mtns.; beer, spirits; p. 42,300.
- Nordkapp or N. Cape, most N. point, Europe;** on Magerø I., Norway.
- Nordkyn, most N. point, with North Cape, of the European mainland, Norway, opposite N. Cape.**
- Nordland, co., Norway;** a. 14,728 sq. m.; p. (1950) 221,701.
- Nordlingen, t., Bavaria, Germany;** carpet factories; p. 8,800.
- Nore, The, sandbank, lightship, Thames estuary, Eng.**
- Nore R., Ireland;** trib. of R. Barrow; length 70 m.
- Norfolk, co., E. Eng.;** noted for shallow lake expanses known as the Broads, popular yachting region; farming, corn, potatoes, cattle, fisheries (Yarmouth), brewing, boots, mustard, farm machinery; cap. Norwich; a. 2,055 sq. m. p. (1951) 546,550.
- Norfolk, c., Nebraska, U.S.A.;** on Elkhorn R.; in farming country; p. (1950) 11,335.
- Norfolk, c., Virginia, U.S.A.;** impt. naval stn.; spt.; general mfts., coffee-roasting; battle between the Monitor and Merrimac fought off N. 1862; p. (1950) 213,513.
- Norfolk I., fertile Australian I., Pac. Oc.;** 800 m. E. of N.S.W.; a. 15 sq. m.; formerly a penal settlement; discovered by Captain Cook, Oct. 10, 1774; pine trees; expts. citrus fruits; a. 134 sq. m.; p. (1949) 1,148.
- Noric Alps, mountainous region, Styria, S. Austria.**
- Normal, t., Ill., U.S.A.;** mkt. gardening, fruit, plants; univ.; p. (1950) 9,772.
- Norman, t., Okla., U.S.A.;** oil-field; cotton processing; agr.; univ. of Okla.; p. (1950) 27,006.
- Norman Wells, t., N.W. Terr., Canada;** at confluence of R. Mackenzie and G. Bear R., 70 m. W. of G. Bear I.; centre of rich oil-field.
- Normandy, old French prov., on English Channel;** mainly agr.; now divided into depts. Manche, Calvados, Eure, Seine-Inférieure, and part of Orne; Rouen was cap.; the Roman Lugdunensis; later a powerful Dukedom; conquered England, 1066.
- Normanton, t., urb. dist., W.R. Yorks, Eng.;** on R. Calder 2 m. E. of Wakefield; coal-mining, rly. wks.; p. (1951) 19,087.
- Norrbottn, co., N. Sweden;** a. 40,754 sq. m.; cap. Piteå; p. (1950) 241,596.
- Norris Dam, Tenn., U.S.A.;** across R. Clinch at confluence with R. Tenn., N.W. of Knoxville; lgst. dam Tenn. Valley Authority (TVA); built for flood control and generation of hydro-electricity.
- Norristown, bor., Penns., U.S.A.;** textiles, hosiery, carpets; p. (1950) 38,126.
- Norrköping, t., Sweden;** N.E. of Linköping; textiles, sugar, paper; p. (1951) 84,939.
- Norte de Santander, dep., Colombia, S. America;** a. 8,295 sq. m.; cap. Cucuta; p. (1947) 409,720.
- North Adams, c., Mass., U.S.A.;** on R. Hoosac; textiles, boots, and shoes; p. (1950) 21,567.
- North America, continent, comprising Canada, U.S.A., Mexico, Central America;** cst. much indented; on W. high chain of mtns., lower range in E., and central plain. Climate varies considerably owing to wide range of latitude and altitude; in N. Arctic, centre extremes of heat and cold, abundant rainfall on E. cst. and N. of W. cst., S. of W. cst. Mediterranean, Mexico, sub-tropical and tropical. Vegetation diverse, varying with altitude, latitude and climate; coniferous forests in N.; originally deciduous forests from E. cst. to approx. 100° W., then grassland to mtn. vegetation of W. range; semi-desert in S.W.; tropical forests Central America. Prairies once home of bison. Agr.: temperate and tropical products, cereals, cotton, tobacco, sugar-beet, potatoes, etc.; lumbering; rich in minerals, coal, petroleum, iron, manganese, etc. General industries, commerce, shipbuilding. Formerly inhabited by Red Indians; now mainly occupied by White races, with many negroes in S.; a. 8,700,000 sq. m.; p. 185,000,000 (estimated).
- North Atlantic Drift, drift of surface waters of Atlantic Ocean N.E. from Gulf Stream towards Europe;** relatively warm; supplies prevailing south westerly winds with warmth and moisture to modify climate of Brit. Isles and countries on N.W. margin of European Continent. See Gen. Inf.
- North Attleboro, t., Mass., U.S.A.;** jewellery mfts.; p. (1950) 12,146.
- North Bay, c., Ontario, Canada;** p. (1941) 15,599.
- North Berwick, burgh, E. Lothian, Scot.;** on S. side of Firth of Forth, 20 m. E. of Edinburgh; seaside resort; famous golf course; p. (1951) 4,001.
- North Brabant, prov., Netherlands;** cap. s'Hertogenbosch; a. 1,920 sq. m.; p. (1947) 1,192,640.
- North Braddock, t., Penns., U.S.A.;** p. (1950) 14,724.
- North Brookfield, t., Mass., U.S.A.;** rubber and asbestos mfts.; p. (1950) 2,599.
- North Cape, see Nordkapp.**
- North Cape, most northerly point, N.I., New Zealand.**
- North Carolina, S. Atlantic st., U.S.A., E. of Tennessee and S. of Virginia;** agr., maize, cotton-growing and mfg., tobacco culture and mfg., cap. Raleigh; ch. port, Wilmington; a. 52,712 sq. m.; p. (1950) 4,061,929, nearly one-third coloured.



- North Channel, Brit. Isles; gives access from Atl. Oc. to Irish Sea between S.W. Scotland (Galloway) and N.E. Ireland (Antrim); length 60 m.; narrowest width 15 m.
- North Chicago, *t.*, Ill., U.S.A.; on L. Michigan; chemicals, metallurgy, electr. goods; p. (1950) 8,628.
- North Dakota, *N.W. st.*, U.S.A.; mainly rolling prairie; agr., wheat, maize, oats, barley, flax, cattle, horses, sheep; coal; a. 70,665 sq. m.; p. (1950) 619,636.
- North Downs, range of low chalk hills across S. Eng., forming cliffs at Dover; gr. alt. abt. 800 ft.
- North Eastern New Guinea, part of New Guinea under Australian administration as Trusteeship terr. under United Nations; a. 69,700 sq. m.
- North East Passage, along N. cst. Europe and Asia between Atlantic and Pacific. *See* Gen. Inf.
- North Holland, *prov.*, Netherlands; on Zuider Zee; a. 1,051 sq. m.; cap. Haarlem; p. (1948) 1,793,966.
- North Little Rock, *t.*, Arkansas, U.S.A.; p. (1950) 44,097.
- North Osetin, A.S.S.R., U.S.S.R.; a. 3,100 sq. m.; cereals, livestock, petroleum.
- North Platte, *c.*, Nebraska, U.S.A., on N. Platte R., trib. of the Nebraska R.; p. (1950) 15,433.
- North Providence, *see* Nassau.
- North Rhine-Westphalia, *Land*, Germany; a. 13,153 sq. m.; p. (1950) 13,196,176.
- North Riding, Yorkshire, *see* Yorkshire, North Riding.
- North Sea, arm of the Atlantic, E. of Gr. Brit., W. of Norway, Sweden, and N. Germany, and N. of Holland, Belgium, and France; length 600 m., width 400 m.; good fisheries.
- North Sea Canal, *ship canal*, N. Holland, Netherlands; connects Amsterdam to N. Sea at IJmuiden; depth 46 ft., length 16 m.
- North Shields, *mkt. t.*, Northumberland, Eng.; Tyne port and part of the borough Tynemouth; marine engines, chain cables, anchors, rope.
- North Sydney, *spt.*, C. Breton I., Nova Scotia; Canada; docks, coal; p. (1941) 6,836.
- North Tonawanda, *c.*, N.Y., U.S.A.; on Niagara R.; mfnfs.; p. (1950) 24,731.
- North Walsham, *mkt. t.*, *urb. dist.*, Norfolk, Eng.; 13 m. N.E. of Norwich; p. (1951) 4,733.
- North-West Frontier Province, Pakistan; consists of dist. of Hazara, Peshawar, Kohat, Bannu, Dera Ismail Khan, and Mardan; a. 13,815 sq. m.; p. (estd. 1951) 3,239,000.
- North-West Frontier Tribal Area, Pakistan; comprises Malakand, Chitral, Khyber, Kurram, N. and S. Waziristan, Amb, Phulera; total a. 27,242 sq. m.; p. (estd. 1951) 2,460,000.
- North-West Passage, between Atlantic and Pacific along Arctic cst. of Canada. *See* Gen. Inf.
- North-West Territories, Canada; the N.W. region of Canada between the Yukon on the W., Hudson Bay on the E., and B.C., Alberta, Saskatchewan, and Manitoba on the S.; divided into three districts, viz., Franklin, Mackenzie, and Keewatin; gold- and silver-mining, radium, uranium, petroleum, furs, fisheries; a. 1,304,903 sq. m.; p. (1951) 16,004.
- North Woolwich, *t.*, Essex, Eng.; on R. Thames; mftg.
- North York. Moors, *limestone plateau*, N.R., Yorkshire; lies S. of estuary of R. Tees; drained N. to R. Tees, S. to R. Derwent and to North Sea by R. Esk; heather moorland; some pastoral farming on lower slopes; impt. iron-ore quarrying along N. edge in Cleveland dist.; alt. varies from 1,000 to 1,500 ft.
- Northallerton, *t.*, *urb. dist.*, N.R. Yorks, Eng.; in broad gap between Cleveland Hills and Pennines; dairy farming and agr. dist.; p. (1951) 6,087.
- Northam, *t.*, W. Australia; on R. Avon, 66 m. from Perth; Australia; p. (1947) 4,653.
- Northampton, *S. Midland co.*, Eng.; chiefly agr.; iron, mining and mftg.; boots, shoes, lace, paper, smelting; co. *t.*, Northampton; a. 998 sq. m.; p. (1951) 359,550.
- Northampton, *t.*, *co. bor.*, Northampton, Eng.; on R. Nen; metropolis of British boot making industry; p. (1951) 104,429.
- Northampton, *c.*, Mass., U.S.A.; textiles, paper; univ.; p. (1950) 29,063.
- Northampton, *t.*, Penns., U.S.A.; cement; beer; clothes; quarrying; p. (1950) 9,332.
- Northbridge, *indust. t.*, Mass., U.S.A.; p. (1950) 10,476.
- Northcote, *t.*, Victoria, Australia; N. sub Melbourne; mfnfs.; p. (1947) 42,713.
- Northelm, *indust. t.*, Lower Saxony, Germany; on R. Rume; p. 12,000.
- Northern Bukovina, formerly part of Romania, ceded to U.S.S.R. 1940 and now forms part of Ukrainian S.S.R.
- Northern Ireland, consists of the administrative cos. of Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone, and administrative boroughs of Belfast and Londonderry. Has its own parliament and executive Government under a Governor appointed by the Crown. Returns 12 members to British House of Commons; agr., oats, potatoes, etc., flax, fruit, hay, chalk, granite, etc., linen, shipbuilding; new industries being established; cap. Belfast; a. 5,238 sq. m.; p. (1951) 1,370,709.
- Northern Rhodesia, *Brit. protectorate*, Central Africa; became member st. of "Federation of Rhodesia and Nyasaland" in 1953, administered from federal cap. Salisbury, S. Rhodesia; tropical climate, moderate rains; savannah vegetation; maize, tobacco, wheat, coffee, zinc, copper, vanadium, gold, ivory; cap. Lusaka; a. 288,130 sq. m.; p. (1951) 1,977,000.
- Northern Territories, *protectorate*, Gold Coast, Brit. W. Africa; lies N. of latitude 8° N.; ch. *t.* Tamale; a. 30,486 sq. m.; p. (1948) 1,077,138.
- Northern Territories, Gold Coast, W. Africa.
- Northern Territory, a large tract of land N. of S. Australia; stock-raising, gold and impt. uranium depts.; a. 523,620 sq. m.; ch. *t.* Darwin; p. (1947) 23,100, inc. 12,232 aborigines.
- Northfield, *c.*, S. Minn., U.S.A.; agr. dairying; p. (1950) 7,487.
- Northfleet, *t.*, *urb. dist.*, Kent, Eng.; on S. bank of R. Thames, adjoining Gravesend; shipbuilding; p. (1951) 18,803.
- Northumberland, *N. maritime co.*, Eng.; on border of Scot.; pastoral, mining, coal and lead, mftg.; chemicals, glass, engineering, and shipbuilding on Tyneside; cap. Newcastle-upon-Tyne; a. 2,019 sq. m.; p. (1951) 798,175.
- Northumberland Straits, separates Prince Edward I. from Nova Scotia and New Brunswick.
- Northwich, *mkt. t.*, *urb. dist.*, Cheshire, Eng.; on R. Weaver, 10 m. S.E. of Runcorn; chemicals salt-mine dist.; p. (1951) 17,480.
- Norton, *t.*, S.W. Va., U.S.A.; coal, mftg.; p. (1950) 4,315.
- Norton, *t.*, *urb. dist.*, E.R. Yorks., Eng.; on R. Derwent opposite Malton; p. (1951) 4,814.
- Norton Sound, *inlet*, W. cst. Alaska, Behring Sea; 200 m. long.
- Norwalk, *t.*, Conn. U.S.A.; on Long I. Sound; good harbour, oysters, iron foundries, clothing; p. (1950) 49,460.
- Norwalk, *bor.*, Ohio, U.S.A.; mftg. centre of farming dist.; p. (1950) 9,775.
- Norway, *kingdom*, N. Europe; fjord coast, mountainous; cool, wet summer, severe winter, heavy snowfall; barley, forest products, aluminium, pyrites; fisheries; greatly developed hydro-electric power; cap. Oslo; a. 124,556 sq. m.; p. (1950) 3,273,546.
- Norwich, *c.*, *co. bor.*, *co. t.*, Norfolk, Eng.; on R. Wensum just above confluence with R. Yare; cath., old cas., cult. etre., agric. etre.; boots, shoes, textiles, gen. indus.; p. (1951) 121,226.
- Norwich, *c.*, Conn., U.S.A.; firearms, cutlery and machinery, textiles; p. (1950) 23,429.
- Norwich, *t.*, N.Y., U.S.A.; chemicals, dairying, agr., farm tools; p. (1950) 8,816.
- Norwood, *S.*, *sub. div.*, Lambeth, Surrey, Eng.; mainly residt.
- Norwood, Ohio, U.S.A.; *sub.*, Cincinnati; p. (1950) 35,001.
- Norwood, *t.*, Mass., U.S.A.; p. (1950) 16,636.
- Nossi Bé, *Is.*, Indian Oc.; off W. cst. of Madagascar; a. 130 sq. m.; part of Fr. col. of Madagascar; rice, coffee, tobacco.
- Notec (Netze), *R.*, Poland; trib. of R. Warta; length 140 m.
- Noto, *c.*, Sicily; W. of Syracuse; cath.; wine, olive oil, mfnfs.; p. 32,575.
- Notodden, *t.*, S. Norway; hydro-electric power; iron smelting; nitrates; p. 6,192.
- Notre Dame Bay, N. cst., Newfoundland, Canada.

- Nottingham, midland co., Eng.:** wheat, oats, barley, cattle, coal; co. t. Nottingham; a. 844 sq. m.; p. (1951) 841,083.
- Nottingham, c., co. bor., co. t., Nottingham, Eng.:** on R. Trent, at S.E. end of Pennines; centre of English lace industry; univ., R.C. cath., fine buildings, cas., museum, gr. mkt. square; hosiery, woollens, iron foundries, brewing; aluminium mfrs.; p. (1951) 306,008.
- Nouméa or Port de France, cap., New Caledonia:** p. (1946) 10,466.
- Nouzonville, t., Ardennes, France:** iron foundries; p. (1946) 6,848.
- Nova Lima, t., Minas Gerais st., Brazil:** in Serra do Espinhaço, 10 m. S. of Belo Horizonte; adjacent to impt. gold-mines of Morro Velho; p. (1940) 10,000.
- Nova Lisboa (Huambo), t., Angola, Africa:** E. of Benguela; the future capital; p. 16,288.
- Novara, Alpine prov., N. Italy:** a. 2,548 sq. m.; p. (1951) 423,033.
- Novara, mfg. t., nr. Milan:** p. (1951) 69,228.
- Nova Scotia, maritime prov., Canada:** mainly fertile uplands and rich valleys, but with mtns. along the est. nr. Bay of Fundy; agr., fruit, livestock, dairying, much mineral wealth, coal and gypsum, and very valuable fisheries; cap. Halifax; a. 21,068 sq. m.; p. (1951) 642,584.
- Nova Zembla (Novaya Zemlya), large Is., Arctic Ocean, U.S.S.R.:** furs, walrus, whale, seal fisheries.
- Nove Zamky, t., Slovakia, Czechoslovakia:** mkt. and mfrs.; p. 22,141.
- Novgorod, t., R.S.F.S.R., U.S.S.R.:** sawmills, boots and shoes, bricks; p. 25,000.
- Novi Ligure, t., Alessandria, Italy:** nr. Genoa; noted for silk mfg.; p. 21,575.
- Novi Pazova, t., Serbia, Yugoslavia:** on R. Raskha; p. 12,196.
- Novi Sad (Neusatz), t., Yugoslavia:** on R. Danube; opposite Petrovaradin; formerly royal free city, almost destroyed by Austrians 1849; tr. in fruit, wine, vegetables, corn; p. (1948) 77,713.
- Novocherkask, t., Ukraine S.S.R., U.S.S.R.:** 20 m. N.E. of Rostov; lge. railway engineering works; p. (1939) 81,286.
- Novograd Volynski, t., Ukraine, U.S.S.R.:** on R. Sluch; iron and soap wks., busy fairs.
- Novogrudok, t., White Russia, U.S.S.R.:** agr. mkt., leather mfrs.; p. 11,355.
- Novorossiisk, spt., Caucasia, U.S.S.R.:** on N.E. est. of Black Sea; gr. grain, petroleum, tobacco exports; p. (1939) 95,280.
- Novosibirsk, t., U.S.S.R.:** on R. Ob; ch. t. Siberian area; grain flour, machinery; p. (1939) 405,589.
- Novozensk, t., S.E. Saratov Reg., U.S.S.R.:** fairs attended by Kirghiz steppe tribes; p. 10,009.
- Novozybkov, t., U.S.S.R.:** E. of Gomel; tallow, hemp, preserved meat.
- Nový Jičín (Neutitschein), t., Moravia, Czechoslovakia:** farm machinery and engineering; p. 10,667.
- Nova Sól (Neusalz), t., Lower Silesia, Poland:** on R. Oder; p. 13,474.
- Nowata, t., N.E. Okla., U.S.A.:** agr., natural gas, oil-field gear; p. (1950) 3,965.
- Nowawes, c., Brandenburg, Germany:** textiles, engineering, chemicals; p. 26,975.
- Nowra, t., N.S.W., Australia:** on E. est. at mouth of Shoalhaven R.; collecting centre for agricultural and pastoral products of coastal plain; at S. terminus of rly. along E. est. of Australia.
- Nowy Sącz, industr. t., Krakow, S. Poland:** on R. Dunajec; p. 23,000.
- Noya, spt., Spain:** lace and linen industries; p. 12,016.
- Noyon, t., Oise, France:** birthplace of Calvin; fine cath.; p. (1946) 6,483.
- Nubia, ancient Ethiopia, S. of Egypt, Africa:** now included in Anglo-Egyptian Sudan; ch. c. Khartoum.
- Nubian Desert, Anglo-Egyptian Sudan, N.E. Africa:** between R. Nile and Red Sea; alt. 1,200-9,000 ft.; a. approx. 90,000 sq. m.
- Nuble, prov., Chile:** bordering on Argentina; a. 5,484 sq. m.; cap. Chillan; p. (1952) 250,243.
- Neuces, R., Texas, U.S.A.:** flows to G. of Mexico; length 400 m.
- Neuva Esparta, st., Venezuela:** cap. La Asunción; p. (1947) 69,195.
- Nuevo Laredo, s., E. Mexico:** agr., cotton, maize, cattle rearing; p. (1940) 28,872.
- Nuevo Leon, st., Mexico:** agr. and stock raising, sugar; cap. Monterrey; a. 25,134 sq. m.; p. (1950) 738,596.
- Nukha, t., Transcaucasia, Azerbaijan, U.S.S.R.:** silk industry.
- Nullarbar Plain, S. Australia:** low, level, limestone plateau fringing Gr. Australian Bight; arid; treeless, salt-bush scrub; crossed by Transcontinental Rly. between Naretha (W. Australia) and Ooldea; rly. is dead straight, dead level for over 300 m.
- Nun, ch. mouth of R. Niger, Africa.**
- Nun, R., Manchuria, China:** trib. of the Sungari; length 500 m.
- Nun, R., on S. frontier of Morocco, N. Africa:** with t. thereon; length 130 m.
- Nuneaton, mkt. t., mun. bor., Warwick, Eng.:** on R. Anker, 13 m. E. of Birmingham; ribbon mfg., glazed brick, sanitary pipes; p. (1951) 54,408.
- Nunkiang, prov., China:** a. 23,912 sq. m.; cap. Lungkiang; p. (1947) 2,094,000.
- Nürnberg (Nuremberg), t., old c., Bavaria, Germany:** mfrs., wooden toys, clocks, beer, chemicals, ivory carving; gr. hop trade; cas. and many historic buildings; trials of Nazi war leaders held here, 1946; p. (1950) 362,459.
- Nutley, t., New Jersey, U.S.A.:** p. (1950) 26,992.
- Nyasa, L., Central Africa:** 1,500 ft. above sea-level; length, 350 m., breadth 40 m.; drains by R. Shire into R. Zambesi.
- Nyasaland "Protectorate, Brit., Central Africa:** became member st. of "Federation of Rhodesia and Nyasaland" in 1953; along W. est. L. Nyasa; hot, wet summer, cooler, dry winter; vegetation, savannah, subtropical forest; tobacco, cotton, coffee, ivory; cap. Zomba; a. 49,177 sq. m.; p. (1951) 2,400,000.
- Nyborg, t., Denmark:** on Fyn I.; p. 9,659.
- Nyeri, cap., Central Prov., "Kikuyu native reserve" Kenya col. and protectorate, Africa.**
- Nyiregyháza, mfg. t., Hungary:** wine, farming, implements; p. over 50,000.
- Nyköbing, spt., Falster I., Denmark:** electric dynamos, machinery; exports butter and bacon; p. 16,097.
- Nyköping, spt., Sweden:** at head of inlet on est.; engineering and shipbuilding, timber trade; p. (1951) 20,477.
- Nyland, see Uusimaa.**
- Nysa R., see Neisse R.**
- Nystad (Uusikumpunkki), spt., Abo-Björneborg, Finland:** on G. of Bothnia; p. 3,946.

## O

- Oadby, urb. dist., Leics, Eng.:** 3 m. S.E. of Leicester; boots and shoes; p. (1951) 6,206.
- Oahu, I., Hawaiian Is., Pac. Oc.:** sugar, pineapples; tourist tr.; cap. Honolulu; a. 604 sq. m.; p. (1940) 368,911.
- Oak Park Village, t., Ill., U.S.A.:** now included in Chicago; p. (1950) 63,529.
- Oakengates, t., urb. dist., Salop, Eng.:** 15 m. N.W. of Wolverhampton; iron founding, engineering, motor-car and cycle components, bricks, tiles, coal; p. (1951) 11,659.
- Oakham, co. t., urb. dist., Rutland, Eng.:** 9 m. S.E. of Melton Mowbray; mkt.; boots, hosiery; p. (1951) 3,537.
- Oakland, c., California, U.S.A.:** on San Francisco Bay; univ.; resid. sub.; motor cars, shipbuilding, fruit canning, electric machinery, clothing, tanneries, sawmills; p. (1950) 384,675.
- Oamaru, bor., spt., S.I., New Zealand:** wool, frozen meat; p. (1951) 8,719.
- Oaxaca, st., Pacific cst., Mexico:** cereals, rubber, coffee, mining; cap. Oaxaca; a. 36,371 sq. m.; p. (1950) 1,412,772.
- Oaxaca, c., cap., Oaxaca st., Mexico:** alt. 4,800 ft.; centre of cochineal trade; table linen weaving, wool zarapes; coffee; silver, gold; cattle; p. (1940) 31,839.
- Ob, G., U.S.S.R.:** inlet of Arctic Ocean; length 600 m.
- Ob, R., W. Siberia, U.S.S.R.:** flows from the Altai Mtns. to the G. of Ob; length (with trib. R. Irtysh) 2,800 m.
- Oban, spt., burgh, Argyll, Scot.:** on Firth of Lorne; summer resort of Highland tourists; terminus of rly. from Stirling; centre for local shipping; woollens, tartans; p. (1951) 6,227.



- Ober Lahnstein, *t.*, Germany; at junction of R. Rhine and Lahn; old cas., ancient walls; mining.
- Oberammergau, *vil.*, Upper Bavaria, Germany; scene of decennial Passion Play; wood and ivory carving; *p.* 1,500.
- Oberhausen, *iron mfg. t.*, N. Rhine-Westphalia, Germany; *nr.* Cologne; *p.* (1950) 202,308.
- Oberstein, *t.*, Germany; on R. Nabe; famous for cutting precious stones.
- Oberwesel, *t.*, Rhineland-Palatinate, Germany; on R. Rhine; once free imperial town, with towered walls and ruined cas. of Schönburg.
- Obi I., *sm. I.*, between Halmahera and Serang, Indonesia.
- Obidos, *t.*, *R. pt.*, Brazil; 500 m. up R. Amazon; cacao, cotton; *p.* 20,000.
- Obihiro, *t.*, Hokkaido, Japan; *p.* (1947) 36,555.
- Obok, *spt.*, *R.*, Somaliland, N.E. Africa; in the Red Sea; coal; *stn.*; *p.* 1,000.
- Obuasi, *t.*, Gold Cst., W. Africa; *p.* (1948) 15,833.
- Obwalden, *can.*, Switzerland; *a.* 190 sq. m.; *p.* (1950) 22,125.
- Ocaña, *ancient t.*, Toledo, Spain; on Ocaña plateau; cas.; pottery, wine; *p.* 9,953.
- Ocaña, *t.*, Magdalena st., Colombia; industr.; *p.* (1947) 9,937.
- Ocean I., *Brit. col.*, Gilbert and Ellice Is., Pac. Oc.; rich in high-grade phosphate; *p.* 824.
- Oceania, name given to the Is. of the Pacific; comprising Australasia, Polynesia, Melanesia, and Micronesia; copra, sugar, fruit, timber; pearl fishing; gold, minerals, phosphates; *a.* 3,201,000 sq. m.; *p.* approx. 11,000,000.
- Ochil Hills, Scottish range reaching from the Firth of Tay to nr. Stirling; highest peak, Ben Cleugh, 2,363 ft.
- Ockmulgee, *R.*, Georgia, U.S.A.; trib. of Altamaha R.; length 280 m.
- Oconee, *R.*, Georgia, U.S.A.; joins the Ockmulgee; length 250 m.
- Ocumare, *t.*, Bolivar st., Venezuela; *nr.* Caracas; *p.* 2,409.
- Odawara, *t.*, Japan; *nr.* Tokyo; *gr. tr.*; *p.* 51,838.
- Odda, *t.*, S. Norway; on Haugesund; *p.* 8,115.
- Odemis, *t.*, Asiatic Turkey; N.E. of Aydin; tobacco, cereals, silk, cotton, flax, olives, raisins, figs; minerals; *p.* (1945) 20,088.
- Odendaalsrust, *t.*, O.F.S., S. Africa; gold centre; *p.* 1,600 (white).
- Odenkirchen, *t.*, N. Rhine-Westphalia, Germany; cottons, silk.
- Odense, *co.*, Denmark; now includes all N.W. Fyn; *a.* 869 sq. m.; *p.* (1945) 231,427.
- Odense, *spt.*, Fyn, Denmark; ancient c. said to have been founded by Odin; birthplace of Hans Andersen; tanneries, dairy produce, bacon, hides; *impt. tr.*; *p.* (1950) 100,940.
- Odenwald, *mtns.*, Hessen, Germany; wooded; highest point Katzenbuckel, 2,057 ft.
- Oder or Odra, *R.*, Central Europe; flowing from Moravia to Baltic through Polish Silesia, forming (since 1945) frontier between Poland and Germany, flows past Wrocław (Breslau), Frankfurt and Szczecin (Stettin); length 560 m.
- Odessa, *spt.*, Ukraine, U.S.S.R.; on Black Sea; cath., univ.; *gr.* grain export; ice-bound for a few weeks in winter; bombarded by English and French 1845; *p.* (1939) 604,223.
- Odra, *R.*, see Oder R.
- Oels, see Olesnica.
- Oelwein, *c.*, *fly. centre*, Iowa, U.S.A.; *p.* (1950) 7,801.
- Offaly, *co.* (late King's co.), prov. Leinster, Ireland; much marshy land (inc. Bog of Allen) barren uplands (Slieve Bloom and other mtns.); *ch. t.* Tullamore; *a.* 772 sq. m.; *p.* (1951) 52,555.
- Offenbach, *t.*, Hessen, Germany; on R. Main; machinery, chemicals, perfumery, leather goods, printing; *p.* 81,329.
- Offenburg, *t.*, Baden, Germany; on R. Kinzig; textiles, cement, farm machinery, tobacco; *p.* 17,976.
- Ogbomosho, *t.*, Nigeria; *p.* (1946) 84,500.
- Ogden, *c.*, Utah, U.S.A.; nr. the Great Salt L.; *fly. centre*; beet sugar, meat packing, flour milling; *p.* (1950) 57,112.
- Ogdensburg, *c.*, *port*, N.Y., U.S.A.; on St. Lawrence R.; opp. Prescott; *gd. tr.*; *p.* (1950) 16,166.
- Ogeeshee, *R.*, Georgia, U.S.A.; flows to Atlantic, S. of Savannah; length 200 m.
- Oglio, *R.*, Italy; traverses L. Iseo; flows to the Po; length 135 m.
- Ogmore and Garw, *t.*, *urb. dist.*, Glamorgan, Wales; in narrow valley, 6 m. N. of Bridgend; industr.; *p.* (1951) 22,638.
- Ogowe, *R.*, Fr. Equatorial Africa; length 750 m.
- Ohau, *L.*, Mt. Cook dist., S.I., New Zealand; fed by glaciers; 12 m. by 24 m.
- O'Higgins, *prov.*, Chile; *a.* 2,745 sq. m.; *p.* (1952) 222,710.
- Ohio, *R.*, U.S.A.; trib. of Mississippi R.; formed in Penns., by the junction of the Monongahela and Allegheny Rs. at Pittsburgh, thence navigable for 975 m. to Cairo in Kentucky, 1,200 m. from the mouth of the Mississippi R.
- Ohio, *st.*, U.S.A.; drained by Ohio R. and tribs.; *gr. agr. and industr. region*; maize, wheat, oats, cattle, coal, petroleum, gas, iron and steel wks., locomotives, boots and shoes, clothing, timber; cap. Columbus; largest cs. Cleveland and Cincinnati; *a.* 41,122 sq. m.; *p.* (1950) 7,946,627.
- Ohre (Eger), *R.*, Bohemia, Czechoslovakia; rises in Fichtelgebirge, flows N.E. into Labe (Elbe) at Litoměřice; flows through several sm. lignite fields, spas of Karlovy Vary (Karlsbad); length 140 m.
- Ohrid, *st.*, S. Yugoslavia; *nr.* Albanian border; *p.* 11,419.
- Oich, Loch, *L.*, Great Glen, Inverness, Scot.; 6 m. long, 1 m. wide.
- Oil City, Penns., U.S.A.; on Allegheny R.; oil, machinery; *p.* (1950) 19,581.
- Oiot Tura, *t.*, Altai, U.S.S.R.; dairy prods., furs; *p.* 10,000.
- Oise, *dep.*, N. France; traversed by R. Oise; forests, cereals, fruits, iron, textiles; cap. Beauvais; *a.* 2,272 sq. m.; *p.* (1946) 396,724.
- Oise, *R.*, trib. of R. Seine, France; canalised, navigable to Chauny; length 186 m.
- Oita, *spt.*, Japan; exports coal; cattle; *p.* (1947) 74,138.
- Ojos del Salado, *mtn.*, N.W. Argentina; alt. 22,572 ft.
- Oka, *R.*, U.S.S.R.; trib. of R. Volga at Gorki; length 929 m.
- Oka, *R.*, Siberia, U.S.S.R.; trib. of R. Angora; length 500 m.
- Okanagan, *R.* and *L.*, Brit. Columbia, Canada; fruit-growing dist.
- Okasaki, *t.*, Honshu, Japan; *nr.* G. of Ovari; industr.
- Okayama, *t.*, Honshu, Japan; exports paper, minerals, firebricks; shipbldg.; *fly. centre*; cattle rearing; *p.* (1950) 162,964.
- Okehampton, *mkt. t.*, *mun. bor.*, Devon, Eng.; on N. flank of Dartmoor; flour, cabinet-making; *p.* (1951) 3,897.
- Okha, *spt.*, E. cst. Sakhalin I., U.S.S.R.; exports petroleum; *p.* 17,000.
- Okhotsk, *spt.*, U.S.S.R.; minerals; *p.* 3,500.
- Okhotsk, Sea of, N.E. Asia; 1,000 m. by 500 m.; enclosed by the Siberian mainland, Kamchatka, the Kurils and Sakhalin I.
- Oki Is., off cst. of Honshu, Japan; *a.* 135 sq. m.
- Oklahoma, *st.*, U.S.A.; including the Indian Terr. in 1890; prairie, plains, and mtns.; cereals, fruits, cotton, stock-raising, petroleum, gas, zinc, coal; *ch. industry* petroleum refining; *a.* 69,919 sq. m.; *p.* (1950) 2,233,351.
- Oklahoma, *c.*, Oklahoma, U.S.A.; univ.; cotton goods, flour, machinery, iron and steel, oil, electr. equipment, pottery; *fly. centre*; *p.* (1950) 243,504.
- Okmulgee, *t.*, Oklahoma, U.S.A.; *p.* (1950) 18,317.
- Oktyabrsky, *t.*, Bashkiria, U.S.S.R. on R. Ik; in new oil mining dist., the "New Baku".
- Öland, *I.*, Baltic Sea; off E. cst. Sweden; separated from mainland by Kalmar Sound; *a.* 593 sq. m.; *ch. t.* Borgholm, a seaside resort.
- Olvarria, *t.*, E. Argentina; 200 m. S.W. Buenos Aires; *fly. centre*; *p.* 24,326.
- Olawa (Ohlau), *t.*, Lower Silesia, Poland; on R. Oder; *mftg.*; *p.* 6,000.
- Old Castle, *historical div.*, Spain; now divided into Santander, Soria, Segovia, Logrono, Avila, Valladolid, Palencia, and Burgos provs.
- Old Deer, *par.*, Aberdeen, Scot.; distilling, brewing, woollens; *p.* 3,380.
- Old Fletton, *urb. dist.*, Hunts, Eng.; on R. Nen opposite Peterborough; *p.* (1951) 8,955.
- Old Forge, *bor.*, Penns., U.S.A.; anthracite coal; *p.* (1950) 9,749.

**Old Kilpatrick**, *see* Kilpatrick, Old.  
**Old Meldrum**, *burgh*, Aberdeen, Scot.; 4 m. N.E. of Inverurie; p. (1951) 1,104.  
**Oldbury**, *mun. bor.*, Worcs., Eng.; nr. Birmingham; industri.; p. (1951) 53,895.  
**Oldenburg**, Lower Saxony, Germany; former Grand-duchy; a. 2,482 sq. m.; farming, cattle, horses, bricks, brewing; cap. O.  
**Oldenburg**, t., Lower Saxony, Germany; on R. Hunte; impt. horse fair, musical instruments, leather; grand-ducal palace; p. (1950) 122,809.  
**Oldham**, *mfg. t.*, co. *bor.*, Lancs., Eng.; on R. Medlock, 4 m. N.E. of Manchester; coal, machinery, cotton, textiles, rayon; p. (1951) 121,212.  
**Olney**, t., N.Y., U.S.A.; on Allegheny R.; oil region; p. (1950) 22,884.  
**Olenek**, R., Siberia, U.S.S.R.; flows W. of the Lena, into Laptev Sea, Arctic Ocean; length 800 m.  
**Oléron**, *le d'*, I., Bay of Biscay; lies off estuary of R. Charente, Aquitaine, France; vine, oysters, salt; length 18 m., maximum width 7 m.  
**Olesnica** (Ols), t., Lower Silesia, Poland; p. 8,000.  
**Olga**, *spt.*, Siberia, U.S.S.R.; on est. of Japan Sea; iron ore; p. 1,000.  
**Olhão**, t., Faro, Portugal; fisheries; p. 13,627.  
**Olifant**, R., Transvaal, S. Africa; trib. of Limpopo.  
**Olinda**, c., Pernambuco st., Brazil; industri.; p. (1947) 31,915.  
**Oliva**, t., Valencia, Spain; nr. Alicante; wine dist., ducal palace; p. 18,407.  
**Olivas**, t., Argentina, S. America; nr. Buenos Aires; p. 24,675.  
**Olivenza**, t., Spain; nr. Portuguese frontier; p. 12,492.  
**Olkhon I.**, L. Baikal, U.S.S.R.; manganese.  
**Olmütz**, *see* Olomouc.  
**Olney**, t., N. Bucks, Eng.; 11 m. S.E. Northampton; boots, shoes, lace; dairying; p. 2,651.  
**Olomouc** (Olmütz), c., Moravia, Czechoslovakia; formerly one of the ch. fortresses of Austria; cath., univ.; brewing, distilling, milling; p. (1947) 53,617.  
**Oloron**, t., Basses-Pyrénées, France; on Gave d'Oloron; cath.; p. (1946) 10,567.  
**Olsnitz**, t., Saxony, Germany; on Weisse Elster; carpet mfn.  
**Olśztyn** (Allenstein), *prov.*, N.E. Poland (former E. Prussia); cap. Olśztyn; a. 7,546 sq. m.; p. (estd. 1950) 681,265.  
**Olt**, R., Romania; joins R. Danube at Nikopol.  
**Oltan**, t., Switzerland; on R. Aare; rly. junc.; motor, cement, machinery wks.; p. (1941) 15,287.  
**Olenita**, t., Romania; on R. Danube, nr. Bulgarian border; p. 10,284.  
**Olvera**, t., Spain; nr. Cadiz; on R. Guadalete.  
**Olympia**, *plain*, Peloponnesus, Greece, on R. Ellis where the Olympic Games were held.  
**Olympia**, *cap.*, Washington st., U.S.A.; timber, machinery, farm produce; p. (1950) 15,819.  
**Olympus**, *mtn.*, Thessaly, Greece; W. of G. of Thessalonika; alt. 9,753 ft.; home of ancient Greek Gods.  
**Olympus**, *mtn.*, Turkey; nr. Troy.  
**Olympus**, Mt., Washington, U.S.A.; alt. 8,150 ft.  
**Olyphant**, *bor.*, Penns., U.S.A.; on Lackawanna R.; p. (1950) 7,047.  
**Om**, R., Siberia, U.S.S.R.; trib. of R. Irtysh; length 330 m.  
**Omagh**, t., *urb. dist.*, Tyrone, N. Ireland; on R. Strule 28 m. S. of Londonderry; corn, tanning, shirt factories; tourist centre; p. (1951) 6,762.  
**Omaha**, c., Nebraska, U.S.A.; on Missouri R.; gr. tr. centre, one of the largest livestock and meat-packing centres in the U.S., gold and silver smelting and refining; p. (1950) 251,177.  
**Oman**, *see* Muscat and Oman.  
**Oman**, G. of, Arabian Sea; connected through strait of Hormuz to Persian G.; length 300 m., width 130 m.  
**Omaruru**, t., S.W. Africa; creamery, aerodrome; p. 1,912.  
**Ombai Is.**, Indonesia; N. of Timor.  
**Omdurman**, c., Anglo-Egyptian Sudan on R. Nile, opp. Khartoum; built by the Mahdi; old Dervish cap.; here Kitchener defeated the Dervishes, 1898; tr. in ivory, gum arabic, cattle, camels; p. (estd. 1951) 125,300.  
**Ometepe**, I., L. Nicaragua, Central America, with volcano; alt. 5,747 ft.  
**Omine**, t., Japan; anthracite coal-mines.

**Omsk**, t., W. Siberia, U.S.S.R.; on the R. Irtysh; on Trans-Siberian Rly., caravan centre; cath.; exports dairy produce; p. (1939) 280,700.  
**Omuta**, t., Kyushu, Japan; coal; p. (1950) 191,978.  
**Onate**, t., Guipuzcoa, Spain; nr. Bilbao; industri.  
**Onega**, L., U.S.S.R.; 85 m. from L. Ladoga; a. 3,765 sq. m.; connection with B. Volga by canal. Length 400 m.  
**Onega**, R., U.S.S.R.; flows to G. of Onega; fisheries; p. 10,000.  
**Oneglia**, *spt.*, Italy; on G. of Genoa, nr. Nice, Italy; olive-oil tr.  
**Onehunga**, *spt.*, *bor.*, N.I., New Zealand; nr. Auckland; p. (1951) 16,968.  
**Oneida**, L., N.Y., U.S.A.; nr. Syracuse; 20 m. by 6 m.; discharges via Oneida R. to Seneca R.  
**Oneonta**, t., N.Y., U.S.A.; on Susquehanna R.; rly. wagon wks.; p. (1950) 13,564.  
**Onomichi**, t., Honshu, Japan; p. (1947) 43,726.  
**Onstwedde**, t., Groningen, Netherlands; mfn.  
**Ontario**, L., N.I., America; smallest of the Great Lakes of the St. Lawrence basin, separating the Canadian prov. of O. from N.Y., U.S.A.; a. 7,500 sq. m.; depth 740 ft.  
**Ontario**, *prov.*, Canada; formerly called Upper Canada; St. Lawrence and Ottawa Rs., Great Lakes; extreme climate, milder in peninsula in S.; coniferous forest; good communications; hydro-electric power; wheat, oats, fruit, dairying, cattle, lumbering, gold, silver, copper, lead, nickel, oil, farm implements, rly. rolling stock, machinery, textiles, wood pulp, newsprint; cap. Toronto; contains Ottawa; a. 412,582 sq. m.; p. (1951) 4,597,542.  
**Onseniente**, t., Valencia, Spain; on R. Clariano; industri.; p. 13,564.  
**Oodnadatta**, t., S. Australia; on uncompleted N. to S. trans-continental rly.; p. 100.  
**O'okiep**, t., C. of Good Hope, S. Africa; copper-mining dist.; p. (with neighbouring villages—whites and non-whites) 5,000.  
**Oosterhout**, t., N. Brabant, Netherlands; nr. Breda; mfn.; p. (1951) 20,761.  
**Ootacamund**, t., Madras, India; ch. t. in Nilgiri Hills; summer headquarters of Madras Govt.; sanatorium; p. (1941) 29,850.  
**Opala**, t., Belgian Congo; on Lomami R.; palm-nuts, gum copal.  
**Opalton**, t., Queensland, Australia; opals.  
**Opatija**, (former It. Abbazia), t., Yugoslavia, tourist resort known as the "Nice" of the Adriatic.  
**Opava**, (former Troppau), t., N. Czechoslovakia; textiles, machinery, sugar; p. (1947) 30,191.  
**Ophir**, *dist.*, N.S.W., Australia; nr. Bathurst; gold.  
**Ophir**, *mtn.*, Malay Peninsula; alt. 5,693 ft.  
**Ophir**, *mining t.*, S.I., New Zealand; nr. Dunedin.  
**Opland**, *dist.*, Norway; a. 9,608 sq. m.; p. (1950) 160,421. [kernels].  
**Opobo**, *spt.*, Nigeria; exports palm-oil and  
**Opole**, (former Oppeln), t., Upper Silesia, Poland; on R. Oder; former cap. of principality; remains of palace, seat of administration Upper Silesia, leather, minerals; p. 27,600.  
**Oporto**, *spt.*, Portugal; on R. Douro; second c. in Portugal; commercial; royal palace of Torre de Marca; cath.; centre of port-wine tr., sardine fisheries, cottons, woollens, silks, distilling, sugar refineries; fruit; p. (1950) 279,738.  
**Opotiki**, *bor.*, N.I., New Zealand; centre of maize dist.; p. (1951) 1,996.  
**Oppeln**, *see* Opole.  
**Oradea**, (former Nagyvarad), t., Romania; nr. Hungarian border; rly. junction, farming, pottery; p. (1945) 32,120.  
**Óraefla Jokull**, *highest mtn.*, Iceland; alt. 6,409 ft.  
**Oran**, *dep.*, N. Algeria; p. (1948) 1,990,729.  
**Oran**, *spt.*, Algeria; cath.; mosque; tr. in wines, wool, cereals, cattle, sheep, hides; French naval and military stn.; p. (1948) 256,661 (Greater Oran, 273,402).  
**Orange**, t., N.S.W., Australia; fruit growing, gold, copper, silver; p. (1947) 13,780.  
**Orange**, *ancient t.*, Vaucluse, France; silks, sugar, fruit; p. (1946) 13,978.  
**Orange**, t., Mass., U.S.A.; p. (1950) 4,048.  
**Orange**, c., N.J., U.S.A.; adj. Newark; calculating machines, radio, textiles, drugs; p. (1950) 33,037.  
**Orange**, C., N. Brazil, S. America.



- Orange, R., C. of Good Hope, S. Africa; flows from Basutoland to the Atlantic; part forms S. boundary between C. of Good Hope and Orange Free State; length 1,300 m.
- Orange Free State, *prov.*, Union of S. Africa; plateau land, Drakensberg to N.E., Rs. Orange, Vaal, and Caledon; sheep, cattle, horses, wheat, maize, fruit, tobacco, coal, diamonds; cap. Bloemfontein; a. 49,647 sq. m.; p. (1951) 1,018,207 (inc. 227,587 whites).
- Orangeville, *t.*, Ontario, Canada; p. 2,718.
- Oranienburg, *t.*, Brandenburg, Germany, on R. Havel, nr. Potsdam; industri.; blast furnaces, chemicals; p. 17,120.
- Oraş, *t.*, Samar, Philippines; p. 20,962.
- Orastie, *t.*, Romania; on R. Muresul; p. 8,817.
- Orbetello, *t.*, Tuscany, Italy; cath.; p. 10,631.
- Ord of Caithness, *hill, headland*, nr. Helmsdale, Scot.; alt. 1,200 ft.
- Ordos, *region*, China; deriving its name from Mongol tribe who inhabit same; mean alt. 3,300 ft.
- Ordu, *spt.*, Turkey; on N. cst.; gd. tr.; exports manganese; p. (1945) 10,346.
- Ore Mtns., *see* Erzgebirge.
- Orebro, *co.*, Sweden; timber, machinery, matches; cap. Orebro; a. 3,650 sq. m.; p. (1950) 247,023.
- Orebro, *t.*, *cap.*, Orebro, Sweden; shoes, gas; p. (1951) 66,548.
- Oregon, *Pacific st.*, U.S.A.; Cascade, Coast and Blue Mtns.; Colombia R. and tribs.; L. valleys; rainy cst., drier interior (agr. with irrigation); cereals, sugar-beet, fruit, cattle, gold, silver, copper, coal, lumbering, fisheries, canning, meat-packing, flour mills; ch. ts. Portland, Salem; a. 96,981 sq. m.; p. (1950) 1,521,341.
- Oregon City, Oregon, U.S.A.; on Willamette R. at the falls; p. (1950) 7,682.
- Orehovo-Zuyevo, U.S.S.R.; E. of Moscow, on R. Klyazma; cottons, woollens, silk, linen and knitted goods; p. (1939) 99,329.
- Orel, *t.*, U.S.S.R.; on R. Oka; univ.; candles, flour, oil; p. (1939) 110,567.
- Orenburg, *see* Chkalov.
- Orense, *inland prov.*, N.W. Spain; timber and fruit growing, agr.; cap. Orense; a. 2,694 sq. m.; p. (1950) 467,903.
- Orense, *t.*, *cap.*, Orense, Spain; on R. Minho; flour, leather, iron; p. (1950) 52,837.
- Ore Sound, *str.*, between Sjaelland and S. Sweden; freezes occasionally.
- Orford Ness, Suffolk, Eng.; coastal promontory 2½ m. long.
- Oriente, *prov.*, Cuba; a. 14,128 sq. m.; p. (1943) 1,356,489.
- Oriente, *terr.*, S. America; in dispute between Peru and Ecuador; situated E. of Andes, between R. Putumayo and R. Marañon; mainly dense forest, reputedly rich in minerals.
- Orihuela, *t.*, Alicante, Spain; on R. Segura; leather, silks, textiles, wine, cereals, fruit; p. (1948) 43,619.
- Orillia, *t.*, Ont., Canada; wood-working, metal; p. (1941) 9,793.
- Orinoco, R., Venezuela; rises in Parima mtns. and flows circuitously to the Atlantic opposite Trinidad; its trib., the Cassiquiare, connects it with the Rio Negro and the Amazon; length 1,480 m.
- Orissa, *state*, India; rice products; few towns; cap. Cuttack; a. 59,869 sq. m.; p. (1951) 14,644,293.
- Oristano, *spt.*, Cagliari, Sardinia; cath.; p. 7,350.
- Orizaba, *t.*, Veracruz, Mexico; cotton mills, coffee, cotton, sugar, maize; p. (1940) 47,956.
- Orizaba, *mtn.*, Veracruz, Mexico; volcanic; alt. 18,204 ft.
- Orjonikidze, *see* Dzauzhikan.
- Orkney, *co.*, Scot.; a group of 68 Is. in the N. Sea, 29 being inhabited; principal Is. Pomona, Sanday, Westray; antiquarian remains, stone circles; farming, fishing; cap. Kirkwall; total a. about 360 sq. m.; p. (1951) 21,253.
- Orlando, *c.*, Florida, U.S.A.; winter resort; citrus fruit; industri.; p. (1950) 52,367.
- Orléanais, *old prov.*, France, corresponding mainly to depts. Loire-et-Cher, Eure-et-Loire and Loiret.
- Orléans, *c.*, Loiret, France; on R. Loire; cap. of Orléanais; cath.; gr. tr. in wine, brandy, wool, blankets, etc.; farm implements; statue of Joan of Arc; p. (1946) 70,240.
- Orleans, I. of, Quebec, Canada; in St. Lawrence R., nr. Quebec; a. 70 sq. m.
- Ormes Head, Great and Little, promontories on cst. Caernarvon, N. Wales.
- Ormos, *t.*, Philippines.
- Ormskirk, *t.*, *urb. dist.*, Lancs, Eng.; 14 m. N.E. of Liverpool; rope, iron, brass, silk and cotton; p. (1951) 20,554.
- Orne, *dep.*, Normandy, France; agr., dairying, stock-keeping, fruit-growing, cider, mineral springs, iron; cap. Alençon; a. 2,372 sq. m.; p. (1946) 273,181.
- Örnåsköldsvik, *t.*, Sweden; on G. of Bothnia; p. 6,333.
- Oronsay, *sm. I.*, S. Colonsay, Argyll, Scot.
- Orontes, R., Lebanon, Syria, Turkey; rises in Lebanon Mtns., flows N. in deep trench between Lebanon and Anti-Lebanon Mtns. to Plain of Antioch (Antakya), then turns W. and breaks through mtns. to Mediterranean Sea; upper valley above Hama forms cultivated belt, width 10 m., used by Aleppo-Beirut rly.; middle valley is marshy; lower valley and Plain of Antioch intensively cultivated, mulberry, citrus and hard fruits, grain; length over 400 m.
- Oroquieta, *t.*, Mindanao, Philippines; p. 26,640.
- Orosháza, *mkt. t.*, S.E. Hungary; in agr. and pig-keeping dist.; p. 27,061.
- Orotava, *t.*, Tenerife, Canary Is.
- Oroya, *t.*, Peru, S. America; copper smelting; p. (1947) 17,076.
- Orpington, *urb. dist.*, W. Kent, Eng.; p. (1951) 63,344.
- Orrell, *t.*, *urb. dist.*, Lancs, Eng.; W. of Wigan; p. (1951) 9,317.
- Orsha, *t.*, U.S.S.R.; on R. Dnieper; tanneries, ironwks.; mkt. for grain and timber; p. 10,000.
- Orsk, *t.*, U.S.S.R.; on R. Ural; in prairie and stock-raising dist.; tanneries and tallow factories; oil, copper and gold ref.; iron and steel, locomotives, sulphuric acid; p. (1939) 65,799.
- Orseno, *prov.*, Chile; a. 3,866 sq. m.; p. (1940) 107,341.
- Orsova, *mkt. t.*, Romania; on R. Danube, nr. the Iron Gates Pass; p. 5,107.
- Orta, *L.*, Italy; W. of Lago Maggiore; a. 7 sq. m.
- Orta, *t.*, Foggia prov., Italy; on shore of L. Orta.
- Ortegal, *C.*, N. cst. Spain.
- Orthez, *t.*, Basses-Pyrénées, France; scene of Wellington's victory over Soult (1814); leather, hams, chocolate; p. (1946) 5,952.
- Ortona, *t.*, Abruzzi Molise, Italy; cap. of ancient Frentani; on Adriatic; cath.; wines; p. 19,104.
- Oruro, *dep.*, Bolivia; a. 20,657 sq. m.; cap. Oruro; p. (1950) 210,260 (large proportion Indians).
- Oruro, *t.*, Bolivia; alt. 12,160 ft.; gold, silver, copper, tin; p. (1950) 62,975.
- Orvieto, *t.*, Umbria, Italy; on R. Paglia; cath., Etruscan antiquities; wines, olive oil, cereals; pottery, lace; p. 20,352.
- Orwell, R., Suffolk, Eng.; estuary of R. Gipping; runs from Ipswich to Harwich.
- Osaka, *large spt., c.*, commercial centre, Honshu I., Japan; gr. tr.; silk, cotton, rayon cloth, tea, iron, glass, shipbuilding, sugar-refining, arsenal; Shinto and Buddhist temples; p. (1950) 1,956,136.
- Oschersleben, *t.*, nr. Magdeburg, Saxony, Germany; lignite mines, sugar, bricks, farm implements, manures; p. 14,079.
- Õsel I., (Saaremaa), Baltic, Estonia, U.S.S.R.; ch. t. Kuressaare.
- Osh, *t.*, Kirghiz, U.S.S.R.; p. 29,088.
- Oshawa, *t.*, Ontario, Canada; motors; p. (1941) 26,813.
- Oshima, group of Is., S. of Kyushu, Japan; a. 8 sq. m.
- Oshkosh, *c.*, Wisconsin, U.S.A.; on Fox R.; meat packing, farming, flour, motors; p. (1950) 41,084.
- Oshogbo, *t.*, Nigeria; p. (1946) 64,000.
- Osijek (Esseg), *t.*, Croatia, Yugoslavia; nr. Hungarian front; cottons, silks, beet-sugar, glass; p. (1948) 50,400.
- Osipenko (Berdyansk), *spt.*, Ukraine, U.S.S.R.; on Sea of Azov; a centre of the salt industry; exports grain, hemp, wool; agr. machinery; p. (1939) 51,664.
- Oskaloosa, *t.*, Iowa, U.S.A.; in agr. and colly. region; p. (1950) 11,024.

- Oskarshamn, *spt.*, Sweden; on Kalmar Sound; seldom icebound; shipbuilding; p. 10,810.
- Oslo (Christiana), *c. cap., ch. spt.*, Norway; on fjord of same name; cath., univ.; woollens, cottons, condensed milk, paper; exports timber, fish, matches; p. (1950) 494,047.
- Osnabrück, *t.*, N. Rhine-Westphalia, Germany; cath.; many mnfs.; p. (1950) 109,538.
- Osorno, *t.*, Chile; agr. centre; timber; people mainly German; p. (1940) 23,068.
- Osorno, *mtn.*, Chile; volcanic peak, 8,790 ft.
- Osorno, *prov. S. Chile*; p. (1952) 121,990.
- Ossa (Kissavos), *mtn.*, Thessaly; N. of Vale of Tempe and Olympus; alt. 6,194 ft.
- Osselt, *mun. bor.*, W.R. Yorks, Eng.; 3 m. W. of Wakefield; mnfs.; p. (1951) 14,576.
- Ossining, *t.*, N.Y., U.S.A.; on Hudson R.; famous "Sing-Sing" prison; p. (1950) 16,098.
- Ossipevsk (Berdichev), *t.*, Ukraine, U.S.S.R.; tobacco, soap, leather; p. (1939) 66,306.
- Ostend, *spt., popular wat. pl.*, Belgium; passenger route between Britain and continent of Europe; casino, fisheries; p. (1947) 49,651.
- Östergötland, *co.*, Sweden; on the Baltic est.; a. 4,266 sq. m.; cap. Linköping; p. (1950) 347,674.
- Osterode, *t.*, Saxony, Germany; at foot of Harz Mtns.; machinery, farming, textiles.
- Östersund, *t.*, Jämtland, Sweden; on Stor L.; industri.; p. (1951) 21,378. [185,419]
- Östfold, *dist.*, Norway; a. 1,613 sq. m.; p. (1950)
- Ostia, *ancient port*, Italy; at mouth of R. Tiber; marshy situation; archaeological remains, cath.; p. 4,000.
- Ostrava, *see* Moravska Ostrava.
- Ostrog, *t.*, on Horýn R., W. part of Ukrainian S.S.R. (Volhynia), U.S.S.R.
- Ostrogochsk, *t.*, Ukraine, U.S.S.R.; nr. R. Don; tallow and cattle tr., tanneries; p. 10,000.
- Ostrow, *t.*, Poznan, Poland; agr. machinery; perfume; p. 30,808.
- Ostrow Mazowiecka (Ostrov), *t.*, Poland; nr. Warsaw; p. 14,658.
- Ostrowiec (Ostrovets), *t.*, Kielce, Poland; on trib. Oder; liquors, bricks and tiles; cattle mkt.; p. 19,211.
- Ostuni, *t.*, Lecce, Italy; mnfs. and tr.; p. 27,602.
- Osuna, *t.*, Seville, Spain; p. 24,228.
- Oswaldtwistle, *t.*, *urb. dist.*, Lancs, Eng.; at N. foot of Rossendale Fells, 3 m. E. of Blackburn; cotton weaving; p. (1951) 12,133.
- Oswego, *c.*, N.Y., U.S.A.; on L. Ontario; taken by Montcalm 1756, and the British 1814; water-power; hosiery, matches, textiles, engines; p. (1950) 22,647.
- Oswestry, *mkt. t., mun. bor.*, Salop, Eng.; at foot of Welsh mtns., 18 m. N.W. of Shrewsbury; cas.; malting, bricks; p. (1951) 10,713.
- Otago, *dist.*, S.I., New Zealand; mountainous, afforested, rich in gold; farming, sheep, fruit; cap. Dunedin (*q.v.*); a. 25,220 sq. m.; p. (1951) inc. Southland 236,750.
- Otago Harbour, Otago dist., S.I., N.Z.; Dunedin and Port Chalmers are ports on this harbour.
- Otari, *spt.*, Hokkaido, Japan; herring fisheries; coalmining, lumbering; p. (1950) 178,330.
- Otavalo, *t.*, Ecuador; wool, ponchos, carpets; p. 15,000.
- Otira Tunnel, S.I., New Zealand; carries rly. from Christchurch to Greymouth through S. Alps nr. Arthurs Pass; length 5½ m.
- Otley, *t.*, *urb. dist.*, W.R. Yorks, Eng.; on R. Wharfe, 10 m. N.W. of Leeds; machinery, paper, printing; p. (1951) 11,568.
- Otranto, *fishing t.*, S. Italy; on Strait O.; cas.; submarine cable stn.; once a flourishing c.; cath., fine mosaic pavement; p. 2,950.
- Otsu, 2 *ts.*, Hokkaido, Japan; busy tr.; ps. 100,000 and 67,532.
- Ottawa, *c.*, Ontario, Canada; cap. of Dominion of Canada; on R. Ottawa, 100 m. W. of Montreal; univ., caths., parliament buildings; hydro-electric power, lumbering, sawmills, paper, flour, leather, matches, machinery, ironware; p. (1951) 198,773.
- Ottawa, *R.*, Canada; trib. of St. Lawrence, forming boundary between Ontario and Quebec; length 625 m.
- Ottawa, *t.*, Ill., U.S.A.; at mouth of Fox R.; grain glass; p. (1950) 16,957.
- Ottawa, *t.*, Kansas, U.S.A.; on Osago R.; rly. wks.; p. (1950) 10,081.
- Ottery St. Mary, *mkt. t., urb. dist.*, Devon, Eng.; 10 m. E. of Exeter; silk, rope, brushes; birth place of S. T. Coleridge; p. (1951) 4,015.
- Ottoshoop, *t.*, Transvaal, S. Africa; gold, fluorspar.
- Ottumwa, *c.*, Iowa, U.S.A.; on Des Moines R.; in midst of great coalfield and agr. dist.; iron and steel, meat packing; p. (1950) 31,570.
- Otway, *hills*, S.W. extremity of Victoria, Australia; sheep.
- Ouachita or Washita, *R.*, Arkansas, U.S.A.; trib. of Red R.; length 550 m.
- Oudenaarde (Audenarde), *t.*, Belgium; town hall; Allies defeated French 1708; textiles; p. 6,525.
- Oudh, *see* Uttar Pradesh, India.
- Oudtshoorn, *t.*, C. of Good Hope, S. Africa; on Olifants R.; ostrich farms, tobacco, fruit; p. (1946) 8,174.
- Ougadougou, *dist.*, transferred from Ivory Cst. to Upper Volta, Fr. W. Africa. [p. 18,000]
- Ougadougou, *t. cap.*, Upper Volta, Fr. W. Africa;
- Oughter, *L.*, *lough*, Cavan, Ireland.
- Oughterard, Galway, Ireland; marble quarries, farming, fishing.
- Oujda, *t.*, Fr. zone, Morocco; phosphate dist.; p. (1946) 88,500 (of which 25,500 Europeans).
- Oullins, *t.*, dep. Rhône, France; nr. Lyons; locomotive repair shops; textiles, glass, leather; p. (1946) 18,300.
- Uulton Broad, *L.*, Suffolk, Eng.; nr. Lowestoft.
- Oulu (Uleåborg), *co.*, N. Finland; partly forest and partly agr.; cap. Oulu; a. 21,887 sq. m.; p. (1950) 360,078.
- Oulu (Uleåborg), *t. cap.*, Oulu, Finland; on G. of Bothnia (Baltic Sea) at mouth of R. Oulu; lumbering; p. (1950) 37,896.
- Oulu, *L.*, Finland; 40 m. long.
- Oundle, *mkt. t., urb. dist.*, Northants, Eng.; on R. Nen, 7 m. S.W. of Peterborough; famous public school; brewing; p. (1951) 2,224.
- Ouro Preto, *t.*, Brazil; former cap. of Minas Gerais st.; iron, manganese, gold; fruit, coffee; textiles, footwear; p. 8,819. [90 m.]
- Ourthe, *R.*, Belgium; trib. of R. Meuse; length Ouse or Great Ouse, *R.*, Norfolk, Eng.; flows N.E. to the Wash; length 156 m.
- Ouse, *R.*, Yorks, Eng.; formed by Rs. Swale and Ure, flows to Humber estuary; length 130 m.
- Ouse, *R.*, Sussex, Eng.; flows to English Channel at Newhaven; length 30 m. [14,807]
- Ovalle, *t.*, Chile; agr. centre; fruit, wool; p. 14,807.
- Ovamboland, *native reserve (Bantus)*, N. of S.W. Africa; agr.
- Ovar, *t.*, Beira Litoral, Portugal; on Avera lagoon; onions and other vegetables, sardines, wine, wheat; p. 12,729.
- Overijssel, *prov.*, Netherlands; bordering on Zuider Zee; dairying, fishing, cottons; a. 1,299 sq. m.; p. (1948) 644,492.
- Overton, *t.*, *rural dist.*, Flint, N. Wales; 5 m. S.E. of Wrexham; p. (rural dist. 1951) 6,760.
- Oviedo, *maritime prov.*, N. Spain; agr. fruit, sardine, and other fisheries; cap. O.; a. 4,204 sq. m.; p. (1950) 888,149.
- Oviedo, *t. cap.*, Oviedo, Spain; on R. Nalon; Gothic cath., univ.; coal; textiles, leather, matches; gr. mkt.; p. (1950) 102,991.
- Owatonna, *t.*, Minn., U.S.A.; p. (1950) 10,191.
- Owen Falls Dam, Uganda; inaugurated 1 April 1954; converts Lake Victoria into reservoir for irrigation of Egypt and Sudan; also to supply Uganda industries with hydro-electric power.
- Owen Sound, *t.*, *L. pt.*, Ontario, Canada; on S.W. est. of Georgian Bay, L. Hudson; E. terminus of lgt. wheat-carrying L. steamers; linked by rly. to Toronto (125 m.) and Montreal; p. (1941) 14,002.
- Owen Stanley, *range*, Papua, New Guinea; highest peak Mt. Victoria; alt. 13,121 ft.
- Owens, *L.*, S. California, U.S.A.; on E. flank of Sierra Nevada 20 m. S.E. of Mt. Whitney; water taken by 225-m.-long aqueduct to Los Angeles; a. 120 sq. m.
- Owensboro, *t.*, Kentucky, U.S.A.; petroleum, farming, stock-raising, tobacco; p. (1950) 33,651.
- Owosso, *c.*, Michigan, U.S.A.; on Shiawassee R.; timber tr.; p. (1950) 15,948.
- Owyhee, *R.*, Oregon, U.S.A.; trib. of Snake R.; length 350 m.
- Oxford, *co.*, S. Midlands, Eng.; mainly agr.; cereals, paper, gloves, blankets, agr. implements, motor cars; cap. O.; a. 749 sq. m.; p. (1951) 275,765.



Oxford, *c., co. bor.*, Oxford, Eng.; on R. Thames, at confluence of Rs. Cherwell and Isis (Thames); famous univ. of 21 colleges; motor cars, printing; p. (1951) 98,675.  
*Orus R., see* Amu Darya.  
 Oyashio, *see* Bering Current. [1,000.  
 Oyem, *t.*, Gabun terr., Fr. Equatorial Africa; p. Oyo, *t.*, W. prov., Nigeria; p. (1946) 79,340.  
 Oyster Bay, *t., cst. resort.* N.Y., U.S.A.; on Long I.; home of Theodore Roosevelt; p. (1950) 5,215.  
 Ozark Mtns., Oklahoma and Arkansas, U.S.A.; lead, zinc; ch. *t.* Joplin.  
 Ozd, *t.*, Hungary; p. 21,277.  
 Ozieri, *t.*, Sardinia, Italy; p. 10,541.  
 Ozorkow, *t.*, Poland; nr. Lodz; mns.; p. 11,000.

# P

Paarl, *t.*, C. of Good Hope, S. Africa; summer resort; wines, fruit, tobacco; p. (1946) 10,935.  
 Fabianice, *t.*, Poland; nr. Lodz; textiles, farming implements, paper; p. 37,140.  
 Pabna, *t.*, Bengal, E. Pakistan; oil, carpets; p. (1941) 32,929.  
 Pacasmayo, *spt.*, Peru, S. America; exports rice, cotton, silver, hides, copper; p. (1947) 6,615.  
 Pachino, *t.*, Sicily, Italy; nr. C. Passaro; grapes, basket-making, fishing.  
 Pachitea, *R.*, Peru, S. America; rises in Andes, flows N. to R. Ucayali; sm. German immigrant colonies in upper valley; length 320 m.  
 Pachmarhi, Madhya, Pradesh, India; summer cap., tourist centre.  
 Pachuca, *cap.*, Hidalgo st., Mexico; silver; p. (1940) 59,351.  
 Pacific Ocean; a. 68,000,000 sq. m.; largest ocean in the world; extends from W. cst. of America to E. cst. of Asia and Australia and the S. Ocean in the S.; enters Arctic Ocean via Bering Strait; greatest length, N. to S. 8,000 m.; breadth 10,000 m.; mean depth 12,560 ft., greatest depth 35,000 ft. in the Marianas Trench.  
 Padang, *spt.*, Sumatra, Indonesia; coffee, spices, rubber, tobacco, copra; p. 52,054.  
 Paddington, *metropolitan bor.*, W. London, Eng.; residit. and industri.; p. (1951) 125,231.  
 Paderborn, *t.*, W. Germany; glass, cattle, grain; p. (1946) 37,272.  
 Padiham, *urb. dist.*, Lancs, Eng.; at N. foot of Rossendale Fells, 4 m. S.W. of Nelson; textiles; p. (1951) 10,031.  
 Padron, *t.*, Spain; ruined cath.; grain, grapes and fruit-growing district; textile mns.  
 Padstow, *t., spt., urb. dist.*, Cornwall, Eng.; on W. side of Camel estuary 4 m. N.W. of Wadebridge; light industries; sm. seaside resort; p. (1951) 2,852.  
 Padua, *t.*, Italy; cath., arcades, ancient bridges; machinery, chemicals, silks, cloth, distilling; p. (1951) 166,072.  
 Paducah, *c.*, Kentucky, U.S.A.; on Ohio R.; saw-mills, tobacco, railway wks.; p. (1950) 32,823.  
 Paeroa, *bor.*, N.I., New Zealand; p. (1951) 2,538.  
 Pag, *I. and spt.*, Yugoslavia; timber, salt; cath.; p. (of I.) 4,349.  
 Pagan, *t.*, Burma; ruins; lacquer work.  
 Pago-Pago, *spt.*, Samoan Is., Pac. Oc.; U.S. naval stn.; p. (1950) 1,586.  
 Pahang, *st.*, Federation of Malaya; cap. Kuala Lipis; largely forested; a. 13,820 sq. m.; p. (1947) 250,173.  
 Pahlataua, *bor.*, N.I., New Zealand; dairying; p. (1951) 2,096.  
 Pahlavi, *t.*, Persia; nr. Resht, on Caspian Sea; rice, hides, skins, fruit; p. (estd. 1949) 48,000.  
 Pai Ho (Hai Ho), *R.*, Hopeh, N. China; rises in mtns. of Jehol, flows S.E. into G. of Pohai 40 m. downstream from Tientsin; mouth blocked by sand-bar, but lower R. carries heavy river-boat and barge traffic; length 290 m.  
 Paignton, *t., urb. dist.*, S. Devon, Eng.; on Tor Bay; seaside resort; farming, cider; p. (1951) 25,369.  
 Paimpol, *fishing pt.*, Côtes du Nord, N.W. France; on N. cst. of Brittany, 20 m. N.W. of St. Brieuc; specialises in lobster fishing.  
 Painted Desert, area of bare, multi-coloured rocks, Arizona, U.S.A.  
 Paisley, *burgh.*, Renfrew, Scot.; 5 m. W. of Glasgow; ancient abbey; linen, cotton, dyeing, chemicals, machinery; p. (1951) 93,704.

Pakhoi, *former treaty port.*, Kwangtung prov., China; indigo, groundnuts, hides, leather, sugar, fish; p. (1931) 36,000.  
 Pakistan, *predominantly Moslem Dominion*, founded in 1947, forming part of sub-continent of India; consists of provs. of Baluchistan, East Bengal (inc. practically all Sylhet), N.W. Frontier, W. Punjab and Sind; products, cereals, tobacco, oil seeds, jute, tea; cap. Karachi; a. 365,907 sq. m.; p. (1951) 75,842,000.  
 Paknampho, *t.*, Siam; on R. Meinam, at upper limit of steam navigation.  
 Pakokku, *t.*, Burma; commercial centre; sugar, rice, tobacco, oil-fields, teak; p. 23,115.  
 Palagru, *I.*, Adriatic Sea; formerly Italian; ceded to Yugoslavia by peace treaty 1947.  
 Palamanu, *t.*, Bihar, India; on R. Koel; shellac, cement; p. (1941) 22,655.  
 Palamos, *spt.*, Spain; E. of Gerona; p. 5,037.  
 Palanpur, *t.*, Bombay, India; p. 10,000.  
 Palau Is., *group of Is.*, in Pacific Ocean.  
 Palatinat, *see* Rhineland Palatinat, Germany.  
 Palawan, *I.*, Philippines; coffee, resin, timber; a. 4,560 sq. m.; p. 107,000.  
 Palembang, *t.*, Sumatra, Indonesia; cap. P. residcy.; cotton, rubber, coffee; p. (1940) 109,000.  
 Palencia, *inland prov.*, Old Castile, Spain; partly fertile plain, partly wooded and mountainous; cap., Palencia; a. 3,093 sq. m.; p. (1950) 233,290.  
 Palencia, *t., cap.*, Palencia, Spain; N. of Valladolid; centre of rich wheat-growing dist.; iron-founding and weaving; p. (1949) 40,023.  
 Palermo, *spt.*, Sicily, Italy; cath., univ.; machinery, chemicals, wines, fruit, tobacco; p. (1951) 483,777.  
 Palestine or The Holy Land (*see also* Israel), *ancient and biblical cty.*, bounded by Syria and Lebanon on the N., Jordan on the E., the Egyptian prov. of Sinai on the S., and the Mediterranean on the W.; a. when under British mandate 10,429 sq. m.; p. (estd. 1948) 732,000.  
 Palestine, *t.*, Texas, U.S.A.; agr. and forest region; p. (1950) 12,503.  
 Palghat, *t.*, Madras, India; p. (1941) 46,000.  
 Palitana, *t.*, Saurashtra, India; a city of Jain temples inhabited by priests and their servants; p. (1941) 76,432.  
 Palk Strait, India; separating India from Ceylon.  
 Palm Beach, *t.*, Florida, U.S.A.; winter resort; grapefruit; p. (1950) 3,886.  
 Palma, *spt.*, Majorca I., Spain; catha., palaces; wine, fruit, silk; cap. Balearic Is.; p. (1950) 136,814.  
 Palmaraia I., Pontine Is., Italy; vineyards.  
 Palmerston North, *c.*, N.I., New Zealand; dairying, sheep; rly. junction; p. (1951) 32,345.  
 Palmira, *t.*, Colombia; tobacco, coffee, rice, cocoa, sugar, grain; p. (1947) 21,235.  
 Palmyra (ancient Tadmor), *c.*, in Syrian desert, 120 m. N.E. of Damascus; extensive ruins; p. 10,000.  
 Palmyra Is., Pac. Oc., U.S.A.; coral islets; coconuts; p. 32.  
 Palmi Hills, *range*, between E. and W. Ghats, S. Deccan, India; highest peak 7,050 ft.  
 Palos, *spt.*, Huelva, S. Spain; on Rio Tinto; starting point for Columbus in 1492.  
 Palos, C. de, Mediterranean, S.E. cst. of Spain.  
 Palmiers, *t.*, Ariège, France; electric steel furnaces; wine; leather; p. (1946) 12,026.  
 Pamir Mtns., U.S.S.R.; "Roof of the World"; plateau region in Central Asia; Stalin Peak 24,590 ft.  
 Pamlico Sound, *lge. lagoon*, on E. cst. of N. Carolina, U.S.A.; length 75 m., width 25 m.  
 Pampa, *La, terr.*, Central Argentina; stock-rearing; cap. Santa Rosa; a. 55,669 sq. m.; p. (1947) 166,929.  
 Pampas, Argentina; vast plains stretching from the Rio Negro on the S. to the Gran Chaco in the N., and E. from the Andes to the Atlantic; woodless, level country; rich pastures in E., supporting countless numbers of sheep and cattle, W. mostly barren.  
 Pamplona, *t.*, Colombia; dyewoods, resin, gums, coal, gold, coffee, cocoa, wheat, brewing, textiles; p. (1947) 13,126.  
 Pamplona, *t.*, Spain; cath., fortress; textiles, leather, paper, flour, soap, earthenware; p. (1950) 72,483.

Panagyurishte, *t.*, Bulgaria; *p.* 12,015.

Panama, *rep.*, Central America; mountainous; climate hot throughout year, abundant rains; language Spanish; religion R.C.; communications poor; cattle-raising, farming; pearls, bananas, cocoa, coconuts, rubber, sugar, coffee; cap. Panama; a. 28,575 sq. m.; *p.* (1950) 805,285.

Panama, *spt.*, Panama; cath.; harbour at S. entrance to Canal; *p.* 123,000.

Panama, canal zone, Panama; strip of land 47 m. long by 10 m. wide, extending 5 m. on either side Panama Canal, administered by U.S.A.; *p.* (1950) 52,822.

Panama Canal, Canal Zone, Panama; length 41½ m., ranging in width from 300 to 1,000 ft.; time of transit through canal 7-8 hours; canal starts at Cristobal (Atlantic), to Gatun locks, through Gatun lake, Culebra cut, Pedro Miguel locks, Miraflores locks, to Bilbao (Pacific).

Panaria, *Is.*, Lipari Is., Italy; a. 1 sq. m.; hot springs, vineyards, olives.

Panarukan, *spt.*, Java, Indonesia; exports tobacco, sugar; *p.* 7,455.

Panay, *I.*, Philippines; between Negros I. and Mindoro I.; a. 4,446 sq. m.; cotton, rice, sugar, coffee.

Pancevo, *t.*, Vojvodina, Yugoslavia; wheat, maize, timber, glass, textiles, ironwks.; *p.* (1948) 30,933.

Pandharpur, *t.*, Bombay, India; on R. Bhima; temple, pilgrimages; *p.* (1941) 25,000.

Pando, *dep.*, Bolivia; *p.* 18,600; cap. Cobiija; *p.* (1950) 19,804.

Pando, *t.*, Uruguay; *p.* 9,600.

Panevezys, *t.*, Lithuania, U.S.S.R.; mnfs. and tr.; *p.* (1940) 26,200.

Pangalanes Canal (Canal Des Pangalanes), Madagascar; follows E. est. from Farafangana to Tamatave, through series of lagoons; length 300 m.

Pangani, *spt.*, Tanganyika Terr., Africa; copra, sisal hemp, maize; *p.* 3,000.

Pangkalanbrandan, *spt.*, Sumatra, Indonesia; oil-refining and export.

Panipat, *t.*, E. Punjab, India; silver and brass, cotton goods, blankets, carpets, pottery; *p.* (1941) 37,837.

Panisher Valley, Afghanistan; silver-mines, unexploited; mica-mine. *[p. 8,000.]*

Pantar I., Lesser Sunda Is., Indonesia; mtns.

Pantelleria, *volcanic I.*, Mediterranean, Italy; midway between W. Sicily and Tunisia; a. 58 sq. m.; ch. t. P. on N.W. est.; figs, raisins, vines, capers, cereals; fishing; *p.* 10,000.

Pantin, *sub.*, Paris, France; glasswork, sugar ref., tobacco factories, chemicals, leather, tallow; *p.* (1948) 36,242.

Paola, *est. t.*, Calabria, Italy; oil and wine tr.; *p.* 13,625.

Paoing, *one of the chief cs.*, Hopei prov., China; on the Yungting R.; gr. tr.; *p.* 120,000.

Paotow, *to.*, Suiyan, N.W. China; on left bank of Hwang Ho at W. end of Peiping-Suiyan rly.; terminus of caravan routes through Gobi Desert and Tarim Basin to Turkestan; gr. trading centre.

Papeete, *cap.*, Tahiti I., Society Is., Pac. Oc.; French col.; connected by air service with Noumea (New Caledonia); exports copra and phosphates; *p.* (1946) 12,428.

Paphos, *administrative dist.*, Cyprus; ancient c., ruins; serious earthquake 1953; *p.* 5,866.

Papua-New Guinea, *terr.*, S.E. New Guinea; provisionally administered by the Commonwealth of Australia, consists of the S.E. part of the I. of New Guinea; cap. Port Moresby; gold, copra, rubber, timber; total a. 183,540 sq. m.; *p.* (1951) 1,476,000 (inc. approx. 10,000 non-indigenous).

Para, *st.*, Brazil; densely forested; rubber, fruits, cacao, Brazil nuts; cap. Belem; a. 464,780 sq. m.; *p.* (1950) 1,142,846.

Para, *spt.*, Brazil, see Belem.

Paraguari, *t.*, Paraguay; tobacco, cotton, cattle, potteries, tanneries, distilleries; *p.* (1945) 11,775.

Paraguay, *rep.*, S. America; undulating country, swamps, forests; rivers, Paraguay, Pilcomayo, Paraná; climate, hot summers, warm winters, moderate rainfall; religion, R.C.; communications poor; fertile; cattle, yerba maté, oranges, sugar, maize, cotton, tobacco, lumber, quebracho extract; iron, manganese, copper; meat

packing; cap. Asunción; a. 157,006 sq. m.; *p.* (1950) 1,405,627.

Paraguay, *R.*, S. America; rises in plateau of Mato Grosso, flows S. and joins R. Paraná nr. Corrientes; forms bdy. between Brazil and Bolivia, Brazil and Paraguay; approx. length 1,200 m.

Paráiba, *st.*, Brazil; cotton, cocoa, sugar, rubber, tobacco; cap. João Pessoa; a. 21,730 sq. m.; *p.* (1950) 1,730,784.

Paráiba, *R.*, Brazil; flows to Atlantic in st. of P.; length 200 m.

Paráiba, *R.*, S. Brazil; rising in São Paulo st., and flowing between Rio de Janeiro and Minas Gerais to the Atlantic N.E. of Rio de J.; length 658 m.

Paramaribo, *spt.*, cap., Netherlands Guiana; (Surinam); on R. Suriname; ch. expts. bauxite, timber, rubber, rice, fruit; *p.* (1947) 73,233.

Paraná, *cap.*, Entre Rios prov., Argentina; *p.* (1947) 83,824.

Paraná, *st.*, Brazil; extensively forested; cap. Curitiba; a. 77,717 sq. m.; *p.* (1950) 2,149,509.

Paraná, *R.*, Brazil; formed by Junc. of Rs. Rio Grande and Parnaíba; flows W. between Paraguay and Argentina; flows into Rio de la Plata; navigable to Brazil frontier nr. Iguassú Falls; length 2,000 m.

Paranaguá, *spt.*, Paraná st., Brazil; ch. port for Paraná; in lagoon harbour; exports maté, timber, coffee, bananas, maize, potatoes; *p.* (1947) 23,000.

Pardes Hanna, *vil.*, Israel; citrus fruits, mineral water, cheese, plastics; *p.* 3,500.

Pardubice, *t.*, Czechoslovakia; saw-milling; brewing, distilling; *p.* (1947) 44,337.

Parenzo, *spt.*, Italy; cath.; fishing; Roman remains.

Paríñas, *C.*, Peru, S. America.

Paris, *cs.*, cap., France; on R. Seine; fifth city of Europe; Notre Dame, Louvre, Palais de Justice, Palais Tuileries, Palais Royal; four triumphal arches; Eiffel Tower 985 ft. high; network of canals, rivers, roads, railways; Latin quarter with Sorbonne (univ. founded 1253); siege Germans 1870-71, occupied by Germans 1940-45; industries; clothes, boots, perfumes, watches, fancy articles, instruments, books, flour, cottonseed oil; *p.* (1954) 2,850,189.

Paris, *t.*, Ontario, Canada; *p.* 4,637.

Paris, *t.*, Ill., U.S.A.; *p.* (1950) 9,460.

Paris, *t.*, Texas, U.S.A.; cotton, fruit, canned goods; *p.* (1950) 21,643.

Parkersburg, *c.*, W. Virginia, U.S.A.; on Ohio R.; iron- and steel-wks., oil and natural gas, coal, glassware, rayon, porcelain; *p.* (1950) 29,634.

Parkes, *t.*, N.S.W., Australia; *p.* (1947) 6,897.

Parma, *prov.*, Emilia, Italy; a. 1,258 sq. m.; *p.* (1951) 390,601.

Parma, *t.*, N. Italy; between the Apennines and the R. Po; univ., cath.; flourishing tr.; food processing, wine, cheese; precision instruments; agr. machinery, footwear, felt hats; *p.* (1951) 122,212.

Parnaíba, *R.*, rises in Brazil, flows into N. Atlantic Ocean, forms boundary between Maranhão and Piauí; length 750 m.

Parnaíba, *spt.*, Piauí, Brazil; cotton, cattle; *p.* (1947) 22,671.

Parnassos, *mn. ridge*, Greece; 83 m. N.W. of Athens, nr. the ancient Delphi, the modern Liakhura; highest summit, Licoresia, alt. 8,068 ft.

Parnu, *t.*, Estonia, U.S.S.R.; on G. of Riga; resort; flax, timber, wood pulp, woollens; *p.* 22,000.

Páros, *I.*, Grecian Archipelago; W. of Naxos; a. 63 sq. m.; cap. P.

Parramatta, *c.*, N.S.W., Australia; fruit, oranges; *p.* (1954) 76,100.

Parrett, *R.*, Somerset, Eng.; flows to Bristol Channel, nr. Bridgwater; length 35 m.

Parry (Mauke) *I.*, Pac. Oc.; part of Cook Is., New Zealand; *p.* 773.

Parry Sound, *t.*, Ontario, Canada; lumbering; *p.* 5,765.

Parsons, *t.*, Kansas, U.S.A.; coal, natural gas, machinery; *p.* (1950) 14,750.

Partinico, *t.*, Sicily, Italy; silk; *p.* 22,080.

Pasadena, *c.*, California, U.S.A.; N. of Los Angeles; in fruit-growing region, base of San Gabriel Mtns.; 200-in. telescope on Mt. Palomar; largest in world; *p.* (1950) 104,577.



- Pasco, *t.*, Washington, U.S.A.; on Snake R.; p. (1950) 10,228.
- Pasco, *see* Cerro de Pasco.
- Pas-de-Calais, *dep.*, N. France; coal, iron; farming, sugar distilling, paper, pottery; cap. Arras; a. 2,606 sq. m.; p. (1946) 1,168,545.
- Pasig, *t.*, Luzon, Philippines; commercial centre of the lake region; p. 29,170.
- Pasir Mas, *t.*, Kelantan, Malaya; rly. junction.
- Passage West, *urb. dist.*, *spt.*, Cork, Ireland; shipping, fishing.
- Passaic, *c.*, New Jersey, U.S.A.; silk, chemicals, dyes, rubber goods, mill machinery, springs, steel cabinets, tin cans; p. (1950) 57,702.
- Passaic, *R.*, N.J., U.S.A.; flows 100 m. to Newark Bay.
- Passau, *t.*, Germany, at confluence of R. Danube, Inn and Ilz; near Austrian frontier; transshipment base, inds. inc. leather, porcelain, tobacco and brewing; p. (estd. 1954) 34,500.
- Passchendaele, *t.*, Belgium; impt. strategic point in First World War. [Sicily, Italy.]
- Passero L., Mediterranean Sea; off S.E. cst. of Pasto, *t.*, *cap.*, Navio dep., Colombia; on flank of Pasto volcano; difficult of access; gold nearby; p. (1947) 27,534.
- Passuruan, *spt.*, Java, Indonesia; exports sugar, tapioca; p. 36,973.
- Patagonia, Argentina; extensive region, E. of Andes; elevated plateau, arid, sterile; principal rivers, Colorado, Rio Negro, and Chubut; minerals, unworked; large tracts of grazing for sheep, horses, and cattle.
- Patan, *t.*, Bombay, India; swords, silk and cotton goods; p. 10,000.
- Patan, *valley t.*, Nepal; p. (1941) 104,928.
- Patani, *spt.*, S. Siam; tin export, fishing; p. 109,252.
- Paterno, *t.*, Sicily, Italy; N.W. of Catania; mineral springs, wines; p. 31,090.
- Pater Noster Is., Indonesia; coconuts.
- Paterson, *c.*, New Jersey, U.S.A.; principal centre silk mfr.; aeroplane engines; textiles; machinery; p. (1950) 139,336.
- Pathankot, *t.*, E. Punjab, India; fruit preserving; p. (1941) 12,354.
- Patia R., Colombia; gold, platinum found.
- Patiala and East Punjab States (Pepsu), India; wheat, millet, sugar, cotton, cattle, chemicals; cap. Patiala; a. 10,099 sq. m.; p. (1951) 3,493,685.
- Patiala, *t.*, India; iron and steel mfg.; flour; p. (1941) 69,850.
- Patino Mines, *see* Uncia.
- Patkal, *hills*, India; Chaukan; alt. 9,020 ft.
- Patmos, *I.*, one of the Dodecanese, Aegean Sea; a. 13 sq. m.; p. (estd.) 3,000. (According to Rev. I. 9, the exiled St. John wrote the Revelation here.)
- Patna, *cap.*, Bihar, India; seat of High Court; univ.; rice, indigo, cotton, salt; p. (1951) 283,479.
- Patna, *t.*, Orissa, India; manganese; p. (1941) 16,757.
- Patras, *spt.*, "Peloponnese", Greece; citadel and cas.; currants, raisins, figs, olives, wine, skins, etc.; p. (1951) 88,414.
- Patricroft, *indust.*, *t.*, nr. Manchester, Lancs, Eng.
- Pau, *t.*, Basses Pyrénées, France; on Gave du Pau; cas.; health resort; linen, chocolate, hams, wine; p. (1946) 46,158.
- Paulis, *t.*, N.E. Belg. Congo; admin. offices; cotton ginneries; rly. repair shops; p. 4,399.
- Paulo Afonso, *falls*, São Francisco R., Brazil; 260 ft.
- Pavia, *t.*, Italy; cath., univ.; walled city; battle site 1525; olives, silk, wine; Parmesan cheese; p. (1951) 63,225.
- Pavlodar, *region*, Kazakhstan, U.S.S.R.; in basin of R. Irtysh; coal, salt.
- Pavlovo, *t.*, U.S.S.R.; on R. Oka; iron and steel, cutlery, tractors, automobiles; p. 10,000.
- Pawtucket, *c.*, Rhode Island, U.S.A.; on P. R. used for water-power; woollen, cotton and silk goods; machinery; chemicals; first cotton-spinning factory, established in the U.S.A. 1790; p. (1950) 81,436.
- Paysandu, *dep.*, Uruguay; p. (1942) 84,265.
- Paysandu, *t.*, Uruguay; meat, cattle, sheep, wool; p. 50,000.
- Pazardzhik, *t.*, Bulgaria; on main rly. line to Istanbul; p. (1947) 30,430.
- Peace, *R.*, Canada; rises in Rocky Mtns., and flows to L. Athabaska; length 1,000 m.
- Peak, *The, Pennine hill dist.*, mid-Eng.; extending from Chesterfield to Buxton, and Ashbourne to Glossop; mainly composed of limestone with typical Karst features; tourists; highest point Kinder Scout, alt. 2,080 ft.
- Pearl, *R.*, *see* Chu Kiang.
- Pearl Harbour, *spt.*, Oahu I., Hawaiian Is., U.S. Naval base.
- Peary Land, Greenland.
- Peč, *t.*, Jugoslavia; nr. Albanian border; tobacco, fruit; p. 17,175.
- Pechenga (Petsamo), *spt.*, Karelo-Finnish S.S.R., U.S.S.R.; on left bank of R. Petsamon 10 m. upstream from Barents Sea; formerly Finnish, ceded to U.S.S.R. Sept. 1944; ice-free throughout year, thanks to influence of North Atlantic Drift; exports nickel, timber.
- Pechora, *R.*, flowing into Arctic Ocean, U.S.S.R.; 1,000 m. long, 700 m. navigable.
- Peckham, *S.E. sub.*, London, Eng.
- Pecos, *R.*, New Mexico and Texas, U.S.A.; trib. of Rio Grande; length 764 m.
- Pécs, *t.*, Hungary; tanning, weaving, paper, majolica; cath., univ., airport; p. 73,000.
- Peebles, *bor.*, *co. t.*, Peebles, Scot.; on upper course of K. Tweed; hydro, woollens; p. (1951) 6,013.
- Peebles, *co.*, Scot.; hilly, Proud Law, 2,754 ft.; sheep, woollens; a. 346 sq. m.; p. (1951) 15,226.
- Peekskill, *t.*, N.Y., U.S.A.; on Hudson R.; iron-wks.; p. (1950) 17,731.
- Peel, *t.*, I. of Man, Eng.; midway along W. cat. cas., cath., ruins; resort; fisheries; p. 2,690.
- Peel Fell, *mfs.*, Northumberland, Eng.; 1,964 ft.
- Pegasus, *B.*, S.I., New Zealand.
- Pegu, *dist.*, Lower Burma; annexed by Brit. 1852; teak forests; p. 2,961,249.
- Pegu, *t.*, Burma; founded in A.D. 573; pagoda 320 ft. high, temple; rice; bronze statuettes mfrd.; p. 21,712.
- Pegu Yoma, *mtns.*, Burma; separate valleys of Rs. Irrawadi and Sittang.
- Pei-Ho, *R.*, Hopei, China; unites with R. Hun-ho at Tientsin and flows to G. of Chihli; length 300 m.
- Pei Kiang, *R.*, Kwangtung, S. China; rises in Nan Ling mtns., flows S. into Canton delta; valley used by road and rly. to approach Meiling and Cheling Passes from Canton; length approx. 300 m.
- Peiping, *see* Peking.
- Peipus, *L.*, between R.S.F.S. Rep. and Estonia, U.S.S.R.; 70 m. long.
- Peiraeus, *spt.*, Greece; port of Athens; principal port of Greece; arsenal; wines, brandy, currants, vinegar; marble; machinery; p. (1951) 184,980.
- Pekalongan, *t.*, N. cst. Java, Indonesia; exports sugar, rubber; p. 65,982.
- Pekan, *t.*, Pahang, Malaya; p. 5,000.
- Pekin, *t.*, Ill., U.S.A.; cereal prods., distilling, leather, metal goods; p. (1950) 21,858.
- Peking, *c.*, *cap.*, China; cultural centre and city of great arch. beauty; for thousands of years seat of the Chinese emperors (Mongol, Ming, and Manchu régimes); surrounded by 22 m. of towering walls broken by 16 gates; p. (estd. 1952) 2,031,000.
- Pelée, *mtn.*, Martinique; active volcano, devastated town of St. Pierre 1902, loss of over 30,000 lives, later eruption caused further 2,000 deaths; alt. 4,400 ft.
- Pelew Is., Caroline Is., Pac. Oc.; coral, primitive agr.; bauxite; p. 12,798.
- Pella, *prefecture*, Macedonia, Greece; cap. Edessa; p. (1951) 116,688.
- Pelly, *R.*, trib. of R. Yukon, N.W. Terr., Canada.
- Peloponnesos, *peninsula*, S. part of Greece, separated from mainland proper by G. of Corinth; a. 8,356 sq. m.; p. (1951) 1,127,467.
- Pelotas, *t.*, Rio Grande do Sul, S. Brazil; at S. end of Lagoa dos Patos; tr. in sheep, cattle from interiors; mfs. woollens, leather, wine.
- Pelvoux, *mtn.*, France; between Isère and Hautes Alpes; alt. 12,920 ft.
- Pemba, *I.*, Kenya Protectorate, E. Africa; 34 m. N. of Zanzibar; a. 380 sq. m.; cloves and copra, coconuts; p. 114,929.
- Pembroke, *t.*, Ont., Canada; lumbering; p. (1941) 11,159.
- Pembroke, *mtn.*, S.I., New Zealand.
- Pembroke, *co.*, Wales; fertile; stock-raising, coal, lead mines, slate; a. 617 sq. m.; p. (1951) 90,896.

- Pembroke**, *mkt. t., mun. bor.*, Pembroke, Wales; on S. side of Milford Haven; cas., ruins of Monkton Priory; naval dockyard; p. (1951) 12,295.
- Pembroke Dock**, Pembroke, Wales.
- Penang**, *st.*, Federation of Malaya; formerly Brit. settlement known as Prince of Wales I.; cap. Georgetown; declared a free port June 1946; coconuts, rice, spices, tin; a. 400 sq. m.; p. (1947) 446,321.
- Penarth**, *urb. dist.*, Glamorgan, Wales; on Severn estuary 2 m. S. of Cardiff; resort; mineral waters, exports coal, iron; p. (1951) 18,528.
- Pendembu**, *inland, t.*, Sierra Leone, W. Africa; p. 1,000.
- Pendleton**, *t.*, Oregon, U.S.A.; p. (1950) 11,774.
- Penado**, *t.*, Brazil; trading centre; p. 12,651.
- Penge**, *urb. dist.*, Kent, Eng.; S.E. sub. of London; residit.; p. (1951) 25,009.
- Pengpu**, *c.*, Anhwei, China; on Hwai Ho 105 m. N.W. of Nanking; on Tientsin-Nanking rly.; p. (estd. 1934) 105,237.
- Penicuik**, *burgh*, Midlothian Scot.; on N. R. Esk, 7 m. S. of Edinburgh; paper, iron; p. (1951) 4,255.
- Penistone**, *mkt. t., urb. dist.*, W.R. Yorks., Eng.; on R. Don, 10 m. N.W. of Sheffield; steel; p. (1951) 6,389.
- Penmaenmawr**, *t., urb. dist.*, Caernarvon, Wales; on N. cst. 4 m. W. of Conway; seaside resort; p. (1951) 4,218.
- Pennine Alps**, Switzerland; division of Alpine system; ch. peaks: Matterhorn (14,766 ft.), Weisshorn (14,804 ft.). Mischabelhörner (14,942 ft.); includes Zermatt; winter sports.
- Pennine Range**, *min. range*, running N. to S. from Cheviot Hills to Derby, Eng.; length 140 m.
- Pennsylvania**, *st.*, U.S.A.; originally proprietary colony of Penn family, and later one of the 13 original states in the Union; traversed N.E. to S.W. by Appalachians; ch. Rs.: Delaware, Susquehanna, Allegheny, and Monongahela; minerals, coal (bituminous and anthracite), natural gas, petroleum, iron ore, maize, wheat, oats, rye; textiles, machinery, motor cars, tobacco; ch. ts.; Pittsburgh, Philadelphia; a. 45,333 sq. m.; p. (1950) 10,493,012.
- Penrhyn**, *dist.*, Caernarvon, Wales; nr. Bethesda; slate quarries.
- Penrith**, *mkt. t., urb. dist.*, Cumberland, Eng.; at N. foot of Shap Fell, 18 m. S.E. of Carlisle; ruined cas.; agr. mkt., tourist centre; p. (1951) 10,490.
- Penryn**, *t., mun. bor.*, Cornwall, Eng.; on estuary of R. Fal, 2 m. N.W. of Falmouth; fishing; granite quarries; p. (1951) 4,088.
- Pensacola**, *spt.*, Florida, U.S.A.; safest landlocked harbour in G. of Mexico; naval station; fish, naval requisites, wool, hides, cotton and lumber mills; p. (1950) 43,479.
- Penitction**, *t.*, B.C., Canada; fruit farming, canning; p. (1951) 10,548.
- Pentire Pt.**, headland, Cornwall, Eng.
- Pentland Firth**, strait between Orkney and the Caithness cst., N. Scot.
- Pentland Hills**, range, Scot.; running from Lanark-Edinburgh-Peebles; highest point Scald Law, 1,896 ft.
- Pentland Skerries**, *small Is.*, Pentland Firth, Scot.
- Pen-y-Ghent**, peak in Pennine Range, W. R. Yorks., Eng.; 2,231 ft.
- Penza**, *t.*, U.S.S.R.; between Penza and Kuibyshev; grain, sawmills, paper, soap, and candles; p. (1939) 157,145.
- Penzance**, *t., mun. bor.*, Cornwall, Eng.; on Mounts Bay; seaside resort, good harbour; pichard fishing, exports copper, tin, and china clay; p. (1951) 20,648.
- Peoria**, *c.*, Ill., U.S.A.; river port; farming implements, grain; p. (1950) 111,866.
- Pepsu**, see Patiala and East Bengal.
- Perak**, Federation of Malaya; ch. product, tin; cap. Ipoh; a. 7,980 sq. m.; p. (1947) 953,933.
- Perekop**, Isthmus of, connects Crimea with Ukraine, and separates Sea of Azov from N.E. Black Sea.
- Pergamino**, *t.*, Buenos Aires prov., Argentina; on Pampas 60 m. S. of Rosario; impt. road and rail focus in centre of ch. maize-growing district.
- Périgueux**, *t., cap.*, Dordogne, France; on R. L'Isle; cath.; china, iron, woollens, figs, truffles; pâtes de foie gras; marshalling yards; rly. repair shops; p. (1946) 40,865.
- Perim**, *I.*, located in straits of Bab el Mandeb at entrance to Red Sea; part of Brit. col. of Aden; a. 5 sq. m.; p. (1946) 360.
- Perlis**, *st.*, Federation of Malaya; cap. Kangar; rice, tin, coconuts; a. 310 sq. m.; p. (1947) 70,490.
- Pern**, see Molotov.
- Pernambuco**, see Recife.
- Pernambuco**, *st.*, Brazil; sugar, fruits; mountainous interior, coast fertile; cotton, coffee; cap. Recife; a. 37,458 sq. m.; p. (1950) 3,430,630.
- Péronne**, *st.*, France; fort changed hands many times in First World War; p. 4,314.
- Perovo**, *t.*, U.S.S.R.; nr. Moscow; p. (1939) 77,727.
- Perpignan**, *fortifd. t.*, Pyrénées-Orientales, France; cath.; wine, brandy, silk, wool; p. (1946) 74,984.
- Persepolis**, *ruins*, ancient cap. of Persia.
- Pershire**, *mkt. t., rural dist.*, Worcs, Eng.; on R. Avon, 3 m. W. of Evesham; abbey church; preserves, machinery; p. (1951) 16,355.
- Persia** (Iran), *kingdom*, Asia; tableland 6,000-8,000 ft., ch. range Elburz Mtns.; Demavend 18,500 ft.; Rs. unimportant; centre barren, N. cst. fertile; climate, summer, days very hot, nights cool, winters warm; religion Islam; poor communications; dates, rice and other cereals, cotton, tobacco, wool, carpets, impt. oil-fields, cap. Tehran; a. 628,000 sq. m.; p. (estd. 1950) 18,772,000.
- Persian G.**, Asia; a. 80,000 sq. m.; inland sea between Arabia and Persia; shores barren.
- Perth**, *t.*, Ont., Canada; farming centre, dairying, oats; p. 4,458.
- Perth**, *co.*, Scot.; Trossachs and P. of Killiecrankie; noted for beautiful scenery; crossed by Grampians in N. and W.; ch. peaks, Ben More, Ben Lowers, Schiehallion; ch. Rs.: Tay, with tribs. Isla, Garry, Tummel, Sarn; pastoral; fruit; distilling; textiles; a. 2,493 sq. m.; p. (1951) 128,072.
- Perth**, *burgh*, Perth, Scot.; on R. Tay, in gap between Sidlaw and Ochil Hills; cap. of Scot. till assassination of James I in 1437; nearby is Scone Palace; cath.; linen, winevettes, brewing, rope, dyeing; p. (1951) 40,466.
- Perth**, *t.*, cap. W. Australia; 12 m. above port of Fremantle; univ., observatory, race-courses; p. (1947) 244,660.
- Perth Amboy**, *spt.*, N.J., U.S.A.; terracotta wks.; shipyards and dry docks; p. (1950) 41,330.
- Peru**, *rep.*, S. America; traversed N. to S. by the Andes, attaining 22,000 ft.; ch. Rs., Marañon and Ucayali; in S.E., L. Titicaca (12,450 ft.) largest lake in S. America; climate, eastern, very hot, drenching rains, central or mountain zone, sun intensely hot, but shade temperatures low; W. and Pacific cst., heat not excessive, scanty rainfall; religion R.C.; poor communications; sugar, cotton, coffee, wool, hides, timber, cocoa, wheat, tobacco, petroleum, silver, copper; cap. Lima; a. 482,258 sq. m.; p. (1947) 7,991,777.
- Peru** (Humboldt) Current, *ocean current*, S. Pac. Oc.; flows N. along cst. of N. Chile and Peru; relatively cold water causes lower air temperatures and produces cloud and fog.
- Perugia**, *spt.*, Umbria, Italy; on R. Tiber; univ., observatory; woollens, silks, lace; foodstuffs, furniture, pottery, chemicals, agr. machinery; p. (1951) 94,504.
- Pesaro**, *Adriatic spt.*, Italy; N.W. of Ancona; resort; figs, wines, oil, silks; majolica ware; sulphur; sugar refining; p. (1951) 53,900.
- Pescadores Is.**, *group of Is.*, 30 m. W. of Formosa; total a. about 51 sq. m.; since 1945 Chinese, formerly Japanese.
- Pescara**, *t.*, Italy; at estuary of R. Aterno, E. cst.; olive oil, soap, pasta, pottery; fishing; p. (1951) 64,802.
- Peshawar**, *t.*, N.W. Frontier Province, Pakistan; on rly. to Khyber Pass commanding route Afghanistan-India; military stn.; coal, fruit, sugar; cottons, embroidery, wood carving, copper ware, boat bldg., marble; p. (1951) 151,776.
- Pesquintero**, *R.*, trib. of Rio Grande del Norte, Mexico.
- Pessac**, *t.*, Gironde, France; grid transf. stn.; wines; p. (1946) 17,769.
- Pest**, *c.*, Hungary; on left bank of R. Danube, opposite Buda, and connected therewith by



- suspension bridge, the two cs. forming the Hungarian cap. of Buda-Pest (*see* Budapest).
- Petah Tiqva**, *t.*, Israel; agr. centre; oranges; textiles, chemicals, metal goods, tanning; *p.* (1946) 18,160.
- Peter I.**, *uninhabited I.*, Antarctic Ocean; belonging to Norway; *a.* about 94 sq. m.
- Peterborough**, *t.*, Ont., Canada; flour milling, electrical machinery, hardware; *p.* (1951) 38,166.
- Peterborough**, *Soke of*, administrative co., Eng.; *a.* 84 sq. m.; *p.* (1951) 63,784.
- Peterborough**, *c.*, *municipal bor.*, Soke of Peterborough, Eng.; on R. Nen at the margin of The Fens; cath.; rly. centre; engineering, milling, bricks, tiles; *p.* (1951) 53,412.
- Peterhead**, *spt.*, burgh, E. Aberdeen, Scot.; on E. cst., 27 m. N.E. of Aberdeen; granite, herring fisheries; *p.* (1951) 12,765.
- Peterlee**, *t.*, Durham, Eng.; on plateau of E. Durham, 11 m. E. of Durham; one of "New Towns" designated 1946; centre of coal-mining dist.; *p.* (1951) 298.
- Petermann Peak**, Greenland; alt. 9,175 ft.
- Petersburg**, *t.*, Alaska, U.S.A.; *p.* (1951) 1,605.
- Petersburg**, *c.*, Virginia, U.S.A.; tobacco, meat-canning, cotton; optical goods; *p.* (1950) 35,054.
- Petersfield**, *t.*, *urb. dist.*, Hants, Eng.; on R. Rother, 12 m. N.W. of Chichester; college; malting, brewing, iron; *p.* (1951) 6,616.
- Petit Morin**, *R.*, France; trib. of R. Marne.
- Petra**, *ancient t.*, Jordan; temples, rock tombs, and Roman ruins.
- Petra**, *t.*, Majorca, Spain; birthplace of founder of San Francisco. 13,456.
- Petric**, *t.*, S. Bulgaria; nr. Yugoslav border;
- Petriu**, *t.*, Siam; rice mills.
- Petrolia**, *t.*, Ontario, Canada; sugar-beet, flax, oil; *p.* 2,081.
- Petropavlovsk**, *spt.*, Kamchatka Pen., U.S.S.R.
- Petropavlovsk**, *t.*, Kazakhstan, U.S.S.R.; on R. Ishim; flour, leather, meat canneries; furs; *p.* (1939) 91,678.
- Petropolis**, *t.*, Rio de Janeiro, Brazil; health resort, 2,300 ft. above sea-level; *p.* 46,829.
- Petrosani**, *t.*, Romania; S. of Deva; *p.* 14,138.
- Petrograd**, *t.*, N.W. Yugoslavia; *p.* 32,338.
- Petrovsk**, *t.*, S.E. Siberia, U.S.S.R.; iron and steel, non-ferrous metallurgy; *p.* 19,122.
- Petrozavodsk**, *t.*, cap. Finno-Karelia, U.S.S.R.; on W. side of L. Onega; mica, paper, timber, steel; *p.* (1939) 69,728.
- Petsamo**, *see* Pechenga.
- Petworth**, *mkt. t.*, *rural dist.*, nr. Chichester, W. Sussex, Eng.; in Rother valley, 12 m. N.E. of Chichester; building stone; *p.* (rural dist. 1951) 9,184.
- Pevensley Levels**, *marshy area*, E. Sussex, Eng.; lie behind coastal sand-bars between Eastbourne and Bexhill, extend 5 m. inland to Hailsham; now largely drained, cattle pastures; *a.* 24 sq. m.
- Pewsey**, *vil.*, *rur. dist.*, Wilts, Eng.; in Vale of Pewsey, 7 m. E. of Devizes; farming, iron, bricks, tiles; *p.* (rural dist. 1951) 18,232.
- Pforzheim**, *t.*, Germany; gold-silver work; paper, machinery; *p.* 79,816.
- Phanrang**, centre of irrigation scheme, Annam, Viet-Nam, Indo-China.
- Phanthiet**, *spt.*, S. Annam, Viet-Nam, Indo-China; exports dried and salt fish; *p.* 5,000.
- Pharsala**, *c.*, Thessaly, Greece; S. of Larisa; Caesar's triumphs over Pompey.
- Philadelphia**, *c.*, *spt.*, cap. Penns., U.S.A.; univ., R.C. cath., masonic temple; mint, academy of fine arts; shipbuilding, locomotives, woollens, cottons, worsteds; sugar, and petroleum refining; exports petroleum, maize, coal, and wheat; centre of War of Independence, from 1790 to 1809; federal cap. founded by Wm. Penn 1682; *p.* (1950) 2,071,605.
- Phila**, *I.*, Upper Egypt; in Nile above Aswan Dam; temples, most noteworthy "Temple of Isis"; buildings usually submerged by dam waters.
- Philippeville**, *t.*, *spt.*, Algeria; wine, sheep, cattle, cereals, cork, cigarettes, mineral water, macaroni, fish canning; *p.* (1948) 57,091.
- Philippeville**, *t.*, Namur, S. Belgium; *p.* 1,230.
- Philippine Is.**, *rep.*, Asia; comprising over 2,000 islands, largest being Luzon, Mindanao, Mindoro, and Palawan; mountainous, many volcanoes, highest Apo, 10,312 ft.; coal, iron, copper, and gold; dye-woods, rice, maize, tobacco, coffee, cotton, and Manila Hemp; coconuts, cigars, and pearl fisheries; cap. Manila; *p.* (1948) 19,234,182.
- Philippopolis**, *see* Plovdiv.
- Phillipstown**, *see* Daingean.
- Phillipsburg**, *c.*, N.J., U.S.A.; on Delaware R.; water-power, machinery, rly. wks.; silk and pulp; *p.* (1950) 18,919.
- Phitsanulok**, *t.*, central Siam; temples; weaving; *p.* 25,000.
- Phlorina** (Florina), *pref.*, Greece; occupied by Bulgaria, April 1941, restored to Greece by peace treaty of 1947; cap. Phlorina; *p.* (1951) 69,367.
- Phlorina** (Florina), *t.*, Phlorina, Greece; in basin at alt. 3,000 ft. 10 m. from Yugoslav border, 15 m. from Albanian border; purely agricultural interests; *p.* (1951) 12,278.
- Phnom Penh**, *t.*, cap. Cambodia, Indo-China; on Mékong R.; rice, cotton; *p.* (estd. 1949) 260,000.
- Phoenix**, *t.*, Arizona, U.S.A.; winter resort; cotton, fruits, livestock; *p.* (1950) 106,818.
- Phoenix Group**, *Is.*, Pac. Oc.; part of Gilbert and Ellice I. colony; *a.* 16 sq. m.; U.S. now have some rights over Canton and Enderbury; *p.* 850.
- Phthiotis and Phocis**, *pref.*, Greece; cap. Lamia; *p.* (1951) 199,145.
- Piacenza**, *prov.*, Emilia, Italy; *a.* 965 sq. m.; *p.* (1951) 299,036.
- Piacenza**, *t.*, Italy; cath., palaces, arsenal; motor cars, chemicals, cement; *p.* (1951) 72,769.
- Pianosa I.**, Italy; penal settlement; cereals, vineyards, olives; *p.* 1,000.
- Pias**, *t.*, Alentejo Baixo, S. Portugal; E. of Beja.
- Plata**, *spt.*, N. Peru; exports cotton, hides, skins, Panama hats; *p.* 6,958.
- Platna**, *t.*, Moldavia, Romania; textiles, timber; *p.* 30,183.
- Paul**, *st.*, Brazil; cattle, cotton, sugar, tobacco, rubber; silver, iron and lead; *a.* 96,262 sq. m.; cap. Teresina; *p.* (1950) 1,064,438. 125 m.
- Piave**, *R.*, N.E. Italy; flows to Adriatic; length
- Piazza Armerina**, Sicily, Italy; oil, wines and nuts; remarkable Roman mosaics (recently discovered); *p.* 28,420.
- Pibor**, *t.*, S.E., Anglo-Egyptian Sudan; *p.* 1,000.
- Picardy**, *old prov.*, France; which included all the Somme dept. and parts of Pas de Calais, Aisne and Oise; old battle sites, Agincourt and Crécy.
- Pichincha**, *prov.*, Ecuador; cap. Quito—the capital of Ecuador; *a.* 6,218 sq. m.; *p.* (1950) 386,520.
- Pickering**, *mkt. t.*, *urb. dist.*, N.R. Yorks, Eng.; on N. margin of Vale of Pickering, 6 m. N. of Malton; church with murals; iron, bricks; *p.* (1951) 4,332.
- Pickering**, *Vale of*, E.R. Yorks, Eng.; wide, flat-floored vale, once occupied by glacial lake; bounded to N. by North York Moors, to S. by York Wolds; drained W. by R. Derwent, which leaves Vale through Kirkham gap; alluvial soils, marshy in centre; crop-farming along margins, grain, fodder crops; cattle grazing on damper meadows in centre; ch. ts. Pickering, Malton, Helmsley.
- Pico da Bandeira**, *mtn.*, Brazil; alt. 9,462 ft.
- Picton**, *t.*, S.I., N.Z.; freezing wks.; tourist and fishing centre, *p.* (1951) 1,928.
- Pictou**, *spt.*, Nova Scotia, Canada; coal; *p.* (1941) 3,069.
- Pidurutalagala**, *mtn.*, Ceylon; alt. 8,295 ft.; highest peak in Ceylon.
- Piedmont**, *region*, N. Italy; rice, wheat, vines, fruits; silk, cottons, woollens; *a.* 9,813 sq. m.; *p.* (1951) 3,513,111.
- Piedras Negras**, *frontier t.*, Mexico; cattle mkt., coal, silver, zinc and copper; *p.* 15,663.
- Pierre**, *t.*, cap., S. Dakota, U.S.A.; on Missouri R.; *p.* (1950) 5,715.
- Pietermaritzburg**, *t.*, cap., Natal, S. Africa; 30 m. N.W. of Durban; named after Piet Retief and Gerhardus Maritz, two Boer leaders; *p.* (1951) 74,399.
- Pietersburg**, *t.*, Transvaal, S. Africa; gold, asbestos, tin; cereals, tobacco, cotton, oranges, lemons; *p.* 15,961.
- Piet Relief**, *t.*, Transvaal, S. Africa; tobacco, fruit, mealies, wattle gr. in dist.; *p.* 4,721.
- Pikes Peak**, *mtn.*, Col., U.S.A.; alt. 14,109 ft.
- Pila** (Schneidemühl), *mfg. t.*, N.W. Poland; N. of Poznan; *p.* 11,000.

Pilar, *t.*, Paraguay: p. 10,000.

Pilatuz, *mtn.*, Switzerland; alt. 6,988 ft.

Pilawa (Pilau), *t.*, *spt.*, U.S.S.R.: shipbuilding, fishing.

Pilbarra, *dist.*, W. Australia; metal ores including gold, copper, tin; ch. mining centre, Marble Bar.

Pilcomayo, *R.*, rising in S. Bolivia, and flowing through the Gran Chaco, separates W. Paraguay from Argentina; trib. of the Paraguay; length 1,400 m.

Pilibhit, *t.*, Uttar Pradesh, India; rice, pepper, sugar; p. (1941) 25,000.

Pillon, *celebrated mtn.*, S. of Mt. Ossa, Thessaly, Greece; alt. 5,310 ft.

Pilau, *see* Pilawa.

Pillon Pass, Switzerland; alt. 5,092 ft.

Pilsen, *see* Pilsen.

Pimentel, *spt.*, Peru; hol. resort; exports sugar; p. 2,000.

Pimlico, *dist.*, Westminster, London, Eng.

Pinar del Rio, *prov.*, W. Cuba, W. Indies; tobacco; a. 5,211 sq. m.; p. (1943) 398,794.

Pinar del Rio, *t.*, Cuba, W. Indies; tobacco; p. (1943) 77,051.

Pind, *t.*, W. Punjab, Pakistan; coal; p. (with Dadan Khan) 11,445.

Pindus, *mtn. chain*, between Thessaly and Albania, Greece; highest peak 8,050 ft.

Pine Bluff, *c.*, Arkansas, U.S.A.; cotton, motor-cars; p. (1950) 37,162.

Pine Creek, *t.*, Arnhem Land, Northern Terr., Australia; gold; p. 115.

Pinerolo, *t.*, Italy; S.W. of Turin; cath.; silk, cotton, woollens; p. 22,890.

Pines, *Is. of dependency* of Fr. col. New Caledonia; a. 58 sq. m.; convict settlement; p. about 570.

Pinetown, *t.*, Natal; resident. township; citrus fruits; p. 5,434.

Pingyang, *see* Pyongyang.

Pinos R., Greece; flows into G. of Thessaloniki.

Pinjarra, *t.*, W. Australia; rly. junction; timber and stock-raising dist.

Pinkiang, *see* Harbin.

Pinos I. (I. of Pines), Caribbean Sea; S. of Cuba; a. 1,180 sq. m.

Pinsk, *t.*, Byelorussia, U.S.S.R.; p. 25,000.

Plombino, *t.*, Italy; port for Elba I.; p. 26,238.

Piotrkow, *indust. t.*, Poland; S. of Lodz; p. 40,000.

Pique, *t.*, Ohio, U.S.A.; N. of Dayton; ironwks., woollens; p. (1950) 17,447.

Piraeus, *see* Peiraeus.

Pirano, *spt.*, Istria, Trieste Terr.; salt, wines, olives; p. 14,875.

Pireicaba, *t.*, São Paulo, Brazil; sugar, cattle, coffee, oranges; p. 31,923.

Pirmasens, *t.*, Rhineland-Palatinate, Germany; S.W. of Mannheim; leather goods, musical instruments; p. 50,600.

Pirna, *t.*, Saxony, Germany; tanning, brewing, glass blowing, porcelain; p. 33,627.

Pirot, *t.*, Yugoslavia; nr. Bulgarian border; Jugoslavia; p. 13,033.

Pisa, *prov.*, Italy; a. 1,180 sq. m.; p. (1951) 348,518.

Pisa, *c.*, Italy; at head of Arno delta, 12 m. N.E. of Leghorn; famous leaning tower, cath., univ.; mineral baths, cotton, silk; p. (1951) 76,572.

Pisagua, *spt.*, N. Chile; p. 2,199.

Pisco, *spt.*, Peru, S. America; cotton; p. 17,222.

Pisek, *t.*, Czechoslovakia; brewing, iron foundries; p. 16,858.

Pistoia, *t.*, Tuscany, Italy; on Arno plain, N.W. of Florence; iron and steel goods, silk, macaroni; p. (1951) 77,434.

Pitcairn I., E. Pacific; British col.; incs. Henderson, Ducie, and Oeno Is.; sweet potatoes, bananas, oranges, coconuts; a. 2 sq. m.; p. (1952) 125, mostly descendants of the mutineers of the "Bounty."

Pitch Lake, Trinidad I., Brit. West Indies; located in the S. of the island, 10 m. S.W. of San Fernando; natural deposit of asphalt; tourist attraction; a. 212 acres.

Pitea, *spt.*, N. Sweden; on G. of Bothnia; p. 6,961.

Piesti, *t.*, Romania; on Arges R.; petroleum, fruit, grain.

Piflochry, *burgh*, Perth, Scot.; on R. Tummel, 4 m. S. of Pass of Killicrankie; summer resort; distilleries, hydros; p. (1951) 2,384.

Pittenweem, *burgh*, Fife, Scot.; at entrance to Firth of Forth; fisheries; p. (1951) 1,642.

Pittsburgh, *c.*, Penns., U.S.A.; R.C. cath., coll., Carnegie Library and Institute; port on Ohio R.; centre of richest American coalfield; natural gas, petroleum, iron and steel, machinery, metal goods, meat packing, glass; p. (1950) 676,806.

Pittsfield, *c.*, Mass., U.S.A.; textiles, paper, plastics, elect. machinery, hol. resort; p. (1950) 53,343.

Pittston, *t.*, Penns., U.S.A.; anthracite, coal, machinery; p. (1950) 15,012.

Piura, *N. dep.*, Peru; a. 15,190 sq. m.; p. (1947) 491,516.

Piura, *t.*, Peru; p. (1947) 23,221.

Placentia, *spt.*, Newfoundland, Canada; p. 533.

Plainfield, *c.*, N.J., U.S.A.; sub. New York City; printing, motor lorries, machinery, chemicals, hosiery; p. (1950) 42,366.

Plaistow, *dist.*, E. London, Eng.

Plate R., or Rio de la Plata; estuary of the Rs. Paraná and Uruguay flowing to the Atlantic between Argentina and Uruguay, length 170 m.; width at head 25 m., at mouth 138 m.

Plattsburg, N.Y., U.S.A.; port of L. Champlain; tourist centre; military post; p. (1950) 17,738.

Plauen, *t.*, Germany; lace; p. 110,300.

Plenty, Bay of, N.I., New Zealand; on E. cst.; 130 m. wide.

Pleven, *fortfd. t.*, Bulgaria; many mosques; famous siege 1877; woollens, silks, wines; p. (1947) 38,997.

Plock, *t.*, Poland; on R. Vistula, nr. Warsaw; arr.; p. 28,508.

Ploesti, *t.*, Prahova dist., Romania; petroleum; p. (1945) 105,114.

Plombières, *t.*, Vosges, France; wat. pl.; p. 1,565.

Plonsk, *c.*, Poland; N.W. of Warsaw; grain, sugar-beet; p. 7,866.

Plovdiv (Philippopolis), *c.*, Bulgaria; on R. Marica; wheat, fruit, silks, woollens, tobacco, attar of roses; Greek cath.; p. (1947) 125,440.

Plumstead, *dist.*, S.E. London, Eng.

Plymouth, *c.*, *spt.*, *co. bor.*, S. Devon, Eng.; on Plymouth Sound; comprises the "three towns" of Plymouth, Devonport, and Stonehouse; R.C. cath., guildhall, museum; shipbuilding; seaside resort; light industries; pt. of call for trans-Atlantic liners; p. (1951) 208,985.

Plymouth, *spt.*, Mass., U.S.A.; Pilgrim Hall, Pilgrim Fathers landed in 1620 from "Mayflower," established first English colony; textiles, cordage, machinery, cottons, woollens; p. (1950) 10,540.

Plymouth, *ch. t.*, Montserrat I., Leeward group; W. Indies; p. (1946) 2,000.

Plymouth, *t.*, Penns., U.S.A.; coal; p. (1950) 13,021.

Plynlimmon, *mtn.*, Montgomery and Cardigan, Wales; alt. 2,469 ft.

Plzeň (Pilsen), *t.*, Czechoslovakia; brewing, bell-founding, clothing, sugar, pottery, machinery; p. (1947) 117,814.

Po, *R.*, Italy; flows from Monte Viso, through Piedmont and Lombardy to the Adriatic; length, 340 m.

Pocatello, *t.*, Idaho, U.S.A.; rly. wks.; livestock; cheese; p. (1950) 26,131.

Pocklington, *mkt. t.*, rural dist., E.R. Yorks, Eng.; at foot of York Wolds, 12 m. E. of York; milling, malting, bricks, tiles; p. (rural dist. 1951) 14,265.

Podolsk, *t.*, U.S.S.R.; S. of Moscow; silks, cement; p. (1939) 72,422.

Podrinje, *dist.*, W. Serbia, Yugoslavia; antimony.

Pohai (Chihhi), G. of, N. China; together with G. of Liaotung forms shallow expanse of water almost cut off from Yellow Sea by Liaotung and Shantung peninsulas; receives water and silt of Hwang Ho; a. approx 15,000 sq. m.

Pointe-à-Pitre, *ch. t.*, Grande Terre I., Guadeloupe, Lesser Antilles; p. (1946) 41,823.

Pointe-des-Galets, *ch. port*, Ile de la Réunion, Indian Ocean (Fr.).

Pointe-Noire, *impt. spt.*, Middle Congo Terr., Fr. Equatorial Africa; aerodrome; exports copper ore, timber, groundnuts; p. 9,164.

Poitiers, *t.*, Vienne, France; univ.; Black Prince defeated French (1356); brewing, hosiery, cloth; p. (1946) 48,546.

Pola, *see* Pula.

Poland, *rep.*, Europe; independence 1918; N. plain; Carpathians in S.; ch. Rs.; Vistula and



- tributaries; climate: hot summers, very cold winters, moderate rainfall; good communications; agr.: cereals, potatoes, sugar-beet, forests, cattle, sheep, horses, pigs; minerals: coal, iron, steel, petroleum, natural gas, potash; cap. Warsaw; overrun and devastated in Second World War; a. 121,131 sq. m.; p. (1950) 24,976,926.
- Pollokshaws, burgh**, Renfrew, Scot.; sub. of Glasgow; industri. and residntl.
- Pollokshields, S.W. sub.**, Glasgow, Scot.; residentl.
- Poltava, industri. t.**, Ukraine, U.S.S.R.; horses, cattle, grain; p. (1939) 130,305.
- Polynesia, sub-div.**, Oceania; I. groups in Pacific within 30° N. and S. of the equator; between 135° E. and W. longitude.
- Pomerania, former prov.**, N. Germany; part left to Germany, on left bank of the R. Oder, now in land of Mecklenburg, Soviet Zone; farming, shipbuilding, fishing.
- Pomona or Mainland**, one of the Orkney Is., Scot.
- Pomona, c.**, California, U.S.A.; fruit-culture; p. (1950) 35,405. [8,012 sq. m.]
- Pomorze, prov.**, Poland; cap. Bydgoszcz; a. Pompeii, *ruined c.*, Italy; stood 13 m. S.E. of Naples, at foot of Vesuvius; destroyed A.D. 79 by volcanic eruption, site re-discovered in 1748; many most interesting excavations; also modern c. nearby; fine church with famous collection of silver and gold plate.
- Ponape I.**, Caroline Is., Pac. Oc.; copra, ivory, nuts, starch, bauxite; a. 134 sq. m.; (1935) p. 11,467.
- Ponca City, t.**, Oklahoma, U.S.A.; p. (1950) 20,180.
- Ponce, t.**, Puerto Rico, W. Indies; coffee, sugar, rum; p. (1950) 99,190.
- Ponchartrain, L.**, shallow lagoon, La., U.S.A.; N.E. of Mississippi delta, immediately N. of New Orleans; site of projected ship canal.
- Pondicherry, cap.**, former French Settlements in India; united with India 1954; cotton, rice; a. of dist. 115 sq. m.; p. (estd. 1948) (of settlements) 222,572, (of c.) 53,101.
- Pont-à-Mousson, t.**, Meurthe-et-Moselle, France; R. Moselle; ironwks., paper, velvet, cement wks.; p. (1946) 10,239.
- Ponta Delgada, ch. t., spt.**, San Miguel I., Azores; p. (1940) 21,048.
- Ponta Grossa, t.**, Paraná, Brazil; rly. junction; maté, rice, timber, tobacco, bananas, cattle, jerked beef; p. 39,600.
- Pontardawe, vil.**, Glamorgan, S. Wales; on R. Tawe, 9 m. N.E. of Swansea; zinc smelting and refining.
- Pontefract, t., mun. bor.**, W.R. Yorks, Eng.; 7 m. E. of Wakefield; oas. ruins; coal, sackng, iron, tanning, brass, confectionery; p. (1951) 23,173.
- Pontevedra, prov.**, Spain, on Atlantic est., and bordering Portugal; agr., livestock, fisheries; cap. Pontevedra; a. 1,695 sq. m.; p. (1950) 671,609.
- Pontevedra, spt.**, cap. Pontevedra prov.; Spain; fishing; p. (1949) 46,168.
- Ponthierville, t.**, Belg. Congo, Africa; nr. Stanley Falls, Congo R.; Belg. Congo; p. 1,000.
- Pontiac, t., ill.**, U.S.A.; agr. mach.; p. (1950) 8,990.
- Pontiac, c.**, Michigan, U.S.A.; on Clinton R.; fishing and shooting, motor cars, rubber goods, machinery, varnish; p. (1950) 73,681.
- Pontianak, t., cap.**, Borneo, Indonesia; exports rubber, copra; p. 45,196.
- Pontine Is.**, off W. est. of Italy; in Tyrrhenian Sea; a. 4½ sq. m.; p. 6,000.
- Pontine Marshes, region**, Latium, S. Italy; coastal zone S.E. of Rome extending from Velletri to Terracina; formerly highly malarial fens, largely drained and colonised 1930 to 1935; 3,200 new farms, 4 new ts.; ch. t. Littoria; a. approx. 250 sq. m.
- Pontresina, t.**, Grisons, Switzerland; E. of St. Moritz; tourist resort.
- Pont-y-mister, vil.**, Monmouth, Eng.; in valley of R. Ebbw, 6 m. N.W. of Newport; lge. steel-works, zinc refineries.
- Pontypool, t., urb. dist.**, Monmouth, Eng.; coal, iron, nylon at Manbilly; p. (1951) 42,683.
- Pontypridd, t., urb. dist.**, Glamorgan, Wales; on R. Taff, 12 m. N.W. of Cardiff; coal, iron; p. (1951) 38,622.
- Ponza I.**, Pontine Is. Italy; wine, wheat, flax; fishing; bentonite mining; a. 3 sq. m.
- Poole, mkt. t., spt., mun. bor.**, E. Dorset, Eng.; on Poole Harbour, 4 m. W. of Bournemouth; seaplane base; yachting; pottery; p. (1951) 82,958.
- Poolewe, par.**, Ross and Cromarty, Scot.; fisheries, farming; p. 1,294.
- Poona, t.**, Bombay, India; seat of Bombay government during rainy season; cotton, sugar, rice; p. (1951) 278,165.
- Poopó, L.**, Oruro dep., Bolivia; S. America; situated in Andes at alt. 12,120 ft.; very shallow; fed from L. Titicaca by R. Desaguadero which flows over saline beds; no outlet, therefore salt-water; maximum length 50 m., width 30 m.
- Popayan, cap.**, Cauca Dep., Columbia; cath., univ.; gold, silver, platinum, copper nearby; p. (1947) 35,690.
- Poperinghe, t.**, W. Flanders, Belgium; woollens, linens, hops; p. 12,393.
- Poplar, metropolitan bor.**, E. London, Eng.; Thames-side; industri. dist.; p. (1951) 73,544.
- Popocatepetl, volcano**, nr. Puebla, Mexico; alt. 17,887 ft.
- Porbandar, spt.**, Saurashtra, India; cement, silk, cotton; imports coal, dates, timber, machinery, petroleum; birthplace of Mahatma Gandhi; p. 65,000.
- Porcupine Hills, t.**, Ontario, Canada; on branch rly. 40 m. S. of Cochrane; centre of impt. gold-mining district.
- Pordenone, t.**, Italy; cath.; cottons, silks, pottery; p. 82,506.
- Pori (Björneborg), spt.**, S. Finland; at mouth of R. Kokemäen; copper refinery, rolling mills, match, paper and pulp wks.; p. (1950) 43,137.
- Porjus, t.**, Norrbotten, N. Sweden; on R. Lulea, where it leaves Stora Luleavatten; impt. hydro-electric power-station supplies power to iron-ore mining districts of Gällivare and Kiruna, also to Narvik rly.
- Porrentruy, t.**, Berne, Switzerland; watches; p. 6,121.
- Porsgrunn, spt.**, Norway; timber, shipping, engineering, porcelain, explosives; p. 8,980.
- Port Alfred, t.**, Cape of Good Hope, S. Africa; resort; harbour entrance too shallow for large boats; p. 5,937.
- Port Amelia, spt.**, Mozambique; sisal, coconuts, cotton, maize, groundnuts; p. (1946) 34,835.
- Port Antonio, t.**, Jamaica, W. Indies; p. 5,482.
- Port Arthur (Lushun), spt.**, Manchuria, China; Chinese naval base; p. (estd. 1936) 141,291. (See Lüta.)
- Port Arthur, L. pt.**, Ontario, Canada; on N.W. est. of L. Superior; lumbering, mining, grain, milling, export centre; p. (1941) 24,426.
- Port Arthur, t.**, Texas, U.S.A.; p. (1950) 57,530.
- Port au Prince, spt.**, Haiti, W. Indies; coffee, cacao; p. 125,000.
- Port Augusta, t., spt.**, S. Australia; at head of Spencer G.; fine harbour; exports wheat, fruit; p. (1947) 3,270.
- Port aux Basques, port**, Newfoundland, Canada; p. 2,108.
- Port Chalmers, t., bor.**, S.I., New Zealand; docks, shipyards; p. (1951) 2,680.
- Port Chester, t., N.Y.**, U.S.A.; on Long I. Sound; summer resort, cottons and woollens; p. (1950) 23,970.
- Port Colborne, t.**, Ont., Canada; port on L. Erie; iron smelting; nickel, copper refining; p. (1941) 6,993.
- Port Elizabeth, spt.**, C. of Good Hope, S. Africa; on Algoa Bay; exports, skins, wool, ostrich feathers, mohair; foundries, soap, chemicals, food preservation, sawmills; p. (1946) 65,271.
- Port Erin, vil.**, I. of Man, Eng.; on S.E. est.; seaside resort, fisheries.
- Port Essington, N. point**, of Coburg Peninsula, N. Terr., Australia.
- Port Francqui, t.**, Belg. Congo; present terminus of Congo rly. on Kasai R.; p. 5,000.
- Port Fuad, t.**, Egypt; N. entrance to Suez Canal; p. 1,000.
- Port Gentil, spt.**, Gabon, Fr. Eq. Africa; exports palm oil, mahogany, ebony; sawmills, fishing; p. 5,000.
- Port Glasgow, burgh, spt.**, Renfrew, Scot.; on S. bank of R. Clyde, 17 m. below Glasgow; shipbuilding, engineering, sails, timber; p. (1951) 21,612.

- Port Harcourt, *spt.***, Nigeria; 30 m. from sea on E. branch of Niger delta; terminus of E. Nigerian rly. system; exports tin, palm oil, groundnuts; p. (1946) 15,201.
- Port Hedland, *sm. spt.***, W. Australia; on N.W. cst. 285 m. S.W. of Broome; exports gold and other metals from Pilbarra gold-field; imports food and machinery; linked to Marble Bar by narrow-gauge rly.
- Port Herald, *t.***, Nyasaland Protectorate, Africa; port on Shire R.
- Port Hope, *t.***, Ont., Canada; midway along N. shore of L. Ontario; fruit, dairying, radium refining; p. (1940) 5,055.
- Port Hunter, N.S.W.**, Australia; port for Newcastle.
- Port Huron, *t.***, Mich., U.S.A.; on L. Huron; summer resort, mineral springs, dry docks, grain elevators; motor-car parts; p. (1950) 35,725.
- Port Jackson, N.S.W.**, Australia; natural harbour for Sydney.
- Port Kembla, *spt.***, N.S.W., Australia; S. of Wollongong; iron and steel wks., textiles.
- Port Laoighise, *mkt. t.***, Laoighis, Ireland; corn-mills; p. (1946) 3,166.
- Port Lincoln, *spt.***, S. Australia; exports wheat, frozen meat, tallow, wool; p. (1947) 3,963.
- Port Louis, *cap.***, Mauritius, Indian Ocean; ch. commercial centre of col.; p. (1947) 69,471.
- Port Lyauette, *t.***, Fr. Zone, Morocco; developed since 1912; exports grain; p. (1946) 56,604.
- Port Macquarie, *t.***, N.S.W., Australia; on Hastings R.; p. (1947) 2,906.
- Port Mahon, *see* Mahon.**
- Port Moody, *terminus***, Canadian Pacific Rly., Vancouver, Brit. Columbia; p. 1,512.
- Port Moresby, *spt. ch. t.***, Papua, New Guinea; promising copper deposits; exports copra, sandalwood, coffee, rubber, shell; p. 2,503.
- Port Natal, *see* Durban.**
- Port Nelson, *spt.***, Manitoba, Canada; on cst. of Hudson Bay at mouth of R. Nelson; linked by rly. to trans-continental systems via The Pas; exports wheat, minerals; closed by ice for 7 months each year.
- Port Nolloth, *spt.***, C. of Good Hope, Union of S. Africa; pt. serving copper and diamond mining districts.
- Port of Spain, *cap.***, Trinidad, W. Indies; cocoa, sugar, asphalt; p. (1946) 92,793.
- Port Okha, *spt.***, Saurashtra, India; exports cement, salt, oilseeds, chemicals.
- Port Phillip, *lge. inlet***, Victoria, Australia; landlocked bay, with Melbourne on N., Geelong on W.
- Port Pirie, *spt.***, S. Australia; smelting ores; exports, wheat, minerals; p. (1947) 12,030.
- Port Radium, *t.***, N.W. Terr., Canada; on Gr. Bear L.; pitchblende deposits; p. 300.
- Port Royal, *t.***, Jamaica, W. Indies; nr. Kingston; dock-yard.
- Port Said, *spt.***, Egypt; N. end Suez Canal; coaling stn.; p. (1947) 178,432.
- Port St. Mary, *vil.***, I. of Man, Eng.; on S.E. cst.; resort; fisheries, boat-building.
- Port Shepstone, *t.***, Natal, S. Africa; sugar, bark, fibre, maize, fruit, dairying, poultry; cement; p. 2,209.
- Port Sudan, *spt.***, Anglo-Egyptian Sudan; 30 m. N. of Suakin; linked by rail to Atbara and Khartoum; p. (1947) 47,000.
- Port Sunlight, Cheshire, Eng.**; modern garden village founded 1888 by Lord Leverhulme for the employees of Lever Brothers' Port Sunlight factories; p. 6,000.
- Port Swettenham, *spt.***, Selangor, Malaya; exports tin, rubber, copra, pineapples; p. 11,300.
- Port Talbot, *t., mun. bor.***, Glamorgan, S. Wales; on E. side of Swansea Bay; impt. iron and steel industry, copper, coal; p. (1951) 44,024.
- Port Taufiq, *spt.***, Egypt; S. end of Suez canal; p. 1,000.
- Port Vendres, *spt.***, Pyrénées-Orientales, France; nr. Perpignan; p. 3,069.
- Portadown, *t., mun. bor.***, Armagh, N. Ireland; on R. Bann, 25 m. S.W. of Belfast; linen, farming; p. (1951) 17,202.
- Portaferry, *spt.***, Down, N. Ireland; shipping, fisheries; p. (1951) 1,275. [7,334]
- Portage, *t.***, Wisconsin, U.S.A.; iron; p. (1950)
- Portage la Prairie, *spt.***, Manitoba, Canada; grain exports; p. (1951) 3,511.
- Portalegre, *t.***, Portugal; cath.; mkt.; p. (1940) 12,046.
- Portarlington, *t.***, Offaly, Ireland; farming; first place to have electric power sta. using local peat fuel; p. (1946) 2,102.
- Portbou, *t.***, on Fr. side of Franco-Spanish border, opposite Rosas on Mediterranean cst.
- Portchawl, *t., urb. dist.***, Glam., Wales; on cst. 10 m. S.E. of Pt. Talbot; resort; p. (1951) 9,529.
- Portici, *spt.***, Campania, S. Italy; on Bay of Naples 5 m. S.E. of Naples; dockland suburb of Naples.
- Portishead, *t., urb. dist.***, Somerset, Eng.; on Severn estuary 3 m. S.W. of Avonmouth; shipping; p. (1951) 4,454.
- Portknockie, *burgh***, Banff, Scot.; on N. Buchan cst., 5 m. E. of Buckie; sm. fishing pt.; p. (1951) 1,457.
- Portland, *naval pt., urb. dist.***, Dorset, Eng.; 4 m. S. of Weymouth on sheltered N.E. side of I. of Portland; lge. artificial harbour; p. (1951) 11,324.
- Portland, *t., spt.***, Maine, U.S.A.; commercial cap. of Maine; packing, canning, engineering, silverware, paper, woollens, matches, cod, mackerel; p. (1950) 77,634.
- Portland, *c.***, Oregon, U.S.A.; gr. wheat and flour export; iron foundries, meat packing; p. (1950) 373,628.
- Portland Canal, *fiord***, N.W. cst. of America, forming boundary between Alaska and B.C.
- Portland, I. of, *peninsula***, Dorset, Eng.; limestone mass, linked to mainland by single spit, Chesil Bank, terminates S. in Portland Bill; building-stone quarries, cement works.
- Portmadoc, *spt., urb. dist.***, Caernarvon, Wales; on Tremadoc Bay; linked by light rly. to Ffestiniog; copper and slate export, p. (1951) 4,060.
- Porto, *see* Oporto.**
- Porto Alegre, *c., cap.***, Rio Grande do Sul st., Brazil; exports lard, preserved meats, rice, timber, tobacco; textiles, chemicals, furniture, brewing, metallurgy; p. (1950) 401,213.
- Porto Empedocle, *spt.***, Sicily, Italy; sulphur ref., flour, furniture, lime, gypsum; p. 14,764.
- Porto Marghera, *spt.***, Venezia, N. Italy; extends along cst. S. from landward end of the causeway linking Venice to the mainland; the modern port of Venice, reached by ship canal dredged through shallow lagoon; oil-refineries.
- Porto Novo, *t., cap.***, Dahomey, Fr. W. Africa; nr. Bight of Benin; p. (1948) 30,827.
- Porto Vecchio, *t.***, Corsica; on E. cst.; p. 5,304.
- Porto Velho, *cap.***, Guaporé st., Brazil; p. 5,000.
- Portobello, *resort***, Midlothian, Scot.; on Fifth of Forth, 3 m. E. of Edinburgh; bricks, pottery, paper.
- Porto Torres, *spt.***, Sardinia, Italy; exports iron ore; p. 7,251.
- Portree, *t., par.***, I. of Skye, Scot.; on Sound of Raasay; fishing, small tweed mill; p. 2,120.
- Portrush, *spt., urb. dist.***, Antrim, N. Ireland; on N. cst. 5 m. N. of Coleraine; p. (1951) 4,166.
- Portsmouth Hill, *chalk ridge***, Hants, Eng.; extends E. to W. behind Portsmouth from Fareham to Havant; water-storage reservoirs supply Portsmouth; lined with early 19th-century fortifications for defence of Portsmouth; length 6 m., alt. 400 ft.
- Portsea Is., *fortd.***, I., between Portsmouth and Langstone Harbours.
- Portslade-by-Sea, *urb. dist.***, E. Sussex, Eng.; 1 m. W. of Hove; p. (1951) 13,572.
- Portsmouth, *c., co. bor., naval port***, Hants, Eng.; opposite I. of Wight; has largest naval establishment in the world; Portsmouth is the garrison t.; Portsea has the naval dockyards, Langport is residt., and Southsea is a popular modern wat. pt. within the bor. a.; across the harbour is Gosport; p. (1951) 233,464.
- Portsmouth, *t.***, New Hampshire, U.S.A.; summer resort, naval dockyard, cotton; the 1905 Peace Treaty between Japan and Russia was negotiated here; p. (1950) 13,330.
- Portsmouth, *c.***, Ohio, U.S.A.; iron and steel goods, aircraft, boots, shoes, bricks; p. (1950) 36,798.
- Portsmouth, *spt.***, Virginia, U.S.A.; naval dockyard; farm produce, cotton, rly. wks.; p. (1950) 80,039.



- Portsoy, spt. burgh**, Banff, Scot.; on N. Buchan cst., 5 m. W. of Banff; fisheries, distilleries; p. (1951) 1,787.
- Portugal, rep.**, Iberian peninsula, S.W. Europe; interior mountainous, with wide, fertile valleys; mild winter, hot summers; agr.: cereals, fruit, etc.; livestock; cork, pine, and other timbers; copper; fisheries; textiles, pottery, tanning, wine, olive oil; cap. Lisbon; a. 35,404 sq. m.; p. (1950) 8,490,455 (inc. Azores and Madeira).
- Portugalete, spt.**, Biscay prov., Spain; nr. Bilbao; p. 10,612. [(1941) 87,151.]
- Portuguesa, st.**, Venezuela; cap. Guanare; p. 10,612.
- Portuguesa, R.**, Venezuela, trib. of R. Apure; length 200 m.
- Portuguese East Africa**, see Mozambique.
- Portuguese Guinea (Senegambia)**, W. Africa; on Atlantic cst. of Africa and surrounded by French terr.; cap. Bolama; ch. spt. Bissau; palm nuts, groundnuts, rubber, wax; a. 13,948 sq. m.; p. (1950) 510,777.
- Portuguese Timor, col.**, E. Indies; mtns.; copra, coffee, cocoa beans, maize, rice, hides, wax, timber; cap. Deli; a. 7,330 sq. m.; p. (1950) 442,378.
- Portuguese West Africa**, see Angola.
- Porvenir, spt.**, Chile; chief t. Tierra del Fuego; wool; p. mainly Jugoslav.
- Porvoo, spt.**, Finland; engineering, forest industries; p. 7,684.
- Posadas, t.**, Spain; on R. Guadalquivir, nr. Cordova; p. 7,350.
- Posados, cap.**, Misiones Terr., Argentina; on Pilcomayo R., on border of Paraguay; p. (1947) 36,623.
- Possen**, see Poznan.
- Pössneck, old t.**, Thuringia, Germany; S.E. of Weimar; porcelain mnfs. [nuts.]
- Postillon Is.**, Lesser Sunda Is., Indonesia; coco-Pestchefstroom, t., Transvaal, S. Africa; on the Vaal R.; univ.; p. 26,986.
- Potenza, t.**, Italy, cap. of prov. Potenza; situated on hill above R. Basento 2,700 ft. above sea level; agr. and indus. ctr.; p. (estd.) 19,000.
- Potgietersrust, t.**, Transvaal, S. Africa; agr. centre; cattle; citrus fruits; p. 5,656.
- Poti, spt.**, Georgia, U.S.S.R.; manganese, saw-mills; p. 15,782.
- Potomac, R.**, U.S.A.; dividing Virginia from Maryland; flowing past Washington to Chesapeake Bay; length 400 m.
- Potosí, dep.**, Bolivia, adjoining Chile and Argentina; famous for silver and tin mines; cap. Potosí; a. 45,031 sq. m.; p. (1950) 534,399.
- Potosí, c.**, Bolivia; on slope of Cerro Gordo de Potosí, 13,350 ft. above sea-level; flourishing tr.; p. (1950) 45,758.
- Potrerillos, t.**, Chile; copper.
- Potsdam, cap.**, Land Brandenburg Germany; in Soviet sphere of influence; beautiful parks and gardens, and many palaces, inc. former Imperial residence; scene of imperial conference between Allies on boundary questions, 1945; brewing, sugar, optical instruments; p. (1946) 113,568.
- Potteries, The, dist.**, N. Staffs, Eng.; centre of earthenware industry, comprising ts. Burslem, Hanley, Fenton, Tunstall, Stoke, and Longton.
- Potters Bar, t.**, urb. dist., N. Middlesex, Eng.; residt.; p. (1951) 17,163.
- Pottstown, t.**, Penns., U.S.A.; iron and steel, farm implements, silk; p. (1950) 22,589.
- Pottsville, c.**, Penns., U.S.A.; iron and steel, rly. wks.; p. (1950) 23,640.
- Poughkeepsie, c.**, N.Y., U.S.A.; on Hudson R.; clothing and iron factories; agr. implements; oil clarifiers; p. (1950) 41,023.
- Poulton-le-Fylde, urb. dist.**, Lancs, Eng.; 4 m. N.E. of Blackpool; farming; p. (1951) 7,672.
- Povenets, t.**, Finno-Karelia, U.S.S.R.; on L. Onega; cellulose, paper; p. 2,000.
- Powis, Vale of**, Montgomery, Wales; runs 12 m. N.E. from Montgomery between Welsh Mtns. and Long Mtn.; drained by R. Severn; cattle-rearing; ch. t. Welshpool; av. width 2 m.
- Poyang Hu, lge. L.**, Kiangsi, China; on S. margin of Yangtze-Kiang plain; receives water of Kan Kiang and tribs., drains N. into Yangtze-Kiang; surrounded by flat, intensively cultivated land, rice, sugar, mulberry; size varies greatly with season, max. a. (in late summer) 1,800 sq. m.
- Poznan, prov.**, W. Poland; stock-raising, mining, mnfs. including locomotives; a. 15,152 sq. m.; p. (estd. 1950) 2,128,419.
- Poznan, t.**, cap. of prov., oldest cap. of Poland; on R. Warta; cath., univ.; mnfs.; p. (1948) 297,000.
- Pozoblanco, t.**, Spain; cattle fairs, lead mines; p. 16,702.
- Pozzuoli, t.**, Italy; 2 m. W. of Naples; ancient Puteoli; mineral baths, ordnance works; notable Roman ruins; p. 27,160.
- Praded (Altwater), Mtns.**, Czechoslovakia.
- Praest, t.**, Zealand, Denmark; on Fakse fjord; p. 1,516.
- Prague (Prahá), c.**, cap., Czechoslovakia; picturesque ancient c. on R. Vitava; univ., founded in 1348; extensive mnfs.; machinery, sugar, leather, milling, chemicals; p. (1947) 922,284.
- Prahova, R.**, Walachia, Romania; rises in Transylvanian Alps, flows S. through impt. Ploesti oilfield into R. Ialomita; length approx. 110 m.
- Prato, t.**, Italy; 8 m. N.W. of Florence; cath., medieval cas. and fortifications; straw plaiting, cottons, woollens, machinery; p. 67,800.
- Prebalkhash (Balkhash), t.**, Kazakhstan, U.S.S.R.; copper.
- Predeal Pass**, Romania; carries main road and rly. across Transylvanian Alps from Bucharest to Brasov; alt. over 4,000 ft.
- Preesall, urb. dist.**, Lancs, Eng.; N. of Blackpool; p. (1951) 2,231.
- Pregel, R.**, Poland; flows to Frisches Haff, nr. Kaliningrad; length 125 m.
- Prezlaw**, see Przemyslaw.
- Prerov, t.**, Czechoslovakia; S.E. of Olomouc; hardware, textiles; p. 21,510.
- Prescelli Myndd, mtns.**, N.E. Pembroke, Wales.
- Prescot, mfg. t.**, urb. dist., S.W. Lancs, Eng.; 4 m. S.W. of St. Helens; mkt., elec. cable indus.; p. (1951) 12,474.
- Prescott, port**, Ontario, Canada; on R. St. Lawrence; p. 3,223.
- Presidio St. Vicente, t.**, N. Mexico; on Rio Grande del Norte.
- Prešov, t.**, Czechoslovakia; linen mnfs.; p. 24,391.
- Prestatyn, t.**, urb. dist., Flint, Wales; on N. cst., 3 m. E. of Rhyl; seaside resort; p. (1951) 8,809.
- Prestea, t.**, Gold Coast, Brit. W. Africa; gold-mining reg.
- Presteign, mkt. t.**, urb. dist., Radnor, Wales; on R. Lugg, 10 m. N.W. of Leominster; p. (1951) 1,257.
- Preston, t.**, Ont., Canada; furniture; p. 6,704.
- Preston, t.**, pt., co. bor., Lancs, Eng.; on R. Ribble; cotton and rayon textiles, plastics, iron, brass; p. (1951) 119,243.
- Prestonpans, burgh**, E. Lothian, Scot.; on S. side of Firth of Forth, 9 m. E. of Edinburgh; "Bonnie Prince Charlie" defeated British here in 1745; bricks, soap, brewing; p. (1951) 2,907.
- Prestwich, industr. t.**, mun. bor., Lancashire, Eng.; in valley of R. Irwell, 3 m. N.W. of Manchester; cotton bleaching and dyeing; rubber mnfs.; p. (1951) 34,387.
- Prestwick, burgh**, Ayr, Scot.; on Firth of Clyde, 3 m. N. of Ayr; impt. golfing centre and trans-Atlantic airport; holiday resort; p. (1951) 11,386.
- Pretoria, administrative cap.**, Transvaal, Union of S. Africa; fine parliamentary buildings, wide boulevards; impt. tr. centre; p. (1951) 283,148.
- Préveza, prefecture**, Greece; cap. Préveza; p. (1951) 56,710.
- Préveza, ford. t.**, Préveza, Greece; on G. of Arta; gd. shipping tr.; p. (1951) 12,257.
- Pribalkhash, t.**, Kazakh S.S.R., U.S.S.R.; situated midway along N. shore of L. Balkhash; ch. copper-mining and smelting centre in U.S.S.R., linked to Kagaranda coalfield by rail.
- Pribram, t.**, Bohemia, Czechoslovakia; lead, silver mining, mnfs.
- Price, c.**, Utah, U.S.A.; coal, asphalt; p. (1950) 6,010.
- Prieska, t.**, Cape of Good Hope, S. Africa; on Orange R.; sheep, cattle, horses; blue asbestos; p. 3,442.
- Prijedor, t.**, Croatia, Yugoslavia; on E. flank of Dinaric Alps, 65 m. S.E. of Zagreb; iron-ore mines.
- Prilep, t.**, Macedonia, Yugoslavia; p. (1948) 25,996.
- Prince Albert, t.**, Saskatchewan, Canada; lumbering, furs; p. (1951) 17,067.

- Prince Albert, *t.*, Cape of Good Hope, S. Africa; fruit; p. 2,520.
- Prince Albert Peninsula, *dist.*, Victoria I., Arctic Canada.
- Prince Albert Sound, *inlet*, Victoria I., Arctic Canada.
- Prince Edward I., *prov.*, Canada; dairying, fishing, and mnfs.; fox farms; much forest land; cap. Charlottetown; a. 2,184 sq. m.; p. (1951) 98,429.
- Prince George, *t.*, Brit. Columbia, Canada; p. (1948) 5,500.
- Prince of Wales I., off coast of C. York Peninsula, Queensland, Australia.
- Prince of Wales, *C.*, Bering Strait, Alaska.
- Prince Rupert, *c.*, Brit. Columbia, Canada; Pacific port of the Canadian National Rly.; p. (1951) 8,546.
- Princes Risborough, *mkt. t.*, Bucks, Eng.; at N. foot of Chiltern Hills, in gap used by main rly.; chairs, brewing; p. 2,438.
- Princeton, *bor.*, N.J., U.S.A.; seat of Princeton Univ.; p. (1950) 12,230.
- Prinetown, *vil.*, Devon, Eng.; nr. Dartmoor prison.
- Príncipe and S. Tomé, *Portuguese Is.*, G. of Guinea, Africa; products, cacao, coffee, coconuts, etc.; a. 372 sq. m.; p. (1940) 60,490.
- Pringles, *t.*, Argentina; agr. centre; p. 12,700.
- Pripet (Pripjat), *R.*, U.S.S.R.; trib. of R. Dnieper; length 350 m.
- Pripet Marshes, U.S.S.R.; a. 30,000 sq. m.; greater part reclaimed.
- Pristina, *t.*, *cap.*, Kosmet, Yugoslavia; on R. Sitnic; many mosques; sugar and coffee; p. (1948) 19,331.
- Progreso, *spt.*, Yucatan, Mexico; sisal; warehousing; p. (1940) 11,990.
- Prokopsk, *t.*, S.W. Siberia, U.S.S.R.; nr. Stalinsk; metallurgy; p. (1939) 107,227.
- Prome, *t.*, Burma; on R. Irrawaddy; silk, rice, cotton, tobacco; p. 28,295.
- Proskurov, *t.*, Ukraine, U.S.S.R.; on R. Bug; mnfs.; p. 10,000.
- Proсна, *R.*, Poland; trib. of R. Warta; length 120 m.
- Prostějov, *t.*, Moravia, Czechoslovakia; match-making, brewing, malt and sugar; geese-breeding; p. (1947) 31,718.
- Provence, *old maritime prov.*, S.E. France; now depts. Var, Basses-Alpes, Bouches-du-Rhône, and part of Vaucluse.
- Providence, *c.*, Rhode I., U.S.A.; at head of Narragansett Bay; impt. mnfs. and educational institutions; textiles, engineering, jewellery; distributing centre for New England; seat of Brown Univ.; p. (1950) 284,674.
- Provo, *c.*, Utah, U.S.A.; at base of Wasatch mtns., nr. shore of Utah Lake; flour, bricks, blast furnaces; p. (1950) 28,937.
- Prudhoe, *urb. dist.*, Northumberland, Eng.; coal; p. (1951) 9,571.
- Prussia, *old st.*, former kingdom, Germany; cap. Berlin; E. Prussia partitioned between Russia and Poland.
- Pruszkow, *t.*, Poland; nr. Warsaw; electr. plant; p. 25,096.
- Prut, *R.*, flows between Romania and Bessarabia from the Carpathian Mtns. to the Black Sea; length 360 m.
- Przemysl, *frontier t.*, Poland; on boundary between Poland and Ukrainian S.S.R.; timber, leather, corn; p. 37,000.
- Przemyslaw, *t.*, Poland; nr. Szczecin; beer, tobacco, sugar, woollens; p. 22,357.
- Psel, *R.*, U.S.S.R.; flows to the R. Dnieper at Kremenchug; length 300 m.
- Pskov, *t.*, R.S.F.S.R., U.S.S.R.; on R. Velykaya; flax tr., leather, sawmills, flour mills, cordage; p. (1939) 59,898.
- Pucallpa, *R. p.*, Peru; on R. Ucayali; oilfield; p. 2,368.
- Pudsey, *t.*, *mun. bor.*, W.R. Yorks, Eng.; between Leeds and Bradford; mnfs., woollens; p. (1951) 30,276.
- Pudukkottai, former Madras st., S. India; now merged into M., Indian Union; a. 1,179 sq. m.; p. 438,348.
- Puebla, *st.*, Mexico; agr.; coffee and sugar growing; a. 13,124 sq. m.; p. (1950) 1,628,638.
- Puebla, *c.*, Mexico; one of the oldest and most impt. cs.; alt. 7,137 ft.; gr. tr. cottons, woollens; p. (1950) 229,975.
- Pueblo, *c.*, Colorado, U.S.A.; on R. Arkansas; coal; iron- and steel-wks.; copper, gold and silver smelted; p. (1950) 63,685.
- Puentearcas, *t.*, Spain; nr. Vigo; wine growing, porcelain; p. 14,634.
- Puente Genil, *t.*, Cordoba, Spain; olive oil; p. 27,552.
- Puerto Aysen, *t.*, Chile; centre of sheep-farming area; p. 3,767.
- Puerto Berrio, *R. pt.*, Colombia; on R. Magdalena; serves Medellín; p. 5,437.
- Puerto Cabello, *spt.*, Venezuela; on the Caribbean S., nr. Valencia; large exports; p. (1947) 22,087.
- Puerto Colombia, *t.*, Colombia; resort; former ocean port for Barranquilla; p. (1947) 4,896.
- Puerto Cortes, *spt.*, Honduras rep., Central America; p. (1945) 8,000.
- Puerto de Santa Maria, *spt.*, Cadiz, Spain; wine, glass.
- Puerto Mexico, see Coatzacoalcas.
- Puerto Montt, *spt.*, Chile; in sheep-farming dist.; term. of longitudinal rly.; p. (1940) 19,060.
- Puerto Natales, *spt.*, Chile; wool, frozen meat; p. 5,273.
- Puerto Plata, *t.*, Dominican rep. Central America; p. (1935) 17,059.
- Puerto Real, *spt.*, Andalusia, Spain; summer resort; wine and oil trade; p. 14,854.
- Puerto Rico, *W. Indian I.*, Greater Antilles; ceded by Spain to U.S.A. in 1898; coffee, sugar, cocoa, tobacco, etc.; cap. San Juan; a. 3,423 sq. m.; p. (1950) 2,210,703, mainly natives of mixed Spanish and aboriginal descent.
- Puerto Salinas, *spt.*, Venezuela; oil-transshipment.
- Puerto Suarez, *R. pt.*, Bolivia; on R. Paraguay; collecting centre for rubber, coffee, Brazil nuts.
- Puerto Varas, *t.*, Chile; tourist centre in Chilean "Switzerland"; p. (1940) 44,024.
- Puget Sound, Washington, U.S.A.
- Puket, *t.*, ch. Siamese pt. on Malay Peninsula; tin-mines; p. 30,000.
- Pula, *spt.*, Croatia, Yugoslavia; arsenal, naval base; cement; ship-breaking; footwear, tar, flour, tobacco, fishing; p. (1948) 22,740.
- Pulacayo, *t.*, Bolivia; alt. 13,600 ft.; silver-mines; p. 8,000.
- Pulo Tantalam, name of strip of land by which Burma is connected with Malay Peninsula, Siam.
- Pulo Wai I., Sumatra, Indonesia; hilly, forests; ch. pt. Sabang.
- Pultusk, *t.*, Poland; on R. Narew; copper-wks., woollens, hosiery; p. 8,787.
- Puna, bleak uninhabited plateau of Peru and Bolivia; alt. 12,000-18,000 ft.
- Punjab, *geographical region*, comprising N.W. of Indus plains, Indian sub-continent; extensive irrigation from the "five rivers"—Jhelum, Chenab, Ravi, Bias, Sutlej; cotton, sugar, cereals; now divided politically between India and Pakistan.
- Punjab (East), *prov.*, India; new cap. Chandigarh; a. 37,428 sq. m.; p. (1951) 12,638,611.
- Punjab (West), *prov.*, Pakistan; cap. Lahore; a. 62,987 sq. m.; p. (estd. 1951) 18,814,000.
- Punta Arenas, *t.*, Magallanes prov., Chile; most S. c. in the world; mutton, wool; whaling; coal nearby; p. (1946) 27,620.
- Puntarenas, *prov.*, Costa Rica; p. (1950) 88,168.
- Puntarenas, *spt.*, Costa Rica, Central America; one of the ch. commercial ports of the country, stands on Gulf of Nicoya; p. (1946) 26,375.
- Purbeck, *I. of, dist.*, Dorset, Eng.; Corfe cas. in centre; limestone (Purbeck "marble") quarries.
- Puri, *dist.*, Orissa, India; cap. P., famous for its temple and festival of the god Vishnu and his monster car, Juggernaut; p. 25,000.
- Purley, *urb. dist.*, Surrey, Eng.; residtl.; p. (with Coulsdon) (1951) 63,770.
- Purnea, *t.*, Bihar, Indian Union; tobacco; p. (1941) 19,036.
- Pursat, *mkt. t.*, Cambodia, French Indo-China; between Phnompenh and Siamese frontier; p. 96,000.
- Puras, *R.*, Peru; trib. of R. Amazon; length 1,400 m.
- Pusan (Fusan) *pt.*, S. Korea; on S.E. cst.; formerly ch. pt. for trade with Japan mainland; silk, hides, rice; p. (1949) 473,619.
- Puteaux, *sub.*, Paris, France; woollens, dyes; p. (1946) 37,369.



- Putney, *S.W. residnt. and industl. Thames-side sub.*, London, Eng.
- Putrid Sea, *see* Gulf of Siwash.
- Puttalam, *t.*, Ceylon; on W. cst.; pearl oysters, salt; p. 7,792.
- Putumayo, *R.*, Ecuador; trib. of E. Amazon; length 700 m.
- Puy-de-Dôme, *peak*, Auvergne Mtns., France; alt. 4,806 ft.
- Puy-de-Dôme, *dep.*, France; drained by R. Allier; generally mountainous; agr., vineyards; coal, silver, lead; cap. Clermont-Ferrand; a. 8,090 sq. m.; p. (1946) 478,876.
- Puy, *Le*, *cap.*, Haute-Loire, France; lace-making; p. (1946) 22,705.
- Puymorens Tunnel, Pyrenees, on bdy. between France and Spain; carries main rly. between Toulouse and Barcelona.
- Pwllheli, *spt., mun. bor.*, Caernarvon, N. Wales; on S. est. of Llleyn peninsula; seaside resort; p. (1951) 3,861.
- Pyatigorsk, *t.*, Caucasus, U.S.S.R.; spa, sulphur springs; p. (1939) 62,875.
- Pyanmana, *t.*, Burma; rly. junction; p. 17,656.
- Pylos, *t.*, S. Greece; W. of Kalamai; p. 3,315.
- Pyeongyang, *cap. c.*, N. Korea; located 40 m. up Han R.; p. (est. 1942) 339,105.
- Pyrenees, *range of mtns.*, S.W. Europe; dividing France from Iberian Peninsula; 270 m. long; highest peak Pic Nethou, or Maladetta, 11,170 ft.
- Pyrenées, Basses, *dep.*, S.W. France; mainly agr. and live-stock rearing; cap. Pau; a. 2,978 sq. m.; p. (1946) 415,797.
- Pyrenées, Hautes, *dep.*, S. France; agr., vines, nuts, live-stock, marble quarries; cap. Tarbes; a. 1,750 sq. m.; p. (1946) 201,954.
- Pyrenées-Orientales, *dep.*, S. France; on Mediterranean; wheat, wine, silk-worm culture, stock-rearing; cap. Perpignan; a. 1,599 sq. m.; p. (1946) 228,776.
- Pyrgos, *t.*, Elis, Greece; prov. Elis, nr. Patras; has suffered from earthquakes; p. (1951) 20,066.
- Pyrmont, *t.*, Germany; nr. Hanover; mineral springs.
- Q**
- Qain, *t.*, E. Persia; carpets, saffron; p. 10,000.
- Qaiyara, *Al*, *t.*, Iraq; route centre; oil resources undeveloped.
- Qalqiliya, *vil.*, Jordan; rly. junction.
- Qalyub, *t.*, Egypt; rly. junction; p. 5,000.
- Qalyubiya, *administrative div.*, Egypt; a. 364 sq. m.; p. (1947) 690,156.
- Qara Dagb, *t.*, Iraq; gum.
- Qara Qum, *sand desert*, Turkmenistan, U.S.S.R.
- Qarun (Karun), *see* Birket el Qarun.
- Qasr el Azraq, *t.*, Jordan; oasis; rice.
- Qatar, *sheikhdom*, Arabia; includes Q. Peninsula, Persian G.; under British protection; oil-mining; a. about 8,000 sq. m.; p. about 25,000.
- Qatif, *fortd.*, *t.*, El Hasa, Saudi Arabia.
- Qatlava Depression, N. Egypt; a. 7,000 sq. m.
- Qena, *t.*, Egypt; on R. Nile; water jars and bottles; p. (1947) 39,672.
- Qishm, *I.*, Aden Protectorate, Arabia; off S. coast of Persia, at entrance of Persian G.; hilly; highest pk., 1,331 ft.; cereals, vegs., fruit, salt; p. 15,000.
- Qisil-Qum, *desert region*, central Asia; covering dried-up a. of the extended Pleistocene Aral Sea.
- Qizan, *spt.*, Saudi Arabia; cereals, pearl-fishing, salt.
- Quantock Hills, Somerset, Eng.; S. of Bridgwater Bay; highest pt., 1,262 ft.
- Qu'Appelle, *t.*, Saskatchewan, Canada; p. 539.
- Quaregnon, *t.*, Hainaut prov., Belgium; Mons colliery dist.; ironwks. and tobacco factories.
- Quarnero, *G.*, Adriatic Sea; between Croatian cst. and Istria.
- Quarto, *G. of*, *arm.*, G. of Cagliari, Sardinia.
- Quathlamba Mtns., *see* Drakensberg.
- Quatre Bras, *nr.* Waterloo, S. Brabant, Belgium.
- Queanbeyan, *t.*, N.S.W., Australia; pastoral, dairying and mixed farming dist.; gold, silver, copper; p. (est.) 8,000.
- Quebec, *prov.*, Canada; agr., cereals, fruit, dairying, pulpwood, asbestos, gold, copper, fishing; cap. Quebec, lgst. C. Montreal; a. 594,860 sq. m.; p. (1951) 4,055,681.
- Quebec, *c. cap.*, Quebec, Canada; on St. Lawrence R.; fine harbour, handsome government buildings; furs, textiles, leather, paper; p. (1951) 161,439.
- Quedlinburg, *t.*, Germany; at foot of Harz Mtns.; aniline dyes, starch, seeds; p. 28,244.
- Queen Alexandra Ra., Antarctica; highest pk., Mt. Kirkpatrick, 14,600 ft.
- Queenborough, *t., mun. bor.*, Kent, Eng.; on R. Swale, I. of Sheppey; chemicals, cement; p. (1951) 3,137.
- Queen Carola Harbour, W. cst. Buka I., Solomon Is., Pac. Oc.
- Queen Charlotte's Is., *group*, N. of Vancouver I., off cst. of Brit. Columbia; ch. Is.: Graham I., Moresby I.; valuable halibut fishing industry.
- Queen Charlotte Sound, *strait* separating Vancouver I. from Brit. Columbia mainland, a continuation of Johnstone Strait.
- Queen Maud Land, Antarctica; claimed by Norway; ice crystal mtns., 10,000 ft. high for 100 m. along cst. (1,550,849).
- Queens, *bor.*, N.Y. City, U.S.A.; p. (1950) 1,550,849.
- Queenscliff, *t.*, Victoria, Australia; on Pt. Phillip Bay; resort; p. 1,969.
- Queensferry, *burgh*, W. Lothian, Scot.; on S. side of Firth of Forth, 8 m. N.W. of Edinburgh; S. end of Forth Bridge and ferry across Firth; p. (1951) 2,486.
- Queensferry N., *vil.*, Fife, Scotland.
- Queensland, *st.*, N.E. Australia; great grassy plains and cst. highlands; agr.: maize, wheat, sugar-cane, cotton, pineapples, bananas; dairying; cattle, sheep, wool; timber; minerals; coal, copper, gold; cap. Brisbane; a. 670,500 sq. m.; p. (1947) 1,106,415.
- Queenstown, *see* Cobh.
- Queenstown, *t.*, C. of Good Hope, S. Africa; in the Great Kei R. valley; prosperous agr. region; p. (1946) 8,136.
- Queenstown, *t.*, Tasmania, Australia; p. 3,400.
- Quelimane, *pt.*, Port. E. Africa; rly. term.; rubber, almonds, copra, coffee, cotton, sisal, tea, tobacco, sugar, wax, ivory; p. 8,000.
- Qulpert (Cheju Do), *I.*, Yellow Sea; 60 m. S. of Korea (40 m. by 17 m.) belonging to S. Korea; agr. and pearl-fishing.
- Quemoy, *gr. of Is.*, off Chinese mainland near Amoy, held by Nationalist forces; p. (est.) 50,000 (plus garrison of 40,000.)
- Que Que, *t.*, S. Rhodesia; alt. 3,979 ft.; gold-mining, farming, ranching dist. centre; iron and steel; tobacco, vegs., citrus fruit; p. 23,736 (Europeans 1,700).
- Quequen, *t.*, E. Argentina; seaside resort.
- Queretaro, *st.*, Mexico; cereals, fruit, minerals; a. 4,432 sq. m.; p. (1950) 285,766.
- Queretaro, *c.*, Mexico; 134 m. N.W. of the c. of Mexico; at alt. 6,346 ft., pottery, cottons, woollens; fine government buildings and cath.; here Emperor Maximilian was executed; p. (1940) 72,951.
- Querimba Is., off Mozambique.
- Quesnel, *t.*, B.C., Canada; on R. Fraser, 360 m. N. of Vancouver; impt. alluvial gold workings. (p. 3,346.)
- Quesnoy, *Le*, *t.*, Nord, France; nr. Valenciennes.
- Quetta, *t.*, Baluchistan, Pakistan; at end of Bolan Pass, on road to Kandahar; rly. junction; tr. and military centre; rebuilt after destruction by earthquake, 1935; p. (1951) 84,343.
- Quezaltenango, *co.*, Guatemala, Central America; on slopes of Cerro Quemado volcano; centre of tr. for W. part of the rep.; textiles; p. 36,804.
- Quezon City, *new cap.* of rep. of the Philippines; built just N.E. of Manila; p. (1948) 107,977.
- Quibdó, *t.*, Colombia, S. America; on R. Atrato; p. (1947) 30,370.
- Quiberon, *t.*, Morbihan, France; on Quiberon Bay, nr. Lorient; p. 3,556.
- Quibor, *t.*, Venezuela; 40 m. S.S.W. Barquisimeto.
- Quicamao, *t.*, st. Rio de Janeiro, Brazil; nr. Camos; industl.
- Quilimane, *see* Quelimane.
- Quillota, *commercial st.*, Valparaiso, Chile; nr. Santiago; p. 17,232. (p. 57,390.)
- Quilmes, *t.*, Argentina; nr. Buenos Aires.
- Quillon, *t.*, Travancore, India; on Malabar cst., gd. tr.; coconuts, pepper, timber; p. (1941) 33,739.
- Quimper, *fortd.*, *t.*, Finistère, France; nr. Brest; pilchards, pottery, paper, leather, brewing; p. (1946) 20,149.

- Quimperlé, *t.*, Finistère, France; 34 m. E.N.E. Quimper; industr. : p. (1946) 10,679.
- Quincy, *t.*, Ill., U.S.A.; milling, tobacco, iron-ware, machinery : p. (1950) 41,450.
- Quincy, *t.*, Mass., U.S.A.; granite, foundries, ship-building : p. (1950) 83,335.
- Quindío, *pass.*, Colombia; provides impt. route-way through Cordillera Central; 11,099 ft.
- Qui Nhon, *t.*, Annam, Viet Nam, Indo-China; exports rice, coconut oil, copra, dried fish, groundnuts : p. 10,000.
- Quintana Roo, *terr.*, Mexico; cap. Chetumal; a. 19,438 sq. m.; p. (1940) 18,752.
- Quintero, *t.*, Chile; naval air stn.; p. 2,047.
- Quintin, *t.*, dep. Côtes-du-Nord, France; nr. St. Brieu.
- Quinto, *R.*, Argentina; flows S.E. from the Sierra de San Luis and becomes lost in a morass; length 250 m.
- Quinzano, *t.*, nr. Brescia, Italy; p. 5,625.
- Quiringua, *ruined ancient t.*, nr. Isabel, Guatemala, Central America; on R. Mohtagua.
- Quistello, *t.*, Mantua, Italy; on R. Secchia; p. 9,450.
- Quito, *c., cap.*, Ecuador; in the Andes, 15 m. S. of the Equator; alt. 9,402 ft.; rubber and hide exports, carpet, leather, and other mnfs.; p. (1950) 212,873.
- Qum, *c.*, Persia; pilgrim centre; mkt.; carpets, porcelain, cotton; p. (estd. 1949) 86,000.
- Quorndon, or Quorn, *sm. t.*, Leicester, Eng.; on R. Soar, 3 m. S. of Loughborough; centre of fox-hunting dist.
- Quorra, *R.*, Africa; one of the names given to the R. Niger; below Timbuktu.
- Quseir, *t.*, Egypt; on Red Sea cst.; caravan trade centre; p. 1,000.
- Quyquyo, *t.*, S. Paraguay; copper, manganese; p. 6,590.
- Qvarken, Oestra, and Vestra, *straits*, in the G. of Bothnia off the Swedish cst.
- R**
- Raab, *see* Győr.
- Raalte, *t.*, Overijssel, Netherlands; nr. Zwolle; industr. : p. 10,382.
- Raasay, *I.*, E. of Skye, Inverness, Scot.; 13 m. long, 3½ m. wide.
- Rab I, at head of Adriatic, Yugoslavia; marble, silk mnfs.; holiday resort; a. 74 sq. m.; p. 6,354.
- Rabat or New Salle, *t.*, Fr. zone, Morocco; at mouth of Bu Regreg; leather and carpet mnfs.; p. (1947) 164,416.
- Rabaul, *t.*, New Britain, Papua-New Guinea; former seat of administration; copra cen.; p. 4,500.
- Rabot, *t.*, Malta; on Gozo I.
- Racalmuto, *t.*, Girgenti, Sicily; agr. interests; p. 13,825.
- Race, *C.*, S.E. Newfoundland, Canada.
- Racibórz (Ratibor), *t.*, Upper Silesia, Poland; on R. Oder; mnfs.; p. 19,605.
- Racine, *c.*, Wisconsin, U.S.A.; on L. Michigan, 10 m. S. of Milwaukee; motor cars, farm implements; p. (1950) 71,193.
- Radauti, *t.*, Bukovina, Romania; paper, glass; p. 14,530.
- Radcliffe, *mun. bor.*, Lancs, Eng.; nr. Manchester; paper-making, dye wks., foundries; p. (1951) 27,551.
- Radeberg, *t.*, Saxony, Germany; on Grosse Röder, nr. Dresden; glass-works; p. 15,775.
- Radebeul, *t.*, Saxony, Germany; sub. Dresden, on R. Elbe; varied light mnfs.; p. 12,428.
- Radevormwald, *t.*, Rhine prov., Germany; textiles, iron goods, electr. equipment; p. 11,823.
- Radford, *t.*, Va., U.S.A.; iron smelting, lumbering; p. (1950) 9,026.
- Radhanpur, *st.*, Saurashtra, India; formerst. in W. India States Agency; a. 2,016 sq. m.; p. 100,644.
- Radnorshire, *inland co.*, N. Wales; oats, wheat; sheep rearing, breeding Welsh ponies, mineral springs; cap. Presteign; a. 471 sq. m.; p. (1951) 19,998.
- Radom, *industr. t.*, Kielce, Poland; nr. Warsaw; p. 70,000.
- Radomsko, *t.*, Poland; nr. Lodz; p. 19,000.
- Radomysl, *t.*, Ukraine, U.S.S.R.; tanneries and flour mills.
- Radstock (Norton Radstock), *t., urb. dist.*, Somerset, Eng.; 10 m. S.E. of Bristol; collieries; p. (1951) 11,934.
- Rafah, *t.*, Egypt; on Israel boundary.
- Rafadali, *t.*, Girgenti, Sicily, Italy; agr. interests; p. 10,325.
- Ragaz, Bad, *t., resort*, St. Gall, Switzerland; on R. Tamina; hot springs; ancient Abbey of Pfäfers, 2,697 ft. above sea-level.
- Ragusa, *c.*, Syracuse, Italy; cheese factories; p. (1951) 48,391.
- Ragusa, *see* Dubrovnik.
- Rahad, *R.*, Anglo-Egyptian Sudan; trib. of Blue Nile.
- Rahmáníya, El, *t.*, Lower Egypt; nr. Rosetta; on R. Nile.
- Rahway, *c.*, N.J., U.S.A.; on R. Rahway; residtl. for New York business men; p. (1950) 21,290.
- Raiatea, *I.*, Society Is., Pac. Oc.; largest of the Fr. Leeward group, 130 m. N.W. Tahiti.
- Raichur, *t.*, Hyderabad, India; pottery; p. about 27,910.
- Raigarh, *t., cap.*, Raigarh state, Madhya Pradesh, India; silk mnfs.; rice; p. (1941) 20,327.
- Rainford, *urb. dist.*, Lancs, Eng.; nr. St. Helens; coal; p. (1951) 4,805.
- Rainer, *mtn.*, Washington, U.S.A.; 14,530 ft.
- Rainton, *E. and W., colly. dists.*, nr. Durham, Eng.
- Rainy, *L.*, on border of Canada and Minn., U.S.A., drained by Rainy R. to the Lake of the Woods.
- Raipur, *t.*, Madhya Pradesh, India; p. (1941) 63,465.
- Raismes, *t.*, Nord, France; nr. Valenciennes; lace industry; p. (1946) 12,203.
- Rajahmundry, *t.*, Madras, India; on the delta of the Godavari R.; p. (1951) 105,276.
- Rajasthan, *st.*, India; originally formed by smaller Rajputana States in S.E., later joined by the larger sts. of Udaipur, Jaipur, Jodhpur, Bikaner, and Jaisalmer, subsequently by Matsyan Union; largest single unit in India; farming, millet, cotton, pulses, textiles, ivory; ch. towns, Jaipur, (cap.), Udaipur, Alwar, Jodhpur; total a. 130,207 sq. m.; p. (1951) 15,297,979.
- Rajkot, *t.*, Saurashtra Union, India; p. (1951) 132,069.
- Rajpipla, *t.*, Bombay, India; E. of Broach.
- Rajputana, formerly collection of twenty-three native India sts. under the charge of a political agent to the Viceroy and the British dist. of Aimer Merwara.
- Rajshahi, *div.*, E. Bengal state, Pakistan; p. (estd. 1951) 14,078,000.
- Raki-Ura I, *see* Stewart I.
- Rakka, *t.*, Nigeria, Brit. W. Africa; on Lower Niger R. 149,000.
- Rakos Palota, *t.*, Hungary; nr. Budapest; p.
- Rakovnik, *t.*, Bohemia, Czechoslovakia; mkt., mining; p. 11,073.
- Raleigh, *c.*, N. Carolina, U.S.A.; educational centre; rly. wks., cotton-mills; p. (1950) 65,679.
- Ralick, *chain of Is.*, Marshall group, Pacific Ocean; parallel with Ratak chain.
- Ramacca, *commune*, E. Sicily; marble; linen; agr.; p. 12,521.
- Ramah, *spt.*, Canada; on cst. of Labrador.
- Rambervilliers, *t.*, Vosges, France; nr. Nancy; p. (1946) 5,767.
- Rambouillet, *t.*, Seine-et-Oise, France; nr. Versailles; picturesque ancient château; p. (1946) 6,720.
- Rameswaram, *t.*, S. India; on Rameswaram I., Palk Strait; contains a great Dravidian temple, one of the Hindu holy places of pilgrimage; p. 8,423.
- Ramgunga, *R.*, India; trib. of R. Ganges, which it joins nr. Cawnpore; length 300 m.
- Ramle, *t.*, Israel; S. of Lydda; p. (1946) 16,380.
- Ramleh, *t.*, Egypt; E. of Alexandria; p. 52,000.
- Ramme, *t.*, Ringkjøbing, Jutland, Denmark.
- Ramnád, *t.*, Madras, India; on peninsula projecting towards Rameswaram I.
- Râmnicu-Sărat, *t.*, Romania; scene of several battles; p. 19,267.
- Râmnicu-Vâlcea, *c.*, Romania; on R. Olt; cath., monasteries; saltmining; hot springs; p. 15,162.
- Rampur, *t.*, Uttar Pradesh, India; N.W. of Bareilly; damask, sugar, pottery; p. (1951) 134,277.



- Rampur Boalia, *t.*, E. Bengal, Pakistan; on R. Ganges; silk industries; government college; suffered from earthquake, 1897; *p.* about 25,000.
- Ramree I., Bay of Bengal, Indian Oc.; off cst. Arakan, Lower Burma; 50 m. long.
- Ramsbottom, *t.*, *urb. dist.*, Lancs, Eng.; on R. Irwell, 4 m. N. of Bury; cottons, calico printing; *p.* (1951) 14,587.
- Ramsey, *mkt. t.*, *urb. dist.*, Hunts, Eng.; on edge of The Fens, 7 m. N. of St. Ives; *p.* (1951) 5,772.
- Ramsey, *t.*, *spt.*, I. of Man; on N.E. cst.; holiday resort; *p.* 4,517.
- Ramsey, *residential bor.*, N.J., U.S.A.; centre of dairying reg.; *p.* (1950) 4,760.
- Ramsey I., off cst. of Pembroke, Wales.
- Ramsgate, *t.*, *mun. bor.*, Kent, Eng.; on S. cst. of I. of Thanet; seaside resort; *p.* (1951) 35,748.
- Rancagua, *c.*, Colchagua prov., Chile; *p.* (1940) 38,423.
- Ranchi, *hot-weather seat of govt.*, Bihar, India; technical institute; rice, tea, shellac; *p.* (1951) 106,849.
- Rand, *gold-mining dist.*, Transvaal, S. Africa (see Witwatersrand).
- Randazzo, *t.*, Catania, Sicily; on S. slopes of Mt. Etna; 2,474 ft. above sea-level; *p.* 16,325.
- Randers, *t.*, Denmark; mediæval monastery; machinery, foundries; exports dairy produce; *p.* (1950) 40,098.
- Randers Fjord, *fjord*, E. cst. Denmark.
- Råneå, *t.*, R., Sweden; on N. cst. of G. of Bothnia.
- Ranenburg, *t.*, U.S.S.R.; on R. Voronezh; *p.* 10,000.
- Ranger, *t.*, Texas, U.S.A.; *p.* (1950) 3,989.
- Rangiora, *t.*, S.I., New Zealand; 20 m. N.W. of Christchurch; centre of a large agr. dist.; *p.* 2,240.
- Rangitiki R., N.I., N.Z.; flows N. into B. of Plenty.
- Rangoon, *c.*, *cap.*, Burma; on E. arm of Irrawaddy delta; 2 cath., many mosques, temples, and pagodas; gr. tr., and many impt. mnfs.; rice, oil, lumber; ivory and wood carving; textiles; *p.* (1941) 600,800.
- Rangpur, *t.*, E. Bengal, Pakistan; on R. Ghaghat; jute; *p.* (1941) 34,039.
- Raniganj, *t.*, Bengal, India; iron, coal-mines; *p.* 10,000.
- Rani-Nur, *famous rock-cave*, Khandgiri Hill, Puri dist., Orissa, India.
- Rannoch, *loch*, Perth, Scot.; 9 m. long, 1 m. wide; drained to R. Tay.
- Rapallo, *t.*, *vat. pl.*, Liguria, N.W. Italy; on G. of Genoa, 22 m. E. of Genoa; most celebrated resort on Italian Riviera di Levante; *p.* (1946) 14,676.
- Rapanui or Easter I., I., Pacific Ocean; W. of Chile.
- Raphoe, *par.*, co. Donegal, Ireland; cath.; mkt.; woollens, esp. tweeds; *p.* 2,600.
- Rapid City, *t.*, S. Dakota, U.S.A.; *p.* (1950) 25,310.
- Rappollswiller, *t.*, Bas Rhin, France; nr. Selestat; walled; known as "the pipers' town."
- Raqqa, *t.*, Syria; on R. Euphrates; *p.* 2,000.
- Raritan, *t.*, N.J., U.S.A.; *p.* (1950) 5,131.
- Rarotonga, *I.*, Pac. Oc.; one of the Cook Is.; 53 m. round, largest of the group; *p.* (1948) 5,549.
- Ras-al-Had, *C.*, E. extremity Arabia.
- Ras-al-Khaima, *t.*, on Persian G., st. of Bahrain, Arabia.
- Rasgrad, *t.*, Bulgaria; nr. Ruschuk, on R. Ak-Lom.
- Ras Mohammed, *S. point*, Sinai Peninsula.
- Ras Tannura, *spt.*, Nejd, Saudi Arabia; large oil-refinery.
- Rashin, *t.*, N. Korea; nr. U.S.S.R. frontier.
- Rasskazovo, *t.*, Tambov reg., U.S.S.R.; ironwks.; wheat; *p.* 25,163.
- Rastatt, *t.*, Baden, W. Germany; nr. Karlsruhe; brewing, cigars, lace, stoves; finest baroque palace in S. Germany.
- Rastenburg, *see* Ketrzyn.
- Rastrick, *indusl. t.*, W.R. Yorks, Eng.; on R. Calder, nr. Halifax.
- Rat Is., *group of Is.*, Aleutian Archipelago.
- Ratak, *chain of Is.*, Marshall Group, Pac. Oc., parallel with Raikoke chain.
- Rath Luire (Charleville), *t.*, Cork, Ireland; on boundary of Limerick; *p.* (1946) 1,547.
- Rathenow, *t.*, E. Germany; bricks, optical glass; *p.* 28,043.
- Rathkeale, *mkt. t.*, *rural dist.*, Ireland; nr. Limerick; *p.* (1946) 13,226.
- Rathlin, *I.*, off Fair Head, N. Antrim, N. Ireland; 5 m. by 1 m.
- Rathven, *par.*, Banff, Scot.; farming, sandstone, limestone, slate; *p.* 15,404.
- Ratibor, *see* Raciborz.
- Raibingen, *t.*, Rhine prov., Germany; anc. church; ironwks., textiles, pottery; *p.* 15,288.
- Ratisbon (Regensburg), *t.*, Upper Palatinate, Bavaria, Germany; 50 m. N.E. of Munich, on R. Danube; cath.; musical instruments, pottery, tobacco, furniture; *p.* (1950) 117,291.
- Ratnagiri, *t.*, Bombay prov., India; cst. trade port; *p.* (1941) 23,906.
- Ratnapura, *t.*, Ceylon; graphite; *p.* 12,441.
- Ratray Head, Aberdeen, Scot. 10,083.
- Rauma, *spt.*, Finland; on G. of Bothnia; *p.* Raunds, *t.*, *urb. dist.*, Northants, Eng.; 5 m. N.E. of Wellingborough; *p.* (1951) 4,616.
- Rava Ruskaya, *t.*, W. Ukraine, U.S.S.R.; oil processing; quarrying; *p.* 12,000.
- Ravenglass, *t.*, Cumberland, Eng.; nr. mouth of R. Esk.
- Ravenna, *reg.*, Emilia, Italy; a. 715 sq. m.; *p.* (1951) 294,419.
- Ravenna, *c.*, Emilia, N. Italy; on marshy plain nr. the Adriatic, 45 m. E. of Bologna; cath., archiepiscopal palace, famous mosaics; sericulture, vines; *p.* (1951) 91,539.
- Ravenna, *t.*, N.E. Ohio, U.S.A.; engineering, rubber; *p.* (1950) 9,857.
- Ravensburg, *t.*, Württemberg, W. Germany; nr. Konstanz; flourishing mnfs. of leather, machinery, textiles; *p.* 18,930.
- Ravensthorpe, *indusl. t.*, W.R. Yorks, Eng.; nr. Dewsbury.
- Ravi, *R.*, Punjab, India; trib. of the Chenab; used for irrigation; length 450 m.
- Rawalpindi, *div.*, W. Punjab, Pakistan; between Lahore and Peshawar; *p.* (estd. 1951) 5,134,000.
- Rawalpindi, *c.*, W. Punjab, Pakistan; on R. Leh; fortfd.; active tr. with Kashmir; railway wks., brewing, foundries, oil refining; *p.* (1951) 237,219.
- Rawicz, *indusl. t.*, Poznan, Poland; *p.* 9,000.
- Rawlins, *t.*, S. Wyo., U.S.A.; mkt., coal, oilfields, ranching; *p.* (1950) 7,415.
- Rawmarsh, *t.*, *urb. dist.*, W.R. Yorks, Eng.; 2 m. N.E. of Rotherham; engineering; *p.* (1951) 18,793.
- Rawson, *spt.*, *cap.*, Chubut terr., Argentina; S. of Valdes Peninsula; oil; *p.* 2,500.
- Rawson, *indusl. t.*, nr. Leeds, Yorks, Eng.
- Rawtenstall, *t.*, *mun. bor.*, Lancs, Eng.; on R. Irwell in centre of Rossendale Fells; cotton weaving; *p.* (1951) 25,426.
- Ray, *C.*, S.W. Newfoundland, Canada; beginning of Long Range, of which the highest peak is 2,673 ft.
- Rayleigh, *t.*, *urb. dist.*, Essex, Eng.; 5 m. N.W. of Southend; *p.* (1951) 9,388.
- Raynham, *t.*, S.E. Mass., U.S.A.; mkt. centre for agr. products, poultry, eggs; *p.* 2,141.
- Razeim, *L.*, Dobrodea, Romania; 25 m. long.
- Ré or Rho, *I.*, W. cst. Charente-Inférieure, France; opp. Rochelle; salt mftg.; ch. t. St. Martin.
- Reading, *t.*, *co. bor.*, Berks, Eng.; at confluence of Rs. Thames and Kennet; univ.; biscuits, engineering, brewing, seed-growing and mkt. gardening; *p.* (1951) 114,176.
- Reading, *t.*, Mass., U.S.A.; nr. Boston; *p.* (1950) 14,006.
- Reading, *c.*, Penns., U.S.A.; on Schuylkill R.; ironwks.; *p.* (1950) 109,320.
- Recanati, *t.*, Macerata, Italy; *indusl.*; *p.* 16,325.
- Recife, *spt.*, *cap.*, Pernambuco, Brazil; univ.; cotton, machinery, sugar, rubber, cocoa; *p.* (1950) 534,468.
- Recklinghausen, *t.*, N. Rhine-Westphalia, W. Germany; nr. Dortmund; collieries, quarries, and mnfs.; *p.* (1950) 104,791.
- Recôncavo, *dist.*, Bahia st., N.E. Brazil; surrounds bay at mouth of R. Paraguaçu; intensive cultivation of sugar-cane, cotton, tobacco, rice, by Negro farmers; ch. ts. São Salvador, Cachoeira.
- Red Basin, *see* Szechwan.
- Red Bay, Antrim, N. Ireland.
- Red Deer R., trib. of Saskatchewan R., Alberta, Canada.
- Red Lake, *t.*, Ontario, Canada; nr. L. Winnipeg; gold.

- Red R.** (China), *see* Song Koi.
- Red R.** U.S.A.: trib. Mississippi, flows from New Mexico through the Staked Plain; length, 1,600 m.
- Red R.** of the North, U.S.A.: rises in Minnesota and flows N., separating N. Dakota and Minnesota, U.S.A., and thence into Manitoba, Canada, to join Assiniboine R.; length 650 m.
- Red Sea**, arm of the sea separating Arabia from Africa; connects with the Indian Ocean by the Straits of Bab-el-Mandeb; length 1,400 m., greatest width 230 m.
- Red Wing**, c., Minn., U.S.A.; on the Mississippi R., at head of L. Pepin; flour mills, grain tr.; p. (1950) 10,645.
- Redbank**, t., N.J., U.S.A.; summer resort, fishing, mkt. gdns., light mnfs.; p. (1950) 12,743.
- Redcar**, t., mun. bor., N.R. Yorks, Eng.; on E. cst., nr. mouth of R. Tees; seaside resort; p. (1951) 27,512.
- Redcliffe**, t., Queensland, Australia; p. (1947) 8,888.
- Redding**, c., N. Cal., U.S.A.; lumber, mining, agr.; tourists; p. (1950) 10,256.
- Redditch**, t., urb. dist., Worcester, Eng.; 12 m. S. of Birmingham; needles, hooks and eyes, springs, aluminium mnfs.; p. (1951) 29,184.
- Rede**, R., Northumberland, Eng.; trib. of R. Tyne.
- Redfern**, sub., Sydney, N.S.W., Australia; iron-wks., engineering; p. (1947) 18,337.
- Redhill**, t., Surrey, Eng.; at foot of N. Downs, adjoining Reigate; residt.
- Redlands**, t., California, U.S.A.; p. (1950) 18,429.
- Redmond**, c., Ore., U.S.A.; agr., esp. potatoes; turkey rearing, dairying; p. 1,876.
- Redonda**, I., Leeward group, Caribbean Sea; between Montserrat and Nevis.
- Redondela**, t., Pontevedra, Spain; on Vigo estuary; old feudal castles; p. 16,927.
- Redruth**, t., part of Camborne-Redruth urb. dist., Cornwall, Eng.; tin-mine dist.; p. (1951) (with Camborne) 35,829.
- Redwood City**, c., W. Cal., U.S.A.; shipbldg., saltwks.; exports sequoia; p. (1950) 25,544.
- Ree**, Lough, L., Ireland; between Roscommon, Longford and Westmeath, an extension of R. Shannon; 17 m. long.
- Regaluto**, industr. t., Catania, Italy; p. 10,200.
- Regello**, t., Val d'Arno, Italy; nr. Florence; p. 14,250.
- Regensburg**, *see* Ratisbon.
- Reggio di Calabria**, t., Calabria, Italy; on Strait of Messina; cath.; perfumes, silks, terracotta; train ferry to Messina (Sicily); has suffered from earthquakes; p. (1951) 140,855.
- Reggio nell' Emilia**, c., cap., Emilia-Romagna, N. Italy; at N. foot of Apennines, 40 m. N.W. of Bologna; locomotives, aircraft; fine church of the Madonna della Ghiara; sericulture cheese-making; p. (1951) 106,182.
- Regina**, t., cap., Saskatchewan, Canada; foundries, oil-wks., sawmills; p. (1951) 69,928.
- Region Oriental**, Ecuador; a. 219,095 sq. m.; p. 295,200; consisting of two provinces—Napo Pastaza and Santiago Zamora; only about 110,000 sq. m. of this region is inhabited.
- Regla**, t., Cuba, W. Indies; nr. Havana; p. 23,037.
- Rehoboth**, t., S.W. Africa; salt, mining, cattle; p. 9,727.
- Reichenbach**, *see* Dzierzoniow.
- Reichenbach**, c., Saxony, Germany; sugar, engineering, textiles; p. 22,276.
- Reichenberg**, *see* Liberec.
- Reichenhall**, wat. pl., Bavaria, Germany; nr. Salzburg; salt springs.
- Reidsville**, t., N.C., U.S.A.; tobacco mkt., mnfs., textiles, turpentine; p. (1950) 11,708.
- Reigate**, mkt. t., mun. bor., Surrey, Eng.; at foot of N. Downs, 5 m. E. of Dorking; residt.; fuller's earth, freestone; p. (1951) 42,234.
- Reims**, t., Marne, France; on R. Vesle; famous Gothic cath.; champagne centre, cloth factories, woollen industries and tr., dye wks.; p. (1946) 110,749.
- Reindeer L.**, Saskatchewan, Canada.
- Remscheid**, t., N. Rhine-Westphalia, Germany; nr. Dusseldorf; cutlery; p. (1950) 103,276.
- Renaix** (Ronse), t., Belgium; nr. Ghent; linen and woollens; dyeing and bleaching; p. 25,924.
- Rendsburg**, t., Schleswig-Holstein, Germany; on R. Eider; brewing, tanning; p. 19,521.
- Renfrew**, maritime co., W. Scot.; S. of R. Clyde; agr., mfg., and commercial, coal, iron, shipbuilding, machinery, printing; ch. industr. centres Paisley and Greenock; a. 245 sq. m.; p. (1951) 324,652.
- Renfrew**, co. t., burgh, Renfrew, Scot.; nr. R. Clyde, 5 m. W. of Glasgow; p. (1951) 17,093.
- Renfrew**, t., Ontario, Canada; p. 5,511.
- Renmark**, t., S. Australia; on Murray R.; centre of irrigated fruit-growing dist.; p. 1,914.
- Rennes**, c., cap., Ille-et-Vilaine, France; 40 m. S. of St. Malo; univ.; dairying and agr. dist.; farm implements, sail-cloth; p. (1946) 113,781.
- Reno**, largest c., Nevada, U.S.A.; seat of Univ. of Nevada; st. agr. college; famous for easy divorce procedure; p. (1950) 32,497.
- Renovo**, bor., Penns., U.S.A.; p. (1950) 3,751.
- Rensselaer**, t., N.Y., U.S.A.; on R. Hudson facing Albany; p. (1950) 10,856.
- Republican Fork** or **Pawnee**, R., trib. of Kansas R., Colorado, U.S.A.; length 550 m.
- Repuise Bay**, on S. side of Melville Peninsula, N. Canada.
- Requena**, t., Valencia, Spain; sulphur springs of Fuentepodida; p. 19,422.
- Resht**, t., cap., Gilan, Persia; nr. Caspian Sea; sericulture, rice; p. (estd. 1949) 110,000.
- Resistencia**, t., cap., Chaco, Argentina; p. (1947) 64,680.
- Resolution**, t., N.W. Terr., Canada; on S. shore of Gr. Slave L.
- Resolution I.**, off S.W. cst. of S.I., New Zealand.
- Resolution Is.** (Brit.), N. of Labrador at entrance Hudson Strait, Franklin, Canada.
- Retalhulen**, t., cap., R. dep., Guatemala, Central America; coffee; p. 6,542.
- Retford**, E., *see* East Retford.
- Rethymnon**, prefecture, I. of Crete; cap. Rethymnon; p. (1951) 72,186.
- Rethymnon**, cap., Rethymnon, Crete; p. (1951) 13,587.
- Réunion**, Ile de la (formerly Bourbon), French I., Indian Ocean; between Mauritius and Madagascar; sugar growing; cap. St. Denis; a. 970 sq. m.; p. (1941) 220,955 (214,382 French).
- Reus**, t., Tarragona, Spain; textiles, leather, soap; p. 32,285.
- Reuss**, R., Switzerland; rises in Mt. St. Gotthard, flows E. and N. through Ls. Lucerne and Zug into R. Rhine, 30 m. E. of Basle; length 150 m.
- Reutlingen**, t., Württemberg-Baden, W. Germany; nr. Stuttgart; p. 33,204.
- Reval**, *see* Tallin.
- Revel**, t., Haute-Garonne, France; nr. Toulouse; p. 5,133.
- Revere**, t., Mass., U.S.A.; sub. of Boston; resort; p. (1950) 36,763.
- Revilla Gigedo Is.**, group of Is., belonging to Mexico, Pac. Oc.; ch. Is., Socorro, San Benito.
- Rewah**, t., India; 131 m. S. of Allahabad; rice, coal; p. (1941) 36,008.
- Rewari**, t., India; S.W. of Delhi; turban and brassware mnfs.; p. 26,000.
- Reykjavik**, c., cap., Iceland; on S.W. cst.; univ., cath.; exports fish, skins, wool; p. (1950) 55,980.
- Rezekne**, t., Latvia, U.S.S.R.; p. 13,133.
- Rhayader**, *see* Elan R.
- Rheine**, t., N. Rhine-Westphalia, Germany; on R. Ems; jute, tobacco and cotton factories; p. 31,673.
- Rheinhausen**, t., Germany; mnfs.; p. 41,000.
- Rheydt**, t., N. Rhine-Westphalia, Germany; nr. Cologne; cotton, silk, and iron industries.
- Rhin** (Bas), dep., N.E. France; cap. Strasbourg; a. 1,848 sq. m.; p. (1946) 673,281.
- Rhin** (Haut), dep., N.E. France; cap. Colmar; a. 1,354 sq. m.; p. (1946) 471,705.
- Rhine**, R., rises in Switzerland, can. Grisons, passes through L. of Constance, skirts Baden, traverses Hesse, Rhineland, and the Netherlands, flowing to N. Sea by two arms, Oude Rijn and the Waal (the latter discharging finally by the Meuse); famous for its beauty, especially between Bonn and Bingen; ch. falls at Schaffhausen; once a natural barrier between E. and W. Europe, the Rhine is now spanned by thirty railway bridges, and its navigation declared free in 1868; length 800 m.
- Rhineland Palatinate**, Land, Germany; a. 7,665 sq. m.; cap. Koblenz; p. (1950) 3,004,752.
- Rhinns** (Rîns), peninsula, on W. cst. Islay I., Inner Hebrides, Scot.; lighthouse.



- Rhio-Lingga Archipelago**, group of Is., Indonesia; mainly in Malacca Strait; a. 12,235 sq. m.; p. 298,225.
- Rhode Island**, *st.*, New England, U.S.A.; washed by the Atlantic, and surrounded by Massachusetts and Connecticut; divided by Narragansett Bay, with many islands, largest being that from which the st. takes its name; mnfs., woollens, cottons, machinery, jewellery; cap. Providence; a. 1,214 sq. m.; p. (1950) 791,896.
- Rhodes (Rhodos)**, I., Dodecanese Is.; off S.W. est., Anatolia, belonging to Greece; cap. R.; figs, oranges, grapes; p. (1940) 61,791.
- Rhodes**, *t.*, cap., I. of Rhodes, Greece; on N.E. est.; p. (1951) 24,186.
- Rhodesia and Nyasaland**, Federation of (formed 1953), comprising Southern Rhodesia (a. 150,333 sq. m., p. 2,106,206); Northern Rhodesia (a. 288,130 sq. m., p. 1,977,000); and Nyasaland (a. 49,177 sq. m., p. 2,400,000).
- Rhodope Mtns.**, range, S. Bulgaria; rise to 10,200 ft.
- Rhodopi**, prefecture, Thrace, Greece; cap. Komotini; p. (1951) 105,874.
- Rhön Gebirge**, *mtn. group*, Thuringia, Germany; highest peak 3,100 ft.
- Rhondda**, *t.*, urban dist., Glamorgan, Wales; in narrow Rhondda valley, 7 m. N.W. of Pontypridd; coalmining; p. (1951) 111,357.
- Rhône**, R. Switzerland and France; rising in the Rhône glacier of the St. Gotthard mtn. group, and flowing through the L. of Geneva and E. France to the G. of Lyons in the Mediterranean; length 640 m.
- Rhône**, *dep.*, S.E. France; drained by R. Rhône, and its trib. R. Saône, which unite at Lyons; agr., grain, potatoes, wine; vine-growing, many mnfs., silks, textiles; cap. Lyons; a. 1,104 sq. m.; p. (1946) 918,866.
- Rhyl**, *t.*, urb. dist., Flint, N. Wales; between Bangor and Chester, at entrance Vale of Clwyd; seaside resort; p. (1951) 18,745.
- Rhymney**, *t.*, urb. dist., Monmouth, Eng.; on R. Rhymney, 4 m. E. of Merthyr Tydfil; mining; p. (1951) 9,134.
- Rialto**, I. and dist. on Grand Canal, Venice; centre of commerce.
- Ribadesella**, *spvt.*, Spain; W. of Santander; p. 8,228.
- Ribatejo**, *prov.*, Portugal; a. 2,794 sq. m.; p. (1940) 424,063.
- Ribe**, *t.*, Jutland, S. Denmark; on W. est.; p. 6,770.
- Ribble**, R., Yorks and Lancs, Eng.; followed by main rly. route Leeds to Carlisle; length 75 m.
- Ribeira**, *t.*, Galicia, Spain; on peninsula of Arosa estuary; agr., cattle-rearing, fishing.
- Ribeirão Preto**, c., S.E. Brazil; mkt. in rich agr. area, esp. coffee, cotton, sugar; p. (1947) 49,891.
- Riberalta**, *R.pt.*, Colonia Terr., Bolivia, S. America; on R. Beni above rapids which limit navigation to upper course; collecting centre for wild rubber.
- Riccia**, *t.*, Campobasso, Italy; industri.; p. 8,575.
- Richelleu** or Chambly, R., Quebec, Canada; flows from L. Champlain to the St. Lawrence R. at L. St. Peter; length 80 m.
- Richmond**, *mun. bor.*, Surrey, Eng.; on R. Thames, S.W. of London; industri. and residential; beautiful park and riverside scenery; p. (1951) 41,945.
- Richmond**, *t.*, *mun. bor.*, N.R. Yorks, Eng.; at E. foot of Pennines on R. Swale; p. (1951) 6,165.
- Richmond**, *t.*, Nelson, New Zealand; p. 1,130.
- Richmond**, *t.*, California, U.S.A.; p. (1950) 99,545.
- Richmond**, c., Indiana, U.S.A.; on R. White-water; mnfs.; p. (1950) 39,539.
- Richmond**, c., Kentucky, U.S.A.; in tobacco-growing and horse-rearing region; p. (1950) 10,263.
- Richmond**, one of the five bors. of New York City, U.S.A.; p. (1950) 191,555.
- Richmond**, c., *cap.*, Virginia, U.S.A.; on falls on R. James; gr. tobacco mfg. centre and mart; p. (1950) 230,310.
- Richrath-Reusrath**, *commune*, Rhine prov., Germany; ironwks., textile mills; p. 14,148.
- Rickmansworth**, *mkt. t.*, urb. dist., Herts, Eng.; at confluence of Rs. Colne and Chess, 3 m. S.W. of Watford; paper, brewing; residtl.; p. (1951) 24,518.
- Rideau Canal**, Canada; from Ottawa R., to Kingston on L. Ontario; length 132 m.
- Ridgefield**, *t.*, N.J., U.S.A.; p. (1950) 8,312.
- Ridgewood**, *t.*, N.J., U.S.A.; p. 17,481.
- Ridgway**, *bor.*, Penns., U.S.A.; electr. equipment, engineering, leather, lumber yards; p. (1950) 6,244.
- Riesa**, *t.*, Saxony, Germany; on R. Elbe, nr. Meissen; ironwks., sawmills; p. 26,248.
- Riesengebirge**, *mtns.*, Germany, (Czech Krkonose, Polish Karkonosze).
- Rieti**, *t.*, Sicily, Italy; industri.; p. 20,200.
- Rieti**, *t.*, Perugia, Italy; an ancient Sabine t. in famous fertile dist.; mnfs.; p. (1951) 33,364.
- Riff (Er Rif) mtns., Spanish Morocco, N.W. Africa; extend E. along N. African est. for 200 m. from Straits of Gibraltar; inaccessible and economically unattractive, terr. of semi-nomadic tribes; rises to over 7,000 ft. in many places.**
- Riga**, *cap.*, Latvia, U.S.S.R.; at head of G. of Riga; gr. industri. activity; machinery, glass, paper, cottons; rly. and shipbuilding; exports wheat, flax, hemp, dairy produce; p. (1935) 378,000. [5,905 ft.]
- Rigi**, *mtn.*, nr. L. Lucerne, Switzerland; alt. 11,355 ft.
- Rijeka-Susak**, *t.*, Yugoslavia; formerly known as Fiume; belonged to Austria-Hungary before First World War, then to Italy; ceded to Yugoslavia by Italy after Second World War; rival port to Trieste; petrol refining, tobacco, chemicals; p. (1948) 72,978.
- Rijsen**, *t.*, Netherlands; p. 10,645.
- Rimac**, R., Lima dep., Peru; S. America; rises in W. cordillera of Andes and flows W. to Pac. Oc.; provides water for irrigation and for c. of Lima; length 75 m.
- Rimini**, *t.*, Emilia, Italy; on the Adriatic est.; mineral springs, sea-bathing, thriving industries; p. 72,914.
- Rimnic**, *t.*, Romania; on R. Rimnic, nr. Bucharest; industri.
- Rimnic**, *t.*, Romania; on R. Aluta, 100 m. N.W. Bucharest.
- Rimouski**, *t.*, Quebec, Canada; on S. bank St. Lawrence R.; lumber; tourists; p. 7,009.
- Ringkøbing Fjord**, *inlet*, W. est. Jutland, Denmark.
- Ringwood** and Fordingbridge, *mkt. t.*, rural dist., Hants., Eng.; on R. Avon, nr. Christchurch; p. (rural dist. 1951) 23,908.
- Rio Branco**, R., Brazil; prov. Baia, trib. of Rio Grande; length 120 m.
- Rio Branco**, R., N. Brazil; flowing to Rio Negro; length 370 m.
- Rio Branco**, *t.*, cap. of Acre st., Brazil.
- Rio Branco**, *terr.*, Brazil; cap. Boa Vista; a. 82,749 sq. m.; p. (1947) 14,010. [34,354]
- Rio Cuarto**, *t.*, Cordoba prov., Argentina; p.
- Rio das Mortes**, R., Brazil; trib. of the Araguay; length 500 m.
- Rio de Janeiro**, *maritime st.*, Brazil; a. 16,443 sq. m.; coffee plantations, sugar, cotton, tobacco; cap. Niterói; p. (excluding cap. c. and Distrito Federal) (1950) 2,326,201.
- Rio de Janeiro**, *cap.*, Distrito Federal, Brazil; on Bay of same name; largest c. in Brazil, many fine buildings, flourishing tr. and industries; very large coffee export, brewing, foundries, milling, sugar-refining; rly. wks.; exports coffee, sugar, hides, meat, diamonds; p. (1950) 2,413,152.
- Rio de la Plata**, *see* Plate R.
- Rio de Oro**, *prov.*, Spanish Sahara; a. 70,000 sq. m.
- Rio de San Juan**, R., Utah, New Mexico and Colorado, U.S.A.; length 350 m.
- Rio Dulce**, R., Santiago st., Argentina; length 400 m.
- Rio Grande**, R., Senegambia, Africa; flows to the Atlantic; length 400 m.
- Rio Grande**, *headstream* of the R. Paraná, Brazil.
- Rio Grande City**, *t.*, S. Texas, U.S.A.; on Rio Grande R.; mkt., agr., oil, natural gas; p. (1950) 3,992.
- Rio Grande de Santiago**, R., Mexico; flows into the Pacific.
- Rio Grande del Norte**, R., flows from st. of Colorado through New Mexico to the G. of Mexico; forms bdy. between Texas, U.S.A. and Mexico; length 1,800 m.
- Rio Grande do Norte st., Brazil; sugar, cotton, cattle-rearing; cap. Natal; a. 20,482 sq. m.; p. (1950) 983,572.**
- Rio Grande do Sul**, *st.*, S. Brazil; cap. Porto Alegre; a. 109,067 sq. m.; p. (1950) 4,213,316.

Rio Grande do Sul, *spt.*, Brazil; leather; p. 45,000.

Rio Muni, *Span. col.*, Cent. Africa; with Fernando Po and other islands forms col. of Span. Guinea; cacao, palm oil, coffee; a. 10,852 sq. m.; p. 135,000.

Rio Negro, *R.*, Argentina; rises in the Andes, and flows through the terr. of Rio Negro to the Atlantic; length 650 m.

Rio Negro, *terr.*, Argentina; S. of Pampa; cap. Viedma; cattle-rearing region; a. 77,610 sq. m.; p. (1947) 132,726.

Rio Negro, *R.*, S. America; rises in Colombia, and flows through N. Brazil to the Amazon; length 1,350 m.

Rio Negro, *dep.*, Uruguay; cap. Fray Bentos; a. 3,269 sq. m.; p. (1942) 47,586.

Rio Piedras, *t.*, Puerto Rico, W. Indies; univ.; p. (1950) 132,369.

Rio Salada, *R.*, Argentina; rises in the Andes, and flows S.E. to R. Paraná, at Buenos Aires; length 1,000 m.

Rio Tinto, *t.*, Spain; at W. end of Sierra Morena, 40 m. N.E. of Huelva; lead and copper mines.

Riobamba, *c.*, Chimborazo, Ecuador; on R. St. Juan; woollens; Inca palace ruins; p. (1938) 26,782.

Rioja, *La, prov.*, Argentina; gold and copper mines; cap. La Rioja; a. 33,394 sq. m.; p. (1947) 109,386.

Riom, *t.*, Puy-de-Dôme, France; nr. Clermont Ferrand; p. (1946) 12,975.

Rion, *R.*, W. Georgia, U.S.S.R.; flows from Caucasus to Black Sea; lower half navig.; hydro-electr. stn. at Kutais. (In Greek mythology the R. Phasis of the Argonauts.)

Rionero, *t.*, Potenza prov., S. Italy; nr. Melfi; industr.; p. 12,025.

Ripatransone, *t.*, Italy; nr. Fermo; industr.; p. 7,700.

Ripley, *mkd. t.*, *urb. dist.*, Derby, Eng.; 7 m. N.E. of Derby; coal, ironwks.; mnfs.; p. (1951) 18,194.

Ripley, *t.*, W. Tenn., U.S.A.; lumbering; veneer; cottonseed processing; p. (1950) 3,318.

Ripon, *c.*, *mun. bor.*, W.R. Yorks, Eng.; on R. Ure; fine cath.; p. (1951) 9,464.

Ripon, *t.*, Wisconsin, U.S.A.; on Green L.; p. (1950) 5,619.

Ripon Falls, *see* Jinja.

Riposto, *t.*, Sicily, Italy; on E. est. nr. Taormina; wine export; p. 10,725.

Ripponden, *urb. dist.*, W.R. Yorks, Eng.; nr. Halifax; p. (1951) 5,213.

Risca, *t.*, *urb. dist.*, Monmouth, Eng.; on R. Ebbw, 5 m. N.W. of Newport; coal, chemicals; p. (1951) 15,131.

Rishton, *t.*, *urb. dist.*, Lincs, Eng.; at N. foot of Rossendale Fells, 4 m. N.E. of Blackburn; p. (1950) 5,794.

Riva, *t.*, Trentino, Italy; battle zone in First World War, Nov.-Dec. 1915; p. 12,950.

Rivas, *spt.*, Nicaragua, Central America; p. 7,443.

Rive-de-Gier, *t.*, Loire, France; on R. Gier, nr. Lyons; mining centre; p. (1946) 13,931.

Rivera, *dep.*, Uruguay; cap. Rivera; a. 3,793 sq. m.; p. (1938) 75,464.

Riverina, *pastoral city*, N.S.W., Australia; between Lachlan-Murrumbidgee and Murray Rs.; sheep, agr. with irrigation; gold, coal; ch. ts. Wagga Wagga, Albury; a. 26,600 sq. m.; p. 71,000.

River Rouge, *t.*, Mich., U.S.A.; p. (1950) 20,549.

Riversdale, *dist.*, *W. prov.*, C. of Good Hope, S. Africa; a. 2,462 sq. m.

Riverside, *t.*, California, U.S.A.; p. (1950) 46,764.

Riverside, *t.*, N.J., U.S.A.; p. (1950) 7,199.

Riverton, *t.*, S.I., New Zealand; p. (1951) 1,015.

Riviera, the belt of est. between the mtns. of the shore of the G. of Genoa, N. Italy, from Spezia to Nice; picturesque scenery, sheltered, mild climate; fashionable health resort.

Riyadh, *t.*, Nejd, Saudi Arabia; p. about 150,000.

Rizal, *prov.*, central Luzon, Philippine Is.; chiefly agr. area; a. 791 sq. m.; p. 444,805.

Rize, *t.*, Turkey; nr. Trabzon, on Black Sea; in I. of same name; p. (1945) 14,174.

Rjukan, *t.*, Telemark, S. Norway; 35 m. N.W. of Notodden, impt. nitrate factories, p. 8,460.

Road Town, *spt. cap.*, Tortola and Virgin Is.; p. (1946) 681.

Roanne, *t.*, Loire, France; nr. St. Etienne; textile industry, cottons, woollens, silk; p. (1946) 44,518.

Roanoke, *I.*, off est. N. Carolina, U.S.A.; 13 m. long.

Roanoke, *R.*, Virginia and N. Carolina, U.S.A.; flows into Albemarle Sound; length 230 m.

Roanoke, *t.*, Ala., U.S.A.; cotton mnfs., clothes; p. (1950) 5,392.

Roanoke, *t.*, S.W. Virginia, U.S.A.; on R. R.; ironwks.; p. (1950) 91,921.

Roatan Is., Honduras, in G. of H.

Robin Hood's Bay, *picturesque inlet with fishing vil. on est.*, N.E. Yorks, Eng.; nr. Whitby.

Robson, *Mt.*, Alberta, Canada, 12,972 ft.

Roca, *C. da*, most W. point of estuary of R. Tagus, Portugal.

Rocafuerte, *t.*, W. Ecuador; coffee, sugar, sisal, indigo; p. 14,125.

Roch, *R.*, Lancashire, Eng.; rises in E. of Rossendale Fells, central Pennines, flows S.W. into R. Irwell nr. Bury; with R. Calder provides relatively easy route across Pennines from Leeds to Manchester; used by rail, road, canal; length approx. 20 m.

Rocha, *dep.*, Uruguay; a. 4,280 sq. m.; cap. Rocha; p. (1938) 82,814.

Rochdale, *t.*, *co. bor.*, Lancs, Eng.; at S. foot of Rossendale Fells, on R. Roch; textiles, rayon spinning, elec. engineering; co-operative movement started here, 1844; p. (1951) 87,734.

Rochefort, *t.*, S. Belgium; p. 3,550.

Rochefort, *fortd. pt.*, Charente-Inferieure, France; with arsenal and sm. est. tr.; famous cheese; p. (1946) 29,472.

Rochelle, *La, fortid. spt.*, *cap.*, Charente-Inferieure, France; on Bay of Biscay; shipbuilding, chemical wks., fisheries; p. (1946) 48,923.

Roches Point, E. side of Cork harbour, Co. Cork, Ireland.

Rochester, *c.*, *mun. bor.*, Kent, Eng.; on R. Medway, adjoining Chatham; cath., cas.; oysters, cement, farming, machinery; p. (1951) 43,899.

Rochester, *c.*, Minn., U.S.A.; in grain growing dist.; p. (1950) 29,885.

Rochester, *t.*, New Hampshire, U.S.A.; on Salmon Falls and Cocheo Rs.; boot factories; p. (1950) 13,776.

Rochester, *c.*, N.Y., U.S.A.; on Genesee R.; univ.; hydro-electric power; milling, machinery; p. (1950) 332,488.

Roche-sur-Yon, *La, t.*, Vendée, France; on R. Yon; cas.; called formerly Bourbon Napoleonville; p. (1946) 18,107.

Rochford, *t.*, *rural dist.*, Essex, Eng.; 3 m. N. of Southend; p. (rural dist. 1951) 19,612.

Rockall, *sm. I.*, N. Atlantic Ocean; lies 200 m. W. of Outer Hebrides; forms highest part of submarine bank which forms good fishing-ground; uninhabited.

Rockall Deep, *submarine trench*, N. Atl. Oc.; between N.W. Ireland and Rockall I.; depth exceeds 1,600 fathoms.

Rockaway, *bor.*, N.J., U.S.A.; iron founding and products; textiles, leather; p. (1950) 3,812.

Rockaway Beach, *summer resort*, on sandbar of Long I.; now incorporated with Queens, one of the five boroughs of New York City, U.S.A.

Rockford, *c.*, Ill., U.S.A.; machinery and furniture mfg.; p. (1950) 92,927.

Rockhampton, *c.*, Queensland, Australia; on R. Fitzroy; commercial cap. of Central Queensland. Has largest meat preserving works in Commonwealth; mining; p. (1947) 34,933.

Rock Hill, *c.*, S. Carolina, U.S.A.; industr.; p. (1950) 24,502.

Rockingham, *t.*, N.C., U.S.A.; cotton mnfs., paper, lumbering, peaches; p. (1950) 3,356.

Rock Island, *c.*, Ill., U.S.A.; on R. Mississippi; lumbering, flour mills, glass, farm implements; elec. equipment; p. (1950) 48,710.

Rockland, *c.*, *spt.*, Maine, U.S.A.; on Penobscot Bay; shipbuilding, granite, quarrying; p. (1950) 9,234.

Rockland, *t.*, Mass., U.S.A.; shoemaking, engineering; p. (1950) 8,960.

Rock River, Wisconsin, U.S.A.; trib. of the Mississippi; length 375 m.

Rockville, *c.*, Connecticut, U.S.A.; on Hockanum R.; silks, woollens; p. (1950) 8,016.

Rocky Mount, *t.*, N. Carolina, U.S.A.; p. (1950) 27,697.

Rocky Mountains, *extensive chain*, N. America; extending along the W. portions of Canada and the U.S.A. from Alaska to Mexico; the highest accurately measured point in the United States



- system is Mt. Massive (14,418 ft.); other high peaks are Mt. Elbert (14,431 ft.), Blanca Peak (14,390 ft.), Mt. Harvard (14,399 ft.), La Plata Peak (14,340 ft.), and Mt. Uncompahgre (14,306 ft.). Mt. St. Elias, in Alaska, is computed to be 18,008 ft. high, and was long held to be the highest peak in N. America, but is now known to be surpassed by the adjacent Mt. Logan (19,850 ft.) and by Mt. Orizaba (18,700 ft.) in Mexico.
- Rodas, *municipality*, Cuba; sugar; p. 21,288.
- Röbby, t., Denmark; on S. cst. of Maribo (Laland) I.; p. 3,511.
- Rodewisch, t., Saxony, Germany; engineering, textiles; p. 10,572.
- Rodez, t., *cap.*, Aveyron, France; on R. Aveyron; cath.; woollens; p. (1946) 20,437.
- Rodosto, *see* Tekirdag.
- Rodriguez, I., British dependency of Mauritius, Indian Oc.; 350 m. N.E. of Mauritius; principal exports, cattle, beans, salt, fish and goats; a. 42 sq. m.; p. (1946) 12,839.
- Roebbing, t., N.J., U.S.A.; established by steel-cable making company; p. (1950) 3,500.
- Roermond, t., Limburg, Netherlands; on R. Maas; minster; paper, beer, cloth; p. (1951) 22,887.
- Roeselare, t., W. Flanders, Belgium; on R. Lys, nr., Kortrijk (Courtrai); cotton, linen, lace; p. (1947) 31,839.
- Roes Welcome, channel between Southampton I. and N.W. Terr. Canada.
- Rogaland, co., Norway; a. 3,546 sq. m.; p. (1950) 211,408.
- Rogers, t., Ark., U.S.A.; fruit, vgs.; tourists; p. (1950) 4,962.
- Rohtak, t., W.N.W. Delhi, India; mkt., cotton textiles; fortifications; p. (1941) 35,235.
- Rokko, C., Honshu, Japan; jutting into Sea of Japan.
- Roma, t., Queensland, Australia; in agr. dist. nr. Mt. Horrible; site of oil-boring operations; p. (1947) 3,880.
- Roman, t., Romania; on R. Moldava; cath.; p. 25,857.
- Romania, *rep.*, E. Europe; bounded by U.S.S.R., Hungary, Yugoslavia and Bulgaria, consisting of provs. of Oltena, Muntenia (Wallachia), Dobrogea (Dobruja), Moldova (Moldavia), S. Bucovina, Transylvania, Banat, Crisana and Maramures; plain drained by Danube and tribs. Prut, Siret, Dambovită, Olt Jiu; except Transylvania, mountainous, Carpathians, Transylvanian Alps; very warm summers, severe winters, rainfall moderate, chiefly in summer; agr., maize, wheat, barley, oats; sheep, cattle, pigs, horses; forests, timber; minerals, petroleum, natural gas, lignite, copper, salt; flour-milling, brewing, distilling, oil-refining; cap. Bucharest; a. 91,671 sq. m.; p. (1948) 15,872,624.
- Romans, t., Drôme, France; on R. Isère; formerly seat of ancient abbey; p. (1946) 22,171.
- Romblon Is., *prov.*, of Philippine Is.; low, fertile; cr. crops, abaca and copra; gold, marble; a. 512 sq. m.; p. 19,367.
- Rome, c., *cap.*, Italy; on R. Tiber, 15 m. from the sea; one of the most famous cities in the world; centre of the Roman Catholic Church and former cap. of the greatest st. in the ancient world; situated on the original "seven hills" of the old Roman metropolis, and in the valleys between, along the R.; contains the celebrated cath. ch. of St. Peter, in the Vatican City, many churches and palaces, the cas. of St. Angelo, and numerous monuments, besides a univ. and several notable institutions devoted to art and learning; was created cap. of mod. United Italy in 1871; mnfs. and trade; p. (1951) 1,657,588.
- Rome, c., Georgia, U.S.A.; on Coosa R.; in cotton region; p. (1950) 29,615.
- Rome, c., N.Y., U.S.A.; on the Mohawk R.; dairying centre; p. (1950) 41,682.
- Romford, mkt. t., *mun. bor.*, Essex, Eng.; 12 m. E. of London; residt.; p. (1951) 87,991.
- Romilly-sur-Seine, t., Aube, France; nr. Troyes; textile factories; p. (1946) 13,314.
- Romney, *see* New Romney.
- Romney Marsh, *coastal marsh*, Kent, Eng.; formed by blocking of R. Rother by shingle spit of Dungeness which extends from Rye to Hythe; now largely drained; pastures for special Romney Marsh breed of sheep; a. 50 sq. m.
- Romny, t., N.E. Ukraine, U.S.S.R.; flour mills, tobacco; p. 25,174.
- Romsdal, Möre Og, *dist.* Norway; cap. Molde; a. 5,812 sq. m.; p. 181,089.
- Romsey and Stockbridge, mkt. t., *rural dist.*, Hants, Eng.; on R. Test, 7 m. N.W. of Southampton; p. (rural dist. 1951) 26,790.
- Ronaldshay, N. and S., islands of the Orkneys.
- Roncesvalles, *mtn. pass.*, in the Pyrenees, Spain; 20 m. N.E. of Pamplona, Navarra; Charlemagne's army under Roland, who was slain, defeated here, 778.
- Ronda, t., Malaga, Spain; ancient Moorish t. 42 m. N. of Gibraltar; mnfs. chocolate, leather, fruit, wines; p. 26,170.
- Ronsdorf, t., Germany; nr. Wuppertal; ironwks.; p. 14,299.
- Ronse, *see* Renaix.
- Roodpoort, t., Transvaal, S. Africa; p. (1946) 22,950.
- Roorkee, t., Uttar Pradesh, India; p. 17,476.
- Roosevelt, R., trib. of Madeira R., Brazil.
- Roosevelt Dam, Arizona, U.S.A.; on R. Salt 130 m. above Phoenix on edge of Colorado Plateau; supplies irrigation for cultivation of 360 sq. m. in lower valley of R. Salt and upper valley of R. Gila; hydro-electric power-station.
- Roper R., N.E. Northern Terr., Australia; navigable for abt. 90 m. inland.
- Roquefort-sur-Soulzon, t., S.E. Aveyron, France; caves in limestone cliffs used for ripening cheese.
- Roraima, *mtn.*, Brit. Guiana, Venezuela boundary; alt. 9,000 ft.
- Rörös, t., Norway; on R. Glommen; p. 2,575.
- Rorschach, t., Switzerland; lace; p. (1941) 10,967.
- Rosa Monte, highest pk., Pennine Alps, Italy; alt. 15,217 ft.
- Rosario, t., Santa Fé, Argentina; on R. Paraná; rly. terminus; sugar refining, milling, brewing; p. (1944) 522,403.
- Rosas, t., Spain; on Franco-Spanish border, opp. Portbou on the Mediterranean cst.
- Roscommon, *inland co.*, Connaught, Ireland; a. 949 sq. m.; p. (1951) 68,128.
- Roscommon, t., Roscommon, Ireland; 96 m. W. of Dublin; p. (1946) 2,041.
- Roscrea, mkt. t., Tipperary and Offaly, Ireland; on Little Bransa R.; p. (1946) 2,968.
- Roseau, t., Dominica, Windward Is.; p. (1946) 9,812.
- Roseburg, t., S.W. Ore., U.S.A.; roses, fruit, poultry; canning, sawmills; p. (1950) 8,390.
- Roselle, t., N.J., U.S.A.; p. (1950) 17,681.
- Rosendaal, t., S.W. Netherlands; nr. Arnhem; p. (1951) 31,889.
- Rosendal-Nispen, *industl. t.*, N. Brabant, Netherlands; nr. Breda.
- Rosenheim, t., Bavaria, Germany; on R. Inn, 35 m. S.E. of Munich; famous for sulphur springs, a favourite wat. pl. with impt. brine wks.; p. abt. 27,236.
- Rosetta (Rashid), t., Lower Egypt; on W. distributary of R. Nile, 43 m. N.E. Alexandria; p. (1947) 28,698.
- Roseville, t., E. Cal., U.S.A.; exports fruit, wines; p. (1950) 8,723.
- Roskilde, mkt. t., Denmark; 20 m. W. of Copenhagen; fine cath. containing tombs of Kings and Queens of D., also royal palace; p. 23,497.
- Ross, mkt. t., *urb. dist.*, Hereford, Eng.; on R. Wye, 12 m. S.E. of Hereford; cider; p. (1951) 5,394.
- Ross and Cromarty, *cst. and Highland co.*, Scot.; total a. 3,202 sq. m.; ch. t. Dingwall; p. (1951) 60,503.
- Ross Dependency, Antarctica, New Zealand.
- Ross I., Victoria Land, Antarctica.
- Ross Sea, *sea* extending to 85° S. in the Antarctic.
- Rossan Pt., *headland*, N. side of Donegal Bay, Ireland.
- Rossano, c., Cosenza, S. Italy; nr. G. of Taranto; old t. under the Byzantium Empire; alabaster and marble quarries; silk, olive oil; p. 17,425.
- Rossendale Fells (Rossendale Forest), *upland region*, S.E. Lancs, Eng.; forms W. extension of Pennines between Mersey and Ribble valleys; composed of hard impervious millstone grit; covered by boggy moorland; many reservoirs store soft water for cotton-spinning t. along S. edge (Bolton, Bury, Rochdale), cotton-weaving t. along N. edge (Blackburn, Accrington,

- Burnley) and sm. industri. ts. in Irwell valley within Rossendale; alt. mainly above 1,200 ft. Rossland, t., Br. Columbia, Canada; gold; p. 2,848.
- Rosslea, *spt.*, Wexford, Ireland; on extreme S.E. of Ireland; steamer connections to Fishguard (Wales).
- Rossiau, t., Germany; on R. Elbe; 2 cas.; chemical and other industries.
- Rostock, *flourishing spt.*, Mecklenburg, E. Germany; nr. mouth of R. Warnow; univ.; fisheries, machinery, sugar, chemicals; p. (1946) 114,869.
- Rostov, t., port, Ukraine, U.S.S.R.; on R. Don. 10 m. up from Sea of Azov (Black Sea); a great grain mart and commercial and industri. centre; p. (1939) 510,253.
- Roswell, t., New Mexico, U.S.A.; p. (1950) 25,738.
- Rosyth, t., Fife, Scotland; naval dockyard.
- Rothamsted, *hamlet*, Hertford, England; in Chiltern Hills, 1 m. S. of Harpenden; Ige. agricultural experimental station.
- Rother, R., Sussex and Kent, Eng.; rises in the Weald, flows S.E. into English Channel at Rye; length 31 m.
- Rother, R., Hants and Sussex, Eng.; trib. of R. Arun; length 24 m.
- Rother, R., Derby and Yorks, Eng.; flows to R. Don at Rotherham; length 21 m.
- Rotherham, t., co. bor., W.R. Yorks; on R. Don, 4 m. N.E. of Sheffield; steel, brass, coal, glass, brewing; p. (1951) 82,334.
- Rotherhithe, *S.E. Thames-side-dist.*, London, Eng.
- Roths, *burgh*, Moray, Scot.; on R. Spey, 12 m. S.E. of Elgin; p. (1951) 1,211.
- Rothsay, *burgh*, Bute, Scot.; on E. est. of I. of Bute in Firth of Clyde; tourist resort; p. (1951) 10,145.
- Rothwell, t., *urb. dist.*, Northants, Eng.; 3 m. N.W. of Kettering; boots, shoes; p. (1951) 4,617.
- Rothwell, t., *urb. dist.*, W.R. Yorks, Eng.; on R. Aire, 3 m. S.E. of Leeds; mining; p. (1951) 24,283.
- Rotondo, *mtn.*, Corsica, France.
- Roturua, *bor.*, N.I., New Zealand; health resort; hot springs; p. (1951) 10,635.
- Rotterdam, *spt.*, *wealthy commercial c.*, Netherlands; on R. Maas; linked to North Sea at Hook of Holland by "New Waterway" ship canal; breweries, sugar-refining, shipbuilding; chemicals, clocks; p. (1951) 684,658.
- Rotti, I. (50 m. by 20 m.) off S. est. of Timor, Malay Archipelago, Indonesia; p. 59,221.
- Rottweil, t., S. Germany; p. 11,278.
- Roubiax, t., Nord, France; nr. Lille; on the Roubais canal 1 m. from the Belgian frontier; woollen mnfs., grape and tomato forcing; gr. tr., many educational institutions and fine bldgs.; p. (1946) 100,978.
- Rouen, c., Seine-Inférieure, France; over 50 m. up R. Seine; extensive cotton and woollen factories, magnificent cath. and church; silks, machinery, ship-building; badly damaged Second World War; p. (1946) 107,739.
- Roulers, *see* Roelare.
- Roumania, *see* Romania.
- Rousay, Orkney Is., Scotland.
- Roussillon, *old prov.*, S. France; lies in depression at E. end of Pyrenees, in dep. of Pyrénées Orientales; largely irrigated by many sm. streams; olive, vine, wheat.
- Rouyn, *mining t.*, Quebec, Canada; at end of L. Abitibi; gold, copper, zinc; p. 8,808.
- Rovereto, c., S. Tyrol, Italy; on R. Adige; silk, leather, paper, cottons; p. 20,576.
- Rovigo, *prov.*, Venetia, Italy; cap., Rovigo; a. 684 sq. m.; p. (1951) 355,056.
- Rovigo, t., *cap.*, Rovigo prov., Italy; on R. Adige, 20 m. S. of Padua; agr. mkt.; p. 39,954.
- Rovinj, t., Istria, Yugoslavia; sardine fisheries; p. 10,150.
- Rowley Regis, *industl. t.*, *mun. bor.*, Staffs, Eng.; adjoins Dudley; p. (1951) 49,409.
- Roxboro', t., N.C., U.S.A.; cotton, tobacco, mnfs.; p. (1950) 4,321.
- Roxburgh, *inland co.*, S. Scot.; stretching half-way along the Eng. border; hilly; sheep-rearing; woollens, tweed; cap. Jedburgh; a. 670 sq. m.; p. (1951) 45,562.
- Royal Leamington Spa, *see* Leamington.
- Royal Oak, t., Mich., U.S.A.; p. (1950) 46,398.
- Royan, t., Charente-Inférieure, France; S. of Rochelle; fishery, tr., industri., p. (1946) 12,192.
- Royersford, *bor.*, S.E. Penns., U.S.A.; light iron and steel mnfs.; glass; p. (1950) p. 3,862.
- Royston, *mkt. t.*, *urb. dist.*, Herts, Eng.; at N. foot of E. Anglian Heights, 7 m. N.E. of Baldock; p. (1951) 4,663.
- Rovston, *urb. dist.*, W.R. Yorks, Eng.; coal-mining; p. (1951) 8,137.
- Roynon, t., *urb. dist.*, Lancs., Eng.; 4 m. N.E. of Manchester; cotton spinning; p. (1951) 14,772.
- Roznava, t., S. Czechoslovakia; W. of Košice; p. 6,835.
- Ruabon, *par.*, Denbigh, N. Wales; on Salop border; coal, iron, tile wks.; p. 3,333.
- Ruandi-Urundi, *terr.*, formerly in German E. Africa, now Belgian Trust Terr., united administratively with Belg. Congo; rich in cattle; cap. Usumbura; a. 10,536 sq. m.; p. (1947) (African) 3,718,545, (European) 2,349.
- Ruapehu, *highest mtn.*, N.I., New Zealand; volcanic peak at S. extremity of central volcanic district; alt. 9,175 ft.
- Rubicon, R. of Central Italy, flowing to the Adriatic, crossed by Julius Caesar and his armies in 49 B.C. Has been identified with the Fiumicino or the Uso. There is a river Rubicon (It. Rubico) a few m. N. of Rimini and S. of Cervia.
- Ruby Mines, *dist.*, Mandalay, Upper Burma; hilly region of the Shan plateau, rich in precious stones; headquarters t. Mogök, in centre of the mining dist.
- Rüdesheim, t., Hessen, W. Germany; on the Rhine nr. Wiesbaden; famous for wine; p. 5,120.
- Rudolf, L., Kenya, Brit. E. Africa; N.E. of L. Victoria; a. 3,500 sq. m.
- Rudolph I., N. of Franz Josef Land, Arctic Ocean; Russian naval base; met. stn.
- Rudolstadt, t., Thuringia, E. Germany; on R. Saale; machinery, chemicals, porcelain; p. 16,863.
- Rueil, t., Seine-et-Oise, France; nr. Paris; p. (1946) 27,016.
- Rufiji, R., Tanganyika; Brit. E. Africa; flows to the Indian Ocean; length 450 m.
- Rugby, *mkt. t.*, *mun. bor.*, Warwick, Eng.; on R. Avon, 9 m. E. of Coventry; famous Public School; electrical and general engineering; p. (1951) 45,418.
- Rugeley, *mkt. t.*, *urb. dist.*, Staffs, Eng.; on R. Trent, 9 m. S.E. of Stafford; coal, iron; p. (1951) 8,525.
- Ruhr, *industl. dist.*, W. Germany; lies to E. of R. Rhine, on either side of R. Ruhr; rich coalfield; impt. iron and steel, heavy engineering industries based on local coal and iron ore from Luxembourg, Spain, Sweden; excellent water communications to N. Sea along R. Rhine and Dortmund-Ems Canal; ch. ts. Essen, Duisburg, Düsseldorf, Dortmund, Bochum.
- Ruhrort, t., N. Rhine-Westphalia, W. Germany; nr. Düsseldorf, at the confluence of the R. Ruhr with the Rhine; shipping port of the Ruhr coal-field.
- Ruislip-Northwood, *urb. dist.*, Middlesex, Eng.; residtl.; p. (1951) 68,274.
- Rukwa, L., Brit. E. Africa; between L. Tanganyika and L. Nyasa in the rift valley; 80 m. by 12 m., area increasing.
- Rum, I., Inner Hebrides, Argyll, Scot.; 8½ m. by 8 m.
- Rumania, *see* Romania.
- Rumburk, t., N. Bohemia, Czechoslovakia; pottery, textiles; p. 10,466.
- Rum Jungle, N. Territory, Australia; 70 m. S.E. of Darwin; impt. uranium mines.
- Runcorn, *industl. t.*, *urb. dist.*, Cheshire, Eng.; on S. side of Mersey estuary; connected by the Ship Canal with Manchester; transporter bridge to Widnes; p. (1951) 23,933.
- Rupert, R., Canada; flows from L. Mistassini to James Bay; length 300 m.
- Rupert, t., Idaho, U.S.A.; agr. centre, potatoes, livestock; p. (1950) 3,098.
- Ruschuk, *see* Ruse.
- Ruse, t., Bulgaria; on R. Danube, opp. Giurgiu in Romania; arsenal, barracks; beer, sugar, tobacco; p. 53,420.
- Rushden, t., *urb. dist.*, Northants, Eng.; 3 m. E. of Wellingborough; shoes; p. (1951) 16,321.
- Rusholme, t., E. of Manchester, S.E. Lancs, Eng.; industri. and residtl.



- Rushville, *t.*, Indiana, U.S.A.; p. (1950) 6,761.
- Russell, *t.*, Kansas, U.S.A.; mkt. in agr. and cattle reg.; oil and gas fields; p. (1950) 6,483.
- Russian Soviet Federal Socialist Republic (R.S.F.S.R.) *ch. constituent rep.*, U.S.S.R.; *ch. industries*: wheat, rye, oats, barley, potatoes, sugar-beet, fruits, sunflower, cotton, hemp, tobacco; sheep, cattle, dairying, pigs, horses; lumbering, timber, wood-pulp; coal, petroleum, iron, manganese, etc.; machinery, textiles, oil-refining, cement, bricks; a. 6,310,594 sq. m.; cap. Moscow; p. (1939) 109,279,000.
- Rustenburg, *t.*, Transvaal, Union of S. Africa; on N.W. edge of High Veld (alt. over 4,000 ft.). 60 m. W. of Pretoria; local mkt. for agricultural produce, sorghum, maize, cotton.
- Rutbah, *t.*, Iraq; on oil-pipe-line from Iraq to Haifa.
- Rute, *t.*, Cordova, Spain; nr. Lucena; industr.; p. 18,903.
- Rnthenia, *dist.*, U.S.S.R.: formerly part of Romania, ceded to U.S.S.R. in 1945, now part of Ukrainian S.S.R.
- Rutherford, *t.*, N.J., U.S.A.; p. (1950) 17,411.
- Rutherfordton, *t.*, N.C., U.S.A.; gold, lumber, textiles; agr.; p. (1950) 3,146.
- Rutherglen, *burgh*, Lanark, Scot.; on R. Clyde, S.E. of Glasgow; industr., chemical, and dye wks., nylon ropes and cotton-weaving factories; p. (1951) 24,225.
- Ruthin, *t.*, *mun. bor.*, Denbigh, Wales; in Vale of Clwyd, 8 m. S.E. of Denbigh; mkt.; p. (1951) 3,599.
- Rutigliano, *t.*, Bari, Italy; agr. interests; p. 10,650.
- Rutland, *midland co.*, Eng.; smallest in country; agr. farming, livestock; cheese, stone, iron; a. 152 sq. m.; cap. Oakham; p. (1951) 20,510.
- Rutland, *co.*, Vermont, U.S.A.; marble quarries, machinery and furniture; p. (1950) 17,659.
- Ruvo, *t.*, Bari, Italy; cath.; olive-oil presses; p. 25,225.
- Ruwenzori, *Mt.*, on bdy. between Uganda Protectorate and Belgian Congo, Central Africa; overlooks W. arm of Gt. African Rift Valley midway between L. Albert and L. Edward; lower slopes covered in equatorial rain forest, coffee plantations on middle slopes above 5,000 ft.; alt. 16,790 ft.
- Ryan Loch, *arm of sea*, on cst. Wigtown, Scot.; 8 m. by 2 m.
- Ryazan, *t.*, U.S.S.R.; S.E. of Moscow; distilling, leather; p. (1939) 95,358.
- Rybinsk, *see* Shcherbakov.
- Rybinsk Sea (Rybinsk Reservoir), U.S.S.R.; artificial lake; created behind dams on R. Volga and R. Sheksna at Rybinsk; part of scheme to regulate flow of R. Volga and to incorporate it in a vast inland waterway system; opened 1945; approx. a. 1,500 sq. m.
- Rybnik, *t.*, S.W. Poland; engineering, brewing, furniture-making; p. 23,052.
- Rybnitz, *region*, Moldavian S.S.R.
- Rydal Water, *L.*, nr. Ambleside, Westmorland, Eng.; *vill.* adjacent contains Rydal Mount, where Wordsworth lived.
- Ryde, *t.*, *mun. bor.*, I. of Wight, Eng.; on N.E. cst.; yachting centre and seaside resort; boat and yacht building; steamer connection across Spithead to Portsmouth; p. (1951) 20,084.
- Rye, *t.*, *mun. bor.*, Cinque Port, E. Sussex, Eng.; at mouth of R. Rother to W. of Dungeness; p. (1951) 4,511.
- Ryton, *t.*, *urb. dist.*, Durham, Eng.; on R. Tyne W. of Newcastle; ironwks.; p. (1951) 13,779.
- Ryukyu Archipelago, group of 89 Is., S. of Kyushu, Japan; total a. 921 sq. m.; consisting of Okinawa, Amami, Tokara, and others; *ch. t.* Naha on Okinawa.
- Rzeszow, *prov.*, S.E. Poland; a. 7,110 sq. m.; agr.; p. (estd. 1950) 1,383,460, cap. R.; p. 29,400.
- Rzhev, *t.*, U.S.S.R.; on R. Volga; industr. and commercial; p. (1939) 54,081.
- S
- Saale, *R.*, Thuringia and Saxony, Germany; trib. of R. Elbe; length 225 m.
- Saalfeld, *t.*, Thuringia, Germany; on R. Saale; machinery, cigars, beer, iron, ochre; p. 19,148.
- Saane, *R.*, Switzerland; flows to R. Aar, nr. Berne; length 65 m.
- Saar, *R.*, Lorraine, Saarland, Palatinate; rises in the Vosges and flows N.W. to R. Moselle, nr. Trier; length 153 m.
- Saar, *st.*, W. Europe; in valley of Saar; administered by League of Nations 1919-35 and returned to Germany after plebiscite; economic attachment of Saar to France agreed upon by Allied powers after Second World War; impt. coalfields, iron; *ch. t.* Saarbrücken; p. (1947) 874,400.
- Saarbrücken, *cap.*, Saarland, on R. Saar, opposite sister *t.* of Sanct. Johann; rich coal-field; ironwks., chemicals, glass, textiles, leather; p. (1947) 133,000.
- Saarebourg, *t.*, Moselle, France; on R. Saar, 30 m. N.W. of Strasbourg; mnfs. gloves, watch springs.
- Saare Maa (Ösel), *I.*, Baltic Sea; at entrance to G. of Riga, Estonian S.S.R., U.S.S.R.; consists of low plateau, bleak and barren; *cht.*, Kuresaare; a. approx. 900 sq. m.
- Saarlouis, *t.*, Germany; porcelain, leather, glass, coal; p. 32,400.
- Saba, *I.*, Netherlands Antilles, W. Indies; a. 4 sq. m.; p. (1948) 1,150.
- Sabac, *t.*, Jugoslavia; on R. Sava; old *cas.*; products; fruit, cattle, pigs, coal; p. 18,238.
- Sabadell, *t.*, Spain; N.W. of Barcelona; linen and cloth mills, flour, paper, distilling, iron founding; p. (1950) 59,494.
- Sabang, *spt.*, Sumatra, Indonesia; bunkering *stn.*; p. 6,355.
- Sabara, *t.*, Minas Gerais, Brazil; iron and steel; p. 7,684.
- Sabinas, *sm. t.*, Nuevo León *st.*, Mexico; at foot of Sierra Madre Oriental, 15 m. N. of Monterrey; coal-mines.
- Sabine, *R.*, Texas and Louisiana, U.S.A.; flows through S. Lake (an expansion of the R. 18 m. long) to Gulf of Mexico; length 500 m.
- Sable Cape, *S. point*, Florida, U.S.A.
- Sable I., off S.E. cst., Nova Scotia; 45 m. long.
- Sackville, *t.*, N.B., Canada; farming centre; mnfs., harness making, stoves, furnaces; p. 2,489.
- Saco, *c.*, Maine, U.S.A.; cotton mnfs.; p. (1950) 10,324.
- Saco, *R.*, U.S.A.; flows from White Mtns. in New Hampshire to Saco B., Maine; length 160 m.
- Sacramento, *c.*, *cap.*, California, U.S.A.; on the R. Sacramento; Capitol and R.C. cath.; rail work-shops, furniture, pottery, smelting, meat and fruit packing, flour; p. (1950) 137,572.
- Sacramento, *R.*, California, U.S.A.; flows to San Francisco Bay; length 500 m.
- Sacz, *see* Nowy Sacz.
- Sadani, *spt.*, Tanganyika, Brit. E. Africa; at mth. of R. Wami; p. 2,000.
- Saddleback (Blencathara), *mtn.*, Cumberland, Eng.; nr. Keswick; alt. 2,847 ft.
- Saddleworth, *t.*, *urb. dist.*, W.R. Yorks, Eng.; in Pennines, 5 m. N.E. of Oldham; cotton goods; p. (1951) 16,762.
- Sado, *I.*, off cst. of Honshu, Japan; gold and silver mines; rice, fishing; a. 331 sq. m.
- Sadon, *t.*, Caucasus, U.S.S.R.; zinc, lead, silver, copper.
- Safad, *t.*, N. of Sea of Galilee, Israel; p. 11,300.
- Safron Walden, *mkt. t.*, *mun. bor.*, Essex, Eng.; on E. Anglian Heights, 12 m. N. of Bishops Stortford; p. (1951) 6,825.
- Safi, *spt.*, W. cst. Morocco; Fr. zone; summer health resort; poor harbour, gr. grain and wool tr.; phosphates; fishing; p. (1946) 50,845.
- Saga, *t.*, Kyushu, Japan; coal-mining, fishing; p. 8,455.
- Sagaing, *div.*, Upper Burma; mtn. ridges, fertile plains; rice, wheat, peas, cotton; a. 50,086 sq. m.; p. 2,322,675.
- Sagaing, *t.*, Upper Burma; on R. Irrawaddy; pagodas; groundnuts, cotton, millets, tobacco, cattle; p. 14,127.
- Saganoseki, *sm. t.*, N.E. Kyushu, Japan; on Bungo Strait, 15 m. E. of Oita; impt. gold, copper, silver-mines.
- Sagastay, *I.*, at mouth of R. Lena, U.S.S.R.
- Saginaw, *c.*, Mich., U.S.A.; on R. Saginaw; in agr. and timber region; machinery, railwks., beet-sugar; p. (1950) 92,918.
- Sagua la Grande, *t.*, Cuba; on R. of same name; p. 15,539.

- Saguenay, R., Quebec, Canada; length from L. St. John to St. Lawrence R. about 100 m.; of gr. depth, beautiful scenery; hydro-electr. power developed.
- Sagunto, *t.*, Spain; nr. Valencia; p. 20,253.
- Sahara, the gr. N. African desert between the Sudan and the Barbary sts., extending from the Atlantic to the Nile, including Tripoli and Fezzan; a. 3,500,000 sq. m.; the E. portion is known as the Libyan desert, that part E. of the R. Nile, being often called the Nubian Desert; numerous oases with ts. and tr. centres; p. (est. 2,500,000), nomadic Arab and Berber tribes.
- Saharan Atlas, S. range of Atlas mtns. in Algeria; ch. pks., J. Aures, 7,644 ft., J. Aissa, 7,350 ft., J. Ksel, 6,594 ft.
- Saharan Oases, *terr.*, S. Algeria; p. 39,575.
- Saharanpur, *c.*, Uttar Pradesh, India; rly. wks., wood carving; furniture, paper, tobacco, mnfs.; p. (1951) 148,435.
- Sahibganj, *t.*, Bihar, India; on R. Ganges.
- Said, *see* Sidon.
- Saidabad or Sirdjan, *t.*, Laristan, Persia; S.W. of Kerman, nr. Kuh-i-Lalehzar mtn.; p. 10,000.
- Saigon, *c.*, *spt.*, Cochín-China, Viet Nam, Federation of Indo-China; on R. Saigon, 34 m. from the China S.; large commercial centre; cath., citadel, arsenal and naval yd.; spices, rice; p. (1948) 695,000.
- Saimaa, *L.*, Finland; N. of Viborg; a. 150 sq. m.; outlet into L. Ladoga.
- St. Abb's Head, *rocky promontory*, Berwick, Scot. St. Agnes Head, Cornwall, Eng.
- St. Albans, *c.*, *mun. bor.*, Herts., Eng.; on N. margin of Vale of St. Albans, 20 m. N.W. of London; faces remains of Roman Verulamium across R. Ver; varied light industries mainly connected with engineering, clothing, food-stuffs; cath.; residtl.; p. (1951) 44,106.
- St. Albans, *t.*, Vermont, U.S.A.; dairy farming; p. (1950) 8,552.
- St. Amand, *t.*, Cher., France; on R. Cher; industri.; p. (1946) 10,990.
- St. Andrews, *burgh*, Fife, Scot.; on N.E. cst. of Fife; seaside resort; univ.; famous golf course; p. (1951) 9,459.
- St. Anne R., Canada; flows to St. Lawrence R., 50 m. above Quebec; length 120 m.
- St. Anthony, *waterfalls*, on R. Mississippi; U.S.A.; predominant factor in site of Minneapolis (Minn.).
- St. Arnaud, *t.*, Victoria, Australia; p. 2,900.
- St. Asaph, *c.*, *rural dist.*, Flint, N. Wales; on R. Clwyd, 4 m. N. of Denbigh; cath.; p. (rural dist. 1951) 9,858.
- St. Augustine, *t.*, Florida, U.S.A.; resort; p. (1950) 13,555.
- St. Austell, *mkt. t.*, *urb. dist.*, Cornwall, Eng.; on S. flank of Hensbarrow, 14 m. N.E. of Truro; holiday resort; china clay, tin; p. (1951) 23,634.
- St. Barthélemy, *French I.*, W. Indies; dependency of Guadeloupe; p. (1946) 2,231.
- St. Bees Head, *promontory*, 2½ m. N.W. of St. Bees, Cumberland, Eng.; freestone quarries, tin.
- St. Benoit, *t.*, Ile de la Réunion, Indian Ocean; connected by rail with ch. port, Pointe-des-Galets.
- St. Bernard Pass, Great, on Italian-Swiss bdy., W. Alps; carries main road from W. Switzerland to Plain of Lombardy; approached from N. by trib. of upper Rhône, from S. by Val d'Aosta; alt. over 7,000 ft.
- St. Bernard Pass, Little, on French-Italian bdy., W. Alps; links Isère valley with Val d'Aosta; alt. approx. 5,000 ft.
- St. Boniface, *t.*, Manitoba, Canada; sub. of Winnipeg; p. (1951) 26,342.
- St. Boswells, *par.*, Roxburgh, Scot.; p. 3,466.
- St. Bride's Bay, at W. extremity, Pembroke, Wales.
- St. Brieuc, *t.*, Côtes-du-Nord, France; college, cath.; ironwks., textiles, timber and cst. tr.; p. (1946) 36,674.
- St. Buryan, *par.*, Cornwall, Eng.; lobster and crab fishing; p. 1,132.
- St. Catharines, *t.*, Ontario, Canada; on Welland Canal; fruit; cycles and motor cars, metal goods, textiles, paper, electr. equipment; mineral springs; p. (1946) 30,275.
- St. Chamond, *t.*, Loire, France; nr. St. Etienne; silk, ribbons, rayon; rly. works; coal-mining; p. (1946) 14,820.
- St. Charles, *c.*, Missouri, U.S.A.; nr. St. Louis; tobacco and flour; p. (1950) 14,314.
- St. Christopher or St. Kitts, *Brit. I.*, Leeward grp., West Indies; sugar, cotton, molasses; a. 69 sq. m.; cap. Basse-Terre; p. (est.) 30,000.
- St. Clair, *t.*, Penns., U.S.A.; industri.; p. (1950) 5,856.
- St. Clair, *L.*, Canada-U.S.A.; part of link between L. Huron and L. Erie.
- St. Clair, *R.*, N. America; flows from L. Huron through L. of St. Clair into L. Erie; forms bdy. between Michigan (U.S.A.) and Ontario (Canada); impt. link in Gr. Lakes waterway; length 85 m., depth dredged to 20 ft.
- St. Claude, *t.*, Jura, France; at confluence of Rs. Tacon and Bienne; cath.; fancy shell, horn and ivory mnfs.; p. (1946) 10,749.
- St. Cloud, *t.*, France, on Seine, 6 m. from centre of Paris; fine park, château; residtl.; porcelain; p. 17,614.
- St. Cloud, *t.*, Minn., U.S.A.; on R. Mississippi; timber yards, dairying, farming; p. (1950) 28,410.
- St. Croix, *I.*, Virgin Is. group, U.S.A.; ch. industries sugar cultivation, stock raising, vegetable growing, rum mnf.; a. 82 sq. m.; p. (1950) 12,096.
- St. Croix, *R.*, Wisconsin, U.S.A.; trib. of the Mississippi; length 200 m.
- St. David, *c.*, Pembroke, Wales; 15 m. S.W. of Fishguard; cath., ruins of Bishop's Palace; p. 1,595.
- St. David's Head, *promontory*, on cst. of Pembroke, Wales.
- St. Denis, *t.*, *N. sub.*, Paris, France; industri. and residtl.; abbey, burial pl. of Kings of France; chemicals, machinery, spirits, soap; p. (1946) 69,939.
- St. Denis, *spt.*, *cap.*, Ile de la Réunion (French), Indian Ocean; p. (1946) 36,096.
- St. Dié, *t.*, Vosges, France; on R. Meurthe; cath.; iron, copper, machinery, hosiery; p. (1946) 15,637.
- St. Dizier, *t.*, Haute-Marne, France; on R. Marne; iron, steel, copper, boats; p. (1946) 19,532.
- St. Elias, *mtn.*, Alaska, N. America; alt. 18,024 ft.
- St. Etienne, *t.*, *cap.*, Loire, France; nr. Lyons; ribbon-weaving, boot-lace, silk, velvet, engineering, armaments, motor cycles, cycles, chemicals, and iron mftg. centre, in coal-field dist.; p. (1946) 177,966.
- St. Eustatius, one of the Netherlands Antilles, West Indies; a. 31 sq. m.; p. (1948) 945.
- St. Francis R., Quebec, Canada; hydro-electric power.
- St. Francis, *R.*, Missouri, U.S.A.; trib. of R. Mississippi; forms boundary of Arkansas; length 450 m.
- St. Gall (St. Gallen), *can.*, Switzerland; mountainous; forest; vineyards; cattle raising; cotton spinning, lace; cap. St. G.; a. 777 sq. m.; p. (1950) 309,106.
- St. Gall, *t.*, Switzerland; on R. Steinach; cath.; cottons and embroidery; p. (1950) 68,011.
- St. George, *bay*, W. cst. Newfoundland, Canada.
- St. George, *I.*, Grenada Is., Brit. W. Indies; wireless stn.
- St. George, *spt.*, New Brunswick, Canada; various granites quarried; p. 1,169.
- St. George's Channel, Brit. Isles; part of Irish Sea separating Wales from Ireland.
- St. George's I., Florida, U.S.A.
- St. Germain, *t.*, Seine-et-Oise, France; on R. Seine; former royal château; cottons, woollens; p. (1946) 22,031.
- St. Germans, *mkt. t.*, *rural dist.*, Cornwall, Eng.; 4 m. W. of Saltash; p. (rural dist. 1951) 16,845.
- St. Gheorghe, *t.*, Romania; on Black Sea cst., S. of Sulina.
- St. Gotthard, *Pass* (alt. 6,867 ft.), Switzerland; between Ticino vall. and L. of Lucerne.
- St. Gowan's Head, *promontory*, Pembroke, Wales.
- St. Helena, *I.*, *Brit. col.*, Atlantic Ocean; 2,100 m. from W. cst. of Africa; only port Jamestown; Napoleon was imprisoned here in 1815-21, and Boer captives in 1900; coaling stn.; a. 47 sq. m.; p. (1952) 4,800.
- St. Helens, *t.*, *co. bor.*, Lancs, Eng.; 12 m. E. of Liverpool; connected by canal with R. Mersey; coal, iron, alkali; copper smelting, glass, plastics; p. (1951) 110,276.



- St. Helier, *spt.*, Jersey, Channel Is.; p. (1940) 16,729.
- St. Hyacinthe, *c. spt.*, Quebec, Canada; on Yamaska R.; cath.; farm machinery, woollens, leather; p. (1946) 17,798.
- St. Ives, *t. mun. bor.*, Cornwall, Eng.; at entrance to St. Ives Bay; fishing, boatmaking; holiday resort; p. (1951) 9,037.
- St. Ives, *mkt. t. mun. bor.*, Huntingdon, Eng.; on R. Ouse, 4 m. E. of Huntingdon; farming, cattle mkt.; p. (1951) 3,077.
- St. Jean, *t.*, Quebec, Canada; rly. junction; porcelain, pottery, tiles; p. 13,646.
- St. Jean d'Angely, *t.*, Charente-Inférieure, France; former Calvinist stronghold; p. (1946) 6,745.
- St. Jérôme, *t.*, Quebec, Canada; pulp, paper, knitted goods, woollens, rubber goods, cement bricks; p. 11,329.
- St. John, *c. spt.*, New Brunswick, Canada; cottons, woollens, machinery, paper, lumbering, sugar refinery; fisheries; large corn and other tr.; p. (1951) 50,779.
- St. John, *I.*, U.S. Virgin Is. group; a. 19 sq. m.; ch. industries, charcoal, stock-raising, tourists; noted for bay leaf oil.
- St. John, *L.*, Quebec, Canada; on Saguenay R.
- St. John, *R.*, New Brunswick, Canada; flows to Bay of Fundy; length 450 m.
- St. John, *t. cap.*, Antigua, W. Indies; p. (1946) 11,000.
- St. John's Point, *C.*, Down, Northern Ireland; forming N. side of Dundrum Bay.
- St. Johns R., Florida, U.S.A.; flows to Atlantic; length 350 m.
- St. John's, *spt. c. cap.*, Newfoundland, Canada; on E. cst.; first Eng. settlement in America; gr. tr. in fish, cod, oil, etc.; p. (1951) 67,749.
- St. John's Wood, *resid. dist.*, N.W. London, Eng.; contains Lord's Cricket Ground.
- St. Johnsbury, *t.*, Vermont, U.S.A.; mnfs.; p. (1950) 7,370.
- St. Joseph, *t. Mich.*, U.S.A.; on L. Mich.; resort; industri.; p. (1950) 10,223.
- St. Joseph, *c.*, Missouri, U.S.A.; on M. R.; rly. centre; meat packing, clothing, farm implements; p. (1950) 78,588.
- St. Joseph d'Alma, *t.*, Quebec, Canada; pulp, paper; p. 6,449.
- St. Joseph Lake, Ontario, Canada.
- St. Julien, *t.*, Haute Vienne, France; on R. Vienne; fine churches, shrine; gloves, leather; porcelain wks.; p. (1946) 10,645.
- St. Just, *t. urb. dist.*, Cornwall, Eng.; nr. Lands End, 6 m. W. of Penzance; dairying; p. (1951) 4,122.
- St. Kilda, *rocky I.*, most W. of the Hebrides, Scot.; 3 m. long; p. was 80, all removed to mainland of Scotland by Govt. 1930.
- St. Kilda, *wat. pt.*, Victoria, Australia; nr. Melbourne; p. 26,000.
- St. Kitts, *see* St. Christopher, W. Indies.
- St. Lambert, *t.*, Quebec, Canada; p. 6,417.
- St. Laurent du Maroni, *t.*, Fr. Guiana; penal admin. centre; p. 1,000.
- St. Lawrence, *G. of*, Canada; arm of Atlantic, partly enclosed by Newfoundland and Nova Scotia; impt. fisheries.
- St. Lawrence I., Alaska, U.S.A.; in Bering Sea; 100 m. long.
- St. Lawrence, *gr. R.*, of N. America; length from the source of its headstream, the St. Louis, 2,100 m.; forms the outlet of the great lakes (Superior, Michigan, Huron, Erie, and Ontario) and the boundary between the st. of New York, U.S.A., and Ontario, Canada; navigable for large vessels to Montreal and for smaller to head of L. Superior; ch. tribs.: Ottawa, Richelieu, St. Maurice, Saguenay.
- St. Leonards, *t.*, Sussex, Eng.; W. of Hastings; seaside resort.
- St. Lô, *t.*, Manche, France; on R. Vire; cath.; cloth mnfs.; p. (1946) 11,814.
- St. Louis, *t. cap.*, Senegal, Fr. W. Africa; at mouth of R. Senegal; cath., pal.; rly. and road centre; airport; exports oilseeds and skins; p. (1948) 51,000.
- St. Louis, *t.*, Ile de la Réunion, Indian Ocean; p. (1941) 23,936.
- St. Louis, *c.*, Missouri, U.S.A.; on R. Mississippi 10 m. below confluence of Rs. Mississippi and Missouri; two univs.; impt. rly. and river junction; largest fur mkt.; grain and cotton mkt.; very varied mnfs.; engineering, boots and shoes; motors, flour, chemicals, printing; p. (1950) 856,796.
- St. Lucia Bay, *inlet* of the Indian Ocean at mouth of R. Umvoloti, S. of St. Lucia Lake, Natal, S. Africa.
- St. Lucia I., *Brit. col.*, Windward Is., W. Indies; exports sugar, cocoa, lime juice, etc.; coaling stn.; a. 238 sq. m.; cap Castries; p. (1952) 82,000.
- St. Malo, *fortfd. spt.*, Ile-et-Vilaine, France; cas. and church (formerly a cath.); holiday resort; shipbuilding; iron, cereals, fruit, wine; also fishing; p. (1946) 11,311.
- St. Maria di Leuca, *C.*, S. Italy.
- St. Marie, *C.*, S. point of Madagascar.
- St. Martin, *French I.*, W. Indies; dependency of Guadeloupe; p. (1946) 6,786.
- St. Martin, *I.*, Netherlands Antilles, W. Indies; a. 13 sq. m.; p. (1948) 1,697.
- St. Marylebone, *metropolitan bor.*, N.W. London, Eng.; industri. and residit.; p. (1951) 75,764.
- St. Mary's I., Scilly Is., Brit. Isles.
- St. Mary's, *t.*, Ontario, Canada; nr. London; p. 3,635.
- St. Matthew I., Alaska, U.S.A.; in Bering Sea.
- St. Maur, *sub.*, Paris, Seine, France; garden city; p. (1946) 55,520.
- St. Maurice, *vil.*, Valais, Switzerland; nr. Martigny; 6th century abbey; once a leading Burgundian t.; p. 2,699.
- St. Maurice, *R.*, Quebec, Canada; trib. of St. Lawrence R.; hydro-electric power developed; length 400 m.
- St. Mawes, *vil.*, Cornwall, Eng.; on E. cst. of estuary of R. Fal; holiday resort, fishing.
- St. Michael, *see* San Miguel, Azores.
- St. Michael's Mt., *castled rock*, Cornwall, Eng.; the anc. Ictis; alt. 230 ft.
- St. Mihail, *t.*, Meuse, France; on R. Meuse, nr. Bar-le-Duc; industri.; Benedictine abbey; lace; p. (1946) 4,581.
- St. Monance, *burgh*, Fife, Scot.; p. (1951) 1,517.
- St. Moritz, *picturesque t., health resort*, Switz.; in the Upper Engadine; winter sports; alt. 6,090 ft.; spa; p. 4,000.
- St. Nazaire, *t.*, Loire-Inf., France; at mouth of R. Loire, nr. Nantes; docks and shipping; steelwks., aircraft; exports wine, sardines, silk, etc.; p. (1946) 11,802.
- St. Neots, *mkt. t. urb. dist.*, Hunts, Eng.; on R. Ouse, 10 m. N.E. of Bedford; paper, corn, iron; p. (1951) 4,697.
- St. Nikolaas, *mftg. t.*, E. Flanders, Belgium; nr. Antwerp; cap. of the ancient Waesland; cottons, woollens, lace, rayon; p. (1947) 43,994.
- St. Ninians, *par.*, Stirling, Scot.; woollens, nails; p. 14,662.
- St. Omer, *t.*, Pas-de-Calais, France; cath., abbey ruins; brewing, distilleries, soap, linen; p. (1946) 18,106.
- St. Ouen, *t. sub.*, Paris, France; on R. Seine; light industries, copper, aluminium goods, furniture, gloves; power stn.; p. (1946) 45,465.
- St. Pancras, *metropolitan bor.*, N. London, Eng.; industri. and residit.; three main line rly. termini within bor.; p. (1951) 138,634.
- St. Paul, *c. cap.*, Minn., U.S.A.; faces Minneapolis across the R. Mississippi; cath.; univ.; meat-packing, milling; furs, lumber products, clothes; p. (1950) 311,349.
- St. Paul, *spt.*, Ile de la Réunion (French), Indian Ocean; p. 25,959.
- St. Paul I., *sm. French I.*, dependency of Madagascar, Indian Ocean.
- St. Paul, *R.*, Liberia; flows to the Atlantic nr. Monrovia; length 300 m.
- St. Paul de Loanda, *t.*, Angola; exports rubber, ivory, palm oil, coffee, coconuts, rum.
- St. Peter, *L.*, Canada; expansion of St. Lawrence R. above Three Rivers; 20 m. by 9 m.
- St. Peter Port, *cap.*, Guernsey, Channel Is.; wat. pl.; fruit, flowers, vegetables; p. 16,215.
- St. Petersburg, *L.*, Florida, U.S.A.; resort; p. (1950) 96,738.
- St. Pierre, *t.*, Martinique I., Fr. W. Indies; ch. t. in Fr. W. Indies; completely destroyed by eruption of Mt. Pelée, 1902.
- St. Pierre and Miquelon, *French terr.*, consisting of 8 sm. is. off S. cst. of Newfoundland; a. of St. Pierre group, 10 sq. m.; a. of Miquelon group, 83 sq. m.; ch. t. St. Pierre, fisheries; p. of St. P. and M. (1951) 4,606.

- St. Pierre, t.**, Réunion, Indian Ocean; p. (1941) 22,379.
- St. Pölten, t.**, Lower Austria; nr. Vienna; cotton spinning and hardware mnf.; p. (1951) 40,338.
- St. Quentin, t.**, Aisne, France; on R. Somme; lace, tulle, woollens, chemicals, ironwks.; p. (1946) 48,556.
- St. Rémy, t.**, Bouches-du-Rhône, France; Roman antiquities.
- St. Rémy, t.**, Marne, France.
- St. Servan, spt.**, Ile-et-Vilaine, France; opp. St. Malo; p. (1946) 12,832.
- St. Sulpice, t.**, Haute Vienne, France; N.E. of Limoges.
- St. Thomas I.**, see San Tomé.
- St. Thomas, I.**, Virgin Is. group., Atl. Oc.; belongs to U.S.A.; port, rum; sugar, cotton, truck-farming, cattle, deep-sea fishing; bunkering of ships; a. 32 sq. m.; p. (1950) 14,559 (with St. John).
- St. Thomas, t.**, Ontario, Canada; rly. workshops, flour, flax; p. 17,132.
- St. Trond, t.**, Limbourg, Belgium; brewing, distilling.
- St. Tropez, t.**, Var, France; on S. cst. nr. Hyères; p. (1946) 4,324.
- St. Valéry-sur-Somme, spt.**, Somme, France; resort of pilgrims; here William the Conqueror embarked for Eng. 1066; fishing; p. 3,071.
- St. Vincent, C.**, S.W. Portugal; Spanish fleet defeated by British 1797.
- St. Vincent, Gulf of**, *lge. inlet*, S. Australia; penetrates 100 m. inland, max. width 35 m.; Pt. Adelaide located on E. side.
- St. Vincent, I.**, Brit. col., W. Indies; one of Windward group; sugar, arrowroot, cotton, peanuts; cap. Kingstown; a. 150 sq. m.; p. (1952) 71,000.
- Sainte Apathe des Monts, t.**, Quebec, Canada; tourist resort; p. 3,308.
- Sainte Croix, Virgin Is.**, W. Indies; former possession of Denmark, now U.S.A.
- Saintes, t.**, Charente-Inférieure, France; cath.; Roman antiquities; suffered in Huguenot wars; farm implements; earthenware; p. (1946) 23,441.
- Saipan I.**, Marianas, Pac. Oc.; sugar, coffee, fruit; a. 71 sq. m.; p. 45,000.
- Sakai, spt.**, Japan; local import centre; p. (1950) 213,688.
- Sakania, t.**, Belgian Congo; frontier stn. on rly. between Elizabethville and N. Rhodesia; customs house; p. 25,095.
- Sakata, t.**, Honshu, Japan; p. 46,447.
- Sakhalin, I.**, off E. cst. Asia; S. half ceded by Japan to U.S.S.R. 1945; a. about 13,930 sq. m.; herring fisheries, coal, naphtha, alluvial gold, oil, timber; p. 420,000.
- Sakishima, Is.**, E. of Formosa.
- Sakmara, R.**, U.S.S.R.; rises in Ural Mtns., trib. of R. Ural; length 350 m.
- Sala, t.**, Västmanland, Sweden; nr. Salberg; silver-mine worked for over 400 years; p. 3,250.
- Saladillo, R.**, N. Argentina; upper course of R. Dulce.
- Salado, Río, R.**, Argentina; trib. of the R. Paraná; length 1,000 m.
- Salado, Río, R.**, Mexico; trib. of Río Grande del Norte.
- Salaga, t.**, Gold Cst., W. Africa; impt. trade; p. 1,000.
- Salamanca, t.**, Guanajuato st., Mexico; p. 11,985.
- Salamanca, prov.**, Leon, W. Spain; cap. Salamanca; a. 4,756 sq. m.; p. (1950) 411,963.
- Salamanca, t.**, cap., Salamanca prov., Spain; on R. Tormes; oldest Spanish univ., 2 cath., many convents; p. (1950) 80,239.
- Salamaua, t.**, pt., New Guinea, Australian Trust. Terr.; gold.
- Salamis, I.**, Greece; opposite harbour of Athens; famous naval battle, 480 B.C.
- Salamis, spt.**, Greece; naval base; p. 17,312.
- Salar de Uyuni**, windswept, dry, salt flat, S.W. Bolivia.
- Salaverry, spt.**, Peru; exports sugar; p. 3,403.
- Salayer Is.**, group, S. of Celebes, Indonesia; a. of largest, 180 sq. m.
- Salcombe, t.**, urb. dist., S. Devon, Eng.; 4 m. S. of Kingsbridge; resort; fishing; p. (1951) 2,576.
- Saldanha B.**, *inlet* on W. cst. C. of Good Hope, S. Africa; whaling, fishing; granite quarrying; length 17 m.
- Salé, t.**, mun. bor., Cheshire, Eng.; on R. Mersey, 2 m. S. of Stretford; p. (1951) 43,167.
- Salé, t.**, Victoria, Australia; 128 m. from Melbourne; centre of large agr. and pastoral dist.; p. (1947) 5,119.
- Salé or Salch, spt.**, Fez, Morocco; formerly pirate headquarters; p. (1946) 57,188.
- Salekhard, t.**, *R. pt.*, N.W. Siberia, U.S.S.R.; on R. Ob; fisheries, collecting centre for furs; exports timber; p. 10,000.
- Salem, t.**, Madras, India; carpets, weaving, farming centre; p. (1951) 202,335.
- Salem, c.**, Mass., U.S.A.; 15 m. from Boston; cottons, lumber products, leather goods, machinery, wireless valves; p. (1950) 41,830.
- Salem, t.**, N.J., U.S.A.; in fruit-growing dist.; p. (1950) 9,050.
- Salem, c.**, Ohio, U.S.A.; steel; p. (1950) 12,754.
- Salem, c.**, cap., Oregon, U.S.A.; on Willamette R.; univ.; fruit-packing, flour milling and canning; p. (1950) 43,140.
- Salemi, t.**, Sicily, Italy; the ancient Halicyæ; p. 19,100.
- Salerno, spt.**, Campania, Italy; on G. of Salerno, 30 m. S.E. of Naples; cottons, silks, printing, leather; vine-growing dist.; p. (1951) 90,317.
- Salford, c.**, co. bor., Lancs, Eng.; on R. Irwell, adjoining Manchester; textiles, electrical instruments, machinery; p. (1951) 178,036.
- Salima, t.**, Nyasaland, S. Africa; alt. 1,672 ft.; term. of rly. from Beira on L. Nyasa.
- Salina, c.**, Kansas, U.S.A.; on Smoky Hill R.; univ.; flour milling, cattle mkt., farm implements; p. (1950) 26,176.
- Salina, I.**, Lipari Is., Italy; in the Mediterranean, 6 m. long; 2 volcanic cones.
- Salina Cruz, t.**, spt., Oaxaca, Mexico; terminal pt. of Tehuantepec rly.; shallow harbour; dye-woods, coffee, hemp, hides and skins; p. 5,393.
- Salinas, t.**, Ecuador; cable stn.; holiday resort; 118 m. from Guayaquil.
- Salinas, R.**, Cal., U.S.A.; rises in U.S. Coast Range, flows N.W. into Bay of Monterey, Pac. Oc.; fertile valley floor irrigated to produce hard and stone fruits, market-garden produce (especially lettuce), alfalfa; length, 140 m.
- Salinas-Grandes, gr. marsh a.**, Argentina; N. of Córdoba.
- Salins, t.**, Jura, France; nr. Besançon; salt springs; p. 4,721.
- Salisbury, c.**, mun. bor., Wilts, Eng.; at S. foot of Salisbury Plain at confluence of Rs. Avon and Wylve; splendid cath.; farming, cattle mkt.; p. (1951) 32,910.
- Salisbury, c.**, cap., S. Rhodesia; also cap. "Federation of Rhodesia and Nyasaland"; rich farming and mining dist. centre; iron and steel; cotton, leather, meat-canning, chemicals; exports gold, tobacco, asbestos; p. (1951) 119,011.
- Salisbury, t.**, Maryland, U.S.A.; iron and steel goods, woodwork, canning; p. (1950) 15,141.
- Salisbury, t.**, N. Carolina, U.S.A.; cotton, grain, timber, textiles, refrigerators; p. (1950) 20,102.
- Salisbury Plain, Wilts, Eng.**; undulating upland N. of Salisbury; prehistoric monumental remains of Stonehenge; impt. Army training-ground.
- Salmon, R.**, Idaho, U.S.A.; trib. of Snake R.; length 450 m.
- Salon, t.**, Bouches-du-Rhône, France; on Canal de Craponne; soap and oil wks.; p. (1946) 15,826.
- Salonika**, see Thessaloniki.
- Salpaus Selka**, Finland; most southerly gravel ridge; forested; winter sports.
- Salsette I.**, N. of Bombay, India; a. 241 sq. m.; connected by bridge and causeway with Bombay; cave antiquities and temples.
- Salt, R.**, Arizona, U.S.A.; rises in Colorado Plateau, flows W. into Gila R. 20 m. below Phoenix; length 240 m. See also Roosevelt Dam.
- Salt Fork, R.**, Okla., U.S.A.; trib. of Arkansas R.
- Salt Lake City, c.**, cap., Utah, U.S.A.; nr. Gr. Salt Lake, headquarters of Mormonism; temple and univ.; large collection of genealogy in the Church Library; tr. centre; meat packing, printing, publishing, metal-work, lumber prods., automobiles, wireless sets; p. (1950) 182,121.
- Salta, N. prov.**, Argentina; sugar, vines, oranges, oil; cap. Salta; a. 62,511 sq. m.; p. (1947) 290,063.
- Salta, c.**, Argentina; on R. Salta; sugar, vines, oranges, tobacco, oil, minerals; cath., college; p. (1947) 66,735.



- Saltash, mkt. t., mun. bor.,** Cornwall, Eng.; on W. side of Tamar estuary; lowest bridge (rly.) across Tamar; farming, fishing, malting; p. (1951) 7,924.
- Saltburn, t., urb. dist. (with Marske),** N.R. Yorks, Eng.; on E. cst. 3 m. S.E. of Redcar; seaside resort; p. (1951) 8,428.
- Saltcoats, burgh, Ayr, Scot.;** on Firth of Clyde, 2 m. S. of Ardrossan; coal; p. (1951) 13,103.
- Salttillo, cap.,** Coahuila st., Mexico; cottons, flour, woolsens, cereals, gold, silver, lead, copper, iron, zinc, coal; p. (1940) 75,721.
- Salto, dept.,** Uruguay; cap. Salto; a. 4,865 sq. m.; p. (1942) 100,840.
- Salto, cap.,** S. dep., Uruguay; leather, salted meats; p. 48,000.
- Salton Sea, L.,** S. Cal., U.S.A.; 263 ft. below sea-level in depression which extends N.W. from head of G. of California; centre of inland drainage; a. 270 sq. m. See also Imperial Valley.
- Saltion Sink, California, U.S.A.;** inland depression 287 ft. below sea-level.
- Saluzzo, t., Italy;** nr. Cuneì; cath., cas.; leather, silks, hats; p. 17,000.
- Salvador, El, rep.,** Central America; on Pacific cst.; very hot, abundant summer rain but dry winter; coffee, sugar, rubber, tobacco, gold, silver, iron, mercury; smallest and most densely populated of Central American States; cap. San Salvador; a. 13,178 sq. m.; p. (1950) 1,855,917.
- Salvador, spl.,** Baia, Brazil; coffee, cocoa, tobacco, hides; p. (1950) 424,142.
- Salween, R.,** Burma; rises in Tibet, flows S. to G. of Martaban; many rapids; length 1,800 m.
- Sal-y-Gomez I.,** Pac. Oc.; Chilean; uninhabited.
- Salzach, R.,** Austria; trib. of R. Inn; length 130 m.
- Salzburg, prov.,** Austria, adjoining Bavaria and the Tyrol; on N. slope of E. Alps; many L., thermal springs; much mineral wealth; cap. Salzburg; a. 2,762 sq. m.; p. (1951) 327,232.
- Salzburg, c.,** Austria; on R. Salzach; cath., cas.; birthplace of Mozart; tourist resort; salt, dairying, musical instruments; annual musical festival; p. (1951) 102,927.
- Salzkammergut, lake dist.,** Upper Austria; salt-mines.
- Salzwedel, t.,** Germany; on R. Jeetze; cloth, linen, chemicals, needles; p. 16,123.
- Samakh, t.,** Israel; on Sea of Galilee; rly. junction.
- Samar, I.,** Philippines; S. of Luzon; 147 m. long, 50 m. wide; a. 5,050 sq. m.; p. 550,000.
- Samara, see** Kuibyshev.
- Samaria, ancient c.,** Israel, now Sebastye.
- Samarinda, t.,** Borneo, Indonesia; on E. cst.; p. 11,046.
- Samarkand, c.,** Uzbekistan, U.S.S.R.; E. of Bukhara; mosques and anc. ruins; cloth, bricks, leather, flour, distilling; p. (1939) 134,346.
- Samarra, t.,** Iraq; on R. Tigris; Moslem holy city; p. 8,000.
- Samawa, t.,** Iraq; on R. Euphrates; cereals, carpets; p. 10,000.
- Sambalpur, t.,** Orissa, India; on R. Mahanadi; ruined fort, old temples; cottons, silks; p. 10,000.
- Sambar, C.,** S.W. Borneo, Indonesia.
- Sambhal, t.,** Uttar Pradesh, India; p. 25,000.
- Sambhar, t.,** Rajasthan, India; p. 50,000.
- Sambor, t.,** W. Ukrainian S.S.R., U.S.S.R.; S.W. of Lvov (Galicia); brine-wells, brewing, silk mfrs.; p. 10,000.
- Sambre, R.,** Belgium and N.E. France; trib. R. Meuse at Namur; length 110 m.
- Samburu, t.,** Kenya; rly. stn.
- Samnan, t.,** Persia; iron, sulphur ores, petroleum.
- Samoa Is., Terr. of W.,** group of 9 Pacific Is. in Pac. Oc.; formerly German, now New Zealand Trust Terr.; largest, Savaii (a. 700 sq. m.); exports copra, cacao beans, bananas; p. (1951) 83,096.
- Samoa Is., Samoan group** Pac. Oc.; E. of 171° long., W. of Greenwich; belong to U.S.A.; a. 76 sq. m.; largest I. Tutuila; ch. port Pago Pago; American naval stn.; p. (1950) 18,937.
- Samokov, t.,** Bulgaria; S. of Sofia; Bulgaria; industrl.; p. 12,784.
- Samos, I.,** Aegean Sea; Greek terr.; off W. cst. Anatolia; fine wine, silk, tobacco, cotton; cap. Vathéos; a. 180 sq. m.; p. (1951) 59,595.
- Samothrace, rugged I.,** Aegean Sea; alt. 5,248 ft.; the "Thracian Samos"; sulphur springs, sponges; a. 71 sq. m.; p. mainly Greeks.
- Samsui, t.,** former treaty port, Kwangtung, China; good tr. with Hong Kong; p. (1931) 9,160.
- Samsø, I.,** Sjaelland (Zealand), Denmark; a. 42 sq. m.
- Samsun, spl.,** Trabzon, Turkey; on Black Sea cst.; exports tobacco, grain, timber, wax, wool, skins, copper goods, antimony; p. (1945) 38,417.
- San, R.,** S.E. Poland; trib. of R. Vistula, boundary between Poland and Ukraine.
- San Ambrosia, I.,** off cst. Chile.
- San Angelo, t.,** Texas, U.S.A.; on R. Concho; cattle, wool, mohair mkt.; dairy prod., petroleum, machine shop prods.; p. (1950) 52,093.
- San Antonio, small coastal t.,** Angola, Africa; at mth. of R. Congo; serves as occasional port of embarkation for travellers from lower regions of Belgian Congo.
- San Antonio, spl.,** Chile; nearest port for Santiago; holiday resort; wine; p. (1940) 27,314.
- San Antonio, c.,** winter resort, Texas, U.S.A.; at mouth of San Pedro R.; cath., fort, arsenal; iron and steel work, textiles, cigars, soap, cattle, hides, wool, cotton; p. (1950) 408,442.
- San Antonio, C.,** most westerly point of Cuba.
- San Benito, spl.,** G. of Tehuantepec, Mexico.
- San Bernardino, t.,** Paraguay; holiday resort.
- San Bernardino, c.,** California, U.S.A.; oranges, lemons, citron; lumber, meat products; p. (1950) 63,058.
- San Carlos, t.,** Luzon, Philippines; p. 47,334.
- San Carlos de Bariloche, t.,** Argentina; on S. shore of L. Nahuel Huapi; tourist centre; p. 3,500.
- San Casciano, t.,** Italy; nr. Florence; industrl.; p. 14,325.
- San Cataldo, t.,** Sicily; Italy; good tr.; p. 22,700.
- San Cristóbal (formerly Cudal Real), t.,** Chiapas, Mexico; cath.; textiles; p. (1940) 11,768.
- San Cristóbal, t., cap.,** Táchira st., Venezuela; cement factories; wireless stn.; p. (1950) 56,073.
- San Diego, t.,** California, U.S.A.; on Pacific cst., 10 m. N. of Mexican border; fine harbour, winter health resort; nr. popular resorts of Coronado Beach and La Jolla; furniture, fishcanning, aircraft; p. (1950) 334,387.
- San Felipe, cap.,** Yaracuy St., Venezuela; p. 12,190.
- San Felipe de Aconcagua, t.,** Chile; nr. Valparaiso; agr. centre, coffee, cocoa, sugar, cotton, maize, fruits, rice, hides; p. 19,660.
- San Felix, t.,** Venezuela; river port on R. Orinoco; p. 1,324.
- San Fernando, spl.,** E. Argentina; on R. Plate, N. of Buenos Aires.
- San Fernando, t.,** Chile; agr. centre; p. 28,723.
- San Fernando, t.,** Cadiz, Spain; fine town-hall, fish mkt.; vineyards; p. (1948) 38,551.
- San Fernando, t.,** Venezuela; river port on Apure R.; tr. centre; alligator hides, egret feathers, cattle; p. 9,489.
- San Fernando, spl.,** Trinidad I., W. Indies; on W. cst. of Trinidad, 25 m. S. of Port of Spain; exports sugar, asphalt, petroleum; p. (1946) 28,842.
- San Francisco, t.,** Argentina; on rly. between Cordoba and Santa Fé.
- San Francisco, c., spl. cap.,** California, U.S.A.; on the San F. bay; entrance spanned by Golden Gate Bridge, longest single-span bridge in the world; ch. commercial c. on W. cst.; univ.; sugar and oil-refining, engineering, canning, lumber mills, printing, publishing, chemicals, machinery; p. (1950) 775,357.
- San Francisco Pass, Argentina-Chile;** across Andes at alt. 15,505 ft.
- San Francisco de Macoris, t.,** Dominican rep., W. Indies; p. 13,108.
- San Geronimo, t.,** Oaxaca st., Mexico; rly. junction.
- San Giovanni a Teduccio, t.,** S. Italy; at foot of Vesuvius; iron mines, rly. workshops; p. 27,475.
- San Giovanni in Persiceto, t.,** N. Italy; nr. Bologna; p. 20,450.
- San Isidro, t.,** E. Argentina; N. sub. Buenos Aires; p. 25,070.
- San Jerónimo, t.,** Rio Grande do Sul, Brazil; low-grade coal.
- San João, t.,** Brazil; on junction of Araguara and Tocantins Rs.

- San Joaquin, R., California, U.S.A.; trib. of Sacramento R.; length 400 m.
- San José, *prov.*, Costa Rica, Central America; cap. San J.; p. (1950) 281,322.
- San José, *t.*, cap., Costa Rica; cath., univ., observ.; coffee tr.; p. (1946) 97,557.
- San José, C., California, U.S.A.; in Santa Clara valley; nr. is Lick Observatory; resort; fruit and vegetable canning; lumber prods., woollens, leather; p. (1950) 95,280.
- San José, *dep.*, Uruguay; a. 2,688 sq. m.; cap. San J.; p. (1942) 97,687.
- San José, *t.*, cap., San José, Uruguay; grain, flour milling; p. 13,000.
- San Juan, *prov.*, Argentina; at foot of the Andes; a. 84,432 sq. m.; cap. San Juan; p. (1947) 260,714.
- San Juan, *t.*, cap. San Juan, Argentina; nr. Mendoza on R. San Juan; cattle, dried fruit; p. 18,000.
- San Juan, C., cap., Puerto Rico, Central America; cath.; naval stn., airport; distilleries, sugar; p. (1950) 224,767.
- San Juan R., Central America; divides Nicaragua and Costa Rica; plans made for its canalization, which would give both countries a clear waterway from Caribbean to Pacific; length 90 m.
- San Juan, R., Mexico; trib. of Río Grande; length 160 m.
- San Juan del Norte (Greytown), *spt.*, S.E. port of Nicaragua on Caribbean Sea.
- San Juan del Río, *t.*, Durango, Mexico; p. 6,694.
- San Juan del Sur, *spt.*, Nicaragua, Central America; on Pacific est.
- San Juanito, *spt.*, Lower California, Mexico; on W. est.
- San Lorenzo, *min.*, S. Argentina; alt. 12,000 ft.
- San Lucas, C., S. point of Lower California, Mexico.
- San Luis, *prov.*, Argentina; oranges, grapes; a. 29,700 sq. m.; cap. S.L.; p. (1947) 167,620.
- San Luis, *t.*, cap., St. Luis, Argentina; cattle, grain, wines; onyx quarrying; p. (1947) 25,788.
- San Luis Obispo, *t.*, California, U.S.A.; p. (1950) 14,180.
- San Luis Potosí, *st.*, Mexico; agr. and mining; cap. San Luis Potosí; a. 24,415 sq. m.; p. (1950) 855,125.
- San Luis Potosí, *t.*, cap., San Luis Potosí *st.*, Mexico; clothing, cottons, rly. wks., lead, silver and gold refining; wool, hides, cattle; p. (1950) 156,324.
- San Marco in Latis, *t.*, Foggia, Italy; p. 19,275.
- San Marino, smallest st. in Europe and world's smallest rep.; on spurs of Apennines, Italy; ch. exports: wine, woollen goods, hides, building stone; farming, cattle-raising; wine; a. 38 sq. m.; cap. San Marino; p. (1947) 12,100.
- San Marino, *t.*, cap., San Marino; on hill-top, alt. over 1,200 ft., 12 m. S.W. of Rimini; tourists; wine, curios for sale to tourists; p. 2,200.
- San Martín, *dep.*, Peru; ch. t. Moyobamba; a. 17,448 sq. m.; p. (1947) 135,155.
- San Mateo, *t.*, California, U.S.A.; residenc. sub. San Francisco; p. (1950) 41,782.
- San Miguel, C., El Salvador, Central America; on Río Grande; nr. malarial swamps; famous fair; rubber, grain, indigo; p. (1946) 49,556.
- San Miguel, *principal I.*, Azores, Portugal; hot sulphur springs, oranges, etc.; 41 m. by 9 m.; cap. Ponta Delgada.
- San Nicolás, R. *pt.*, Argentina; on Paraná R., 148 m. from Buenos Aires; cattle, flour, agr. produce; p. 24,329.
- San Pedro, *t.*, Paraguay; p. (1945) 14,790.
- San Pedro, *spt.*, California, U.S.A.; sub. Los Angeles; naval base; p. (1950) 36,527.
- San Pedro de Macoris, *t.*, Dominican Rep., W. Indies; p. (1948) 24,200.
- San Pedro Sula, *t.*, Honduras, Central America; p. (1945) 22,116.
- San Quintín Bay, *spt.*, Lower California; Mexico.
- San Rafael, *t.*, W. Argentina; agr., cattle, fruit; p. 32,663.
- San Remo, *spt.*, Italy; famous winter seaside resort on Riviera; olive oil, lemons, wine, flowers; p. 31,625.
- San Roque, C., E. Brazil.
- San Roque, *t.*, Andalusia, Spain; nr. Gibraltar; p. 12,371.
- San Salvador or Watling's I., Bahama Is., W. Indies; discovered by Christopher Columbus, 1492; p. (1943) 693.
- San Salvador, *cap.*, El Salvador; univ., observatory; silks, cottons, cigars; p. 157,356.
- San Sebastian, C., *spt.*, cap., Guipuzcoa, Spain; captured by Wellington 1813; gd. tr. and fisheries; sailcloth, cottons, paper, glass; p. (1950) 113,776.
- San Severo, *t.*, Italy; hill-top site, 15 m. N.W. of Foggia; olive oil, wine; p. 36,275.
- San Tomé, I., G. of Guinea; off Angola; volcanic; coffee, cocoa, coconuts; p. 52,000.
- San'a, *cap.*, Yemen, Arabia; walled c. 7,270 ft. above sea-level; tr. in silk, cottons and china; jewellery, arms, fruit; p. 60,000.
- Sanchez, *spt.*, Dominican Rep., W. Indies; situated on the Bahía de Sumana, at E. end of Cibao lowland district; linked to Santiago by rail; exports cacao, tobacco.
- Sancti Spiritus, C., Santa Clara, Cuba; in grazing dist.; p. (1943) 104,578.
- Sandakan, *impt. tr. c.*, N. Borneo, E. Indies; N.E. est.; fine natural harbour; exports timber, rubber, copra, hemp, salt fish; p. (1931) 13,723.
- Sandalwood (Sumba) I., in Malay Archipelago, S. of Flores, Indonesia; very fertile; rice, maize, tobacco, timber, cinnamon; cap. Waingapu; a. 4,385 sq. m.; p. 182,326.
- Sanday, I., Barra Is., Orkney, Scot.
- Sandbach, *t.*, *urb. dist.*, Cheshire, Eng.; 3 m. S.E. of Middlewich; salt, chemicals; p. (1951) 9,250.
- Sandbank, *par.*, Argyll, Scot.; 3 m. N.W. Dumoon; p. 1,366.
- Sandiacre, *vil.*, Derby, Eng.; on W. bank of R. Erewash, 4 m. S. of Ilkeston; lace-making.
- Sandoa, *t.*, Belgian Congo; on upper Lulua R.; admin. centre; p. 5,000.
- Sandown-Shanklin, *t.*, *urb. dist.*, I. of Wight, Eng.; on Sandown Bay; holiday resort; p. (1951) 12,693.
- Sandringham, *par.*, Norfolk, Eng.; Royal residence; farming.
- Sandur, *t.*, Madras state, India; manganese, iron; p. 5,529.
- Sandusky, C., Ohio, U.S.A.; on S. est., L. Erie; tr. in coal, fruit, and foodstuffs; paper, farm implements, chemical mnfs.; p. (1950) 29,375.
- Sandwich, *t.*, *myn. bor.*, Kent, Eng.; at mouth of Stour R.; old Cinque port; mkt., light industries, yacht building; p. (1951) 4,142.
- Sandwich Is., dependency of Falkland Is., Brit. Crown Col. S. Atlantic.
- Sandy, *t.*, *urb. dist.*, Beds, Eng.; 3 m. N.W. of Biggleswade; mkt. gardening; p. (1951) 3,667.
- Sandy Hook, *peninsula*, N.J., U.S.A.; projecting into lower bay of New York; yachting centre.
- Sanford, I., Florida, U.S.A.; p. (1950) 11,935.
- Sanga, R., trib. of Congo R., Fr. Equatorial Africa.
- Sangerhausen, *t.*, Germany; at foot of Harz Mtns.; mnfs. sugar, farm machinery; p. 12,272.
- Sangir (Sangihe), Is., Indonesia; between Philippines and Celebes; eruption of volcano on ch. island killed 12,000 inhabitants, 1856.
- Sangli, *t.*, Bombay state, India; tobacco; p. 5,574.
- Sankuru, R., trib. of Kasai R., Belg. Congo, Central Africa.
- Sanlúcar, *t.*, Cadiz, Spain; nr. mouth R. Guadalquivir; wines and agr. produce; ruined cas.; p. 32,848.
- Sanniya Hor, L., Iraq; linked to R. Tigris; shallow, acts as flood control reservoir.
- Sanok, *t.*, Poland; nr. Rzeszów; metallurgy; p. 11,176.
- Sanquhar, *burgh*, Dumfries, Scot.; in upper Nithsdale; carpets, coal, bricks; p. (1951) 2,381.
- Sansanding, *t.*, Fr. W. Africa; site of lge. barrage across R. Niger.
- Santa Ana, C., El Salvador, Central America; municipal palace, barracks; coffee, sugar; p. (1946) 98,942.
- Santa Ana, *t.*, California, U.S.A.; fruit farming, oilfields, mnfs. farm implements, preserved fruits; p. (1950) 45,553.
- Santa Barbara, *dist.*, Honduras; Panama hats.
- Santa Barbara, *t.*, winter resort, California, U.S.A.; at foot of Santa Inez mtns.; fruit, oil; p. (1950) 44,913.



- Santa Catarina, st., Brazil;** inc. Sta. Catarina I.; a. 36,435 sq. m.; mineral wealth; cap. Florianopolis; p. (1950) 1,578,159.
- Santa Clara, t., Cuba;** at alt. over 1,200 ft.; sugar, cattle; p. (1943) 122,241.
- Santa Clara Valley, Cal., U.S.A.;** extends S. from San Francisco Bay; very intensive fruit-growing under irrigation, specialises in prunes; ch. t., San José.
- Santa Cruz, spt., Patagonia, Argentina;** sheep.
- Santa Cruz, terr., S. Argentina;** sheep, horses; cap. Gallegos; a. 93,952 sq. m.; p. (1947) 24,491.
- Santa Cruz, t., Bolivia;** alt. 1,500 ft.; sugar, coffee, rice, cattle; p. (1950) 42,746.
- Santa Cruz, dep., Bolivia;** cap. S. C.; p. (1950) 286,145.
- Santa Cruz, c., California, U.S.A.;** on Monterey Bay; popular seaside resort, fruit and vegetable canning; fishing; p. (1950) 21,970.
- Santa Cruz, t., cap. Tenerife I., Canary Is.;** p. (1950) 103,446.
- Santa Cruz Is., Pacific Ocean;** part of the Brit. Solomon Is.; protectorate.
- Santa Cruz de la Sierra, t., Bolivia;** on R. Piray; sugar, flour; distilling; p. 33,000.
- Santa Cruz de Tenerife, prov. (Spanish), Canary Is., Atl. Oc.;** inc. islands of Tenerife, Palma, Gomera, Hierro; a. 1,329 sq. m.; p. (1950) 418,101.
- Santa Fé, prov., Argentina;** agr. and stock farming; cap. Santa Fé; a. 52,056 sq. m.; p. (1947) 1,700,026.
- Santa Fé, t., Argentina;** on island in R. Salado; cath., univ.; shipbuilding; p. 168,011.
- Santa Fé, t., New Mexico; U.S.A.;** at base of Sangre de Cristo range; oldest capital in U.S. founded by Spaniards 1610; p. (1950) 27,998.
- Santa Isabel, cap., Fernando Po, Continental Guinea, Span. W. Africa;** residence of Governor; p. (1946) 15,064.
- Santa Maria, t., Rio Grande do Sul, Brazil;** rly. centre; tanning, hats, brewing, maté, wine, timber, rice; p. 39,492.
- Santa Maria, t., Campania, Italy;** on site of ancient Capua; cath.; glass, leather; p. 36,637.
- Santa Marta, spt., cap., Magdalena dep., Colombia, S. America;** cath.; p. (1947) 25,113.
- Santa Maura, see Levkás.**
- Santa Monica, c., Cal., U.S.A.;** sub. Los Angeles; residt.; p. (1950) 71,595.
- Santa Rosa, t., cap., La Pampa terr., Argentina;** p. 14,000.
- Santa Rosa, t., California, U.S.A.;** fruit, grain, dairying; p. (1950) 17,902.
- Santa Rosalia, t., peninsula of Lower California, Mexico;** located E. cst. on G. of California; impt. copper-mines.
- Santander, dep., Columbia, S. America;** E. of the Magdalena R.; cap. Bucaramanga; a. 12,379 sq. m.; p. (1947) 718,480.
- Santander, prov., Spain;** agr., grape growing, fisheries; cap. Santander; a. 2,108 sq. m.; p. (1950) 404,921.
- Santander, spt., cap., Santander prov., Spain;** former summer resort of the Court; cath.; exports iron and zinc ore; p. (1950) 102,462.
- Santarem, t., Para, Brazil;** rubber, cacao, Brazil nuts, sugar; p. 3,000.
- Santarem, dist., Portugal;** in fertile valley of R. Tagus; cap. S.; p. (1950) 458,658.
- Santarem, t., Portugal;** on height above Tagus; fine bridge; p. (1940) 14,409.
- Santiago, prov., Chile;** cap. Santiago; a. 5,557 sq. m.; p. (1952) 1,748,636.
- Santiago de Chile, c., cap., Chile;** on R. Mapocho; most populous t. on Pacific side of S. America; cath., univ.; national library; leather, soap, beer, foundries; p. (1940) 639,546.
- Santiago de Compostela, c., Corunna, Spain;** on R. Sar; cath. (with tomb of St. James); univ.; beer, spirits, paper, linen; p. (1950) 55,553.
- Santiago de Cuba, c., spt., Cuba, W. Indies;** on S. cst.; former cap. of I.; cath.; iron foundries, tanneries, centre of mineral dist.; exports sugar, coffee, tobacco; Spanish fleet destroyed by U.S.A. warships here 1898; p. (1943) 120,577.
- Santiago de las Vegas, t., Cuba;** nr. Havana; p. (1943) 21,265.
- Santiago de los Caballeros, t., Dominican Rep., W. Indies;** p. (1948) 62,527.
- Santiago del Estero, t., Argentina;** on R. Dulce; p. (1947) 63,491.
- Santiago del Estero, prov., Argentina;** cap. S. del E.; a. 52,511 sq. m.; p. (1947) 574,383.
- Santiago-Zamora, prov., Ecuador;** p. (1950) 21,046.
- Santo Domingo (Dominican Republic), E. Hispaniola, W. Indies;** mountainous, fertile valleys; sugar, coffee, cacao, timber; rich in minerals (unworked); cap. Ciudad Trujillo; a. 19,332 sq. m.; p. (1948) 2,182,109.
- Santo Domingo, see Ciudad Trujillo.**
- Santona, spt., Spain;** on N. est., E. of Santander; p. 11,136.
- Santorenc, see Thera.**
- Santos, c., spt., São Paulo, Brazil;** world's ch. coffee port; also exports sugar, rum, tobacco; p. (1950) 201,739.
- São Carlos, t., São Paulo st., Brazil;** 120 m. N.W. of São Paulo; centre of ch. coffee-growing district.
- São Francisco, R., Brazil;** flows from Minas Gerais prov. to Atlantic; navigable for 150 m. below cataract of Paulo Afonso; length 1,600 m. [15,000.]
- São Francisco, spt., Santa Catarina, Brazil;** p. São Jerônimo, t., Rio Grande do Sul st., S. Brazil; 40 m. W. of Porto Alegre; coal-mines.
- São João, t., Minas Gerais, Brazil;** coffee, rice, cattle, cotton, sugar; p. (1947) 38,500.
- São Leopoldo, t., Rio Grande do Sul st., S. Brazil;** 20 m. N. of Porto Alegre, largest of group of German colonies in S. Brazil; mkt. t.
- São Luiz, cap., Maranhao st., Brazil;** episcopal palace; p. (1947) 97,713.
- São Paulo, st., Brazil,** on Atlantic est.; coffee, sugar-cane, cereals, cotton, tobacco, fruit, wine; cap. S. Paulo; a. 95,454 sq. m.; p. (1950) 9,242,610.
- São Paulo, c., cap. São Paulo st., Brazil;** cath., monasteries; cottons, woollens, jute, furniture; p. (1950) 2,227,512.
- São Roque, c., Rio Grande do Norte st., N.E. Brazil;** most N.E. point of S. American continent.
- São Tome with Principe Is. in the G. of Guinea;** p. (1950) 60,159.
- Saône, R., France;** rises in Vosges, and flows to R. Rhône at Lyons; length 282 m.
- Saône-et-Loire, dep., France;** mountainous; wines, coal, cereals, iron, steel, porcelain, oil, chemicals; cap. Mâcon; a. 3,331 sq. m.; p. (1946) 506,749.
- Saône-Haute, dep., France;** cereals; fruit, iron, steel, cottons, coal; cap. Vesoul; a. 2,074 sq. m.; p. (1946) 202,573.
- Sapporo, t., administrative cap., Hokkaido, Japan;** garrison; flour mills, flax, hemp, brewing; p. (1950) 313,850.
- Saqqara, t., Egypt;** tombs and pyramids; near site of Memphis.
- Saragossa, see Zaragoza.**
- Sarajevo, t., cap., Bosnia and Herzegovina, Yugoslavia;** the assassination here, on June 28, 1914, of the Archduke Francis Ferdinand precipitated the First World War; weaving, carpets, pottery, flour, silks, sugar; p. (1948) 118,806.
- Saranac, L., t., popular lakeside resort, N.Y., U.S.A.;** p. (1950) 6,913.
- Saransk, t., cap., Mordovia, U.S.S.R.;** preserved milk; p. 10,000.
- Sarapul, k. pt., U.S.S.R.;** on R. Kama; boots, shoes, gloves, rope, flax; p. 10,000.
- Saratoga Springs, N.Y., U.S.A.;** summer resort at foot of Adirondack mtns., mineral springs; p. (1950) 15,473.
- Saratov, t., U.S.S.R.;** on R. Volga; univ.; impt. tr. centre; distillery, flour milling, ironwork; p. (1939) 375,860.
- Sarawak, Brit. col., N.W. Borneo;** exports sago, rubber, oil, pepper; cap. Kuching; a. 47,071 sq. m.; p. (1952) 581,000.
- Sardinia, I., reg., Italy;** in Mediterranean and former kingdom, constructed out of Duchy of Savoy; mountainous; sheep, cattle, fishing, wheat, barley, fruit, wine; cap. Cagliari; a. 9,302 sq. m.; p. (1951) 1,273,850.
- Sargasso Sea, zone, situated in S.W. of North Atlantic;** relatively still sea within swirl of warm ocean currents. Noted for abundance of gulf-weed on its surface, rich in marine life. Named by Columbus.

Sariwon, *t.*, Korea; p. 30,389.  
 Sark, *I.*, Channel Is.; 3½ m. long, 6 m. E. of Guernsey; picturesque scenery; farming.  
 Sark, *R.*, forms extreme western boundary between Scotland and England.  
 Sarnia, *t.*, Ontario, Canada; on St. Clair R.; woollens, machinery, oil refineries; p. 18,734.  
 Sarsborg, *t.*, Norway; on R. Glommen; chemicals, wood-pulp, aluminium; p. (1946) 12,767.  
 Sarreguemines, *t.*, Moselle, France; 7 m. S.E. of Saarbrücken; porcelain, plush leather, matches; p. (1946) 13,375.  
 Sarria, *t.*, Lugo, Spain; p. 15,167.  
 Sarthe, *dep.*, N.W. France; undulating surface; farming, apples, livestock; coal, linen, potteries; cap. Le Mans; a. 2,412 sq. m.; p. (1946) 412,214. [165 m.]  
 Sarthe, *R.*, France; trib. of R. Loire; length 382 km.; *t.*, Liguria, Italy; nr. Spezia; cath.; silks; p. 13,650.  
 Sasebo, *spt.*, Kyushu, Japan; p. (1950) 194,453.  
 Saseno *I.*, see Sazan.  
 Saskatchewan, *prov.*, Canada; coniferous forests and plains; Rs. Saskatchewan and Churchill; many lge. ls.; extreme climate; good rail communications; hydro-electric power; gr. wheat prov.; livestock, dairying; coal, copper, furs, fisheries; cap. Regina; a. 251,700 sq. m.; p. (1951) 831,728.  
 Saskatchewan, *R.*, Canada; flows from Rocky mtns. through L. Winnipeg and thence by R. Nelson to Hudson Bay; length 1,450 m.  
 Saskatoon, *c.*, Saskatchewan, Canada; univ.; flour, cement; p. (1951) 53,268.  
 Sasovo, *t.*, U.S.S.R.; wood industries; p. 10,000.  
 Sassari, *t.*, Sardinia, Italy; nr. G. of Asinara; cath., univ., palaces; tobacco and macaroni works; oil, grain; p. (1951) 70,243.  
 Satara, *t.*, Bombay, India; p. (1941) 36,405.  
 Satu-Mare, *t.*, N.W. Romania; pottery, textiles; p. 56,313.  
 Saudi Arabia, *largest kingdom*, peninsula of Arabia; formerly kingdom of Hejaz (cap. Mecca) and Nejd (cap. Riyadh); mainly desert; nomadic pop.; Mohammedanism; dates, wheat, barley; impt. oil concessions; p. (approx.) 7,500,000.  
 Sauerland, *dist.*, Land N. Rhine-Westphalia, W. Germany; plateau, alt. from 500 to 1,500 ft. E. of Rhine and between valleys of Sieg and Ruhr; agriculturally poor, largely forested; crossed by R. Wupper, with which are associated industri. ts. Wuppertal (textiles), Solingen and Remscheid (cutlery and special steel).  
 Saugor, *t.*, Madhya Pradesh, India; p. (1941) 63,933.  
 Sault Ste. Marie, *c.*, Mich., U.S.A.; on L. Superior at rapids; flour, woollens, locomotives; p. (1950) 17,912.  
 Sault Ste. Marie, *c.*, Ontario, Canada; on L. Superior at rapids; pulp, paper, iron, steel; p. (1941) 25,794.  
 Sault Ste. Marie Canals ("Soo"), Canada and U.S.A.; twin canals on Canadian and American side of shallow channel linking L. Superior and L. Huron; traversed by all wheat and iron-ore traffic from L. Superior pts.; length (Canadian) 1 m.; depth 18 ft.  
 Saumur, *t.*, Seine-et-Loire, France; on R. Loire, 30 m. S.W. of Tours; wines, enamels, tinware; p. (1946) 17,635.  
 Saurashtra, *st.*, India; union of the 15 sts. of former W. Indian Sts. Agency; total a. 21,062 sq. m.; p. (1951) 4,136,005.  
 Sava or Save, *R.*, N. Yugoslavia; trib. of Danube; length 550 m.  
 Savage or Niue, Cook Is., Pacific Ocean; under New Zealand; ch. exports native plaited ware, bananas, copra, and sweet potatoes; ch. port Alofi; a. 100 sq. m.; p. (1948) 4,318.  
 Savaii *I.*, *largest of Samoan group*, Pacific Ocean; a. 703 sq. m.  
 Savannah, *c.*, *spt.*, Georgia, U.S.A.; turpentine, manure, soap, timber; p. (1950) 119,638.  
 Savannah, *R.*, U.S.A.; flows between Georgia and S. Carolina, to Atlantic Ocean; length 450 m. [65 m.]  
 Save, *R.*, France; trib. of R. Garonne; length 340 km.; *Col De, low pass*, N.E. France; carries trunk rly. from Paris to Strasbourg and the Orient between Vosges and Hardt Mtns.; gradual approach from W., steep descent to E. into Rhine valley.  
 Savignano, *t.*, Piedmont, Italy; silk; p. 18,725.

Savoie or Savoy, *dep.*, S.E. France; on Italian border; mountainous; mineral springs, pastoral, dairying; cap. Chambéry; a. 2,389 sq. m.; p. (1946) 235,939.  
 Savoie (Haute), *dep.*, France; mountainous; farming, wine, cheese; cap. Annecy; a. 1,774 sq. m.; p. (1946) 270,565.  
 Savona, *spt.*, Genoa, Italy; cath.; iron, ship-building, glass and tinplate wks.; exports preserved fruits and tomatoes; p. (1951) 68,698.  
 Sawbridgeworth, *t.*, *urb. dist.*, Herts, Eng.; on R. Stort, 4 m. S. of Bishops Stortford; p. (1951) 3,692.  
 Saxmundham, *mkt. t.*, *urb. dist.*, Suffolk, Eng.; 18 m. N.E. of Ipswich; p. (1951) 1,438.  
 Saxony, *Land*, Germany, Soviet Zone; farming, printing, type-founding, toys, textiles, lace, spirits, beer, coal, iron, mineral springs; ch. ts. Dresden, Leipzig, Chemnitz; a. 6,640 sq. m.; p. 5,543,400.  
 Saxony-Anhalt, *Land*, Germany, Soviet zone; a. 9,480 sq. m.; p. 4,162,100.  
 Sayan Mtns., *range of mtns.*, between Rs. Yenisei and Angra, U.S.S.R.  
 Sayre, *t.*, Penns., U.S.A.; on R. Susquehanna; p. (1950) 7,735.  
 Sazan, *I.*, Adriatic Sea; off. est. of Albania; restored to Albania by Italy.  
 Scafell Pike, *mtn.*, Cumberland, Eng.; in N. Pennines; highest in Eng.; alt. 3,210 ft.  
 Scalby, *t.*, *urb. dist.*, N.R. Yorks, Eng.; 3 m. N.W. of Scarborough; p. (1951) 6,225.  
 Scalpay, *I.*, Skye, Scot.  
 Scandinavia, *region*, N. Europe, comprising Sweden, Norway, and Denmark.  
 Scania, *see* Skåne.  
 Scapa Flow, *strait*, N. Scot.; between Pomona and Hoy, Orkney Is., surrendered German fleet scuttled, 1919.  
 Scarba, *I.*, Argyll, Scot.; off N. end of Jura.  
 Scarborough, *t.*, *mun. bor.*, N.R. Yorks, Eng.; on E. est. 18 m. N.W. of Flamborough Head; seaside resort; jet ornaments, fishing; p. (1951) 43,983.  
 Scarpanto, *Greek I.*, E. Mediterranean; between Rhodes and Crete, one of the Dodecanese; p. 8,747.  
 Schaan-Vaduz, *t.*, Liechtenstein; point where Arlberg Express (Paris-Vienna) passes through the principality.  
 Schaffhausen, *most N. can.*, Switzerland; on R. Rhine; pastoral and afforested; cap. Schaffhausen; p. (1951) 57,515.  
 Schaffhausen, *t.*, cap. Schaffhausen can., Switzerland; on the Rhine; cath., cas.; famous falls, iron, steel, aluminium, cottons, brewing, distilling; p. (1941) 22,498.  
 Schaumburg-Lippe, *former st.*, between provs. of Hanover and Westphalia, Germany, now part of Lower Saxony; farming; coal-mining; cap. Bückeburg.  
 Scheide (Scheldt), *R.*, France, Netherlands, and Belgium; rises in Aisne, France, flows to N. Sea; length 248 m.  
 Schenectady, *c.*, N.Y., U.S.A.; on R. Mohawk; mfrs., foundries, electrical wks., wireless transmitting apparatus, locomotives; p. (1950) 91,785.  
 Scheveningen, *seaside resort*, Netherlands; 2 m. N.W. of the Hague; fishing.  
 Schiedam, *t.*, Netherlands; N.W. of Rotterdam; liquors, candles, yeast; p. (1951) 73,603.  
 Schiehallion, *mtn.*, Perth, Scot.; alt. 3,547 ft.  
 Schiltheim, *t.*, Bas-Rhin, France; machinery, factory equipment; p. (1946) 22,397.  
 Schlei, *narrow inlet* of Baltic, Schleswig-Holstein, Germany; 25 m. long.  
 Schleswig, *t.*, *pl.*, Schleswig-Holstein, Germany; cath.; tanning, milling, fishing; p. 21,022.  
 Schleswig-Holstein, *Land*, N. Germany; retroceded from Denmark 1920; cap. Kiel; moors and plain farming, livestock; textiles, tobacco; a. 6,048 sq. m.; p. (1950) 2,594,648.  
 Schlettstadt, *see* Sélestat.  
 Schmalkalden, *t.*, Germany; resort; iron, steel, toys, beer; p. 10,737.  
 Schneidemühl, *see* Pila.  
 Schouten *I.*, New Guinea, Indonesia; in Greel-vink Bay; p. 25,487.  
 Schouwen *I.*, Zeeland, Netherlands; in N. Sea.  
 Schramberg, *t.*, Württemberg, Germany; p. 11,741.  
 Schuylkill R., Penns., U.S.A.; flows into Delaware R.; length 130 m.



- Schuylkill Haven, *t.*, Penns., U.S.A.; on Schuylkill R.; p. (1950) 6,597.
- Schwarzwald (Black Forest), *forest belt*, Land Württemberg-Baden, W. Germany; a. 1,844 sq.m.; highest peak Feldberg, alt. 4,900 ft.
- Schweinfurt, *t.*, Bavaria, Germany; on R. Main, N.E. of Würzburg; ironwks.; p. 40,167.
- Schweizer Reneke, *t.*, Transvaal, S. Africa; irrigation; p. 2,252.
- Schwelm, *industl. t.*, N. Rhine-Westphalia, Germany; nr. Arnsberg. [20,605.]
- Schwenningen, *t.*, Württemberg, Germany; p. 3.
- Schwerin, *cap.*, Land Mecklenberg, Germany; *industl.* and educational; *cath.*, palace; pianos, furniture, soap, bricks; p. 55,692.
- Schwerte, *t.*, N. Rhine-Westphalia, Germany; nr. Hagen; nickel wks.
- Schwibus, *see* Swiebodzin.
- Schwyz, *forest can.*, Switzerland; cap. Schwyz; a. 350 sq. m.; p. (1950) 71,082. [(1941) 9,530.]
- Schwyz, *t.*, Switzerland; nr. L. of Lucerne; p. 3.
- Sciacca, *spt.*, Sicily, Italy; nr. Girgenti; *cath.*; headquarters of Mediterranean coral fishery; sardines, olives; mineral springs; p. approx. 25,000. [Italy.]
- Scilla, *promontory*, Strait of Messina Calabria.
- Scilly Is., *group*, 30 m. S.W. of Land's End, Cornwall, Eng.; total a. 10 sq. m.; largest I. St. Marys; cap. Hugh Town; flowers, vegetables; p. 1,828.
- Scioto, *R.*, Ohio, U.S.A.; joins Ohio at Portsmouth; length 250 m.
- Scone, *par.*, Perth, Scot.; place of residence and coronation of early Scottish kings; from here Edward I. removed the Stone of Destiny to Westminster Abbey in 1297; tourist centre; civil aerodrome.
- Scotland, British Isles; northern part of Gr. Britain; contains 33 counties; home affairs administered by Dep. of Secretary of State for Scotland; physically divided into Highlands (many islands on W.), Middle Lowlands, and S. Uplands; highest peaks, Ben Nevis 4,406 ft. and Ben Macdui 4,296 ft.; ch. Ls., L. Lomond, L. Ness; ch. Rs., Clyde, Tweed, Tay, Spey, Dee, Forth; climate, maritime; agr. in E., grazing in W.; oats, barley, wheat, potatoes, fruit; coal, iron, oil-shale, granite; fisheries; mnfs., textiles, shipbuilding; machinery, distilling, sugar-refining, printing; cap. Edinburgh; Glasgow, ch. commercial and *industl. t.*; a. 29,796 sq. m.; p. (1951) 5,095,969.
- Scranton, *c.*, Penns., U.S.A.; on R. Susquehanna; anthracite, iron foundries, steel wks., locomotives, and silk mnfs.; p. (1950) 125,536.
- Scunthorpe, *t.*, *mun. bor.*, Lindsey, Lincs, Eng., on Lincoln Edge, 6 m. S. of the Humber; iron-mining and smelting, steel girders; p. (1951) 54,245.
- Scutari (Albania), *see* Shkodra.
- Scutari (Turkey), *see* Uskudar.
- Scutari L., *see* Shkodra L.
- Seaford, *t.*, *urb. dist.*, E. Sussex, Eng.; 3 m. E. of Newhaven; seaside resort; p. (1951) 9,023.
- Seaforth Loch, Lewis, Outer Hebrides, Scot.; 14 m. long.
- Seaham, *spt.*, *urb. dist.*, Durham, Eng.; Seaham Harbour, on E. cst. 4 m. S. of Sunderland; modern colliery workings, extending under sea; p. (1951) 26,138.
- Seathwaite, *vil.*, N. Lancashire, Eng.; on R. Duddon on S. fringe of English Lake Dist.; highest average annual rainfall recorded in Brit. Is., 130 inches.
- Seaton, *t.*, *urb. dist.*, S. Devon, Eng.; on Lyme Bay at mouth of R. Axe; seaside resort; freestone quarries; p. (1951) 2,903.
- Seaton Valley, *t.*, *urb. dist.*, Northumberland, Eng.; nr. Blyth; p. (1951) 26,435.
- Seattle, *spt.*, Washington, U.S.A.; *univ.*, *cath.*; shipbuilding, aeroplanes, glass, fish-canning, fishing and whaling, packing, lumbering, coal; p. (1950) 467,591.
- Sebenico, *see* Sibenik.
- Sebnitz, *t.*, Germany; E. of Dresden; p. 12,674.
- Secunderabad, Hyderabad, India; military stn.; p. 100,000.
- Sedalla, *c.*, Missouri, U.S.A.; farming, meat-packing; machinery, textiles, coal; rly. centre and wks.; p. (1950) 20,354.
- Sedan, *t.*, Ardennes, France; on R. Meuse; formerly a strong fortress; battle 1870, resulting in complete defeat of France; weaving; machinery, metal ware, woollens, flour; p. (1946) 13,514.
- Sedgefield, *t.*, Durham, Eng.; farming; p. 3,111.
- Sedgley, *industl. t.*, *urb. dist.*, Staffs, Eng.; nr. Wolverhampton; nail, rivet, chain and lock wks.; p. (1951) 23,104. [paper.]
- Segezha, *t.*, Finno-Karelia; on L. Vyg; cellulose.
- Sego, *L.*, U.S.S.R.; 20 by 20 m.; N.W. of L. Onega; outlet into White Sea.
- Segou, *t.*, *R. pt.*, Fr. Sudan, Fr. W. Africa; on R. Niger; centre of irrigation scheme; cotton, hides, cattle, wax, salt; p. (1946) 22,150.
- Segou Canal, *Fr. W. Africa*; leaves R. Niger 4 m. below Bamako, extends 130 m. N.E. to Segou; irrigates 3,000 sq. m. on right bank of Niger and assists navigation.
- Segovia, *prov.*, Old Castile, Spain; agr., stock-keeping, and mftg.; cap. Segovia; a. 2,682 sq. m.; p. (1950) 201,433.
- Segovia, *c.*, Spain; nr. R. Eresma; *cath.*; iron-ware, cloth, earthenware, paper, flour; p. (1949) 34,838.
- Segre, *R.*, Lerida, N.E. Spain; rises in E. Pyrenees, flows S.W. into R. Ebro; water irrigates the area around Lerida, the largest block of irrigated land in Spain; length approx. 170 m.
- Segura, *R.*, Spain, flows to Mediterranean at Guardamar; 180 m. [length 300 m.]
- Seim, *R.*, Ukraine, U.S.S.R.; trib. of R. Desna.
- Seine, *dep.*, France; mkt. gardens; gypsum, freestone; a. 185 sq. m.; cap. Paris; p. (1946) 4,775,711.
- Seine, *R.*, France; rising in Côte d'Or dep., and flowing past Paris and Rouen to English Channel at Havre; length 473 m.
- Seine-et-Marne, *dep.*, N. France; agr., stock-raising, dairying; "Brie" cheese; porcelain, gypsum, flagstone; cap. Melun; a. 2,275 sq. m.; p. (1946) 407,137.
- Seine-et-Oise, *dep.*, N. France; mkt. gardening, vineyards, wheat; machinery, chemicals, porcelain, gunpowder, stone; cap. Versailles; a. 2,185 sq. m.; p. (1946) 1,414,910.
- Seine-inférieure, *dep.*, N. France; undulating and fertile; grain, dairying, textiles, iron, shipbuilding, flax, chemicals; fisheries; cap. Rouen; a. 2,448 sq. m.; p. (1946) 846,131.
- Sekia el Hamra, *prov.*, Spanish Sahara; N.W. Africa; a. 32,047 sq. m.; ch. t. Smara.
- Sekondi, *spt.*, Gold Cst., Brit. W. Africa; connected with and largely superseded as a pt. by Takoradi harbour; p. (1948) 44,130. [inc. Takoradi.]
- Selangor, *st.*, Malaya; on W. side of Peninsula; a. 3,160 sq. m.; cap. Kuala Lumpur; p. (1947) 710,788.
- Selby, *mkt. and industl. t.*, *urb. dist.*, W.R. Yorks, Eng.; on R. Ouse, 13 m. S. of York; ancient abbey church; flour-milling, flax, oil-cake; p. (1951) 10,217.
- Sele, *R.*, S. Italy; rises in S. Apennines, flows W. into G. of Salerno; headwaters now carried E. through gr. Apennine tunnel (7 m.) to irrigate plateau of Apulia in S.E. Italy.
- Selenga, *R.*, Mongolia and Siberia; flows into L. Baikal; length 750 m.
- Selestat, *t.*, Bas-Rhin, France; on R. Ill; two cath.; p. (1946) 10,722.
- Selkirk, *co.*, Scot.; mountainous (Broad Law 2,723 ft.); sheep, oats, woollens; cap. Selkirk; a. 267 sq. m.; p. (1951) 21,724.
- Selkirk, *bor.*, *co. t.*, Selkirk, Scot.; on Ettrick Water; 4 m. S. of Galashiels; tartans, tweeds; p. (1951) 5,853.
- Selkirk, *t.*, Yukon, Canada; on junction of Macmillan and Lewes Rs.
- Selkirk Mtns., B.C., Canada; run N.W. to S.E. parallel with Rocky Mtns. and occupy inside of the great bend of R. Columbia; ancient rocks; highly mineralised; pierced by Connaught Tunnel on Canadian Pacific Rly. route through Kicking Horse Pass to Vancouver; rise to over 9,000 ft.
- Selma, *c.*, Alabama, U.S.A.; on Alabama R.; in cotton-growing dist.; also dairying, lumbering, ironwks., fertilizers; p. (1950) 22,840 (more than half coloured).
- Selsey, *t.*, Sussex, Eng.; on Selsey Bill, 7 m. S. of Chichester; coastal resort; fishing.
- Selsey Bill, *peninsula*, between Bognor Regis and Portsmouth, Sussex, Eng.
- Selukwe, *t.*, S. Rhodesia; alt. 4,734 ft.; gold mining, chrome ore; ranching and agr.

Selwyn Range, *mtns.*, Queensland, Australia; extends 350 m. W. from Gr. Dividing Range; forms divide between Rs. flowing N. to G. of Carpentaria and Rs. flowing S. to Darling; gold, copper; alt. mainly below 1,500 ft.

Semarang, *spt.*, Java, Indonesia; exports sugar, tobacco, tapioca, kapok; shipbldg., rly. repairs, cement, sawmills; p. 217,800.

Seminole, *t.*, Oklahoma, U.S.A.; p. (1950) 11,863.

Semionovka or Semenovka, *t.*, Ukraine, U.S.S.R.; leather, impt. fairs; p. 9,000.

Semipalatinsk, *t.*, Kazakhstan, U.S.S.R.; on R. Irtysh; busy tr. centre; leather, flour; p. (1939) 109,779.

Semlin, *see* Zemun.

Semmering Pass, *low pass*, Austria; provides route across E. Alps for rly. from Vienna to Venice; alt. below 3,000 ft.

Sena, *t.*, Mozambique, Port E. Africa; on R. Zambezi.

Sendai, *t.*, Honshu, Japan; salt, fish; p. (1950) 341,685.

Seneca Falls, *t.*, N.Y., U.S.A.; on R. Seneca; mnfs.; p. (1950) 6,634.

Senegal, *R.*, W. Africa; flowing from Kong mtns. W. and N.W. to Atlantic at St. Louis, above Cape Verde; length 1,000 m.

Senegal, *terr.*, Fr. W. Africa; N. of R. Gambia; groundnuts, weaving, pottery; cap. St. Louis; a. 77,730 sq. m.; p. (1945) 1,895,000.

Senekal, *t.*, O.F.S., S. Africa; trading centre; wool, wheat; p. 4,415.

Senigallia, *t.*, Italy, N.W. of Ancona; p. 26,345.

Senj, *spt.*, Yugoslavia; cattle; tobacco; p. 3,072.

Sennar, *t.*, Anglo-Egyptian Sudan; on Blue Nile, on rly. route to Khartoum, Suakin, Pt. Sudan; dam for irrigation and control of Nile floods; p. 1,000.

Sennin, *see* Kamaishi.

Sens, *t.*, Yonne, France; on R. Yonne; cath., the ancient Agedincum; farm implements, boots, chemicals, cutlery; p. (1946) 17,329.

Senta, *t.*, Yugoslavia; on R. Tisa; flour, leather, sugar, wine, agr., machinery, chemicals, paper; p. (1948) 25,077.

Seoul, *cap.*, S. Korea; brassware, pottery, silk; p. (1949) 1,446,019.

Septimer, *mtn. pass*, Swiss Alps, can. Grisons; alt. 7,611 ft.

Seraing, *t.*, Liège, Belgium; extensive ironwks.; engineering; p. (1947) 42,292.

Serampore, *t.*, W. Bengal, India; former Danish settlement; cotton and silk weaving, pottery, jute and paper-mills; p. (1941) 55,339.

Serang, *I.*, Malay Archipelago, Indonesia, N. of Amboyna; a. 6,612 sq. m.; tobacco; p. (est.) 105,000.

Serang, *t.*, Java, E. Indies; W. of Jakarta.

Serbia, *fed. unit*, Yugoslavia; former independent kingdom; a. 33,930 sq. m.; cap. Belgrade; p. (1948) 6,523,224.

Serdovsk, *t.*, U.S.S.R., S.W. of Penza; grain tr.; p. 10,000.

Seremban, *t.*, Negri Sembilan, Malaya; p. 25,000.

Seres, *see* Serrai.

Sereth, *R.*, Romania; trib. of R. Danube; length 290 m.

Sergipe, *est. st.*, Brazil; forested; tobacco, maize, sugar, cotton; cap. Aracaju; a. 8,129 sq. m.; p. (1950) 650,132.

Sergo, *see* Kadiyevka.

Seriphos, *I.*, Cyclades group, Grecian Archipelago, Aegean Sea.

Serowe, *cap. c.*, Bamangwato tribe, Bechuanaland protectorate, S.W. Africa; p. 15,935.

Serpukhov, *t.*, R. pt., U.S.S.R., on R. Oka, S. of Moscow; leather, cotton, textiles, paper, chemicals; copper- and iron-wks.; p. (1939) 90,766.

Serra da Bandeira, *cap.*, Hulia prov., Angola; tourists.

Serra da Mantiqueira, *mtn. range*, highest in Brazil.

Serra do Espinhaco, *mtns.*, Brazil; highest peak, Itambe, 6,705 ft.; iron-ore deposits.

Serra do Mar, *mtns.*, Brazil; form steep E. edge of Brazilian Plateau S. from Rio de Janeiro.

Serrai (Seres), *prefecture* Macedonia, Greece; cap. Serrai; p. (1951) 221,015.

Serrai (Seres), *t.*, Macedonia, Greece; on Struma R.; woollens, cottons, carpets; p. (1951) 36,279.

Sestri Levante, *spt.*, Italy; nr. Genoa; p. 15,341.

Sète (formerly Cette), *spt.*, Hérault, France; on Mediterranean cst.; chemicals, fisheries; exports oysters, brandy, wine; p. (1946) 31,203.

Setif, *mkt. t.*, E. Algeria; alt. 3,596 ft.; cereals, horses; p. (1948) 51,674.

Setouchi, *coastal region*, S.W. Honshu, N. Shikoku, Japan; flanks shores of Inland Sea; sm. plains backed by terraced hillsides; intensive agr., rice, mulberry, tea, citrus fruits; many sm. ts. engaged in fishing, local tr. and varied industries inc. textiles, salt-extraction from brine.

Settè Cama, *spt.*, Gabun, Fr. Equat. Africa; open roadstead, landing difficult owing to swell; exports timber.

Settle, *mkt. t.*, *rural dist.*, W.R. Yorks., Eng.; on R. Ribbles in heart of Craven dist.; caves with remains of extinct fauna; thread, cotton; p. (1951) 14,279.

Settsu Plain, S. Honshu, Japan; located at head of Osaka Bay at E. end of Inland Sea; intensive-ly cultivated alluvial lowlands, ch. crops, rice, vegetables, oranges; gr. industr. belt extends along cst. through Kobe, Osaka, Kishiwada; engineering, chemicals, textiles; a. 500 sq. m.

Setubal, *c. spt.*, Lisbon, Portugal; on R. Sado, boatbuilding, fishing, sardine-curing, lace, salt, fertilizers, etc.; p. (1940) 263,272.

Seul Lac, *L.*, S. of St. Joseph L., Ontario, Canada.

Sevan (Gokcha), *large l.*, Armenia, U.S.S.R.; alt. 6,340 ft.; never freezes; surrounded by high, barren mountains.

Sevastopol, *spt.*, Crimea, U.S.S.R.; built on ruins left after famous siege 1855; resort on Black Sea; naval arsenals; leather, tiles, machinery; exports grain; p. (1939) 111,946.

Seven Islands, *pt.*, on St. Lawrence, Quebec, Canada; exports iron brought by rail from Ungava peninsula.

Sevenoaks, *mkt. t.*, *urb. dist.*, Kent, Eng.; in Vale of Holmesdale, 5 m. N.W. of Tonbridge; residt.; light industries; p. (1951) 14,834.

Seyern, *R.*, W. of Eng. and N. Wales; rises in Montgomery and flows to Bristol Channel; length 200 m.

Seyern, *R.*, Ontario, Canada; flows to Hudson Bay; length 350 m.

Seyern Tunnel, Eng.; under estuary of R. Severn between Pilning (Gloucestershire) and Severn Tunnel Junction (Monmouthshire); carries main rly. from London to S. Wales; longest main-line rly. tunnel in Brit. Is.; length nearly 4½ m.

Seville, *prov.*, Spain; agr., mining; cap. Seville; a. 5,430 sq. m.; p. (1950) 1,099,374.

Seville, *pt.*, *cap.*, Seville, Spain; on R. Guadalquivir; Gothic cath.; palace, univ.; ironware, machinery, cigars, silks, porcelain, aircraft; exports, lead, iron, mercury, cork, oranges, lemons, wine; p. (1950) 376,627.

Sèvres, *t.*, Seine-et-Oise, France; on R. Seine; celebrated porcelain mnfs.

Seychelles Is., *Brit. col.*, Indian Oc.; consisting of 92 Is., largest I. Mahé; cap. Victoria; exports copra, cinnamon, vanilla, patchouli oil; total a. 156 sq. m.; p. (1952) 37,000.

Seyne or La Seyne-sur-Mer, *t.*, Var, France; nr. Toulon; shipbuilding; p. (1946) 26,172.

Sfax, *spt.*, Tunisia; admin. centre; exports phosphate, olive oil, salt, esparto grass, cereals, dates, hides; imports foods, coal, textiles, soap; sponges, fishing; p. (1946) 54,637.

Sgurr Mor, *mtn.*, Ross and Cromarty, Scot.; alt. 3,483 ft.

Shabani, *t.*, S. Rhodesia; asbestos and gold-mines; rly. terminus.

Shaftesbury, *mkt. t.*, *mun. bor.*, Dorset, Eng.; 10 m. N. of Blandford; p. (1951) 3,297.

Shahabad, *t.*, Bihar, India; cement; p. (1941) 53,122.

Shahjahanpur, *c.*, Uttar Pradesh, India; on Deoha R.; sugar; p. (1951) 104,835.

Shahpur, *t.*, W. Punjab, Pakistan; cotton; p. 8,545.

Shaker Heights, *t.*, Ohio, U.S.A.; p. (1950) 28,222.

Shakhty (Alexandrovsk Grushevski), *t.*, Ukraine, U.S.S.R.; coal, anthracite; p. (1939) 155,081.

Shamokin, *bor.*, Penns., U.S.A.; iron mftg., anthracite; p. (1950) 16,879.

Shan States, former Federated Shan States and Wa States, Burma; p. 1,617,071.



- Shandakan Tunnel**, N.Y. st., U.S.A.; carries water under Catskill Mtns. to augment water supply of c. of New York; length 18 m.
- Shanghai**, *c.*, *pt.*, Kiangsu, China; on Whangpoo trib. of Yangtze-Kiang; most impt. of the former Chinese treaty ports, considerable export silk and tea; mnfs. paper, cigarettes, cotton; shipbuilding, engineering; *p.* (estd. 1952) 5,407,000.
- Shanhaiwan**, *t.*, *pt.*, Hopen, China; on rly. from Peking to Manchuria and the Liaotung G.
- Shanklin**, *see* Sandown-Shanklin.
- Shannon Airport**, Clare, Ireland, *see* Foynes.
- Shannon**, *R.*, Ireland; separating Connaught from provs. of Leinster and Munster, and flowing to Atlantic at Loop Head; length 224 m.
- Shansi**, *inland and hilly prov.*, N. China, bounded W. and S. by the Hwang-Ho; coal, iron ore, petroleum, salt; *cap.* Talyuan; *a.* 60,394 sq. m.; *p.* (1947) 11,601,000.
- Shantou**, *see* Swatow.
- Shantung**, *maritime prov.*, China, on the G. of Chihli and the Yellow Sea; ports; Chefoo, Weihaiwei, and Kiaochow; fertile plain; grain, silk, fruit; coal, iron, lead, copper; *cap.* Tsinan; *a.* 56,447 sq. m.; *p.* (1947) 33,100,000.
- Shap**, *par.*, Westmorland, Eng.; nearby is Shap Summit 914 ft., an impt. pass traversed by railway and by a main road; granite.
- Shapinsay**, Orkney Is., Scot.
- Sharl**, *R.*, Fr. Sudan, W. Africa; flows from the S. to L. Chad; navigable for greater part of course; length 700 m.
- Sharikhan**, *t.*, Uzbekistan, U.S.S.R.; *nr.* Namagan cotton.
- Sharon**, *plain*, Israel; citrus fruits, vineyards, poultry.
- Sharon**, *t.*, Penns., U.S.A.; ironwks., bricks, electrical goods; *p.* (1950) 26,454.
- Sharpness**, *vil.*, Gloucester, Eng.; on S. shore, Severn estuary 13 m. N.E. of Avonmouth; entrance to Berkeley Canal.
- Shasi**, *c.*, *R. pt.* Hupeh, China; on Yangtze-Kiang; cotton cloth; *p.* (estd. 1931) 113,526.
- Shasta**, *R. pt.* California, U.S.A.; 14,380 ft.
- Shatt-al-Arab**, *R.*, Iraq; formed by union of Tigris and Euphrates, flows thence to head of Persian G.; length 120 m.
- Shatura**, *t.*, U.S.S.R.; E. of Moscow; electric power-plant.
- Shawinigan Falls**, *c.*, Quebec, Canada; pulp and paper; *p.* (1941) 20,325.
- Shawnee**, *c.*, Oklahoma, U.S.A.; cottons, meat-preserving; *p.* (1950) 22,948.
- Shcherbakov** (Rybinsk), *t.*, *R. pt.*, U.S.S.R.; on *R.* Volga; *agr. tr.*; *p.* (1939) 139,011.
- Sheaf**, *R.*, W.R., Yorkshire, Eng.; rises in S.E. Pennines, flows N.E. to join *R.* Don at Sheffield; for last 2 m. narrow valley crowded with smaller factories of Sheffield; valley provides main route to S. (Chesterfield) and S.W. (Manchester via Totley); length 11 m.
- Sheboygan**, *c.*, Wisconsin, U.S.A.; on L. Michigan; furniture mfg., pianos, gloves, enamelled ware; *p.* (1950) 3,599.
- Shechem**, *see* Nablus.
- Sheerness**, *spt.*, *urb. dist.*, Kent, Eng.; on I. of Sheppey at entrance to estuary of *R.* Medway; Government dockyard and garrison; corn, malt; *p.* (1951) 15,727.
- Sheffield**, *c.*, *co. bor.*, W.R. Yorks, Eng.; on cramped site at confluence of *R.s.* Sheaf and Don; *gr.* cutlery, steel, iron, brass mfg., centre, machinery, instruments, electro-plate, etc.; *p.* (1951) 512,834.
- Shelbyville**, *t.*, Indiana, U.S.A.; on Big Blue R.; mfg. centre in colliery and *agr.* region; *p.* (1950) 11,734.
- Shellal** (Esh Shellal), *t.*, *R. pt.*, Upper Egypt, N.E. Africa; on right bank of *R.* Nile, 2 m. above Aswan Dam; S. terminus of Egyptian rly. system; river-steamer service connects with Wadi Halfa, 160 m. upstream, N. terminus of Anglo-Egyptian Sudan rly. system.
- Shellhaven**, *oil refineries*, Essex, Eng.; on N. side of Thames estuary, *nr.* Stanford-le-Hope.
- Shelton**, *t.*, Conn., U.S.A.; old vil. of Huntington, has 18th-century houses; *p.* (1950) 12,694.
- Shenandoah**, *t.*, Penns., U.S.A.; anthracite; *p.* (1950) 15,704.
- Shenandoah**, *R.*, Virginia, U.S.A.; trib. of Potomac R.
- Shendi**, *t.*, Anglo-Egyptian Sudan; on *R.* Nile; *p.* 14,300.
- Shensi**, *prov.*, China; W. of Hwang-Ho; wheat, cotton; coal, petroleum; *cap.* Changan; *a.* 72,919 sq. m.; *p.* (1947) 9,389,000.
- Shenyang** (Mukden), *c.*, Liaoning, Manchuria, N. China; on Hun-Ho in narrowest part of lowland linking N. China plain with plain of Manchuria; impt. rly. junction with main routes N. to Harbin and Trans-Siberian Rly., S. to Peking, Lushan (Pt. Arthur) and into Korea; *gr.* commercial and political centre; *p.* (estd. 1952) 1,551,000.
- Shepherd's Bush**, *resid. sub.*, W. London, Eng.
- Shepparton**, *t.*, Victoria, Australia; 118 m. N.N.E. of Melbourne; *p.* (1943) 8,500.
- Sheppey**, *I. of*, Kent, Eng.; in Thames estuary E. of mouth of *R.* Medway; 9 m. long, 5 m. wide; cereals, sheep-raising.
- Shepshead**, *t.*, *urb. dist.*, Leicester, Eng.; 3 m. W. of Loughborough; gloves, boots, shoes, needles; *p.* (1951) 6,235.
- Shepton Mallet**, *mkt. t.*, *urb. dist.*, Somerset, Eng.; at foot of Mendip Hills, 5 m. S.E. of Wells; velvet, silk; *p.* (1951) 5,131.
- Sherborne**, *mkt. t.*, *urb. dist.*, Dorset, Eng.; 4 m. E. of Yeovil; famous abbey and school; gloves, silk, creameries; *p.* (1951) 5,987.
- Sherbrooke**, *c.*, Quebec, Canada; at confluence of *R.s.* St. Francis and Magog; woollens, cottons, carpets, machinery, sawmills; *p.* (1951) 50,543.
- Sherchell**, *small spt.*, Algeria; *mkt.*; *p.* 12,650.
- Sheridan**, *t.*, Wyoming, U.S.A.; *p.* (1950) 11,500.
- Sheringham**, *t.*, *urb. dist.*, Norfolk, Eng.; on N. est. 4 m. W. of Cromer; seaside resort; fishing; *p.* (1951) 4,803.
- Sherman**, *t.*, Texas, U.S.A.; *tr.* in locally produced cotton and corn; *p.* (1950) 20,150.
- Sherwood Forest**, *ancient royal woodland*, Notts., Eng.
- Shetland Is.**, Scot.; in Zetland co., 50 m. N.E. of the Orkneys; about 100 in group, *ch.* I., Mainland; textiles, fishing; also cattle, sheep, ponies; potatoes; *ch.* t. Lerwick; *a.* 551 sq. m.; *p.* (1951) 19,343.
- Shenoyenne**, *R.*, Dakota, U.S.A.; trib. of Red R.; length 325 m.
- Shields**, North, *see* Tynemouth.
- Shields**, South, *see* South Shields.
- Shifnal**, *mkt. t.*, *rural dist.*, Shropshire, Eng.; 5 m. S.E. of Wellington; malting, coal, iron; *p.* (rural dist., 1951) 13,534.
- Shigatse**, *t.*, Tibet; on *R.* Tsangpo; *tr.* centre on main caravan routes; *p.* 9,000.
- Shikarpur**, *t.*, Bombay, India; trading centre, gems and silk; *p.* over 62,000.
- Shikoku**, *one of the Ise Is.* Japan; S. of Honshu; rice, fruit, sugar-cane; copper; *a.* 7,248 sq. m.
- Shildon**, *t.*, *urb. dist.*, Durham, Eng.; 3 m. S. of Bishop Auckland; rly. wks.; *p.* (1951) 14,513.
- Shilka**, *R.*, E. Siberia; trib. of *R.* Amur; length 760 m.
- Shillong**, *t.*, Assam, India; at alt. 4,500 ft. in Khasi Hills; centre of impt. tea-growing dist.; *p.* 25,000.
- Shimabara**, *t.*, Japan; holiday resort; *p.* (1947) 38,510.
- Shimizu**, *spt.*, Japan; tea centre; oranges, paper, tinned fruit and fish; *p.* (1947) 68,892.
- Shimoda**, *spt.*, Honshu, Japan; between Nagoya and Yokohama; *p.* 10,000.
- Shimonoseki**, *spt.*, Honshu I., Japan; at extreme S.W. of I.; steamer connections to Moji (Kyushu I.); *p.* (1950) 193,572.
- Shin**, *Loch*, Sutherland, Scot.; 16½ m. long; drained by *R.* Shin to the *R.* Oykel.
- Shipka Pass**, Bulgaria; over the Balkan Mtns. 47 m. N.E. of Plovdiv.
- Shipley**, *t.*, *urb. dist.*, W.R. Yorks, Eng.; on *R.* Aire; 8 m. N.W. of Leeds; worsted mnfs.; *p.* (1951) 32,585.
- Shipston-on-Stour**, *mkt. t.*, Warwick, Eng.; in Cotswold Hills, 4 m. E. of Chipping Camden; rope, farming; *p.* 1,365.
- Shiraz**, *c.*, *cap.*, Fars, Persia; beautifully sited in vine-growing dist.; mosaics, carpets, silk; *p.* (estd. 1949) 114,000.
- Shire**, *R.*, flows from L. Nyasa to R. Zambesi; on it are the famous Murchison Falls, up to which the *R.* is navigable; length 380 m.
- Shirwa** or **Chilwah**, *shallow L.*, *nr.* Nyasa, Africa; 40 m. long, 14 m. wide; has 4 Is.

**Shiuchow (Kukang), t., Kwangtung, China;** tobacco, ground-nuts; head of navigation of R. Pei; p. (estd. 1935) 207,610.

**Shiuhing, t., Kwangtung, China; W. of Canton:** marble; oranges.

**Shizuoka, spt., Honshu, Japan;** tea refining, blending, packing; oranges, fruit tinning; woodwork; textiles; p. (1950) 233,629.

**Shkodra (Scutari), L., 29 m. long;** on borders of Montenegro and Albania; outlet via R. Bojana into Adriatic.

**Shkodra (Scutari), t., Albania;** stands at foot of S. L. (ancient cap. Illyria); cas., cath.; textiles, fire-arms; exports tobacco, grain, wool, skins, etc.; p. (1930) 29,209.

**Shoa, st., Ethiopia;** S.E. Amhara.

**Shoalhaven, R., N.S.W., Australia;** length 260 m.

**Shoeburness, t., Essex, Eng.;** on N. side of Thames estuary, 3 m. E. of Southend; barracks, gunnery school, bricks.

**Sholapur, c., Bombay, India;** between Hyderabad and Poona; large bazaar, temples, etc., silk, cotton cloth; p. (1951) 266,050.

**Shoreditch, metropolitan bor., E. London, Eng.;** industr.; p. (1951) 44,885.

**Shoreham-by-Sea, t., urb. dist., W. Sussex, Eng.;** at mouth of R. Adur, 4 m. E. of Worthing; old spt. and mkt. t.; p. (1951) 13,052.

**Shoshone Falls, on Snake R., Idaho, U.S.A.;** height 200 ft.

**Shott esh Shergui, largest saline lake, Algeria.**

**Shotts, plateau, N. Africa;** upland reg. with salt lakes, within Atlas mtns.

**Shreveport, c., Louisiana, U.S.A.;** industr. centre in cotton-growing dist.; petroleum; p. (1950) 127,206.

**Shrewsbury, co. t., mun. bor., Salop, Eng.;** on R. Severn 12 m. above Ironbridge gorge between The Wrekin and Wenlock Edge; glass-staining, iron, malting, brewing; impt. cattle and sheep mkt.; famous public school where Philip Sidney and Darwin went; fine churches, Shire Hall, Guildhall, etc.; p. (1951), 44,926.

**Shropshire (Salop), N.W. midland co., Eng.;** bordering on Wales; fine pastoral country with hills and woodland, agr. and dairying; iron; mnfs.; cap. Shrewsbury; a. 1,347 sq. m.; p. (1951) 289,844.

**Shufu, see Kashgar.**

**Shumen (Shumia), t., Bulgaria;** S.E., of Ruse; cloth; occupied by Russians, 1878; p. (1947) 31,169.

**Shumerliya, t., Chuvashia, U.S.S.R.;** cellulose, paper, woodworking; p. 10,000.

**Shurma, t., Hejaz, Saudi Arabia;** S. of Medina.

**Shusha, industr. t., S.W. Azerbaijan, U.S.S.R.;** silk-weaving, leather.

**Shustar, t., Persia;** carpets, woollens, pottery, etc. shallow-draught boats can reach Shallili, nr. S. by R. Karun; p. 20,000.

**Shuya, t., U.S.S.R.;** textiles, sheepskin coats; p. (1939) 57,950. [p. 17,286.]

**Shwebo, t., Central Burma;** on R. Irrawaddy.

**Si Kiang, ch. R., S. China;** headstreams rise in Yunnan plateau, form main R. nr. Sunchow. R. then flows E., enters S. China Sea through lge. delta nr. Hong Kong; lower valley intensively cultivated, rice, sugar-cane, tea; tropical climate permits continuous cultivation of most crops throughout year; valley v. densely populated.

**Siakot, t., Lahore, W. Punjab, Pakistan;** N.E. of Lahore; paper and cotton mfg.; p. (1951) 167,543.

**Siam (Thailand), kingdom, S.E. Asia;** much jungle; hot, abundant summer rainfall; ch. product, rice, also rubber, teak-wood, salt, pepper, tin; rice-mills; cap. Bangkok; a. 200,148 sq. m.; p. (1946) 18,147,000.

**Siam, G. of, large inlet, S. China Sea;** 385 m. from N.W. to S.E.

**Sian (Changan), c., cap., Shensi, China;** mkt.; oil and sawmills; (estd. 1952) 629,000.

**Šibenik, t., Jugoslavia;** naval base; fishing, weaving, woollens, chemicals; bauxite; p. 37,271.

**Siberia, terr., U.S.S.R.;** from the Ural Mtns. to Sea of Okhotsk and Bering Strait, bounded by the Arctic on the N., and on the S. by Mongolia and Turkestan; climate mostly severe; ch. ts. Novosibirsk (cap. W.S.) and Irkutsk (cap. E.S.); rich in coal, iron, minerals; resources

not yet fully known; a. 4,210,420 sq. m.; p. (1939) 21,891,469.

**Siberut, t., S. of Sumatra, Indonesia.**

**Sibi, t., Baluchistan, Pakistan;** lignite; p. 9,532.

**Sibiu, t., Central Romania;** linen, leather, brewing; p. (1945) 63,733.

**Sibu, t., Sarawak; Brit. Borneo, E. Indies;** 80 m. up R. Rejang; p. 5,000.

**Sicily, the largest I.;** Mediterranean Sea; former kingdom and now a region of Italy; produces corn, oranges, olives, silk, almonds, sardines, sulphur and salt; pleasant climate; mountainous, highest point the volcano Mt. Etna; ch. ts. Palermo, Catania, Messina; a. 9,926 sq. m.; p. (1951) 4,462,220.

**Sicuni, t., S. Peru, S. America;** alt. 11,650 ft.; agr. and pastoral dist. centre; p. 15,000.

**Sidamo, see Galla and Sidamo.**

**Sidcup, see Chislehurst and Sidcup.**

**Sidi bel Abbes, t., W. Algeria;** wheat, barley, tobacco, olives, vines; cattle, wool; footwear, bricks, furniture, cheese, macaroni; p. (1948) 61,355.

**Sidlaw Hills, low mtn. range, Angus, Perth, Scot.**

**Sidmouth, mkt. t., urb. dist., Devon, Eng.;** on S. cst., 15 m. S.E. of Exeter; seaside resort; Honiton lace, gloves; p. (1951) 10,403.

**Sidon, cst. t., Lebanon;** on Mediterranean, N. of Beirut; p. 17,695.

**Siedlce, t., Poland;** E. of Warsaw; p. 25,562.

**Siegburg, t., N. Rhine-Westphalia, Germany;** on R. Sieg; tobacco factories, fireworks; p. 20,446.

**Siegen, t., N. Rhine-Westphalia, Germany;** on R. Sieg nr. Cologne; iron-mining and smelting; p. 32,757.

**Siemianowice Śląskie, t., Poland;** nr. Katowice; p. 18,438.

**Siena, t., Tuscany, Italy;** in Tuscan Hills, 30 m. S. of Florence; many fine bldgs., univ., cath.; palazzo, "the Palio" traditional festival and races held annually; machinery, textiles, iron work; p. (1951) 52,226.

**Sieradz, t., Poland;** on R. Warta; p. 23,449.

**Siero, t., Oviedo, Spain;** on R. Nora; agr., livestock-raising, coal-mining; p. 30,931.

**Sierra Da Estrella, see Estrella, Sierra da.**

**Sierra de Baudo, mtn. range, Colombia, S. America.**

**Sierra de Gata, mtn. range, half in Portugal, half in Spain.**

**Sierra de Gredos, mtn. range, Central Spain.**

**Sierra de Guadarrama, mtn. range, Central Spain.**

**Sierra Leone, Brit. protectorate, Brit. W. Africa;** ch. products palm oil, palm kernels, ginger, rubber, some cotton; iron-ore and diamond deposits; cap. Freetown; a. 27,925 sq. m.; p. (1952) 2,000,000.

**Sierra Leone, Brit. col., Brit. W. Africa;** cap. Freetown; a. 256 sq. m.; p. (1940) 121,000.

**Sierra Madre, mtn. range, W. cst., Mexico and Guatemala.**

**Sierra Mojada, mtn. range, Central Mexico.**

**Sierra Morena, mtn. range, Spain;** between Guadalquivir and Guadiana basins, highest point 5,500 ft.

**Sierra Nevada, mtn. range, Granada, Spain;** highest summit, Mulhacen.

**Sierra Nevada, mtn. chain, California, U.S.A.;** highest peak Mt. Whitney, alt. 14,893 ft.

**Sierra Nevada de Mérida, mtn. range, W. Venezuela;** S. America; extends N.E. from San Cristobal to Barquisimeto; extension of E. range of Andes, alt. over 16,000 ft.; impt. coffee plantations from 3,000 to 6,000 ft. on slopes.

**Sierra Nevada de Sta. Marta, mtns., Colombia, S. America;** summits over 19,000 ft.

**Sighet, t., N. Romania on U.S.S.R. frontier;** p. (1945) 18,329.

**Siglufjörð, spt., N. Iceland;** herrings; p. (1947) 2,972.

**Siguir, t., French Guinea, Fr. W. Africa;** on R. Niger; gold; p. 11,000.

**Sirt, t., Turkey;** S. of Bitlis; p. 16,210.

**Sikang, prov., China;** cap. Kangting; a. 164,991 sq. m.; p. (1947) 1,756,000.

**Sikasso, t., Fr. Sudan, Fr. W. Africa;** mkt., route centre; p. 13,000.

**Sikkim, st., E. Himalayas, adjoining Tibet, Nepal, and Bhutan;** dense forests, with rich flora and orchidaceae, but grows rice and Indian corn in the clearings; ch. tr. routes from Bengal to Tibet pass through the st.;



- cap. Gangtok; a. 2,745 sq. m.; p. (1951) 135,646.
- Sila, *La, mtn. massif*, Calabria, S. Italy; granite mass occupying full width of peninsula; alt. over 3,500 ft., max. 6,327 ft.
- Silchester, *par.*, Hants, Eng.; between Basingstoke and Reading; Impt. centre of the Roman road system; many Roman remains.
- Silesia (Polish Śląsk, Czech Slezsko), *geographical region*, Europe; extends on both sides of Oder R.; rich in coal, zinc, iron, arsenic; farming, sugar-beet, cereals, fruit, general industry; has frequently changed hands, in 1919 was divided between Germany (70%), Poland (25%), and Czechoslovakia (5%); in 1945 the former German part became Polish, now forms 2 provs., caps. Katowice and Wrocław; p. 4,764,500; the Czechoslovakian part is united with Moravia; p. 200,000.
- Silistra, *t.*, Bulgaria; on N.E. Romanian border, on Danube R.; cloth, distilleries, sawmills, grapes; p. 16,180.
- Silkeborg, *t.*, Jutland, Denmark; W. of Aarhus; p. 20,955.
- Silloth, *resort*, on Solway Firth, Cumberland, Eng.; coal, grain.
- Silsden, *t., urb. dist.*, W.R. Yorks, Eng.; on R. Aire, 4 m. N.W. of Bingley; p. (1951) 5,820.
- Silva Porta, *t.*, Angola, Africa; admin. t.; cattle, agr. centre; p. 4,671.
- Silver City, *t.*, N. Mex., U.S.A.; gold, iron, silver; cattle; health resort; p. (1950) 7,022.
- Silver Spring, *t.*, Maryland, U.S.A.; sub. to Washington; p. 43,294.
- Simalur, *I.*, S. of Sumatra, Indonesia.
- Simcoe, *L.*, N. of L. Ontario, Canada; 30 m. by 18 m.
- Simeto, *E.*, Sicily, Italy; rises in central Sicily, flows E. across plain of Catania into Mediterranean; lower course bordered by malarial marshes; length 54 m.
- Simferopol, *t.*, Crimea, U.S.S.R.; on R., Salghir nr. Sevastopol; soap, candles, fruits; p. (1939) 142,678.
- Simla, *cap.*, E. Punjab, Indian Union; alt. 7,075 ft. above sea, with sanatorium; p. (1941) 18,348.
- Simonstown, *C.* of Good Hope, S. Africa; naval stn., docks; p. 7,310.
- Simplon, *mtn.*, Switzerland; alt. 11,695 ft.; the pass over the Simplon (alt. 6,594 ft.) from Domodossola, Italy, to Brig in the Rhône valley, Switzerland, was originally made by Napoleon I. The Simplon rly. tunnel leads from Brig on the Swiss side to Iselle in the Val di Vedro on the Italian and is the longest in the world, 12½ miles.
- Sinai, *peninsula*, between Gs. of Aqaba and Suez, at head of Red Sea; a. 11,055 sq. m., mainly desert; Mt. Sinai (the Arab Jebel Musa, or "Mt. of Moses") called also Horeb, is one of numerous mtns. on the peninsula; alt. 7,363 ft.
- Sinaloa, *st.*, Mexico; on G. of California; agr. and mining, rich in gold, silver, copper, iron and lead; cap. Culiacán; a. 22,580 sq. m.; p. (1950) 621,940.
- Sind, *state*, Pakistan; formerly part of the Mogul Empire; administrative headquarters at Karachi, spt. for the Indus valley; mostly desert, only one-tenth irrigated; products, cereals, hemp, cotton, indigo; a. 50,443 sq. m.; p. (1951) 4,619,000.
- Sindara, *t.*, Fr. Equat. Africa; admin. centre.
- Sines, *spt.*, S. Portugal; birthplace of Vasco da Gama; p. 6,094.
- Singapore, *I.*, *Brit. Crown col.*, at S. extremity of Malay Peninsula; includes Christmas I. and Cocos Is.; British naval base; rubber, fruits, coffee; a. 291 sq. m.; p. (1953) 1,123,400.
- Singareni, *t.*, Hyderabad, India; coal. [wks.]
- Singhbhum, *dist.*, Bihar, India; iron- and steel-Singora, see Songkhala.
- Sinkiang, *N.W.*, *prov.*, China, bordering on Soviet Union and Kashmir; *aut. reg.*; cereals, cotton, wool, silk; cap. Tihwa; a. 705,962 sq. m.; p. 4,360,000.
- Sinnah, *t.*, Persia; carpets; p. 32,000.
- Sinop, *Turkish t.*, on Black Sea in I. of same name; timber, silk; p. 4,896.
- Sintra (Cintra), *t.*, Portugal; summer resort, 18 m. from Lisbon; convention of S., 1808.
- Sion, *cap.*, Valais, Switzerland; on R. Rhône; built on two castled hills; cath.; p. 9,363.
- Sioux City, Iowa, U.S.A.; on R. Missouri; meat-packing, foundries, electrical goods, cement; p. (1950) 83,991.
- Sioux Falls, *t.*, S. Dakota, U.S.A.; on Big Sioux R.; in rich wheat region; machinery, cars, farming implements; p. (1950) 52,696.
- Sirajganj, *t.*, Bengal, Pakistan; on R. Jamuna; gr. jute-mart; p. 5,000.
- Sir Edward Pellew, *group of Is.*, N. Australia; in G. of Carpentaria.
- Siret R., see Sereth R.
- Sirmur, *former Punjab State*, India; merged into the Indian Union; ch. t. S. (or Nahan).
- Sitapur, *t.*, Uttar Pradesh, India; p. 30,381.
- Sitka (formerly Novo Archangelsk), *t.*, S.E. Alaska, U.S.A.; on Baranof I., in Sitka Sound; was ch. port of former Russian America; gold-mines; lumbering, canning; naval and coaling stn.; p. (1950) 2,080.
- Sitra, *I.*, Persia G.; forming part of st. of Bahrain, Arabia, 3 th. long and 1 m. wide; from here an oil pipeline and a causeway carrying a road extends out to sea for 3 m. to a deep-water anchorage.
- Sittang R., Burma; rises in Pegu Yoma, flows S., enters G. of Martaban, Andaman Sea through delta; valley intensively cultivated, rice; delta forested; length 610 m.
- Sittingbourne and Milton, *mkt. t., urb. dist.*, Kent, Eng.; on Milton Creek, 9 m. E. of Chatham; paper-mills, brick-wks.; cement; centre of fruit growing dist.; p. (1951) 27,904.
- Sivas, *Turkish I.*, rich in minerals, has mineral springs with fertile grain-growing soil, fine orchards and vineyards, besides timber forests; cap. Sivas; p. (1945) 494,373.
- Sivas, *t.*, Turkey; in the Kizil Irmak valley; mnfs. woollens; p. (1945) 45,419, three-fourths Moslems.
- Sivash or Putrid Sea, lagoon on E. side of Crimea, U.S.S.R.
- Siwa, *oasis*, Egypt; in Libyan Desert, 300 m. S.W. of Alexandria; dates, olives, remains of temple of Ammon and the fountain of the Sun; 20 m. long, 1 m. wide; p. 1,000.
- Sjælland I., Denmark; largest island; agr., fishing, mnfs.; ch. t. Copenhagen; a. 2,840 sq. m.
- Skagen, *t.*, N. Denmark; on est. of the Skagerrak; p. 6,446.
- Skagerrak, arm of N. Sea, giving access to the Kattegat, between Norway and Denmark, 70-90 m. wide.
- Skagway, *sm. spt.*, Alaska, U.S.A.; at head of Lynn Canal inlet, 400 m. N.W. of Prince Rupert; linked by rly. to Whitehorse on Upper R. Yukon; boomed in gold rush (in 1898, p. 15,000), subsequently declined; p. (1940) 634.
- Skanderborg, *t.*, Jutland, Denmark; S.W. of Aarhus; p. 4,171.
- Skåne (Scania), *peninsula*, extreme S. of Sweden; corresponds approx. to counties Malmöhus, Kristianstad; most favoured part of Sweden in relief, soil, climate; intensive farming, wheat, barley, sugar-beet, fodder crops, dairy cattle; ch. ts. Malmö, Lund, Trelleborg; a. approx. 4,000 sq. m.
- Skaraborg, *co.*, Sweden; a. 3,269 sq. m.; p. (1950) 243,397.
- Skaw, *The (Grenen), C.*, at extreme N. of Denmark.
- Skeena, *R.*, B.C., Canada; rises in N. Rocky Mtns., flows S.W. to Pac. Oc. at Prince Rupert; lower valley used by Canadian National Rly. from Edmonton (Alberta) to Prince Rupert via Yellowhead Pass; length approx. 400 m.
- Skegness, *t., urb. dist.*, Lindsey, Lincoln, Eng.; on E. est. at entrance to The Wash; farming, vegetables; resort; p. (1951) 12,554.
- Skelmersdale, *t., urb. dist.*, Lancs, Eng.; coal, bricks, drainpipes; p. (1951) 6,211.
- Skelton and Brotton, *t., urb. dist.*, N.R. Yorks, Eng.; at N. foot of Cleveland Hills, 10 m. E. of Middlesbrough (1951) 12,099.
- Skerries, *spt.*, Dublin, Ireland; fishing; muslin, stones.
- Skibbereen, *mkt., spt., urb. dist.*, Cork, Ireland; farming; p. (1946) 2,361.
- Skiddaw, *mtn.*, Cumberland, Eng.; E. of Bassenthwaite L.; alt. 3,054 ft.
- Skien, *spt.*, Bratsberg, Norway; on R. Skien; saw-mills, ice, and timber tr.; p. (1946) 14,474.
- Skjernice, *t.*, Poland; S.W. of Warsaw; p. 17,666.

- Skipton, *t.*, *urb. dist.*, W.R. Yorks, Eng.; on R. Aire, 6 m. N.W. of Keighley; woollen factories; p. (1951) 13,210.
- Skive, *t.*, N. Jutland, Denmark; fishing; rly. centre; p. 12,360.
- Skopin, *t.*, U.S.S.R.; S.E. of Moscow; corn, cattle, oil and salt tr., flour mills; p. 16,740.
- Skopje, *t.*, *cap.*, Macedonia, Yugoslavia; chrome-mines in neighbourhood; the ancient Scopi; p. (1948) 91,491.
- Skowhegan, *t.*, Maine, U.S.A.; p. (1950) 6,183.
- Skye, *I.*, largest of the Inner Hebrides, Inverness, Scot.; mountainous; sheep-farming and fisheries; only town, Portree; a. 547 sq. m.
- Skyros, *I.*, Grecian Archipelago, E. of Evvoia (Euboea).
- Slagelse, *old t.*, Sjaelland (Zealand), Denmark; p. 18,073.
- Slaitwhait, *mkt. t.*, W.R. Yorks, Eng.; S.W. of Huddersfield.
- Slamannan, *par.*, Stirling, Scot.; coal, iron; p. 3,001.
- Slanic, *t.*, Wallachia, Romania; on S. flank of Carpathian Mtns., 22 m. N. of Ploesti; impt. salt deposits.
- Ślask, *see* Silesia.
- Slatina, *t.*, Romania; on R. Olt, 87 m. W. of Bucharest; ancient churches; p. 13,136.
- Slave, *R.*, N.W. Terr., Canada; flows into Gr. Slave L.
- Slave Coast, portions of Guinea est., W. Africa, embracing Dahomey and col. of Nigeria.
- Slavonia, former Crown land (with Croatia) of Hungary; now Yugoslavia; a. 8,987 sq. m.; *cap.* Osijek; p. 2,625,000.
- Slavyansk, *t.*, Ukraine, U.S.S.R.; coal, chemicals, salt; p. (1939) 75,542.
- Sleaford, *mkt. t.*, *urb. dist.*, Kesteven, Lincoln, Eng.; 12 m. N.E. of Grantham; malting, farming; p. (1951) 7,282.
- Sleepers, The, *group of Is.*, Hudson Bay, Canada.
- Slesko, *see* Silesia.
- Sieve Bloom, *hill range*, Offaly and Laochis cos., Ireland; highest point 1,733 ft.
- Sieve Donard, *mtn.*, N. Ireland; highest of the Mourne Mtns., co. Down; alt. 2,796 ft.
- Silgo, *coast co.*, Connacht, Ireland; pasture, tillage, barren mtns., and turf; livestock, fishing; a. 737 sq. m.; p. (1951) 60,521.
- Silgo, *t.*, Silgo, Ireland; on Silgo Bay; distilling, flour, fisheries; p. (1946) 12,906.
- Slioch, *mtn.*, Ross and Cromarty, Scot.; 3,217 ft.
- Sliven, *t.*, E. Roumelia, Bulgaria; famous for black wine; p. (1947) 35,553.
- Slough, *t.*, *mun. bor.*, Bucks, Eng.; on river terrace N. of R. Thames, 23 m. W. of London; many light industries; p. (1951) 66,439.
- Slovakia, *old prov.*, Czechoslovakia; consists largely of Carpathian Mtns.; *ch. t.* Košice; a. 18,902 sq. m.; p. (1947) 3,402,300.
- Slovenia, *fed. unit*, Yugoslavia; *cap.* Ljubljana (Laibach); a. 6,266 sq. m.; p. (1947) 1,389,064.
- Slupsk, *t.*, Poland; W. of Gdańsk; p. 33,948.
- Småland, *dist.*, S. Sweden; barren upland area S. of L. Vättern; moorland, deciduous forest; contrasts greatly with remainder of S. Sweden.
- Smederevo, *t.*, Yugoslavia; nr. Belgrade; p. 15,455.
- Smethwick, *co. bor.*, Staffs, Eng.; N.W. sub. of Birmingham; chemicals, machinery, engineering, iron, glass; p. (1951) 76,397.
- Smichov, *t.*, Czechoslovakia; on R. Vltava; connected by bridge with Prague; mnfs.; p. 54,370.
- Smith Sound, Arctic Canada; connects Kane Bay with Baffin Bay.
- Smith's Falls, *t.*, Ont., Canada; rly. centre; p. 7,159.
- Smoky Hill, *R.*, Colorado, Kansas, U.S.A.; trib. of Kansas R.; length 400 m.
- Smolensk, *c.*, U.S.S.R.; on both banks of the R. Dnieper; tallow, linen, iron and copper smelting; p. (1939) 156,677.
- Smyrna, *see* Izmir.
- Snaefell, *highest mtn.*, I. of Man; alt. 2,034 ft.
- Snake R. or Lewis Fork, trib. of Columbia R., flows from Wyoming to Washington, U.S.A.; length 1,050 m.
- Sneek, *t.*, Friesland, Netherlands; nr. Leeuwarden; mnfs.; p. 16,320.
- Sneeuwbergen, *min. range*, C. of Good Hope, S. Africa.
- Sniatyn, *t.*, Poland; on R. Prut, nr. Ukrainian border; tanning, horse and cattle fairs; p. 12,120.
- Suizort, Loch, *arm of sea* (14 m. long), N. of I. of Skye, Scot.
- Snohetten, *mtn.*, highest in Dovrefjeld range, Norway; alt. 7,565 ft.
- Snowdon, *mtn.*, nr. Caernarvon, Wales; (highest in Eng. and W.); alt. 3,571 ft.
- Snowy, *R.*, N.S.W. and Victoria, Australia; rises in Mt. Kosciusko, flows S. into Bass Strait 80 m. W. of C. Howe; water carried through tunnel under Australian Alps to help irrigation in Murray valley; length 220 m.
- Soar, *R.*, Leicester, Nottingham, Eng.; rises in uplands of S. Leicestershire, flows N.W. through Leicester, Loughborough, into R. Trent nr. Long Eaton; lower valley contains main centres of hosiery and knitwear industries; length 43 m.
- Sobat, *R.*, Anglo-Egyptian Sudan, N.E. Africa; rises in S.W. of Abyssinian Highlands, flows N.W. into R. Nile 80 m. below L. No.; one of ch. sources of Nile flood-water; Abyssinia receives monsoon rains April to October, maximum discharge into White Nile, November and December; length over 500 m.
- Soche, *see* Yarkand.
- Society Is., *archipelago*, S. Pac. Oc.; between the Tuamotu Archipelago and Friendly Is., under French protection; *ch. I.* Tahiti; *ch. products* phosphate and copper; *cap.* Papeete; p. 37,303.
- Socotra, *Brit. I.*, G. of Aden, Indian Oc.; S. of Arabia and E. of C. Guardafui; gums, dates, fishing, stock-raising; a. 1,382 sq. m.; p. 12,000.
- Söderala, *spt.*, Sweden; nr. Söderhamn; p. 12,299.
- Söderhamn, *spt.*, Sweden; on G. of Bothnia, N. of Gävle; timber, wood-pulp, iron; p. 11,634.
- Södermanland, *co.*, Sweden; S.W. of Stockholm; a. 2,634 sq. m.; p. (1950) 214,056.
- Södertälje, *t.*, Sweden; on L. Malar; engineering, matches; resort; p. (1951) 25,266.
- Soerabaya or Surabava, *spt.*, Java, Indonesia; dockyards and arsenal; exports coffee, rice, cotton, sugar, tapioca; p. over 300,000.
- Soerakarta or Solo, *t.*, Java, Indonesia, p. over 100,000.
- Soest, *t.*, N. Rhine-Westphalia, Germany; machinery, soap, sugar; p. 22,573.
- Sofala and Manica, *prov.*, Mozambique; N. of Inhambane; by some identified with the "Land of Ophir" of the Bible; *cap.* Beira.
- Sofia, *t.*, *cap.*, Bulgaria; the ancient Sardica, and the Triaditza of the Byzantine Greeks; on Golem Isker R.; mnfs., sugar, beer, flour, leather, silk, tobacco, maize, linen; p. (1947) 434,888.
- Sogn og Fjordane, *co.*, Norway; a. 7,135 sq. m.; p. (1950) 97,680.
- Sogne Fjord, longest in Norway.
- Sohag, *t.*, Egypt; on R. Nile; p. (1947) 43,234.
- Soignies, *t.*, Belgium; on R. Senne; granite, flax; p. 10,309.
- Soissons, *t.*, Aisne, France; iron, copper, farm implements, glass, sugar; p. (1946) 18,174.
- Söke, *t.*, Turkey; liquorice, fruits, cereals, livestock; emery, lead; p. 11,837.
- Sokol, *t.*, U.S.S.R.; on R. Sukhona; paper; p. 10,000.
- Sokoto, *native st.*, Central Sudan, Africa; between Bornu and Ganda; now included in Brit. col. Nigeria; cotton-growing, dates, bananas, cattle-rearing.
- Sol Ilets, *t.*, U.S.S.R.; near Kazakhstan border; salt; p. 10,000.
- Solefteå, *t.*, Västernorrland, Sweden; on G. of Bothnia; p. 7,607.
- Solent, The, *strait* separating the I. of Wight from the mainland; extends from Hurst Castle to Calshot.
- Soleure (Solothurn), *can.*, N. Switzerland; arable, pastoral, and afforested; a. 306 sq. m.; p. 162,600.
- Solihull, *urb. dist.*, Warwick, Eng.; 5 m. S.W. of Birmingham; light industries; p. (1951) 67,977.
- Solikamsk, *t.*, U.S.S.R.; on R. Kama; potash and magnesium salts; aeroplanes; p. 10,000.
- Soling, *t.*, N. Rhine-Westphalia, Germany; 15 m. E. of Düsseldorf; cutlery centre; p. (1950) 147,845.
- Söller, *t.*, Majorca, Spain; p. 10,586.



- Solomon Is.,** *archipelago*, W. Pac. Oc.; part of which linked with Papua-New Guinea under Australian administration; copra, trocas shell, sweet potatoes; a. 3,910 sq. m.; p. (estd. 1950) 98,571.
- Solor I., Lesser Sunda Is.,** Indonesia; a. 114 sq. m.
- Solothurn, can.,** N.W. Switzerland; crossed by Jura mtns. and R. Aar; agr., pastoral, industri.; a. 306 sq. m.; p. (1950) 170,508.
- Solothurn, t.,** Switzerland; on R. Aar; watches, jewellery, cottons, motor production; p. (1941) 15,414.
- Sölvesborg, spt.,** Sweden; ice-breakers necessary in winter; tanneries; p. 4,246.
- Solway Firth,** arm of Irish Sea, between Dumfries, Kirkcudbright, Scot., and Cumberland; length 40 m.
- Somaliland, region,** N.E. Africa; "the Eastern Horn of Africa," from the Strait of Bab-el-Mandeb S. to the Equator.
- Somaliland, British, protectorate,** N.E. Africa; extends along G. of Aden, and up to 150 m. inland; comprised mainly of plateau, alt. 7,000-9,000 ft.; hot, dry climate (tempered inland by altitude); ch. products, hides, ostrich feathers; cap. Berbera; a. 68,000 sq. m.; p. (1952) 640,000 Somali.
- Somaliland, French, col.,** N.E. Africa; extends inland for approx. 90 m. from straits of Bab-el-Mandeb; comprised of plain, mainly below 600 ft. alt.; hot, dry climate; ch. products, coffee, hides, salt; cap. Jibuti (linked by rly. to Addis Ababa); a. 9,071 sq. m.; p. (1946) 44,800.
- Somaliland, Italian, former Italian col.,** N.E. Africa; now under Italian Trusteeship; extends S. along est. of Indian Oc. to bdy. of Kenya, and up to 200 m. inland; mainly below 1,200 ft. alt.; hot, dry climate; gum, ivory, cattle (some cotton and Italian plantations in the S.); cap. Mogadishu; a. (approx.) 194,000 sq. m.; p. (estd.) 1,255,000.
- Sombor, t.,** Serbia, Yugoslavia, p. (1948) 34,376.
- Sombrero I.,** Brit. Leeward Is., W. Indies; phosphate of lime.
- Somerset, S.W. co.,** Eng.; bounded inland by Gloucester, Devon, Wilts. and Dorset; pasture, arable, orchard, and woodland, with mines, quarries, and mnfs.; impt. fisheries; co. t. Taunton; a. 1,620 sq. m.; p. (1951) 551,188.
- Somerset East, t.,** C. of Good Hope, S. Africa; sheep, dairying, citrus fruits, angora hair; p. 7,419.
- Somerset West, t.,** C. of Good Hope, S. Africa; wine, fruit, veg.; explosives; p. 5,011.
- Somersworth, t.,** New Hampshire, U.S.A.; on Salmon Falls R.; mnfs.; p. (1950) 6,927.
- Somerton, par.,** Somerset, Eng.; milk processing; p. 1,776.
- Somerville, c.,** Mass, U.S.A.; sub. of Boston; varied mnfs.; p. (1950) 102,351.
- Somme, dep.,** N. France; mainly agr. with thriving textile industries; cap. Amiens; a. 2,443 sq. m.; p. (1946) 441,368.
- Somme, R.,** France; flows in depts. Aisne and Somme to English Channel; length 116 m.
- Sommen, L.,** Sweden (25 m. by 8 m.) 15 m. E. of L. Vättern.
- Somport Tunnel,** on bdy. France-Spain; carries main rly. from Pau to Zaragoza under Central Pyrenees; length 5 m.
- Sønderborg, spt.,** S. Jutland, Denmark; resort; cas. (mil. barracks); p. 14,125.
- Sondershausen, t.,** Thuringia, Germany; woollens, salts; p. 10,677.
- Sondrio, prov.,** Lombardy, Italy; silk; a. 1,233 sq. m.; cap. Sondrio; p. (1951) 163,376.
- Songea, t.,** Tanganyika, Brit. E. Africa; admin. centre; wheat, coffee, tobacco.
- Songkhala, spt.,** S. Siam; exports tin; p. 10,000.
- Song Koi (Red R.),** R., rises in Yunnan plateau, S.W. China, flows S.E. through Tongking, Fr. Indo-China, enters G. of Tongking, S. China Sea at Haiphong; lower valley densely populated and intensively cultivated; length approx. 800 m.
- Sonneberg, t.,** Thuringia, Germany; toys; p. 20,083.
- Sonora, st.,** Mexico; on G. of California; silver-mines, stock-raising, grain, cotton, sugar, fruit, tobacco growing; cap. Hermosillo; a. 70,477 sq. m.; p. (1950) 507,429.
- "Soo" Canals,** see Saulte Ste. Marie Canals.
- Soochow (Wu-hsien), c.,** Kiangsu, China; nr. Shanghai; former treaty port; silk weaving and export; cotton, rice; p. (estd. 1936) 389,797.
- Sopot, spa, seaside resort,** Poland; on W. shore of Gdańsk B.; p. 26,917.
- Sopron, t.,** N.W. Hungary; on R. Hunte; impt. horse fair; p. 42,255.
- Sorata, t.,** Bolivia; 57 m. W. La Paz; nr. Andes peak of Ancohuma (Ilampu); p. 2,000.
- Sorau,** see Zary.
- Sorel, t.,** Quebec, Canada; sawmills, foundries, engineering; p. 12,251.
- Soria, prov.,** Old Castile, Spain; agr. and cattle-rearing, with cheese, timber, wool, and salt export; cap. Soria; a. 2,977 sq. m.; p. (1950) 161,182.
- Soria, t., cap.,** Soria, Spain; on R. Douro; p. (1949) 17,066.
- Soriano, dep.,** Uruguay; a. 3,561 sq. m.; cap. Mercedes; p. (1942) 93,490.
- Sormova, t.,** Gorki reg., U.S.S.R.; machinery, Diesel motors, boilers, linen.
- Soro, t.,** Zealand, Denmark; p. 3,191.
- Sorocaba, t.,** Brazil; rly. works; textiles, cement, footwear, wines; p. 48,594.
- Soroki, t.,** Moldavian S.S.R., U.S.S.R.; on R. Dniester; tr. in wine, corn, cattle, wool and fruit; p. 10,000.
- Soroti, t.,** Uganda; Brit. E. Africa; on Kloga L.; admin. centre; cotton ginning.
- Sorrento, cst. t.,** S. Italy; nr. S. extremity G. of Naples; popular resort, anciently celebrated for its fine wines; p. 26,325.
- Sortavala, t.,** Finno-Karelia, U.S.S.R.; cellulose, sawmills, paper; p. 4,600.
- Sör-Trondelag,** see Trøndelag.
- Sosnowiec, t.,** S.W. Poland; rly. junc.; coal, iron, textiles; p. 77,853.
- Sotteville-les Rouen, t.,** Seine-Inf., France; rly. works; p. (1946) 18,469.
- Soufrière, mtn.,** Basse-Terre I., Lesser Antilles Group, W. Indies; volcanic; highest peak in Lesser Antilles; alt. 4,869 ft.
- Sound, The,** channel between the Kattegat and the Baltic, 3 m. across at narrowest part from Sweden to the Zealand cst.
- Sousse (Susa), spt.,** Tunisia; p. (1946) 36,566.
- South Africa, Union of,** British dominion, Africa; consisting of provs. of C. of Good Hope, Natal, Transvaal, and Orange Free State; climate, Mediterranean to tropical; vegetation, evergreens in C. region, grassland (veld) in E.; cereals, cotton, sugar, vines, citrus fruit, sheep and cattle, ostriches, gold, diamonds, coal, copper, tin, various mnfs.; administrative cap. Pretoria; legislative cap. Cape Town; a. (inc. Walvis Bay) 472,494 sq. m.; p. (1951) 12,646,375 (2,643,187 European, 8,535,341 native, 1,467,847 other).
- South America, continent;** physical features, cst. regular except in S.W.; Andes Mtns. along whole of W. cst., Brazilian Highlands on E. cst., rolling plains in centre; climate, diverse, varying with latitude and altitude; equatorial, hot and wet; Atacama, a rainless desert on middle W. cst. In S. temperate; vegetation, varying with latitude, altitude, climate, from coniferous, deciduous, and tropical forest to tropical and temperate grasslands and deserts; ch. industries; temperate and tropical agr.; cocoa, coffee, sugar-cane, rubber, cereals; cattle, sheep; minerals; gold, silver, copper, tin, diamonds, nitrates; factory industries developing gradually; races: Europeans, mainly of Spanish and Portuguese descent, Indians, Negroes, mulattoes and mestizos (mixed races); a. 7,300,000 sq. m.; p. (estd.) 80,000,000.
- South Atlantic,** see Atlantic Ocean.
- South Australia,** see Australia, South.
- South Bend, c.,** Indiana, U.S.A.; carriage and wagon wks., iron foundries, paper- and flour-mills, farming implements, aeroplanes; seat of Notre Dame University; p. (1950) 115,911.
- South Carolina, st.,** U.S.A.; level in E., and mtns. in W.; cereals, cotton, rice, tobacco; cap. Columbia; ch. port, Charleston; a. 31,055 sq. m.; p. (1950) 2,177,027.
- South Dakota, st.,** U.S.A.; mixed farming, wheat; gold, silver, lead, copper, lumbering, flour-milling, butter, cheese; cap. Pierre; a. 77,047 sq. m.; p. (1950) 652,740.

South Downs, *range chalk hills*, Sussex and Hants, Eng.

South Georgia, *Brit. I.*, S. Atlantic Ocean; a. 1,570 sq. m.; mtns., whaling centre.

South Holland, *prov.*, Netherlands; flat, intersected by rivers and dykes; cap. The Hague; a. 1,130 sq. m.; p. (1948) 2,308,383.

South I., *lge. I.*, part of Dominion of N.Z.; contains S. Alps (highest Mt. Cook, 12,849 ft.), Canterbury Plains; wool, mutton, dairy products, fruit; a. 53,093 sq. m.

South Kensington, *dist.*, in W. London; contains Victoria and Albert Museum, the Geological and Science Museums, the Natural History collection of the Brit. Museum, the Imperial Institute, the Albert Hall, etc.

South Molton, *mkt. t., mun. bor.*, Devon, Eng.; at S. foot of Exmoor, 10 m. S.E. of Barnstaple; p. (1951) 3,125.

South Orange, *t.*, N.J., U.S.A.; residtl.; p. (1950) 15,230.

South Orkney Is., Antarctica; whaling; met. stn.

South Portland, *c.*, Maine, U.S.A.; on Portland harbour; p. (1950) 21,866.

South Queensferry, *bor.*, W. Lothian, Scot.; p. 2,214.

South Sandwich Is., Antarctica; whaling.

South Shetland, *Brit. archipelago*, S. Atlantic; 600 m. S. C. Horn; whaling.

South Shields, *t., co. bor.*, Durham, Eng.; on S. bank at mouth of R. Tyne; ship-building and colliery centre, light industries being developed; p. (1951) 106,605.

Southall, *t., mun. bor.*, Middlesex, Eng.; 9½ m. W. of London; residtl.; many varied light industries; p. (1951) 55,900.

Southam, *mkt. t., rural dist.*, Warwick, Eng.; 5 m. S.E. of Leamington; lime, cement, mineral spring; p. (1951) 12,726.

Southampton, *spl., co. bor.*, Hants, Eng.; at head of Southampton Water on peninsula between estuaries of Rs. Test and Itchen; extensive docks for passenger-liners and other shipping, engineering; p. (1951) 178,326.

Southampton, C., S. pt. of Coates I., Hudson Bay, Canada.

Southampton Water, *inlet*, Hants, Eng.; comprises drowned estuaries of Rs. Itchen and Test; gives access from Solent and Spithead to spt. of Southampton; length 9 m., width 1-1½ m.

Southborough, *t., urb. dist.*, Kent, Eng.; in centre of The Weald, 2 m. N. of Tunbridge Wells; residtl.; p. (1951) 8,823.

Southbridge, *t.*, Mass., U.S.A.; optical instruments and cutlery; p. (1950) 16,748.

Southend-on-Sea, *t., co. bor.*, Essex, Eng.; on N. side of Thames estuary; wireless factory, varied light industries; p. (1951) 151,830.

Southern Alps, *range of mtns.*, S.I., New Zealand.

Southern Cross, *t., rly. junction*, W. Australia; on main Transcontinental Rly. 220 m. E. of Perth; gold-mines, now declining.

Southern Ocean, surrounds Antarctica; pack ice.

Southern Rhodesia, *Brit. self-governing col.*, Africa; became member st. of "Federation of Rhodesia and Nyasaland" in 1953; climate healthy; tobacco, maize, fruit; cattle; gold, coal, asbestos, chrome ore; cap. Salisbury; a. 150,333 sq. m.; p. (1951) 2,106,206.

Southgate, *mun. bor.*, Middlesex, Eng.; N. sub. of London; residtl.; p. (1951) 73,376.

Southland, *div.*, Otago; S.I., New Zealand; a. 11,170 sq. m.; p. (1948) 74,400.

Southport, *t., co. bor.*, Lancs, Eng.; on S. side of Ribbles estuary, 12 m. N. of Liverpool; seaside resort; residtl.; p. (1951) 84,057.

Southport, *vat. ph.*, Queensland, Australia; 50 m. S. of Brisbane; pastoral, dairying, fruit-growing and timber district; p. (1947) 8,432.

Southsea, *dist.*, Portsmouth, Hants, Eng.; seaside resort.

Southwark, *metropolitan bor.*, London, Eng.; on R. Thames; wharves, warehouses, etc.; p. (1951) 97,191.

Southwell, *mkt. t., rural dist.*, Notts, Eng.; lace, bricks; cath.; p. (rural dist. 1951) 39,705.

South-West Africa, mandate of Union of S. Africa; mostly desert, scanty rainfall; cattle, ostriches; diamonds, tin, copper; cap. Windhoek; a. 317,725 sq. m.; p. (1946) 360,040 (inc. 40,000 Europeans).

Southwick, *urb. dist.*, W. Sussex, Eng.; on S. est. 4 m. W. of Brighton; p. (1951) 10,718.

Southwold, *spl., mun. bor.*, E. Suffolk, Eng.; on E. est. 8 m. S. of Lowestoft; iron, rope, fishing; p. (1951) 2,473.

Sovetsk, *see Tilsit*.

Soviet Harbour, *spl.*, G. of Tartary, U.S.S.R.

Sowerby Bridge, *t., urb. dist.*, W.R. Yorks, Eng.; on R. Calder, 3 m. W. of Halifax; woollens; p. (1951) 13,770.

Sozh, R., Ukraine, U.S.S.R.; trib. of R. Dnieper; length 240 m.

Spa, *t.*, Liège, Belgium; mineral springs, resort; p. 9,372.

Spaask, *t.*, Far East, U.S.S.R.; nr. L. Khanka; beet sugar, cement.

Spain, *Kingdom* (without a sovereign), S.W. Europe; interior plateau; climate varied, very hot summers, warm rainy winters, N. W. mild, and wet, central plateau extremes of heat and cold; evergreen trees and shrubs; cereals, vines, citrus fruits, olives, nuts; sheep, goats, pigs, etc.; coal, copper, iron, lead, zinc, mercury, cork; mnfs. wine, sugar, silk, brewing, etc.; cap. Madrid; a. 189,890 sq. m.; p. (1950) 27,976,755.

Spalding, *mkt. t., urb. dist.*, Holland, Lincoln, Eng.; in The Fens, 10 m. up the R. Welland from The Wash; farming, garden produce; p. (1951) 11,031.

Spandau, *t.*, Brandenburg, Germany; firearms, gunpowder; previously gr. military centre.

Spanish Sahara, *col.*, N.W. African coast; cap. Villa Cisneros; a. 105,400 sq. m.; p. 37,000.

Spanish Town, *t.*, Jamaica, W. Indies; p. (1943) 12,007.

Sparrows Point, *t.*, Maryland, U.S.A.; situated on Chesapeake Bay at entrance to Bear Creek; impt. iron and steel industry.

Sparta, *famous ancient c.*, the Morea, Greece; on the R. Eurotas; passed under Roman rule, 146 B.C.; p. (1951) 11,040.

Spartanburg, *t.*, S. Carolina, U.S.A.; cotton mills; p. (1950) 36,795.

Spartel, C., International Zone, Morocco.

Spertivento, C., Italy; most S. point of Italian mainland.

Spencer Gulf, *lge. inlet*, S. Australia; penetrates 240 m. inland, max. width 75 m.

Spennymoor, *t., urb. dist.*, Durham, Eng.; 5 m. S. of Durham; mnfs.; p. (1951) 19,784.

Sperrin Mtns., Tyrone and Londonderry, N. Ireland.

Spey, R., Inverness, Moray, and Banff, the most rapid in Scot., flows N.E. to Moray Firth; length 107 m.

Speyer, *t.*, Rhineland-Palatinate, Germany; beer, sugar, paper; its famous Diet of 1529 condemning the Reformation gave rise to the term "Protestant"; p. 27,718.

Spezia, *La, spl.*, Liguria, Italy; on Bay of Spezia; arsenal, docks, maritime industries, electrical machinery, and olive oil; p. (1951) 109,978.

Spice Is., *see Moluccas*.

Spitalfields, *par.*, E. London, Eng.; formerly a gr. silk-weaving centre.

Spithead, *roadstead*, between Portsmouth and the I. of Wight, Eng.; used by ships of Royal Navy.

Spitsbergen (Svalbard), *I. group*, belonging to Norway; well within Arctic Circle; mountainous; sealing and whaling; coal, marble, iron ore, zinc, asbestos; a. 24,294 sq. m.; p. (1946) 1,551.

Split (Spalato), *c.*, Yugoslavia; wine, olive oil, bauxite, shipping; p. (1948) 49,964.

Spitzen Pass, Rhaetian Alps; between Lombardy and Grisons, Switzerland; alt. 6,939 ft.

Spokane, R., Idaho, U.S.A.; flows to the R. Columbia at Washington; length 120 m.

Spokane, *t.*, Washington, U.S.A.; on R. Spokane, at the fall which is used for hydro-electric power; gr. timber tr., flour and sawmills; p. (1950) 161,721.

Spoleto, *t.*, Perugia, Italy; truffles; p. 32,600.

Sporades, *I.*, Grecian Archipelago in the Aegean and neighbouring seas; belonging to Greece, includes Samos, Kos, etc.

Spree, R., Saxony and Brandenburg, Germany; flowing W. past Berlin to the Havel at Spandau; length 227 m.

Spremburg, *t.*, Brandenburg, Germany; on R. Spree; cloth, bicycles, machinery; p. 13,323.



- Springbok, t., cap.**, Namaqualand, C. of Good Hope, S. Africa; copper-mining; p. 1,599.
- Springfield, c., cap.**, Ill., U.S.A.; gr. rly. centre; iron, watches, etc.; p. (1950) 81,628.
- Springfield, c., Mass.**, U.S.A.; mnfs. cars, electrical apparatus and paper; p. (1950) 162,399.
- Springfield, c., Missouri**, U.S.A.; flour milling; Congregational college; p. (1950) 66,731.
- Springfield, c., Ohio**, U.S.A.; agr. implements, motor lorries; p. (1950) 78,508.
- Springfontein, t., O.F.S.**, S. Africa; rly. centre; p. 2,089.
- Spring, t.**, Transvaal, Union of S. Africa; E. of Johannesburg; p. (1946) 25,355.
- Springure, t.**, Queensland, Australia; rly. term.; wheat; p. 1,113.
- Spurn Head, C.**, E. Yorks., Eng.; at mouth of Humber estuary.
- Sretensk, t.**, S.E. Siberia, U.S.S.R.; coal, machinery, leather, woodworking.
- Srinagar, t., cap.**, Kashmir, India; on R. Jhelum in W. Himalayas; 5,263 ft. above sea-level; silver and copper wares, carpet weaving, paper; p. (1941) 207,787.
- Sriracha, t.**, Siam; sawmills; p. 81,471.
- Stade, t.**, Germany; nr. Hamburg; leather, alcohol; p. 14,997.
- Staffa, I.**, the Inner Hebrides, W. Scot.; 6 m. N. Iona, off W. coast Mull; Fingal's Cave, 227 ft. long, with other basaltic caves.
- Stafford, co. t., mun. bor.**, Staffordshire, Eng.; on R. Sow, 15 m. N. of Wolverhampton; iron and salt wks.; p. (1951) 40,275.
- Staffordshire, W. midland co., Eng.**; rich in iron and coal, the "Black Country" being famous; also large Potteries dist., brewing, and many thriving mnfs.; co. t. Stafford; a. 1,153 sq. m.; p. (1951) 1,621,013.
- Staines, mkt. t., urb. dist.**, Middlesex, Eng.; on R. Thames, 4 m. S.E. of Windsor; cars, light engineering; p. (1951) 39,983.
- Stainmore, pass**, N.R. Yorkshire, Eng.; crosses N. Pennines from Greta valley into upper Eden valley; used by main road but only minor rly.; alt. 1,370 ft.
- Stalin Canal (Baltic-White Sea Canal)**, U.S.S.R.; system of canals and canalised Rs.; links Leningrad via L. Ladoga and L. Onega to Soroka, on White Sea; opened 1933; approx. overall length 550 m.
- Stalinabad, t., cap.**, Tadzhikistan, U.S.S.R.; p. (1939) 82,540 (gr. increase since 1926).
- Stalingrad, c., U.S.S.R.**; on R. Volga, S. of Saratov; tractor wks., chemicals, oil refining; fierce siege and successful defence of S. Sept. to Nov. 1942 was turning point of the Second World War; p. (1939) 445,476.
- Stalino (Varna), fortified t., Bulgaria**; on Black Sea; ch. spt. of the city, with gr. grain tr.; p. (1947) 77,792.
- Stalino, t.**, Ukraine, U.S.S.R.; coal, iron, manganese; p. (1939) 462,395.
- Stalinogorsk (Bobriki), t.**, U.S.S.R.; on R. Don; lignite, fertilisers, chemicals; p. (1939) 76,207.
- Stalinsk, c., U.S.S.R.**; coal; developed as centre of heavy industry; p. (1939) 169,538.
- Stalybridge, t., mun. bor.**, Cheshire, Eng.; on R. Mersey, 5 m. E. of Manchester; cotton-spinning, weaving, iron-wks.; p. (1951) 22,544.
- Stamboul, see Istanbul.**
- Stamford, c., Conn.**, U.S.A.; on shore of Long I. Sound; p. (1950) 74,293.
- Stamford, mkt. t., mun. bor.**, Kesteven, Lincoln, Eng.; 10 m. N.W. of Peterborough; malting, coal; p. (1951) 10,899.
- Standerton, t.**, Transvaal, S. Africa; on R. Vaal; livestock, oats; p. 10,473.
- Standish-with-Langtree, urb. dist.**, Lancs., Eng.; 4 m. N.W. of Wigan; p. (1951) 8,991.
- Stanger, t.**, Natal, S. Africa; tea, sugar, maize, wattle; p. 2,500.
- Stanimaka (Asenovgrad), t.**, Bulgaria; wine tr.; p. 20,920.
- Stanislaus, R.**, California, U.S.A.; trib. of the San Joaquin R.; length 200 m.
- Stanislav, t.**, W. Ukraine, U.S.S.R.; oil; p. 25,000.
- Stanley, t., urb. dist.**, Durham, Eng.; 10 m. N.W. of Durham; mnfs.; p. (1951) 48,123.
- Stanley, spt., cap.**, Falkland Is.; whaling; p. (estd. 1950) 1,250.
- Stanley Falls**, on the Upper Congo R., Belgian Congo, Africa; nr. the Equator, named after the explorer, Sir H. M. Stanley.
- Stanley Pool**, an expansion of the Lower Congo, Africa; 25 m. long, 16 m. wide.
- Stanleyville, t.**, Belgian Congo, Africa; on R. Congo nr. Stanley Falls; named after the explorer; p. 27,312.
- Stanovoi Mtns., range of mtns.**, U.S.S.R.; extends from N. of R. Amur to nr. Sea of Okhotsk.
- Star of the Congo, t.**, Katanga, Belgian Congo, Africa; copper-mining.
- Stara Planina (Balkan Mtns.)**, Bulgaria; highest peak, 7,780 ft.
- Stara Zagora, t.**, Central Bulgaria; copper smelting, mineral springs; p. (1947) 37,057.
- Stargrad, t.**, Poland; prev. in Prussia; woollens, machinery, cottons, spirits; p. 9,773.
- Start Point, C.**, nr. Dartmouth, Devon, Eng.
- Stassfurt, t.**, Saxony-Anhalt, Germany; 12 m. S. of Magdeburg; potash salts, chemicals; p. 15,299.
- Staten I.**, the most S. point N.Y. st., U.S.A.; shipyards; also island off Tierra del Fuego, S. America; 45 m. long.
- States of the Church**, Italian territories ruled over by the Pope, in his secular capacity prior to 1870, now absorbed by other provinces.
- Stavanger, spt.**, Rogaland, Norway; margarine and preserved-food factories, woollen mills, fish curing and canning, shipbldg., etc.; p. (1946) 49,218.
- Staveley, t., urb. dist.**, Derby, Eng.; 3 m. N.E. of Chesterfield; coal, iron, mnfs.; p. (1951) 17,941.
- Stávnice, t.**, Czechoslovakia; impt. mining centre, producing silver, copper, lead.
- Stavropol, t.**, S. terr., R.S.F.S.R., U.S.S.R.; textiles, coal, farm implements; p. (1939) 85,100.
- Stawell, t.**, Victoria, Australia; 150 m. N.W. of Melbourne; gold-mining, agr., pastoral and tobacco growing dist.; p. (1947) 4,840.
- Steelton, bor.**, Penns., U.S.A.; steel foundries; p. (1950) 12,574.
- Steep Holm I.**, Bristol Channel, Eng.
- Steep Rock, see Atikokan.**
- Stellenbosch, t.**, C. Prov., Union of S. Africa; 25 m. E. of Cape Town; univ.; wines, fruit; p. (1946) 15,258.
- Stendal, t.**, Saxony-Anhalt, Germany; nr. Magdeburg; cath.; rly. wks., machinery, textiles; p. 31,768.
- Stepney, metropolitan bor.**, E. London, Eng.; p. (1951) 98,581.
- Sterlitamak, t.**, Bashkir A.S.S.R., U.S.S.R.; on S.W. flank of Ural Mtns., 120 m. N.E. of Chkalov (Orenburg); impt. oil-refineries on "Second Baku" oilfield; linked by pipeline to Stavropol.
- Šternberk, t.**, Moravia, Czechoslovakia; N. of Olomouc; textile mfg.; p. 12,566.
- Stettin, see Szczecin.**
- Steuenville, c.**, Ohio, U.S.A.; iron, steel, paper, glass, coal, natural gas; p. (1950) 35,872.
- Stevenage, mkt. t., urb. dist.**, Hertford, Eng.; in wind gap through Chiltern Hills, 4 m. S.E. of Hitchin; nucleus of new satellite t. to relieve congestion of London; p. (1951) 6,627.
- Stevenage, t.**, Hertford, Eng.; one of "New Towns" designated 1946; incorporates bulk of Stevenage urb. dist., and extends S. and E.; engineering and other light industries; p. (1951) 7,312.
- Stewart, R.**, trib. of R. Yukon, N.W. Terr., Canada.
- Stewart I.**, S. of I.I., New Zealand; a. 670 sq. m.
- Stewarton, burgh, Ayr.**, Scot.; 5 m. N. of Kilmarnock; woollens, carpets; p. (1951) 2,800.
- Steyning, vil.**, E. Sussex, Eng.; on R. Adur, 4 m. N. of Shoreham at entrance to gap through S. Downs; residit.; p. 1,875.
- Steyr, t.**, Austria; on R. Enns, nr. Linz; bicycles, lorries, small-arms factories; p. (1951) 36,727.
- Stilton, vil.**, Huntingdon, Eng.; 6 m. S.W. Peterborough; famous for cheese.
- Stinchar, R.**, Ayr., Scot.; flows W. to sea at Ballantrae; length 30 m.
- Stirling, ancient burgh**, Stirling, Scot.; on R. Forth in gap between Campsie Fells and Ochil Hills; cas.; p. (1951) 26,960.
- Stirling, midland co., Scot.**, borders Firth of Forth; coal-mining, agr., textiles; a. 466 sq. m.; p. (1951) 187,432. [10,790]
- Stockerau, t.**, Austria; machinery, chemicals; p. 10,790.
- Stockholm, c., cap.**, Sweden; on Is. at outlet of L. Malar; called the "Queen of the Baltic" for the beauty of its surroundings; commercial

- centre; machinery, textiles, leather, sugar, chemicals; many academic institutions; p. (1951) 745,936.
- Stockport, t., co. bor.,** Cheshire, Eng.; on R. Mersey, 5 m. S.E. of Manchester; cotton, hats, chemicals, machinery, leather; p. (1951) 141,660.
- Stocksbridge, urb. dist.,** W.R. Yorks; p. (1951) 10,277.
- Stockton, t., California, U.S.A.;** farm implements, flour, lumber; p. (1950) 70,853.
- Stockton-on-Tees, mkt. t., mun. bor.,** Durham, Eng.; 4 m. W. of Middlesbrough; gr. iron bridge connects the town with Thornaby and South Stockton (included in the parliamentary bor.) across the R. Tees; impt. iron and steel industries, elec. engineering, plastics, and large shipping tr., also linen and potteries; p. (1951) 74,024.
- Stoke-on-Trent, c., co. bor. (including Hanley, Stoke-upon-Trent, Fenton, Longton, and Stoke Rural),** Staffs, Eng.; at S.W. foot of the Pennines; art china and pottery, iron and coal; p. (1951) 275,095.
- Stoke Newington, metropolitan bor.,** N.E. London; p. (1951) 49,137.
- Stokesley, mkt. t., rural dist.,** N.R. Yorks, Eng.; 7 m. S. of Middlesbrough; linen, gunpowder; p. (rural dist. 1951) 17,922.
- Stone, mkt. t., urb. dist.,** Staffs, Eng.; on R. Trent, 7 m. S. of Stoke-on-Trent; boots and shoes; p. (1951) 8,299.
- Stoneham, t., Mass., U.S.A.;** boots and shoes; p. (1950) 13,229.
- Stonehaven, fishing t., burgh, Kincardine, Scot.;** on E. est., 14 m. S. of Aberdeen; brewing, woollens; p. (1951) 4,438.
- Stonehenge, prehistoric group of monumental stones, on** Salisbury Plain, Wilts, Eng. Seep. 685.
- Stonehouse, par., Lanark, Scot.;** coal; linen; p. 4,204.
- Stony Stratford, mkt. t., Bucks, Eng.;** on R. Ouse, nr. Buckingham; engineering, lace.
- Stornoway, spt., burgh, Ross and Cromarty, Scot.;** on E. est. of I. of Lewis, Outer Hebrides; herring fishing and steamer pier; p. (1951) 4,954.
- Stour, R., Kent, Eng.;** flows past Canterbury to Pegwell Bay; length 40 m.
- Stour, R., Somerset, Dorset, and Hants, Eng.;** trib. of R. Avon; length 55 m.
- Stour, R., Suffolk and Essex, Eng.;** flows E. to sea at Harwich; length 42 m.
- Stour, R., Worcs. and Staffs, Eng.;** trib. of R. Severn; length 20 m.
- Stourbridge, t., mun. bor., Worcs., Eng.;** on R. Stour, 9 m. W. of Birmingham; coal, tanneries, nails, glass, fire-brick mfgt.; p. (1951) 37,247.
- Stourport-on-Severn, urb. dist., mkt. t., Worcs., Eng.;** at confluence of R. Stour and Severn; carpets, tanning, textiles, iron; p. (1951) 10,140.
- Stowmarket, t., urb. dist., Suffolk, Eng.;** on R. Orwell, 11 m. N.W. of Ipswich; chemical manures; p. (1951) 7,325.
- Strabane, t., urb. dist., Tyrone, N. Ireland;** salmon fishing, agr. centre; p. (1951) 6,620.
- Straits Settlement, former Brit. col., Malay Peninsula;** comprising Singapore, Penang, Malacca, and Labuan; dissolved in 1946; Singapore became separate Crown Col., Penang and Malacca part of Federation of Malaya, and Labuan transferred to N. Borneo.
- Stralsund, spt., Mecklenburg, Germany;** opposite Rügen I.; grain tr., various mfs.; p. 43,630.
- Strand, t., C. of Good Hope, S. Africa;** resort; p. 9,270.
- Strangford Lough, arm of sea, Down, N. Ireland;** 18 m. long, 6 m. wide at entrance.
- Stranraer, burgh, Wigtown, Scot.;** at head of Loch Ryan; steamer service to Larne, Antrim, N. Ireland; creameries, brewing; p. (1951) 8,622.
- Strasbourg, fortif. c., cap., Bas-Rhin, France;** on R. Ill just above confluence with R. Rhine; captured 1870, regained 1918; fine cath., univ., imperial palace, many handsome new public bldgs.; extensive tr.; machinery, tanning, jewellery, printing, hardware; exports hogs, sausages, famous pies, beer, etc.; p. (1946) 175,515.
- Stratford, dist., E. London, Eng.;** in bor. of W. Ham; engine wks., mfgt.
- Stratford, c., Ontario, Canada;** woollens, farm machinery, flour, sawmills, engine wks.; p. 17,038.
- Stratford, t., on R. Housatonic, Conn., U.S.A.;** aircraft; p. 30,800.
- Stratford-on-Avon, t., mun. bor., Warwick, Eng.;** on R. Avon, 9 m. S.W. of Leamington; birth-place of Shakespeare; memorial theatre, library, etc.; p. (1951) 14,980.
- Strathaven, t., Lanark, Scot.;** cas.; brewing, weaving; p. 4,207.
- Strathmore, lowland belt, central Scotland;** extends from Crieff N.E. to Montrose; flanked to N. by Scot. Highlands, to S. by Sidlaw, and Ochil Hills; drained by Rs. Earn, Tay, Isla, S. Esk; famous for cereals and small fruits; length 60 m., width 7-10 m.
- Strathpeffer, wat. pl., Ross and Cromarty, Scot.;** 5 m. W. of Dingwall; spa.
- Strathspey, valley of the Spey, Scot.;** 70 m. long.
- Stratton and Bude, resort, N. Cornwall, Eng.;** on N. est. 12 m. S. of Hartland Point; p. 5,163.
- Straubing, t., Bavaria, Germany;** chemicals, machinery, breweries; p. 25,893.
- Strawberry, R., Utah, U.S.A.;** on E. slopes of Wasatch Mtns. 80 m. S.E. of Salt Lake City; dammed to supply irrigation water, led through  $3\frac{1}{2}$  m. tunnel under Wasatch Mtns. to 100 sq. m. cultivable land round L. Utah.
- Streatham, residit. dist., Surrey, nr. London, Eng.**
- Streator, c., Ill., U.S.A.;** bricks, glass, hardware, farm implements; p. 14,990.
- Street, t., urb. dist., Somerset, Eng.;** at foot of Polden Hills, 5 m. S.W. of Wells; boots and shoes; p. (1951) 5,300.
- Stretford, mun. bor., S.E. Lancs., Eng.;** sub. of Manchester; p. (1951) 61,532.
- Stromboli, I., Lipari Is., Mediterranean Sea;** off N. est., Sicily; active volcano, alt. 3,038 ft.; p. 853.
- Stromness, mkt. burgh, port, Mainland, Orkney Is., Scot.;** 13 m. W. Kirkwall; p. (1951) 1,503.
- Stromstad, spt., Sweden;** on Skagerrak; seaside resort; shipbldg.; fishing.
- Stronsay, Orkney Is., Scotland.**
- Strood, t., Kent, Eng.;** in mun. bor. of Rochester; aluminium.
- Stroud, mkt. t., urb. dist., Eng.;** in Cotswold Hills, on R. Frome; numerous industries; p. (1951) 15,977.
- Strumble Head, promontory, N. Pembroke, Wales.**
- Stryi, R., Poland;** trib. of R. Dniester.
- Stryi, t., Poland;** sawmills, matches; p. 25,000.
- Sturgeon Falls, t., Ont., Canada;** pulp, paper; p. 4,576.
- Sturminster Newton, mkt. t., rural dist., Dorset, Eng.;** on R. Stour, 6 m. N.W. of Blandford; p. (rural dist. 1951) 9,297.
- Stuttgart, c., cap., Württemberg-Baden, Germany;** on R. Neckar; beautifully situated amid vine-clad hills; publishing, textiles, pianos, chemicals, jewellery, cigars; p. (1950) 497,677.
- Styr, R., Poland;** trib. of R. Prypei (Pripiet); length 250 m.
- Styria, prov., Austria;** grain, wine and fruit; stock-rearing, tourist tr.; a. 6,326 sq. m.; p. (1951) 1,109,345.
- Styrian Alps, that portion of the Alpine mtn. system E. of the Hohe Tauern.**
- Suakin, spt., Anglo-Egyptian Sudan, N.E. Africa;** on Red Sea; linked by rly. to Khartoum; p. 6,250.
- Subotica, t., Serbia, Yugoslavia;** boots, rly. material, farming, stock-raising; p. (1948) 112,530.
- Suceava, t., S. Bukovina, Romania;** former residence of Moldavian princes; fancy leather; p. (1945) 10,123.
- Suchan, t., Far East, U.S.S.R.;** coal; p. 10,000.
- Suchow (Tungshan), t., Kiangsu, China;** on Tai-Hu, 40 m. W. of Shanghai; gr. commercial and industr. centre, silks, cottons, rice; p. (estd. 1935) 160,013.
- Sucre, cap., Chuquisaca dep. and legal cap. of Bolivia;** univ. and cath.; p. (1950) 40,128.
- Sucre, st., Venezuela;** cap. Cumana p. (1941) 291,452. [Sudan and Fr. Sudan.]
- Sudan, ind. rep. since 1.1.56, see Anglo-Egyptian**
- Sudbury, t., mun. bor., W. Suffolk, Eng.;** on R. Stour, 12 m. N.W. of Colchester; p. (1951) 6,614.
- Sudbury, t., Ontario, Canada;** nickel, copper; p. (1941) 32,203.



- Sudetes Mts.**, range, Poland, Czechoslovakia; separating Bohemia and Moravia from Silesia.
- Suez**, *spt.*, Egypt, N.E. Africa; at head of G. of Suez (arm of Red Sea) and S. entrance of Suez Canal, which crosses the Isthmus of Suez to the Mediterranean at Port Said and is of very gr. value to shipping; the ancient Arsinoë; Port Tewfik adjoining has quay and docks; p. (1947) 108,250.
- Suez**, *G.*, Red Sea; N.W. arm of Red Sea between Arabian Desert and Sinai Peninsula, Egypt; southern approach to Suez Canal; length 190 m., width varies from 12 to 25 m.
- Suez Canal**, *ship canal*, Egypt, N.E. Africa; connects Mediterranean Sea (Pt. Said) with Red Sea (Suez) through Ls. Manzala, Timsah, and Bitter; saves over 4,000 m. on journey N.W. Europe to India, 1,000 m. to Australia; opened 1869, used by over 80 million tons shipping in 1951; length, 101 statute m., depth 34 ft., average width 200 ft.
- Suffolk**, *most E. maritime co.*, Eng.; bounded by Essex, Norfolk, Cambridge, and the N. Sea; mixed farming, dairying; fisheries; mnf. of agr. implements; co. t. Ipswich; divided for administrative purposes into Suffolk E. p. (1951) 321,849 and Suffolk W. p. (1951) 120,590.
- Suhl**, *t.*, Thuringia, Germany; on R. Lauter; length 85 m.; industr.; p. 19,681.
- Suir**, *R.*, Ireland; flows E. to Waterford Harbour.
- Suiyuan**, *prov.*, China; cap. Kweihsacheng; a. 134,181 sq. m.; p. (1947) 2,084,000.
- Sukhumi**, *spt.*, cap., Abkhazia, U.S.S.R.; resort; coal, tobacco; p. 31,701.
- Sukkur**, *t.*, Pakistan; on R. Indus, 230 m. N.E. of Karachi; gr. dam for irrigation; p. (1941) 66,466.
- Sulaiman**, *mtns.*, Asia; range bounding the Punjab and Baluchistan.
- Sulaimaniya**, *t.*, Iraq; p. (1947) 32,000.
- Sulina**, *t.*, Romania; at mouth of Sulina branch of Danube R., considerable grain tr.; p. 5,925.
- Sullana**, *t.*, N. Peru; rly. centre; maize, cotton, cinchona bark; p. (estd. 1950) 27,379.
- Sultanabad**, *t.*, Persia; carpet mftg.; p. 55,000.
- Sulu Is.**, Philippines; archipelago between Borneo and the Philippines; a. 950 sq. m.; acquired by the U.S.A. 1898.
- Sumatra**, *I.*, Malay Archipelago, Indonesia; separated from Java by Strait of Sunda; coffee, sugar, rice, pepper; gold, tin, petroleum, coal; a. 161,612 sq. m.; p. (1930) 7,841,175.
- Sumba**, *I.*, Indonesia; part of Timor Archipelago.
- Sumbawa**, one of the Lesser Sunda Is., Indonesia; in the E. Indian Archipelago, E. of Lombok; a. (with neighbouring Is.) 5,240 sq. m.; p. 314,843.
- Sumy**, *t.*, Ukraine, U.S.S.R.; agr. implements, textiles; p. (1939) 63,883.
- Sumat**, Loch, sea arm, Argyll cst., W. Scot.; 19½ m. long.
- Sunbury-on-Thames**, *urb. dist.*, Middx., Eng.; W. of London; residtl., water wks., light industry; p. (1951) 23,396.
- Sunda Strait**, between Java and Sumatra, Indonesia; 13 m. wide, contains the volcanic I. of Krakatau.
- Sundarbans**, *The*, tract of forest and swamps, fringing the delta of the Ganges, E. Pakistan; 165 m. long, 81 m. wide; rice grown in N.; tigers and crocodiles found in S.
- Sunday I.**, largest of Kermadec Is., New Zealand; 20 m. in circuit and with a p. of 28 is the only one of the Kermadec Is. that is inhabited; met. and radio stn. established on I.
- Sunday**, *R.*, C. of Good Hope, S. Africa; flows into Algoa Bay; length 200 m.
- Sunderland**, *spt. co. bor.*, Durham, Eng.; at mouth of R. Wear; gr. shipbldg. and coal-export centre (including Monkwearmouth and parts of Bishopwearmouth); also engineering, glass, paper, cordage, biscuits; fine harbour, piers and docks; p. (1951) 182,515.
- Sundsvall**, *spt.*, Västernorrland, Sweden; on a wide bay of the Baltic nr. Hernösand; timber and wood-pulp industries; p. (1951) 25,775.
- Sungait**, *t.*, Azerbaijan, U.S.S.R.; N. of Baku; oil refining, synthetic rubber, chemicals.
- Sungari**, *R.*, Manchuria, N. China; trib. of R. Amur; including the Nonni; length over 1,000 m.
- Sungkiang**, *prov.*, Manchuria; cap. Mutankiang; a. 30,703 sq. m.; p. (1947) 4,923,000.
- Sungpan**, *t.*, Szechwan, China; silver, gold, lead; linseed oil, paper; smelting, engineering.
- Superior**, *c.*, Wisconsin, U.S.A.; at head of L. Superior; gr. tr. in grain, timber, coal, shipbldg. and flour mills; p. (1950) 35,325.
- Superior**, *L.*, N. America; largest sheet of fresh water in the world; lies between Canada and the U.S.A.; one of the chain of gr. lakes in the St. Lawrence system; outlet to L. Huron by the St. Mary's R., receives the waters of the St. Louis, Pigeon, and Nipigon; a. 32,000 sq. m.
- Surabaya**, see Soerabaya.
- Surat**, *c.*, Bombay, India; on R. Tapti; cotton mftg., silk brocade, embroidery; p. (1951) 223,182.
- Surbiton**, *mun. bor.*, Surrey, Eng., on R. Thames, nr. Kingston; residtl.; p. (1951) 60,675.
- Surinam**, *R.*, Netherlands Guiana, S. America; flows N. to Atlantic Ocean nr. Paramaribo; length 300 m.
- Surinam** (Netherlands Guiana), *Dutch col.*, S. America; ch. expts. bauxite, timber, rubber, rice, fruit; cap. Paramaribo; a. 55,000 sq. m.; p. (1947) 207,684.
- Surrey**, *S. co.*, Eng.; S. of R. Thames; cereals, livestock, vegetables; residtl.; a. 722 sq. m.; p. (1951) 1,601,555.
- Sus**, *R.*, S. prov. Morocco, N. Africa; flowing to the Atlantic nr. Agadir; length 130 m.
- Susa**, see Sousse.
- Susak**, *spt.*, Yugoslavia; timber and products, foods, cement; p. 16,104.
- Susquehanna**, *R.*, N.Y., Penns., and Maryland, U.S.A.; flows to Chesapeake Bay through highly industr. area; provides routeway, W. from Philadelphia and Baltimore across Appalachian Mts.; length 422 m.
- Sussex**, *maritime co.*, S.E. Eng.; adjoining Surrey, Kent, and Hants, and washed by English Channel; traversed E. to W. by the S. Downs; co. t. Lewes; a. 1,457 sq. m.; divided administratively into Sussex E. p. (1951) 618,083 and Sussex W. p. (1951) 318,611.
- Sutherland**, *N. co.*, Scot.; N.W. Moray Firth, washed by Atlantic and N. Sea; grazing and forest land, most sparsely pop. in Scot.; mountainous, with many lochs; co. t. Dornoch; a. 2,102 sq. m.; p. (1951) 13,664.
- Sutherland Falls**, Milford Sound, S.I., New Zealand; height 1,904 ft.
- Uttej**, *R.*, E. Punjab, India; rises in the Himalayas and flows to the R. Indus; used for lge.-scale irrigation; length 1,000 m.
- Sutton and Cheam**, *mun. bor.*, Surrey, Eng.; nr. Croydon; mainly residtl.; p. (1951) 80,664.
- Sutton**, see Mablethorpe and Sutton.
- Sutton-Coldfield**, *t.*, *mun. bor.*, Warwick, Eng.; 6 m. N.E. of Birmingham; hardware, plastics; television transmitter; granted royal charter by Henry VIII.; p. (1951) 47,590.
- Sutton-in-Ashfield**, *t.*, *urb. dist.*, Notts, Eng.; 3 m. S.W. of Mansfield; coal, lime, hosiery; p. 39,800.
- Suva**, *c.*, cap., Fiji Is.; on Viti Levu I., fine harbour; p. (1946), 11,398.
- Suwalki**, *t.*, N.E. Poland; nr. boundary of Lithuanian S.S.R.; timber, grain, woollens; p. 14,000.
- Swannee**, *R.*, Florida and Georgia, U.S.A.; flows to G. of Mexico; known as "Swanee River," length 250 m.
- Svalbard**, see Spitsbergen.
- Svendborg**, *spt.*, Fyn, Denmark; mnfs., earthenware, tobacco, exports butter, etc.; p. 21,356.
- Sverdlovsk**, *t.*, U.S.S.R.; on R. Isset, at E. base of the Ural Mts.; coal, platinum, precious stones, gold, machinery; p. (1939) 425,544.
- Svetloye**, *t.*, S.E. Siberia, U.S.S.R.; on R. Zhuga; gold; p. 2,500.
- Sviatoi Nos**, *C.*, Arctic cst., U.S.S.R.; nr. entrance of White Sea.
- Svir**, *R.*, U.S.S.R.; flowing between L. Onega and L. Ladoga; length 125 m.
- Svistov**, *t.*, Bulgaria; on R. Danube, Romanian border; p. 12,949.
- Svolvör**, *spt.*, Norway; ch. t. Lofoten Is.; fishing.
- Swabia**, *dist.*, Bavaria, Germany; a. 3,807 sq. m.; cap. Augsburg.

- Swabian Alps, mtns.,** Württemberg, Germany; incl. the Swabian Jura range between valleys of Neckar and Danube.
- Swadlincote, t., urb. dist.,** Derby, Eng.; 3 m. E. of Burton-on-Trent; collieries, potteries, earthenware; p. (1951) 20,909.
- Swaffham, mkt. t., urb. dist.,** Norfolk, Eng.; 11 m. S.W. of King's Lynn; iron; p. (1951) 2,863.
- Swakopmund, t., S.W. Africa;** former spt.; resort; p. 2,942.
- Swale, R., N.R. Yorks, Eng.;** joins R. Ure to form E. Ouse; length 60 m.
- Swale, channel,** between I. of Sheppey and Kentish mainland, Eng.; 16 m. long.
- Swan, R., W. Australia;** flows to Indian Ocean, nr Perth.
- Swan Hill, t.,** Victoria, Australia; fruit growing and dairying under irrigation; p. (1947) 5,000.
- Swanage, mkt. t., urb. dist.,** Dorset, Eng.; on bay, E. cst. I. of Purbeck; seaside resort; stone quarries; p. (1951) 6,853.
- Swanland, region, W. Australia;** consists of extreme S.W. corner of W. Australia; hot, dry summers and mild winters with adequate rain; forests of Karri and Jarrah; agr. vines, citrus and deciduous fruits, wheat; highest population density in W. Australia; ch. ts. Perth, Fremantle, Bunbury.
- Swansea, spt., co. bor.,** Glamorgan, Wales; on Swansea Bay, Bristol Channel; many industries connected with coal and iron, copper, tinplate, petroleum; large export; p. (1951) 160,332.
- Swat, dist.,** Malakand, N.W. Frontier Agencies and Tribal Areas, Pakistan.
- Swatow (Shantou), c. spt.,** Kwangtung, S. China; on S.E. cst. nr. mouth of Han Kiang, 200 m. N.E. of Hong Kong; good harbour; fishing; sm. coastal trade, mainly with Hong Kong; exports tangerines; p. (estd. 1946) 146,864.
- Swaziland, British protectorate, S. Africa;** S.E. of the Transvaal; agr., maize, tobacco, fruit, cattle, asbestos, gold, tin; seat of administration, Mbabane; a. 6,704 sq. m.; p. (1946) 185,215 (European 3,201).
- Sweden, kingdom, N. Europe;** forming E. (and larger) part Scandinavian Peninsula; mountainous W., but otherwise flat and dissected by Rs. and many Ls., while one-fourth of the land is forest; gr. timber export and mining of iron ore, lead, silver, arsenic; cereals, root crops, hay, livestock; mnfs., textiles, matches, machinery, glass, chemicals, etc.; cap. Stockholm; a. 173,426 sq. m.; p. (1950) 7,044,039.
- Swellendam, t., C. of Good Hope, S. Africa;** fruit, wines, wool, grain, oranges; p. 3,993.
- Swidnica (former German Schweidnitz), t.,** Lower Silesia, Poland; textiles, leather, machinery, beer, farm implements; p. 21,480.
- Swiebodzice (Freiburg), t.,** Silesia, Poland; p. 8,345.
- Swiebodzin (former German Schwiebus), t.,** W. Poland; p. 9,000.
- Swift Current, t.,** Saskatchewan, Canada; p. (1951) 7,430.
- Swilly, Lough, arm of the Atlantic, cst. of Donegal, Ireland;** 25 m. long.
- Swindon, t., mun. bor.,** Wilts, Eng.; in upper Thames Valley (Vale of White Horse), 27 m. S.W. of Oxford; gr. rly. wks.; impt. rly. junction; mkt. for local dist.; p. (1951) 68,932.
- Swinemünde, see Swinoujscie.**
- Swinoujscie (Swinemünde), spt.,** Pomerania, Poland; on I. of Usedom (Uznam), Baltic Sea; the outpost of Szczecin; shipping industries and large tr.; p. 15,587.
- Swinton, t., urb. dist.,** W.R. Yorks, Eng.; in Don valley, 3 m. N.E. of Rotherham; coal, iron, potteries, bricks and tiles; p. (1951) 17,922.
- Swinton and Pendlebury, mun. bor.,** Lancs, Eng.; 5 m. W. of Manchester; p. (1951) 41,294.
- Switzerland, rep.,** Central Europe; upland region, with Jura Mtns. on N. and Alps to S.; dairying, butter, cheese, chocolate, etc., wine; watches and clocks, electrical machinery; very dependent on large tourist tr.; four national languages; cap. Bern; a. 15,944 sq. m.; p. (1950) 4,714,992.
- Sydenham, S.E., subm. dist.,** London, Eng.; residtl.; site of the Crystal Palace, burnt down 1936.
- Sydney, c., cap.,** N.S.W., Australia; principal spt. on shore of Port Jackson Bay; many beautiful bldgs. and parks, stretching S. to Botany Bay; has univ.; large commercial and active industries; magnificent harbour and docks; p. (1947) (inc. subs.) 1,484,004.
- Sydney or S. Sydney, spt.,** C. Breton I., Nova Scotia; iron and steelwks., coal, chemicals; p. (1951) 31,317.
- Sydney Mines, t.,** Nova Scotia, Canada; coal; p. (1951) 8,410.
- Syktyvkar, t., cap.,** Komi, U.S.S.R.; on Vychegda R.; wood chemicals, fur industry; p. 10,000.
- Sylhet, t.,** E. Pakistan; weaving and bamboo goods; p. 28,128.
- Syra, I. of the Cyclades, Aegean Sea;** part of Greece; p. (1940) 27,663.
- Syracusa, t.,** Sicily, Italy; on I. of Ortygia, off E. cst.; cath.; exports olive oil, oranges, lemons, locust beans, almonds, wine, chemicals, pottery, etc.; p. (1951) 70,300.
- Syracuse, c., N.Y., U.S.A.;** chemicals, salt, machinery, motor cars, electrical appliances, woollens; seat of Syracuse Univ.; p. (1950) 220,553.
- Syr Darya, R.,** Kazakhstan, U.S.S.R.; flowing into Aral Sea.
- Syria, rep.,** S.W. Asia; former French mandate; stretches along E. shore of Mediterranean and E. to the R. Euphrates; chiefly agr.; cereals, olives, fruit, goats, sheep; silk, wool; cap. Damascus; a. 66,046 sq. m.; p. (estd. 1950) 3,252,687.
- Syzran, t.,** U.S.S.R.; on R. Volga; oil shale products, leather, sawmills; p. (1939) 77,679.
- Szarvas, t.,** Hungary, S. of Mezőtúr; industr.
- Szczecin, prov.,** Poland; cap. Szczecin; a. 12,100 sq. m.; p. (estd. 1950) 512,681.
- Szczecin (former Stettin), spt.,** Poland; at mouth of R. Odra (Oder); formerly Prussia; shipbldg., machinery, chemicals, sugar, paper, cement, porcelain, oil refining; large tr.; birthplace of Russian Empress Catherine II; p. (estd. 1950) 159,122.
- Szczecinek (formerly German Neustettin), t.,** W. Polish Pomerania; p. 15,000.
- Szechwan, prov.,** China; cereals, sugar, tea, cotton, silk, coal, iron, salt, petroleum; cap. Chengtu; a. 144,996 sq. m.; p. (1947) 45,846,000.
- Szeged, t.,** Hungary; on Theiss R., 100 m. S.E. of Budapest; gr. commercial and industr. centre; soap, leather, breweries; p. (1949) 132,616.
- Székesfehérvár, t.,** Hungary; nr. Budapest; wine, shoes; p. (1941) 47,968.
- Szentes, t.,** Hungary; p. 34,394.
- Szolnok, t.,** Hungary; on R. Tisza, E. of Budapest, machinery; p. (1941) 42,011.
- Szombathely, t.,** Hungary; rly. centre; textiles, wine, agr. implements; p. (1941) 42,870.

## T

- Taastrup, I.,** Denmark; S. of Fyn; 9 m. long.
- Tabarka, spt.,** Tunisia; mkt., exports cork, tanning, charcoal; fishing; p. 1,509.
- Tabasco, maritime st.,** Mexico; on Bay of Campeche, adjoining Guatemala; cacao, sugar-cane, tobacco, rubber, pepper, maize, rice and hard-woods; cap. Villa Hermosa; a. 9,782 sq. m.; p. (1950) 361,995.
- Tabatinga, t.,** Brazil; on junction of Rs. Javari and Amazon.
- Table Bay, inlet of Atlantic, cst. of C. of Good Hope, S. Africa;** site of Cape Town.
- Table Mountain, C. of Good Hope, S. Africa, nr. Cape Town;** alt. 3,549 ft.
- Tábor, t.,** Czechoslovakia; S. of Prague, on R. Lužnice; trib. of R. Vltava; cigars, beer; p. 17,596.
- Tábor, Mt., N. Palestine;** S.E. of Nazareth.
- Tabora, t.,** Central Tanganyika; Brit. E. Africa; at junction of rlys. from Dar es Salaam and L. Victoria; p. 12,768.
- Tabriz, prov. cap.,** Azerbaijan, Persia; gr. commercial centre, formerly ch. emporium for the tr. of Persia in the W., much of which is now diverted by the railway through the Caucasus; dried fruits, carpets; match factories; famous Blue Mosque; (estd. 1949) 272,000.
- Tabu, spt.,** Ivory Coast, Fr. W. Africa; exports palm oil, rice, cocoa, coffee.
- Tachira, st.,** Venezuela, S. America; cap. San Cristobal; p. (1941) 245,722.



- Tacna, dep., Peru;** terr. transferred by treaty from Chile, 1929; mainly desert; nitrate of soda, silver, copper; subject to earthquakes; a. 4,930 sq. m.; ch. t. T.; p. (1947) 42,070.
- Tacoma, spt., Washington, U.S.A.;** on Puget Sound; lge. timber and grain tr., copper smelting; p. (1950) 143,673.
- Tacuarembó, dep., Uruguay, S. America;** a. 8,112 sq. m.; cap. Tacuarembó; p. (1942) 105,939.
- Tadcaster, rural dist., mkt. t., on R. Wharfe, W.R. Yorks, Eng.;** brewing, stone; p. 25,520.
- Tadmor, see Palmyra.**
- Tadoussac, t., Quebec, Canada;** on left bank of R. Saguenay, where it enters St. Lawrence R.; tourist centre; oldest settlement in Canada (1599).
- Tadzhikistan, a constituent rep., U.S.S.R.;** mainly farming, cereals, cotton, fruit, horticulture, cattle breeding; minerals, gold, petroleum, coal; cap. Stalinabad; a. 55,700 sq. m.; p. (1939) 1,485,090.
- Taegu, walled c., S. Korea;** silk; p. (1949) 313,705.
- Taejon, t., S. Korea;** S. of Seoul; fish, petroleum, cereals; p. (1949) 126,704.
- Taff, R., Glamorgan, Brecknock, Wales;** rises in Brecon Beacons, flows S.E. across coalfield to Bristol Channel at Cardiff; length 40 m.
- Tafilalet, Morocco, N. Africa;** oasis of the Sahara, E. of Atlas; ch. t. Abuam; dates.
- Taganrog, spt., U.S.S.R.;** on Sea of Azov; tobacco, tanneries, fisheries; exports grain; p. (1939) 188,808.
- Tagliamento, R., N.E. Italy;** rises in Carnic Alps, flows S. into Adriatic Sea (G. of Venice); valley used by main rly. from Venice to Vienna via Semmering Pass; length approx. 100 m.
- Tagus, R., Spain and Portugal;** flows W. across Meseta to Atlantic at Lisbon; length 540 m.
- Tahiti, principal I., of Society group; Pac. Oc.;** fertile cst. land, picturesque; a. 402 sq. m.; cap. Papeete; p. 24,820.
- Tahoe, L., Cal., Nevada, U.S.A.;** in Yosemite National Park, Sierra Nevada, at alt. 6,225 ft., surrounded by summer resorts; a. 200 sq. m.
- Taichow, t., Chekiang, China;** nr. iron-ore mines.
- Taif, t., Hejaz, Saudi Arabia;** about 50 m. from Mecca; about 5,900 ft. above sea-level; summer resort; honey and fruit; p. 25,000.
- Taihape, t., N.I., New Zealand;** 161 m. N.E. of Wellington; in what is known as the King Country, on the Hautapu R.; sheep and dairy farming and saw-milling.
- Taihoku, see Tai-peí.**
- Tai Hu, L., Kiangsu, China;** focus of intensive system of m. canals and waterways 60 m. N. of Shanghai; a. approx. 100 sq. m.
- Taima, t., Saudi Arabia;** cereals, dates, fruit, tobacco, rock salt.
- Taimyr Peninsula, N. cst., Siberia, U.S.S.R.;** terminates with C. Chelyuskin.
- Tain, burgh, Ross and Cromarty, Scot.;** on S. side of Dornoch Firth, 20 m. N.E. of Dingwall; p. (1951) 1,602.
- Tainan, t., Taiwan, China;** sugar, rice; p. (1950) 221,088.
- Taipei, cap., Taiwan;** p. (1950) 503,086.
- Taiping, t., Malaya;** p. 41,361.
- Taiwan, see Formosa.**
- Taiyuan, (Yangchu), c., Shansi, China;** on Fuen-Ho; p. (estd. 1946) 251,566.
- Taizz, t., Yemen;** mkt. agr. products; p. 4,000.
- Takamatsu, t., Japan;** N. cst. Shikoku; gr. tr.; p. (1950) 124,545.
- Takao, spt., Formosa, China;** on S.W. cst.; exports rice, sugar; p. (estd. 1947) 150,846.
- Takaoka, t., Honshu, Japan;** centre of rice trade; lacquer work; p. (1950) 142,046.
- Takasaki, t., Honshu, Japan;** coalmines, raw silk; p. (1947) 82,582.
- Takoradi, spt., Gold Coast, Brit. W. Africa;** as spt. has superseded Sekondi; rly. to Kumasi; exports cocoa, palm-oil, rubber, bauxite, gold, manganese; p. 5,478.
- Taku, dockyard, at mouth of R. Peiho, China,** at entrance to Tientsin and Peking.
- Talara, t., N. Peru, S. America;** on C. Pariñas; p. 14,467.
- Talavera, c., Spain;** on Tagus R.; cloth, leather, wine; p. 18,631.
- Talbes, t., Siberia, U.S.S.R.;** iron and steel.
- Talca, prov., Chile;** cap. Talca; a. 3,721 sq. m.; p. (1952) 174,390.
- Talca, t., cap. Talca prov., Chile;** S. of Santiago; cereals, mixed farming, impt. tr. centre; p. (1940) 56,735.
- Talcahuano, spt., Chile, nr. Concepción;** naval stn.; p. (1940) 41,536.
- Tali, t., Shensi, China;** in fertile valley; wheat; p. 50,000.
- Tallahassee, c., Florida, U.S.A.;** cigars; p. (1950) 27,237.
- Tallahatchee, R., trib. of Mississippi, U.S.A.;** flows S.W. and becomes R. Yazoo; length 240 m.
- Tallin, spt. cap., Estonian S.S.R., U.S.S.R.;** timber, ship-bldg., textiles; p. 134,000.
- Taltal, spt., Chile;** S. of Antofagasta; exports nitrates and silver; p. 5,659.
- Tamale, ch. t., Northern Terr., Gold Cst., Brit. W. Africa;** p. (1948) 16,164.
- Tamar, R., Devon and Cornwall, Eng.;** flows S. to Plymouth Sound; length 45 m.
- Tamar, R., Tasmania, Australia;** rises in N.E. Tasmania, flows W. and N. into Bass Strait nr. Georgetown; navigable 42 m. up to Launceston.
- Tamatave, one of the ch. ports, Madagascar;** large meat-preserving factories; exports graphite, hides, raffia; p. (1946) 30,411.
- Tamaulipas, st., Mexico;** on G. of Mexico, S. of Texas; nitrates, cereals, sugar, coffee, cattle, petroleum; cap. Ciudad Victoria; a. 30,731 sq. m.; p. (1950) 717,267.
- Tambov, t., U.S.S.R.;** on R. Oka; woollens, tobacco, synthetic rubber, linen, thread, leather goods; p. (1939) 121,285.
- Tammerfors, see Tampere.**
- Tampa, bay on W. cst. Florida, U.S.A.;** 40 m. long.
- Tampa, t., Florida, U.S.A.;** popular winter resort, cigar factories, phosphates; p. (1950) 124,631.
- Tampere (Tammerfors), t., S. Finland;** on rly. between Helsinki and Vaasa; textiles, leather, paper; p. (1950) 103,043.
- Tampico, spt., Mexico;** on the R. Panuco, 9 m. from the G. of Mexico; fruits, sugar, maize; p. (1940) 84,037.
- Tampico, R., Mexico,** flows to G. of Mexico; length 200 m.
- Tamworth, t., N.S.W., Australia;** on R. Peel; milling; ch. commercial centre of Northern Tableland; p. (1947) 12,071.
- Tamworth, t., mun. bor., Staffs, Eng.;** on R. Tame, 5 m. S.E. of Lichfield; ancient cast; coal; p. (1951) 12,889.
- Tana, lge. L., N. Ethiopia, nr. Gondar,** source of Blue Nile, 45 m. long, 40 m. wide; surrounded by marsh, papyrus swamp.
- Tana, R., forming part of boundary between Finland and Norway,** flows into Arctic Ocean.
- Tana R., ch. R., Kenya Col., E. Africa.**
- Tananarive, t., cap., Madagascar;** connected by air-line with Paris; lge. meat-preserving factories; p. (1949) 174,153.
- Tanaro, R., N. Italy;** trib. of R. Po; length 125 m.
- Tanauan, t., on Luzon I., Philippines.**
- Tanda, t., Uttar Pradesh, India;** nr. R. Gogra; cotton weaving, artificial silk; p. 8,404.
- Tandi, t., Argentina;** p. 32,400.
- Tandjoengbalei, spt., Sumatra, Indonesia;** exports, tobacco, copra.
- Tandur, t., Hyderabad, India;** coal; p. 8,462.
- Tanga, spt., Tanganyika, Brit. E. Africa;** rly. term.; on plateau overlooking Tanga Bay; p. 11,000.
- Tangalla, t., S. cst. Ceylon.**
- Tanganyika, or. L., E. Central Africa;** 400 m. long, greatest width 45 m.; a. about 12,700 sq. m.; 2,800 ft. above sea; discovered by Burton and Speke in 1868, and since explored by Livingstone, Stanley, and others.
- Tanganyika Terr, Brit. Trusteeship, E. Africa;** former German E. Africa; climate tropical, varies with elevation; ch. products, sisal, coffee, cotton, groundnuts, pyrethrum, copra, ebony, hardwoods; cap. Dar es Salaam; a. 362,688 sq. m.; p. (1952) 7,943,000 (inc. 11,000 Europeans).
- Tangier, spt., Morocco, N. Africa;** on Strait of Gibraltar; ceded to England in 1662 when Catherine of Braganza married Charles II, but abandoned to the Moors 22 years later; now internationalised zone; cigarettes, fishing; p. of t. (estd. 1947) 84,628.
- Tanjong Pandan, spt., Billiton, Sumatra, Indonesia;** exports tin; p. 11,589.

- Tanjore, *t.*, Madras, India; silks, carpets, jewellery, inlaid metals; impt. Brahman centre; p. (1951) 100,680.
- Tanta, *t.*, Lower Egypt; 55 m. N. of Cairo; impt. rly. junction; religious fairs; p. (1948) 139,816.
- Tapachula, *ch. t.*, S. Mexico; coffee, cattle, tobacco, sugar refineries, sawmills; p. (1940) 43,032.
- Tapajóz, *R.*, trib. of R. Amazon.
- Tapti, *R.*, W. India; flows W. to G. of Cambay at Surat from Betul dist., Madhya Pradesh; length 450 m.
- Tapungato, *mtn.*, W. Argentina; alt. 22,300 ft.
- Taquari, *R.*, Brazil; trib. of R. Paraguay; length 400 m.
- Tara, *R.*, Siberia, U.S.S.R.; trib. of R. Irtysh; length 200 m.
- Tarakan, *spt.*, Borneo, Indonesia; on Tarakan I.; oil; p. (of I.) 12,000.
- Taranaki, *prov.*, N.I., New Zealand; a. 3,750 sq. m.; p. (1951) 87,000.
- Taranto, *t.*, Lecce, Italy; on G. of Taranto, inlet of Ionian Sea; maritime arsenal with gr. commercial and industl. interests; strong cas.; cottons, velvets, soap, oil; famous for its oyster and mussel fisheries; p. (1951) 167,166.
- Tarapaca, *prov.*, N. Chile; rich in nitrates and silver; cap. Iquique; a. 21,340 sq. m.; p. (1952) 102,694.
- Tarason, *t.*, Bouches-du-Rhône, France; connected by bridges with Beaucaire on opposite bank of R. Rhône; old cas., famous festival; silk and fruit; p. (1946) 8,478.
- Tarbat Ness, *promontory*, N. Side of Moray Firth, Ross and Cromarty, Scot.
- Tarbes, *t.*, cap., Hautes-Pyrénées, France; on R. Adour; cath.; paper, flax, woollens, machinery, aircraft, leather; p. (1946) 44,854.
- Taree, *t.*, N.S.W., Australia; dairying, agr., fishing, oysters, timber, limestone; p. 5,426.
- Targu-Jiu, *t.*, Romania; coal, petroleum, timber; p. 17,698.
- Targul-Mures, *t.*, Romania; on R. Maros; famous old fort, with Gothic Calvinist cath., where in 1571 religious liberty was promulgated for the first time in Europe; gd. tr.; p. (1945) 41,118.
- Tarifa, *c.*, Cadiz, Spain; on Gibraltar Strait; fish tr., cereals, oranges, wines; p. 14,815.
- Tarija, *prov.*, Bolivia; cap. Tarija; a. 24,786 sq. m.; p. (1950) 126,762.
- Tarija, *t.*, cap., Tarija prov., Bolivia; S.E. of Potosi; gd. tr.; p. (1950) 16,869.
- Tarim, *t.*, Aden Prot., Arabia; mkt.; religious teaching centre.
- Tarkastad, *t.*, C. of Good Hope, S. Africa; sheep; rich arable land; p. 2,877.
- Tarma, *t.*, Peru, S. America; alt. 9,980 ft.; alfalfa, maize, beans; p. 7,876.
- Tarn, *R.*, France; trib. of R. Garonne; has famous rocky gorge 31 m. long in its upper course; length 235 m.
- Tarn, *dep.*, S. France, watered by Tarn and its tribs.; wheat and wine; cap. Albi; a. 2,232 sq. m.; p. (1946) 298,117.
- Tarn-et-Garonne, *dep.*, W. France; corn, wine, woollens, paper, silk; cap. Montauban; a. 1,440 sq. m.; p. (1946) 167,664.
- Tarnopol, *see* Ternopil.
- Tarnow, *t.*, Poland; E. of Kraków; agr.; farm implements, glass; p. 33,000.
- Tarragona, *prov.*, Spain; on the Mediterranean; vineyards and agr.; cap. Tarragona; a. 2,426 sq. m.; p. (1950) 356,811.
- Tarragona, *fortfd. spt.*, cap. Tarragona, Spain; at mouth of R. Francoani; mnfs. alcohol, liqueurs, chocolate, paper, silk, fish-salting; p. (1949) 4,211.
- Tarrasa, *t.*, Barcelona, Spain; in fruit and vine-growing dist.; royal college; thriving industries; p. (1950) 58,880.
- Tarsus, *ancient c.*, Turkey; nr. Adana, opposite Cilician Gates; surrounded by orange and citron groves; ruined Roman temple; birth-place of Apostle Paul; exports, cotton, wool, hides; p. 28,789.
- Tartary or Tatar, *region*, Central Asia; now divided into Chinese or E. Turkestan, and W. Turkestan, U.S.S.R.
- Tartary, *Gulf of, arm of the Sea of Japan*, separating Sakhalin from the Siberian mainland.
- Tartu (formerly Dorpat), *t.*, Estonia, U.S.S.R.; saw-mills; p. 67,000.
- Tarudant, *t.*, Fr. Morocco, N. Africa; mkt., orange water, leather, pottery, copper and brass; p. 12,877.
- Tashkent, *cap.*, Uzbekistan, U.S.S.R. on Syr Darya R.; has extensive silk mnfs. and great commerce; p. 585,005.
- Tasman Bay, *lge. inlet*, S.I., New Zealand; penetrates N. est., between Separation Point and D'Urville I.; enclosed by mtns. sheltered, fertile, coastal fringe; ch. ts. Nelson, Motueka.
- Tasman Glacier, S.I., New Zealand; one of the largest in the world.
- Tasmania (formerly Van Dieman's Land), *I., st.*, Australia; plateau with fertile valleys; temperate climate; forest and grasslands; grain, fruit, cattle-raising; copper, coal, zinc, lead, tin, silver; whaling; mnfs. being developed; cap. Hobart; a. 26,215 sq. m.; p. (1947) 257,078.
- Tatar, *autonomous Soviet-Socialist rep.*, U.S.S.R.; ch. t. Kazan on R. Volga; p. 3,000,000.
- Tatra Mtns. (High Tatra), highest Carpathian group, Czechoslovakia, alt. 8,743 ft.
- Taubaté, *t.*, Brazil; p. 28,070.
- Tauber, *R.*, Germany; trib. of R. Main; length 74 m.
- Taunton, *co. t., mun. bor.*, Somerset, Eng.; on R. Tone at W. end of Vale of Taunton; old cas.; apples, cider, gloves, farming implements, silk; p. (1951) 33,613.
- Taunton, *c.*, Mass., U.S.A.; cotton, iron foundries; p. (1950) 40,109.
- Taunus, *mtn. range*, Hessen, Germany; between the R. Lahn and the R. Rhine and Main.
- Taupo, *L.*, N.I., New Zealand; largest L. in New Zealand; geysers, hot springs in vicinity; 25 m. by 17 m.
- Taurida or Krim, *dist.*, Crimean Peninsula, U.S.S.R., separated from Ukraine by Perekop Peninsula, divided by R. Salgir; a. 24,540 sq. m.; wheat, tobacco, fruit.
- Taurus Mtns., *range*, S. Turkey.
- Tavastehus (Häme), *dep.*, Finland; cap. Tavastehus; a. 7,118 sq. m.; p. (1940) 420,438.
- Tavira, *t.*, S. Portugal; fishing; p. 12,364.
- Tavistock, *mkt. t., urb. dist.*, Devon, Eng.; on R. Tavy, 12 m. N. of Plymouth; tr. in arsenic extracted from copper ore; p. (1951) 5,889.
- Tavoy, *t.*, Burma; between Siam and the Bay of Bengal, W. of Bangkok; rice, tin-mining; p. 29,018.
- Tavy, *R.*, Devon, Eng.; trib. of R. Tamar; length 20 m.
- Taw, *R.*, Devon, Eng.; flows from Dartmoor to Bideford Bay; length 50 m.
- Taxco, *t.*, Mexico; alt. 5,600 ft.; gold-silver-mining; tourist centre; p. (1940) 26,704.
- Tay, *R.*, Scot.; flows S.E. from Loch Tay in Perth, to the Firth of Tay.
- Tay Bridge, *rly. bridge*, E. Scot.; spans Firth of Tay from Wormit (Fife) to Dundee (Angus); carries main E. est. rly. from Edinburg to Aberdeen; length 2 m.
- Tay, *Firth of, lge. inlet*, E. est. Scot.; extends inland almost to Perth; length 27 m., max. width 3 m.
- Mayabas, *t.*, Luzon, Philippines; on slope of extinct volcano Banajao; in rice- and coconut-growing dist.
- Tayeh, *industl. t.*, Hupeh, China; lies to S. of Yangtze-Kiang, 42 m. S.E. of Wuhan; centre of very impt. iron-ore deposits; iron and steel industry, heavy engineering.
- Tayport, *burgh*, Fife, Scot.; at entrance to Firth of Tay; opposite Broughty Ferry; linen, jute; p. (1951) 3,222.
- Taz, *R.*, Siberia, U.S.S.R.; flows to Bay of Tazovsk in Gulf of Obi; length 300 m.
- Tbilisi (Tiflis), *cap.*, Georgian S.S.R., U.S.S.R.; exports tobacco, cotton, silk, carpets; p. (1939) 619,176.
- Tczew (Dirschau), *t.*, Pomerania, Poland; on R. Vistula; rly. wks., sugar, agr. implements; p. 21,000.
- Team Valley, Durham, England; impt. trading estate has been developed here.
- Te Aroha, *t.*, N.I., New Zealand; between Hamilton and Thames; one of the ch. resorts in the thermal springs district; p. (1951) 2,664.
- Te Awamutu, *t.*, N.I., New Zealand; S. of Hamilton agr. and dairying dist.; p. (1951) 3,874.



- Tebessa, *t.*, Algeria; alt. 2,789 ft.; mkt.; embroidery, carpets; phosphate deposits nearby; p. (1946) 18,293.
- Tecuci, *t.*, Romania; N.W. of Galati; battle. 1476; p. 2,029.
- Teddington, *t.*, Middx., Eng.; sub. of London; on R. Thames; National Physical Laboratory.
- Tedzhen, *R.*, Turkmen and N. Persia; flowing into Hari-Rud.
- Tees, *R.*, N. Eng.; flows E. from Pennines to N. Sea between Yorks and Durham; length 70 m.
- Tefe, *R.*, Brazil; trib. of R. Amazon; length 500 m.
- Tegal, *spt.*, Java, Indonesia; sugar mnfs. and export; p. 43,015.
- Tegucigalpa, *cap.*, Honduras, central America; lies on R. Choluteca; alt. 3,200 ft. above sea-level; univ.; an Inter-Ocean Highway, connecting the town with both the Caribbean Sea and the Pacific, is being constructed; bananas; p. (1945) 55,715.
- Tehran, *c.*, *cap.*, Persia; became the residence of the Shah at end of 18th century; stands 70 m. due S. of the Caspian; alt. 3,447 ft.; a. (within the bastions)  $7\frac{1}{2}$  sq. m.; glass, small arms, ammunition, chemical and match factories; has twelve gates, closed at night; p. of t. and district (estd. 1949) 1,010,000.
- Tehri-Garhwal, *former Himalayan st.*, Punjab, India; a. 4,500 sq. m.; p. (1941) 397,369.
- Tehuantepec, *t.*, Mexico; on the Tehuantepec R., nr. the Pacific est. of the Isthmus; once an Indian cap.; cath.; p. 6,731.
- Tehuantepec, Isthmus of, separates G. of Mexico from the Pacific at narrowest point of Mexico; width 130 m.
- Tefi, *R.*, S.W. Wales; rises in Cambrian Mtns. nr. Strata Florida, flows S.W. and W. into Cardigan Bay 14 m. N.E. of Fishguard; forms bdy. between Cardigan and Carmarthen, Cardigan and Pembroke; sm. flannel industry in ts. and vils. in lower valley; length 94 m.
- Teign, *R.*, Devon, Eng.; flows to sea at Teignmouth from Dartmoor; length 30 m.
- Teignmouth, *t.*, *urb. dist.*, Devon, Eng.; at mouth of R. Teign, 13 m. S. of Exeter; resort; yacht-bldg.; p. (1951) 10,589.
- Tel-peí (Taihoku), *c.*, *cap.*, Formosa (Taiwan), China; on est. plain at N. end of I. of Formosa; p. (estd. 1946) 271,754.
- Tekirdag, *t.*, Turkey; on Sea of Marmara, W. of Istanbul; grain; p. (1945) 14,780.
- Tela, *spt.*, Honduras Central America; on Atlantic est.; p. 10,454.
- Tel Aviv, *c.*, Israel, S.W. Asia; founded by Zionists, 1909; first all-Jewish c.; many mnfs.; p. with Jaffa (estd. 1951) 370,000.
- Telemark, *co.*, Norway; a. 5,837 sq. m.; p. (1950) 136,371.
- Tellicherry, *t.*, *spt.*, Madras, India; exports coffee, cardamoms, sandalwood, and coconuts; p. (1941) 36,320.
- Telok Anson, *t.*, Perak, Malaya; p. 23,055.
- Telok Betong, *spt.*, Sumatra, Indonesia; exports pepper, agr. products; p. 25,170.
- Teme, *R.*, on border of Wales and Worcester, Eng.; trib. of R. Severn; length 70 m.
- Temes, *R.*, S.W. Romania; flows to R. Danube, nr. Belgrade; length 180 m.
- Temora, *t.*, N.S.W., Australia; gold, wheat; p. (1947) 4,113.
- Temple, *rlv. t.*, Texas, U.S.A.; in cotton-growing dist.; p. (1950) 25,467.
- Templemore, *mkt. t.*, *urb. dist.*, Tipperary, Ireland; on R. Suir.
- Temryuk, *t.*, N. Caucasasia, U.S.S.R.; on Sea of Azov; grain-export centre.
- Temuco, *t.*, Chile; p. (1940) 84,696.
- Tenasserim, *div.*, lower Burma; on Siamese border; tin, rice; p. 2,110,420.
- Tenasserim, *t.*, lower Burma; on est. at mouth of R. Tenasserim; length 250 m.; p. 10,000.
- Tenbury, *mkt. t.*, Worcester, Eng.; 5 m. S.E. of Ludlow; p. 1,922.
- Tenby, *t.*, *mun. bor.*, Pembroke, Wales; on W. side of Carmarthen Bay, Bristol Channel; seaside resort; p. (1951) 4,597.
- Tenedos, *I.*, Aegean Sea; off W. coast Turkey; 7 m. long; Turkish possession.
- Tenerife, *I.*, Canary Is.; tourist resort; wheat, fruits, wines; contains extinct volcanic peak of Tenerife; alt. 12,182 ft.; cap. Santa Cruz; a. 782 sq. m.; p. 73,120.
- Tengri-Nor, *L.*, Tibet; N.W. Lhasa; 80 m. long, 40 m. wide.
- Tengyüeh, *former treaty port*, China; p. (1931) 19,000.
- Tenimber Is., S. Moluccas, Indonesia; group of 66 islands; forests, swamps; maize, rice, coconuts, sago; p. 31,847.
- Tennessee, *R.*, Tennessee, Kentucky, U.S.A.; largest and most impt. branch of the Ohio; its valley once liable to flooding, now controlled by dams, and land improved by the Tennessee Valley Authority; length 782 m.
- Tennessee, *S. central st.*, U.S.A.; between Mississippi R. and the Appalachian Mtns.; cotton and agr. (chiefly maize); coal, iron ore, copper; mnfs., iron and steel, flour, cottons, cotton-seed oil; cap. Nashville; ch. port Memphis; a. 42,244 sq. m.; p. (1950) 3,291,718.
- Tenos, *I.*, Greek Archipelago, Aegean Sea; one of the Cyclades.
- Tenterden, *mkt. t.*, *mun. bor.*, Kent, Eng.; 8 m. N. of Rye; church with famous steeple; p. (1951) 4,225.
- Tepic, *cap.*, Nayarit st., Mexico, U.S.A.; p. (1940) 33,239.
- Teplice-Sanov, *wat. pl.*, former prov. of Bohemia, N.W. of Prague; textile and hardware industries; p. (1947) 45,183.
- Teramo, *prov.*, Abruzzi, Italy; a. 1,067 sq. m.; cap. Teramo; p. 240,183.
- Teramo, *t.*, Italy; pottery and silks; ancient Interamnum; p. (1951) 38,751.
- Terek, *R.*, N. Caucasasia, U.S.S.R.; flows to Caspian Sea; length 350 m.
- Teresina, *t.*, *cap.*, Piauí st., Brazil; cotton and thread factory; p. (1947) 77,228.
- Termini, *spt.*, Sicily, Italy; S.E. of Palermo; tunny fishing, macaroni, olive oil; wine, sulphur; p. 19,050.
- Ternate, Moluccas Is., Indonesia; sago, spices; p. (1930) 19,533.
- Terneuzen, *t.*, Netherlands; on W. Schelde R.; p. 11,494.
- Terni, *t.*, Perugia, Italy; amongst the Apennines; iron and steelwks., arms factory, jute; p. (1951) 83,931.
- Ternopil (Tarnopol), *t.*, Ukraine, U.S.S.R.; E. of Lvov; p. 25,000.
- Terranova, *t.*, Sardinia, Italy; on N.E. est.; textiles, fishing; p. 10,157.
- Terre Adélie, name given to French terr. and I. in Antarctic; est. a. 160,000 sq. m.
- Terre Haute, *c.*, Indiana, U.S.A.; coal, natural gas, flour, paper, glass, foundries; p. (1950) 64,214.
- Terschelling, *I.*, Frisian Is., Netherlands; at entrance to Zuyder Zee.
- Teruel, *prov.*, S. Aragon, Spain; timber forests, coal, weaving, etc.; cap., Teruel; a. 5,721 sq. m.; p. (1950) 236,002.
- Teruel, *t.*, *cap.*, Teruel prov., on R. Turia; cath.; p. (1949) 19,047.
- Teschén, *see* Ceský Těšín.
- Teslin Lake, *S.* of Yukon, N.W. Terr., Canada; source of R. Lewes.
- Test or Anton, *R.*, Hants, Eng.; flows to head of Southampton Water; a well-known trout stream.
- Tettenhall, *urb. dist.*, Staffs, Eng.; industri. p. (1951) 7,742.
- Tetuan, *ch. spt.*, Spanish Zone, Morocco, N. Africa; p. (1945) 93,653.
- Tetyukhe, *t.*, U.S.S.R.; on coast N.E. of Vladivostok; coal, munition refinery; p. 5,000.
- Teutoburger Wald, *mtn. range*, Germany.
- Teviot, *R.*, Roxburgh, Scot.; trib. of R. Tweed; length 37 m.
- Tewkesbury, *mkt. t.*, *mun. bor.*, Gloucester, Eng.; on R. Avon, 1 m. above confluence with R. Severn; old houses, Norman Abbey, milling; p. (1951) 5,292.
- Texarkana, *c.*, Texas and Arkansas, U.S.A.; boundary passes down middle of main street, timber and cotton region; rly. workshops; total p. (1950) 40,628.
- Texas, *st.*, S.W. U.S.A.; a. 263,644 sq. m.; prairie, mtns. in W.; leading cotton-producing st., also cereals, fruits, etc., petroleum (leading st.), coal, sulphur, mnfs., flour, cotton-seed oil, etc.; cap. Austin; ch. pt. Galveston; a. 267,339 sq. m.; p. (1950) 7,711,194.
- Texel, *I.*, W. Frisian Is., Netherlands; a. 83 sq. m.; scene of several naval battles.

Tezcuco or Texocco, *L.*, Mexico; a. 77 sq. m.; less than 2 ft. deep; contains no fish.

Thame, *mkt. t., urb. dist.*, Oxford, Eng.; on R. Thame, 7 m. S.W. of Aylesbury; p. (1951) 3,585.

Thame, *R.*, trib. of R. Thames, Eng.; length 35 m.

Thames, *R.*, Eng.; rises in the Cotswold Hills, Gloucester, and flows past Oxford, Reading, Windsor, and London to the Nore; length 209 m.

Thames, *R.*, Ontario, Canada; flows into L. St. Clair; length 160 m.

Thames, *R.*, New Zealand, flows N. to G. of Hauraki; length 86 m.

Thames, *t., spi.*, N.I., New Zealand; on the Firth of Thames, 42 m. S. from Auckland; gold-fields; p. (1951) 4,549.

Thames Ditton, *residtl. dist.*, Surrey, Eng.; on R. Thames; opposite Hampton Court.

Thameshaven, *lge. oil refinery*, Essex, Eng.; on N. est. of Thames estuary 8 m. below Tilbury.

Than Hoa, *t.*, Viet-Nam, Indo-China; mkt. and agr. centre; rice; p. 25,000.

Thane, *I. of*, *lge. promontory*, N.E. extremity, Kent, Eng.; formed by bifurcation of R. Stour; contains Margate, Ramsgate, and Broadstairs, with other seaside resorts.

Thar Desert, on bdy. between India and W. Pakistan; covers gentle slopes between N.W. Deccan and irrigated valley of R. Indus; completely barren, lack of rivers or level land prevents irrigation; crossed only by caravan routes.

Tharawaddy, *dist.*, Pegu, Burma; mainly forest, with rice fields in the clearings; p. 7,131.

Thaton, *dist.*, Tennasserim div., Burma; rice and tobacco.

Thaxted, *mkt. t.*, Essex, Eng.; nr. source of R. Chelmer, 5 m. S.E. of Safron Walden; p. 1,596.

Thaya, *R.*, Austria; trib. of the R. March; length 130 m.

Thayetmyo, *dist. t.*, Pegu div., Burma; forest, rice, tobacco; p. (of t.) 9,279.

Thebes, *ruined ancient cap.*, Upper Egypt; on both banks of R. Nile; site now partly occupied by villages Karnak and Luxor; important archaeological discoveries in the Valley of the Kings in 1923.

Theiss, *largest R.*, Hungary; 'principal trib. of the R. Danube; navigable from Tokay; length 840 m.

Theodore, *t.*, Queensland, Australia; on R. Dawson; irrigation scheme; cotton, fodder crops.

The Pas, *t.*, Manitoba, Canada; on R. Saskatchewan 80 m. upstream from L. Winnipegosis; rly. junction on line from Prairie Provinces to Churchill on Hudson Bay; branch line to Flin Flon.

The Sound, *see Sound, The*.

Thera, *volcanic I.*, Greek archipelago, Aegean Sea; 10 m. long; cap. Thera.

Thermopylae or Pylae, celebrated pass between Mt. Aetia and the sea, N.E. Greece; battle between Persians and Spartans, 480 B.C.

Thesprotia, *prefecture*, Epirus, Greece; cap. Hegoumenitsa; p. (1951) 47,565.

Thessaloniki (Salonika), *prefecture*, Greece; p. (1951) 453,271.

Thessaloniki, *t.*, Greece; at head of G. of Thessaloniki; woollens, soap, cottons, brewing, import and export tr.; contains fiscal free zone; p. (1951) 626,820.

Thessaly, *dist.*, Central Greece; containing two main prefectures, Larisa and Trikkala; horse-breeding; a. 5,208 sq. m.; p. (1940) 579,145.

Thetford, *t., mun. bor.*, Norfolk, Eng.; on Little R. Ouse; p. (1951) 4,445.

Thetford Mines, *t.*, Quebec, Canada; asbestos mining centre; p. 12,716.

Thielt, *t.*, Belgium; 17 m. W. of Ghent; lace, wool, cotton, linen; p. (1938) 12,478.

Thiers, *t.*, Puy-de-Dôme, France; cutlery; p. (1946) 16,000.

Thies, *t.*, Senegal, Fr. W. Africa; rly. centre and workshops; groundnuts; p. (1948) 24,000.

Thionville, *t.*, Moselle, N. France; nr. Luxembourg border; fruit, vegetables, tanning brewing; p. (1946) 17,596.

Thirmerie, *L.*, Cumberland, Eng.; 3 m. long;

furnishes part of the water supply of Manchester by a conduit of 96 m.

Thirsk, *mkt. t., rural dist.*, N.R. Yorks. Eng.; in wide gap between Pennines and Cleveland Hills, 7 m. S.E. of Northallerton; flour, farm implements; p. (rural dist. 1951) 13,525.

Thisted, *t.*, Thyland, Denmark; on Lim Fjord; p. 9,425.

Thok-Jalung, *t.*, Tibet; in Aling Kangri Mtns.; gold-mining centre.

Thomar, *t.*, Portugal; paper, cheese; route centre; p. 11,333.

Thomasville, *c.*, Georgia, U.S.A.; cotton region; p. (1950) 14,424.

Thompson, *R.*, B.C., Canada; rises in Monashee Mtns. flows S.W. into R. Fraser 140 m. upstream from Vancouver; valley forms impt. routeway used by trunk rlys. from Vancouver E. towards Yellowhead Pass (Canadian National Rly.) and Kicking Horse Pass (Canadian Pacific Rly.); length approx. 230 m.

Thonon-les-Bains, *t.*, Haute Savoie, France; resort on L. Geneva; p. (1946) 13,181.

Thornaby-on-Tees, *t., mun. bor.*, N.R. Yorks; opposite Stockton-on-Tees; heavy industries, pottery; p. (1951) 23,413.

Thornbury, *mkt. t., rural dist.*, Gloucester, Eng.; 10 m. N. of Bristol; p. (rural dist. 1951) 25,848.

Thornton Cleveleys, *t., urb. dist.*, Lancs, Eng.; 4 m. N.E. of Blackpool; p. (1951) 15,437.

Thousand Isles, *L.*, at outfall of L. Ontario; the islets really number 1,500 to 1,800, and are partly situated in New York State and partly in Canada.

Thrace, ancient name of terr. in S.E. Europe, part of which has been added to Greece; successively under Macedonian, Roman, Byzantine, and Turkish rule, before passing to Greece; tobacco; a. 3,315 sq. m.; p. (1951) 336,736.

Three Points, *c.*, Gold Coast Colony, Brit. W. Africa; W. extremity of Bight of Benin.

Three Rivers (Trois Rivières), *c., pt.*, Quebec, Canada; at confluence of St. Maurice and St. Lawrence Rs.; wood-pulp mnf.; exports grain, cattle; p. (1951) 46,074.

Thule, N.W. Greenland; 1,000 m. from N. Pole; American air base, regular services planned; spt. open only 2-3 mths. per annum.

Thun, *L.*, Berne can., Switzerland; occupies valley of R. Aar where it leaves Alpine region; separated from L. Brienz by deltaic neck of land on which is situated Interlaken; a. 38 sq. m.

Thun, *t.*, tourist centre, Berne, Switzerland; on N.W. end of L. Thun, 16 m. S.E. of Berne; p. (1941) 20,239.

Thur, *R.*, Switzerland; flows to R. Rhine, nr. Schaffhausen; length 70 m.

Thurgau, *can.*, Switzerland; bounded by Ls. Constance and Baden; dairying, fruit, textiles; cap. Frauenfeld; a. 388 sq. m.; p. (1950) 149,738.

Thuringia, *st. or Land*, Germany; situated between Franconia, the Harz Mtns., and the Rs. Saale and Werra and comprising in great part the mountainous Thüringer Wald dist.; oats, potatoes, potash; a. 6,022 sq. m.; p. (1946) 2,927,497.

Thuringian Forest or Thüringer Wald, *wild, wooded hill range*, Central Germany; 95 m. long; famous for romantic scenery and legends.

Thurles, *mkt. t.*, Tipperary (N. Riding), Ireland; on R. Suir; horse fair; p. 6,012.

Thursday, *I.*, Torres Strait, Queensland; pearl fishery centre; p. 1,500.

Thurso, *burgh*, Caithness, Scot.; on Thurso Bay; most N. t. on Scottish mainland; ancient stronghold of the Northmen; p. (1951) 3,203.

Tiaret, *t.*, W. Algeria, N. Africa; in strategic pass; walled; agr. mkt.; cereals, wool, cattle; p. 22,344.

Tiber, *R.*, Italy; flows from the Apennines to the Mediterranean, passing through Rome; length 220 m.

Tiberias, *t.*, Israel; on Sea of Galilee; gypsum quarried nearby; inland port; p. (1946) 11,810.

Tibesti, *mtns.*, on bdy. between Libya and Fr. W. and Equatorial Africa; barren in spite of slight rainfall; mainly above 6,000 ft., maximum alt. 11,155 ft.

Tibet, *lofty plateau*, Central Asia; called the "Roof of the World," its lowest plains being 12,000 ft. above sea level; semi-desert; Chinese



- suzerainty restored, 1951; exports wool, musk, gold, skins, and drugs; cap. Lhasa; a. 70,003 sq. m.; p. about 4,000,000.
- Ticino** or **Tessin**, *can.*, Switzerland; forests, vineyards, olives, and agr.; contains parts of L. Maggiore and L. Lugano; cap. Bellinzona; largest t. Lugano; a. 1,086 sq. m.; p. 175,055.
- Ticino**, R., Switzerland and Italy; trib. of Po; forms S. approach to St. Gotthard Pass; length 150 m.
- Tickhill**, *urb. dist.*, W.R. Yorks, Eng.; cas.; p. (1951) 2,550.
- Tidore** I., Moluccas, Indonesia; coffee, tobacco, fruit; a. 30 sq. m.; p. 19,126.
- Tienen** (Tirlemont), t., Brabant, Belgium; machinery, woollens, leather; captured by Marlborough, 1705; p. (1947) 22,343.
- Tien Shan** or **Celestial Mtns.**, *lofty chain*, N. frontier Chinese Turkestan; highest peak 24,000 ft.
- Tientsin**, *former treaty port, municipality prov.*, Hopei, China; 70 m. S.E. Peiping; cottons, silks; exports wool, skins, soya-beans; p. (estd. 1952) 1,795,000.
- Tierra del Fuego**, *archipelago*, extreme S. America, separated from Patagonia by Strait of Magellan, divided politically between Chile and Argentina; a. (Argentine part) 8,344 sq. m.; p. 4,921.
- Tiffin**, c., Ohio, U.S.A.; milling, brewing, foundries; p. (1950) 18,952.
- Tiflis**, see Tbilisi.
- Tigre**, st., Ethiopia, formerly an independent kingdom; cap. Adua.
- Tigre**, R., S. America; rises in Ecuador and flows mainly through Peru to the R. Marañon (Amazon); length 400 m.
- Tigris**, R., Turkey; rising in mtns. of Armenia and Turkestan, flowing S.E. to join the Euphrates 40 m. N.W. of Basra; length 1,100 m.
- Tihwa** (Urunchi), t., Sinkiang, China; p. (estd. 1945) 80,000.
- Tijuco**, see Diamantina.
- Tikhvin**, t., U.S.S.R.; on R. Syas; aluminium ores; p. 25,000.
- Tilburg**, t., N. Brabant, Netherlands; nr. Breda; flourishing woollens, mnfs., tobacco, leather; p. (1951) 122,551.
- Tilbury**, t., Essex, Eng.; on N. bank of R. Thames, 20 m. E. of London; extensive docks.
- Till**, R., N. Northumberland, Eng.; trib. of R. Tweed; length 32 m.
- Tillicoultry**, *burgh*, Clackmannan, Scot.; on Devon R.; wool factories; p. (1951) 3,818.
- Tilmanstone**, *mining vil.*, Kent, Eng.; on N. flank of N. Downs, 4 m. S.W. of Deal; on Kent coalfield, coal despatched by overhead cable to Dover.
- Tilist** (Sovetsk), t., U.S.S.R.; on R. Niemen, nr. Klaipeda; ironwks. and machinery mftg., chemicals, and distilling; p. (1939) 57,286.
- Timaru**, t., S.I., New Zealand; wool, milling, skins; p. (1951) 22,758.
- Timbuktu**, Fr. Sudan, Africa; 8 m. N. of the N. bend of R. Niger, on border of the Sahara desert; agr. tr. centre; p. (1946) 6,900; flourished as comm. mart and Moslem centre, 14-16th cent.
- Timisoara**, t., W. Romania; impt. commercial and industr. centre, tobacco, petroleum, paper; fortress, cas., cath.; p. (1948) 111,987.
- Timmins**, t., Ontario, Canada; gold; p. (1941) 28,790.
- Timor**, *Portuguese possession*, E. Indies; consists of E. part of T.I. in Malay Archipelago, together with Ambeno, Pulo Cambing, and Pulo Jako; ch. products coffee, sandalwood, copra, wax; cap. and ch. spt. Dilly; total a. 7,330 sq. m.; p. (1936) 463,996.
- Timor Archipelago**, *group of Is.*, Indonesia; of which the largest is Timor; total a. 24,450 sq. m.; fishing, exports copra; p. 1,657,376.
- Timor Sea**, that part of the Indian Ocean N.W. of W. Australia, and S. of Timor I.
- Timsah**, L., Egypt, N.E. Africa; sm. L. midway along Suez Canal; used for recreational purposes by Brit. garrison in Canal zone.
- Tinneveli**, t., Madras, India; rice, coffee, cotton, tobacco; p. (1941) 60,676.
- Tinogasta**, t., Catamarca prov., Argentina; in E. foot-hills of Andes 120 m. N.W. of Catamarca; impt. copper-mines.
- Tintagel**, *vil.*, Cornwall, Eng.; with ruined cas.; reputed birthplace of King Arthur; tourists.
- Tinto**, R., Huelva, Spain; flows W. to the Atlantic; length 65 m.
- Tinto Hills**, Lanark, Scot.; highest peak 2,300 ft.
- Tipperary**, *inland co.*, Munster, Ireland, a. 1,659 sq. m.; divided into Tipperary Co. (N. Riding), p. (1946) 58,099; and Tipperary Co. (S. Riding), p. (1946) 77,882.
- Tipperary**, t., Tipperary, Ireland; 29 m. S.E. Limerick; mftg., butter, lace; p. (1951) 133,347.
- Tipton**, t., *mun. bor.*, Staffs, Eng.; 2 m. W. of W. Bromwich; coal, cement, engineering; p. (1951) 39,332.
- Tiranë**, t., *cap.*, Albania; olives; p. (estd. 1951) 40,000.
- Tiraspol**, t., Moldavia, U.S.S.R.; on R. Dniester; heat and power-stn. recently constructed; milling, tobacco; p. 10,000.
- Tircannonail**, see Donegal.
- Tire**, t., Aydin, Turkey; raisins, tobacco, cotton; p. 22,032.
- Tiree**, I., Inner Hebrides, Scot.; off est. of Mull; small fresh-water lochs and Scandinavian forts.
- Tiruchirappalli**, *formerly Trichinopoly*, t., Madras, India; on R. Cauvery; cigars, goldsmith's work; p. (1951) 218,921.
- Tisa** (Tisza), R., U.S.S.R., Hungary, Yugoslavia; rises in E. Carpathians, flows N.W. to Cop, thence S. across flat, agricultural plain of Gr. Alföld into R. Danube 45 m. below Novi Sad; approx. length 700 m.
- Titacaca**, L., Bolivia, Peru, S. America; between two ranges of the Andes, on borders of Bolivia and Peru; 12,645 ft. above the sea; a. 3,200 sq. m.; average width 27 m. length 101 m.; almost cut in two by peninsula of Copacabana; nearly 700 ft. deep on E. side, shallow W. and S.; contains numerous Is., largest Titicaca; it is drained on the S. side by the R. Desaguadero.
- Titograd** (Podgorica), t., Montenegro, Yugoslavia; nr. Albanian frontier; p. (1948) 12,272.
- Tiumen**, t., Siberia, U.S.S.R.; N.W. of Tobolsk; leather, carpets.
- Tiverton**, *mkt. t., mun. bor.*, Devon, Eng.; 14 m. N. Exeter; lace mftg.; p. (1951) 10,869.
- Tivoli**, t., Rome, Italy; sulphur baths.
- Tiztzu**, t., Algeria, N. Africa; admin. centre; livestock, honey, oil, corn; p. 40,526.
- Tlaxcala**, st., Mexico; adjoining Puebla; a. 1,555 sq. m.; cap. Tlaxcala; p. (1950) 234,226.
- Tlemcen**, t., Algeria, N. Africa; exports textiles, carpets, ostrich feathers, olive oil, grain, and onyx; p. (1948) 69,668.
- Tobago**, I., Brit., W. Indies; has belonged to Britain since 1762, administered by Trinidad; its name is supposed to be derived from the fact that the Carib natives were greatly addicted to tobacco; exports sugar, rum, rubber, cotton, tobacco, coffee, etc.; cap. Scarborough on S. side; a. 116 sq. m.; p. (1946) 27,161, nearly all Negroes.
- Tobarra**, t., Spain; industr.; p. 13,110.
- Tobata**, *industr. c., spt.*, N. Kyushu, Japan; on S. shore of Shimonoeki Strait at entrance to Tokai Bay; iron and steel industry, engineering, sugar-refining, glass, bricks; lge. modern coal docks; p. (1947) 84,260.
- Tobermory**, *burgh*, Argyll, Scot.; on I. of Mull at N. entrance to Sound of Mull; p. (1951) 692.
- Tobol**, R., W. Siberia, U.S.S.R.; trib. of R. Irtysh; length 500 m.
- Tobolsk**, t., W. Siberia, U.S.S.R.; on R. Irtysh; fishery industries and tr.; p. 23,500.
- Tobruk**, *spt.*, Libya, N. Africa; on est. 220 m. E. of Benghazi; p. (estd. 1951) 2,500.
- Tocantins**, R., provs. Pará and Goiás, Brazil; flows N. through the Pará estuary to the Atlantic; navigation interrupted by rapids 200 m. above Pará; length 1,700 m.
- Toce**, R., N. Italy; rises in Lepontine Alps, flows S. and S.E. into L. Maggiore; valley used by trunk rly. from Milan to Berne as S. approach to Simplon Tunnel; length, 54 m.
- Tocopilla**, *spt.*, Chile; exports nitrate, copper ore, sulphates, iodine; p. (1940) 17,287.
- Todmorden**, *mkt. t., mun. bor.*, W.R. Yorks, Eng.; nr. source of R. Calder, 6 m. N.E. of Rochdale; cottons, machinery, iron; p. (1951) 19,072.
- Togoland**, W. Africa; former German col., administered by Britain and France as trust terr.; dyewoods, rubber, coffee, cocoa, fruits, weaving, pottery, straw plaiting; a. 33,700 sq. m.; p. (1952) (British part) 410,000. (French part) 565,780.

- Tokat, t., Turkey;** on Tokat I., N. of Sivas; copper and yellow leather mftg.; Armenian massacre 1895; p. 20,153.
- Tokay, (Tokaj), t., Hungary;** vineyard dist.; Tokay liqueur wines are well known; p. 5,069.
- Tokelau or Union Isles, group of 3 Is., Brit. col., Pac. Oc.;** 300 m. N. of W. Samoa administered by New Zealand; a. 4 sq. m.; p. (1951) 1,580.
- Tokushima, t., E. cst. Shikoku, Japan;** cottons; p. (1947) 83,520.
- Tokyo, c., spl., cap., Japan;** on Tokyo Bay, S.E. cst. of Honshu; univ., imperial palace; gr. commercial centre; silks, machinery, lacquer, pottery; p. (1950) 6,277,500.
- Toledo, prov., Spain;** mountainous; agr., vineyards, stock-raising; a. 5,925 sq. m.; p. (1949) 532,278.
- Toledo, ancient c., cap., Toledo, Spain;** on R. Tagus; with cath., and many specimens of Gothic, Moorish, and Castilian architecture in its picturesque narrow streets; famous Alcazar palace citadel; sword-making still flourishes; p. (1949) 42,598.
- Toledo, c., Ohio, U.S.A.;** on Maumee R.; gr. rly. centre covering 28½ sq. m.; grain, flour, lumber, engineering, motor cars; p. (1950) 303,616.
- Tolima, volcano, Andes, Colombia, S. America;** alt. 18,143 ft.
- Tolima, dep., Colombia, S. America;** a. 8,374 sq. m.; cap. Ibague; p. (1947) 691,360.
- Toluca, t., Mexico;** brewing, flour, cottons; p. (1950) 115,422.
- Tom, R., Siberia, U.S.S.R.;** trib. of R. Obi; length 400 m.
- Tombigbee, R., Mississippi, U.S.A.;** flows S. to form the Mobile; length 500 m.
- Tommot, t., Yakutsk, U.S.S.R.;** on R. Aldan; gold; p. 10,000.
- Tomsk, region, Siberia, U.S.S.R.;** adjoining Chinese frontier; agr., dairying, stock-raising, fisheries, mining, mftg.
- Tomsk, c., Siberia, U.S.S.R.;** on R. Tom, and branch of Trans-Siberian rly.; univ., cath., many thriving industries; p. (1939) 141,215.
- Tonale, t., nr. G. of Tehuantepec, Chiapas, Mexico;** p. 6,379.
- Tonawanda, t., N.Y., U.S.A.;** on Niagara R.; mnfs.; p. (1950) 14,617.
- Tonbridge, t., urb. dist., Kent, Eng.;** on R. Medway, 13 m. S.W. of Maidstone; malting, brewing, rly. wks.; p. (1951) 19,239.
- Tønder, t., Denmark;** old houses; cattle-breeding; p. 6,778.
- Tonga Is., see Friendly Is.**
- Tongariro, volcanic peak, N.I., New Zealand;** in centre of volcanic district; alt. 6,458 ft.
- Tongeren (Tongres), episcopal c., Belgium;** mineral springs; p. 13,484.
- Tongking, Viet Nam, Indo-China;** rice, sugarcane, tobacco, coffee, cotton, silk, coal, tin, limestone; a. 40,530 sq. m.; ch. t. Hanoi; ch. port Haiphong; p. (1942) 9,220,000.
- Tonk, t., Rajasthan, India;** mica; p. (1941) 38,650.
- Tonlé Sap, L., Cambodia, Indo-China.**
- Tønsberg, fortfd. t., Norway;** on Bay nr. entrance to Oslo fjord; headquarters of sealing- and whaling-fleet, oil mills; p. (1946) 11,388.
- Toowoomba, c., Queensland, Australia;** wheat, pastoral and dairying dist., flour-milling, tanning, brewing, wine; p. (1947) 33,326.
- Topeka, t., cap., Kansas, U.S.A.;** on Kansas R.; flour-milling, engineering, machinery, large tr.; p. (1950) 78,781.
- Torcello, I., with ancient Byzantine cath., on lagoon nr. Venice, Italy.**
- Torgau, c., Germany;** on R. Elbe; glass, ceramic ware, mineral oil, agr. implements, paper; p. 12,647.
- Torhout, t., W. Flanders, Belgium;** textiles; p. 12,223.
- Tormes, R., Spain;** trib. of Douro (Duero); length 150 m.
- Toronto, c., cap., Ontario, Canada;** on Bay of Toronto, L. Ontario; spacious harbour; univ.; extensive tr. and mnfs.; foundries, distilleries, exports grain, timber, cattle, etc.; fine parliament bldgs., parks, etc.; p. (1951) 1,081,460.
- Torontoy, gorge, Cuzco dep., Peru;** located on R. Urubamba 50 m. N.W. of Cuzco.
- Torpoint, urb. dist., Cornwall, Eng.;** on Plymouth Sound opposite Plymouth; p. (1951) 5,852.
- Torquay, t., mun. bor., S. Devon, Eng.;** on N. side of Tor Bay; seaside resort with all-year season; p. (1951) 53,216.
- Torre Annunziata, t., spl., Italy;** on Bay of Naples; arms factory, macaroni mftg., sericulture; p. 65,715.
- Torre del Greco, spl., Italy;** on Bay of Naples; at foot of Mt. Vesuvius; seaside resort; lava quarries, shipbldg.
- Torredonjimeno, t., Jaen, Spain;** wine, wheat, fruit; p. 16,069.
- Torrens, L., S. Australia;** 130 m. long, 20 m. wide; varies from brackish lake to salt marsh.
- Torreón, t., Mexico;** p. (1950) 132,101.
- Torres Vedras, t., Portugal;** sulphur baths; p. 11,898.
- Torres Strait, between C. York, Queensland, Australia, and New Guinea;** 90 m. wide, dangerous navigation.
- Torrevelia, spl., Alicante, Spain;** salt-beds, fisheries, etc.; p. 9,412.
- Torrige, R., Devon, Eng.;** trib. of R. Taw; length 37 m.
- Torrington, t., Conn., U.S.A.;** metal-plate work, woollens; p. (1950) 27,820.
- Torrington, t., rural dist., Devon Eng.;** on R. Torrridge, 4 m. S.E. of Bideford; gloves, tanning; p. (rural dist. 1951) 7,387.
- Torrox, spl., S. Spain;** on Mediterranean Sea; p. 7,334.
- Tortona, t., N. Italy;** the Roman Dertona; cath.; p. 21,813.
- Tortosa, fortfd. t., Spain;** on R. Ebro; wine, oil, fruit, paper, leather; p. 38,285.
- Tortuga, I., Caribbean Sea;** located off N.W. cst. of Hispaniola; provides shelter from N.E. Trade Winds for Port de Paix; length 25 m., width 10 m.
- Torun (Thorn), t., S. Pomerania, Poland;** on R. Vistula; univ.; grain, timber; p. 63,035.
- Tosya, t., Turkey;** grapes, rice, cotton, wool, mohair, weaving; p. 10,740.
- Totana, t., Murcia, Spain;** wheat, olives, oranges; p. 15,264.
- Totnes, t., mun. bor., Devon, Eng.;** on R. Dart, 6 m. N.W. of Dartmouth; cider; p. (1951) 5,534.
- Totonicanpan, t., Guatemala, Central America;** hot springs, gardens; pottery, furniture, textiles; p. 6,932.
- Tottenham, mun. bor., Middx., Eng.;** N. of London; industri. and residu.; p. (1951) 126,921.
- Tottington, urb. dist., Lancs., Eng.;** p. (1951) 5,824.
- Touggourt or Tuggurt, t., S. Algeria;** on edge of Sahara Desert; rly. terminus; dates; p. 243,363.
- Toul, t., Meurthe-et-Moselle, France;** on R. Moselle; wines, brandy, earthenware, lace; p. (1946) 13,267.
- Toulon, c., spl., naval stn., Var, France;** on Mediterranean cst.; arsenal, fine bldgs., shipbldg., lace-making, vines, olive oil, fisheries; p. (1946) 125,742.
- Toulouse, t., Haute-Garonne, S. France;** on R. Garonne; imposing bldgs., cath.; tobacco, gunpowder, cannon foundries, paper, leather, stained glass; p. (1946) 264,411.
- Touraine, former prov., France;** now divided into Indre-et-Loire and part of Vienne depts.
- Tourcoing, t., Nord, France;** 10 m. N.E. of Lille; textiles, carpets, cement; p. (1946) 76,080.
- Tournai, t., Hainaut, Belgium;** on R. Scheldt; nr. Mons; famous cath.; textiles, carpet mftg.; p. (1947) 33,221.
- Tours, t., Touraine, France;** on R. Loire; cath.; iron, steel, wines, leather, textiles; p. (1946) 80,044.
- Towcester, mkt. t., rural dist., Northants, Eng.;** 9 m. S.W. of Northampton; boot-making; p. (rural dist. 1951) 14,540.
- Tow Law, urb. dist., Durham, Eng.;** in Wear Dale, 10 m. N.W. of Bishop Auckland; p. (1951) 3,186.
- Townsville, spl., Queensland, Australia;** on E. cst., 400 m. N. of Rockhampton; second port of st.; exports prods. of rich dairying, pastoral, and mining terr.; soap, beer; p. (1947) 34,233.



- Towy, *R.*, S. Wales; flows S.W. to Carmarthen Bay; length 65 m.
- Towyn, *mkt. t., urb. dist.*, Merioneth, Wales; on csty. of Cardigan Bay, 3 m. N.W. of Aberdovey; lead; p. (1951) 4,491.
- Toyama, *c.*, Honshu, Japan; located centrally on Etchu plain to E. of Noto Peninsula; administrative and comm. centre of region; aluminium smelting; p. (1950) 154,484.
- Trabzon, *spt.*, Turkey; on Black Sea cst.; caravan centre; exports tobacco, carpets, hides; reputed to be the ancient Trapezus; p. (1945) 29,551.
- Trafalgar, *C.*, S.W. cst., Cadiz, Spain; Nelson's famous victory, 1805.
- Trail, *t.*, B.C., Canada; large metallurgical smelter; p. (1951) 11,430.
- Tralee, *cst. t.*, Kerry, Ireland; on R. Lee; exports grain, butter; p. (1946) 9,982.
- Tranent, *burgh*, E. Lothian, Scot.; 10 m. E. of Edinburgh; coal; p. (1951) 5,639.
- Trani, *spt.*, Apulia, Italy; on the Adriatic; 12th-century cath.; p. 30,551.
- Transbaikal, *dist.*, Siberia, U.S.S.R.; E. of L. Baikal; mineral wealth; ch. t., Chita.
- Transcaucasia, name given to region of U.S.S.R. which comprises the constituent reps. of Georgia, Armenia, and Azerbaijan; ch. t., Tbilisi.
- Transkei, *dist.*, C. of Good Hope, S. Africa; cereals, fruits, cattle, sheep.
- Transvaal, *prov.*, Union of S. Africa; hot summers, temperate winters; grassland, agr., maize, tobacco, sheep, wool, cattle, gold, diamonds; coal, copper, tea, engineering, brewing, pottery; a. 110,450 sq. m.; cap. Pretoria; p. (1951) 4,802,405 (inc. 1,205,453 whites).
- Transylvania, *former prov.*, Hungary, now in Rumania; cereals, tobacco, sheep, cattle, horses; surrounded and traversed by the Carpathians; p. (1948) 3,420,859.
- Transylvanian Alps, *range of high mtns.*, Rumania.
- Trapani, *io.tfd. spt.*, W. Sicily, Italy; salt, wine, olive oil, fish, alabaster, coral, mother-of-pearl; exports; p. (1951) 72,289.
- Trasimeno, *L.*, Umbria, central Italy; occupies lge. extinct volcanic crater; drained S. to R. Tiber; a. approx. 60 sq. m.
- Trás-os-Montes e Alto-Douro, *prov.*, N. Portugal; ch. t., Tua; a. 47,340 sq. m.; p. (1940) 592,079.
- Traun, *R.*, Austria; trib. of R. Danube; enters L. known as Traun See; length 100 m.
- Travancore-Cochin, *st.*, S. India; formerly Madras Sta.; rice, coconuts, pepper, taploca, hardwoods; univ.; a. 9,155 sq. m.; p. (1951) 9,265,157.
- Traverse City, *t.*, Mich., U.S.A.; timber industries, tr.; p. (1950) 16,974.
- Trawden, *urb. dist.*, Lancs, Eng.; p. (1951) 2,114.
- Trebizonde, see Trabzon.
- Tredegar, *minim. t.*, urb. dist., Monmouth, Eng.; in narrow valley 3 m. W. of Ebbw Vale; p. (1951) 20,375.
- Tregaron, *t.*, rural dist., Cardigan, Wales; in upper Teifi valley, 10 m. N.E. of Lampeter; p. (rural dist. 1951) 5,447.
- Treinta y Tres, *dep.*, Uruguay; a. 3,682 sq. m.; cap. Trienta y Tres; p. (1942) 68,850.
- Trelew, *t.*, Patagonia, Argentina; ch. commercial t.; sheep; p. 7,000.
- Trelleborg, *t.*, S., Sweden; p. 15,311.
- Tremadoc Bay, N. Wales; N. part of Cardigan Bay between Llleyn peninsula and cst. of Merioneth.
- Trengganu, *st.*, Malaya; mining both tin and iron; rice, rubber, coconuts; cap. Kuala Trengganu; a. 5,050 sq. m.; p. (1947) 225,996.
- Trent, *R.*, Eng.; rises in N. Staffs. and flows to join the Ouse in forming the estuary of the Humber; length 170 m.
- Trentino-Alto Adige, *region*, N. Italy; a. 5,252 sq. m.; p. (1951) 728,559.
- Trento, *t.*, cap., Venezia Tridentina, N. Italy; on R. Adige; p. (1951) 62,128.
- Trenton, *c.*, cap., N.J., U.S.A.; on Delaware R.; ironwks., pottery, rubber, and other mnfs.; p. (1950) 128,009.
- Treport, *Le*, *spt.*, Seine-Inf., France; resort, fishing; p. (1946) 5,719.
- Tres Arroyos, *t.*, E. Argentina; agr. and livestock centre; p. 32,173.
- Trèves, see Trier.
- Treviglio, *t.*, Lombardy, Italy; E. of Milan; silk mfts.; p. 19,615.
- Treviso, *t.*, Lombardy, Italy; cath.; majolica ware, silks, woollens; p. (1951) 61,972.
- Trichinopoly, (see Tiruchirappalli).
- Trier, *ancient c.*, Rhineland-Palatinate, Germany; on R. Moselle; cath.; many Roman antiquities; iron founding, dyeing, cottons, woollens, stained glass; p. 38,000.
- Trieste Free Territory, *free state*, on the Adriatic; constituted by Peace Treaty with Italy, 1947, as compromise between conflicting Yugoslav and Italian claims; a. 287 sq. m., p. (Zone A) 350,000 (est.), (Zone B) 75,000 (est.) Oct. 1954. Military government terminated; Zone A handed over to Italy, Zone B to Yugoslavia.
- Trieste, *spt.*, cap. Free Terr. of Trieste; industr. i.e., shipbldg., fishing; cath., cas., Roman antiquities; p. (1951) 296,096.
- Trikkala, *prefecture*, Thessaly, Greece; cap. Trikkala; p. (1951) 127,900.
- Trikkala (the ancient Trikal), *t.*, Thessaly, Greece; nr. Larissa; many mosques; grain tr.; p. (1951) 27,890.
- Trincomalee, *t.*, naval stn., N.E. cst., Ceylon; gd. harbour; tobacco, rice, palms; p. 32,507.
- Tring, *mkt. t.*, urb. dist., Herts, Eng.; in gap between Chiltern Hills, 9 m. N.W. of Hemel Hempstead; dairy farming; p. (1951) 5,018.
- Trinidad, *c.*, Colorado, U.S.A.; on Purgatory R.; rly. wks., coal; p. (1950) 12,204.
- Trinidad, *I.*, Crown col., Brit. W. Indies; oil, asphalt, sugar, rum, coconut oil; cap. Port of Spain; a. 1,864 sq. m.; p. 602,714.
- Trinidad, *cap.*, Beni, Bolivia; p. (1950) 10,759.
- Trinidad, *t.*, Cuba, W. Indies; exports honey; p. 15,453.
- Trinity, *R.*, Texas, U.S.A.; flows S.E. to Galveston Bay; length 500 m.
- Tripoli, *spt.*, Lebanon; S.W. Asia; terminus of oil pipe-line from Iraq; p. (estd. 1950) 78,000.
- Tripoli, *prov.*, Libya, N. Africa; extends W. to Tunisia, E. to Cyrenaica, S. into Sahara Desert; largely composed of desert, scattered oases; cap. Tripoli; p. (estd. 1951) 768,600.
- Tripoli, *t.*, cap., Tripoli prov. Libya, N. Africa; also joint cap. (with Benghazi) of Libya; expanded greatly under Italian colonial administration; exports wool, hides; p. (estd. 1951) 140,000.
- Tripolis, *cap.*, Arcadia, Peloponnese, Greece; tapestries, leather; p. (1951) 17,675.
- Tripura, *dist.*, India; hilly; rice, jute, cotton, sugar, cane; a. 4,116 sq. m.; p. (1951) 639,029.
- Tristan da Cunha, *sm. group of British Is.*, S. Atl. Oc.; ch. I. Tristan, consists of extinct volcano; has recently become an impt. meteorological and radio stn.; a. 38 sq. m.; p. (1952) 281.
- Trivandrum, *t.*, S. India; cap. st. Travancore; woodcarving; p. (1951) 186,931.
- Trnava, *t.*, Czechoslovakia; on R. Vah; cloth, sugar; p. 24,226.
- Trnovo (Tirnovo), *t.*, Bulgaria; copper work; p. 16,182.
- Troitsk, *t.*, S. Urals, U.S.S.R.; leather, knitwear; p. 40,500.
- Trollhätten, *t.*, Sweden; famous waterfalls, with generating-station; p. (1951) 24,264.
- Troms, *dist.*, Norway; a. 10,006 sq. m.; p. (1950) 117,498.
- Tromsø, *spt.*, Troms, Norway; on sm. I. of Tromsø, in Tromsø Sound; seal and walrus fishing; p. (1946) 10,785.
- Tronador, *volcano*, Andes, S. America; on Argentine-Chilean boundary; alt. 11,352 ft.
- Trøndelag, *N.*, *dist.*, Norway; a. 8,659 sq. m.; p. (1950) 109,860.
- Trøndelag, *S.*, *dist.*, Norway; a. 7,241 sq. m.; p. (1950) 197,758.
- Trondheim, *spt.*, Norway; on W. est. on S. side of Trondheim Fjord; shipbldg., exports timber and wood-pulp, butter, fish, copper; contains ancient cath., burial place of early Norwegian kings, and place of coronation of recent sovereigns; p. (1946) 56,444.
- Troon, *burgh*, Ayr, Scot.; on Firth of Clyde, 6 m. N. of Ayr; gd. harbour and graving docks; p. (1951) 10,061.
- Troppau, *t.*, Czechoslovakia; see Opava.
- Trossachs, *mtn. defile*, Perth, Scot.; tourist resort.
- Trouville, *spt.*, Calvados, France; resort, boat-bldg., fishing; p. (1946) 6,514.
- Trowbridge, *mkt. t.*, urb. dist., Wilts, Eng.; 3 m. S.E. of Bradford-on-Avon; cloth wks., milk processing, brewing; p. (1951) 13,844.

- Troy, c., N.Y., U.S.A.: at confluence of Rs. Hudson and Mohawk; great shirt-mfg. centre; p. (1950) 72,311.
- Troyes, c., Aube, France; on R. Seine; former cap. Champagne; magnificent cath., hosiery, iron, looms, mnfs.; p. (1946) 58,805.
- Trujillo, *spt.*, Honduras, Central America; on Atlantic cst.; p. (1945) 7,547.
- Trujillo, *ch. t.*, La Libertad, Peru; sugar, copper; p. (std. 1950) 47,723.
- Trujillo, *old t.*, Spain; N.E. of Badajoz; wheat, wine, fruit; birthplace of Pizarro; p. 13,753.
- Trujillo, *st.*, Venezuela, S. America; cocoa, coffee; cap. T.; p. (1947) 264,270.
- Truk Is., Caroline Is., Pac. Oc.; coral, copra, dried fish; a. 50 sq. m.; p. 17,133.
- Truro, c., *mun. bor.*, Cornwall, Eng.; at confluence of Rs. Kenwyn and Allen; cath.; tin smelting. jam wks.; p. (1951) 12,851.
- Truro, t., Nova Scotia, Canada; on Salmon R., nr. head of Cobequid Bay; hosiery; p. 10,756.
- Trutnov, t., Czechoslovakia; at foot of Riesengebirge; coal, linen; p. 18,320.
- Tsangpo, R., Tibet; one of the headstreams of the R. Brahmaputra; length 850 m.
- Tschenstokov, *see* Czestochowa.
- Tsinan, c., Shantung, China; on the right bank of the Hwang Ho, 100 m. from the G. of Chihli; mnfs. glass, textiles, precious stones; p. (std. 1946) 591,490.
- Tsining, c., Shantung, China; p. (std. 1930) 150,000.
- Tsingtao, c., Shantung, China; salt, silk; former treaty port; p. (std. 1946) 755,057.
- Tsitsihar (Lunkiang), t., Manchuria, N. China; on the Vladivostok portion of the Trans-Siberian rly.; p. (std. 1947) 174,675.
- Tsugaru Strait, Japan; separates Is. Hokkaido and Honshu; links Sea of Japan with Pac. Oc.; length 45 m., width 15-20 m.
- Tsumeb, t., S.W. Africa; rly. term.; copper-mines, cattle; p. (white) 580.
- Tsuruga, *spt.*, Japan; on W. cst. Honshu; rayon textiles, cotton; p. (1947) 24,223.
- Tuam, *mkt. t.*, *rural. dist.*, Galway, Ireland; Roman Catholic and Protestant cath.; p. (1946) (of dist.) 29,216, (of t.) 3,873.
- Tuamotu, coral archipelago, S. Pac. Oc.; belonging to France; a. of group 330 sq. m.; gd. harbour at Fakarava; pearl fisheries; p. 5,127.
- Tuapse, *spt.*, R.S.F.S.R., U.S.S.R.; at foot of Caucasus Mtns. on N. cst. of Black Sea; at W. end of oil pipe-line from Baku and Makhach Kala; impt. oil refineries.
- Tubarao, t., Santa Catarina st., S. Brazil; on E. cst., 175 m. N.W. of Porto Alegre; coal-mines.
- Tübingen, t., Württemberg, Germany; on R. Neckar; univ.; printing, dyeing, chemicals, surgical instruments; p. 28,686.
- Tucson, c., Arizona, U.S.A.; on Santa Cruz R.; gold-, silver-, and copper-mining; founded in 1580 by a Jesuit mission, and from 1867 to 1877 was the capital of Arizona, seat of Univ. of Arizona; p. (1950) 45,454.
- Tucumán, *prov.*, Argentina; agr. and stock-raising; cap. Tucumán; a. 8,817 sq. m.; p. (1947) 604,526.
- Tucumán, c., cap. Tucumán *prov.*, Argentina; on R. Salí; univ.; breweries, sawmills, flour-mills, sugar; p. (1947) 157,926.
- Tugela, R., Natal, S. Africa; rises in Drakensberg Mtns. and flows to Indian O.; length 300 m.
- Tuggurt, *see* Touggourt.
- Tula, *region*, R.S.F.S.R., U.S.S.R.; S. of Moscow; pasturage, stock-keeping, iron and coal; cap. Tula.
- Tula, t., R.S.F.S.R., U.S.S.R.; on both banks R. Upa; gun factory, sugar-mills, and many smaller industries; p. (1939) 273,403.
- Tulare, L., S. Cal., U.S.A.; centre of inland drainage 40 m. S. of Fresno; streams feeding it used for irrigation; in drought years L. dries up completely; a. 90 sq. m.
- Tulbagh, t., C. of Gd. Hope, Union of S. Africa; on Gr. Berg R., 65 m. N.E. of Cape Town; commands entrance to Tulbagh Kloof (pass) by which Cape Town to Johannesburg rly. approaches Hex. R. valley and thus climbs to Gr. Karroo and gains central African tableland.
- Tulcea, t., Dobroja, Romania; on Danube; grain, wool, fish; p. 21,642.
- Tulchin, t., Ukraine, U.S.S.R.; flour and grain tr.; p. 10,000.
- Tulkarm, t., Jordan; agr. centre; rly. junction; p. 5,368.
- Tullamore, *mkt. t.*, *urb. dist.*, Offaly, Ireland; on Grand Canal; farming, distilling, brewing; p. (1946) 5,894.
- Tulle, t., *cap.*, Corrèze, France; cath.; p. (1946) 18,202.
- Tulsa, c., Oklahoma, U.S.A.; second largest c. in st.; oil-well machinery, aeroplanes; p. (1950) 182,740.
- Tumbes, *dep.*, Peru, S. America; cap. Tumbes; a. 1,590 sq. m.; p. (1947) 29,471.
- Tummel, R., Perth, Scot; trib. of R. Tay; used by Perth to Inverness rly. as S. approach to Drumochter Pass.
- Tumut, t., N.S.W., Australia; gold, wheat; p. 2,176.
- Tunbridge Wells, *mkt. t.*, *Royal mun. bor.*, *inland wat. pl.*, Kent, Eng.; on border of Sussex, 5 m. S. of Tonbridge; the chalybeate waters were discovered in 1606 by Lord North; p. (1951) 38,397.
- Tung Hai or Eastern China Sea, name of part of the Pacific Ocean bordering S. China.
- Tungshan, *see* Suchow.
- Tungting Hu, *lge. L.*, Hunan, China; on S. margin of Yangtze-Kiang plain; receives waters of Yuan Kiang and Siang Kiang, drains N. to Yangtze-Kiang; surrounded by flat, intensively cultivated land, rice, sugar, mulberry; size varies greatly with season; maximum a. (in late summer) 2,500 sq. m.
- Tunguska, Upper, Stony and Lower, Rs., Siberia, U.S.S.R.; all rise in Sayan Mtns. nr. L. Baikal and flow N.W. through forested country into R. Yenesei.
- Tunis, *ch. t.*, Tunisia, N. Africa; *spt.* on bay off G. of Tunis; bazaars, palace of the Bey; many industries, much tr.; the ruins of ancient Carthage are to the N.E.; p. (1946) 364,592.
- Tunisia, one of the *Barbary sts.*, N. Africa; now a French regency; agr., stock-rearing, mineral and phosphate working, silk and carpet weaving, pottery mfg., fishing (including sponges), also fruit- and flower-growing and perfume distillation; cap. Tunis; a. about 48,300 sq. m.; p. (1946) 3,230,952 (inc. 239,529 Europeans).
- Turda, t., Transylvania, Romania; salt mines; p. 29,107.
- Turian (Tulufan), c., Sinkiang, China; below sea-level on the S. side of the Tian-Shan Mtns.; p. 20,000.
- Turgai, *dist.*, U.S.S.R.; N. of Sea of Aral, forms part of Kazakhstan rep.; a. 175,219 sq. m.; agr. and cattle-breeding; p. 500,000 (largely nomadic Kirghiz).
- Turgai, t., U.S.S.R.; on caravan road from Tashkent to Orsk; p. 2,500.
- Turgutlu (Kassaba), t., Turkey; 35 m. E. of Izmir; cotton, melons; p. 31,000.
- Turin, c., N. Italy; on Rs. Po and Dora; former cap. Piedmont and Sardinian sts.; cath. (Holy Shroud preserved in which body of Christ is said to have been wrapped), univ., royal palace and cas., and Palazzo Carignano; leather, textiles, engineering; extensive tr.; p. (1951) 712,596.
- Turkestan E., territory included in Chinese *prov.* of Sinkiang; separated from W. or former Russian Turkestan by Pamir plateau; mainly desert.
- Turkey, *rep.*, Europe and Asia; has lost much of 19th-century territories; evergreen trees, shrubs, livestock, cereals, tobacco, figs, fruits, copper, silver, coal, carpets, silk, wine, olive oil; cap. Ankara; largest t. Istanbul; a. 296,107 sq. m.; p. (1950) 20,934,670.
- Turkmen, S.S.R., U.S.S.R.; agr. based on irrigation, fruit, cotton, wool; sulphates, petroleum, mnfs., carpets; cap. Ashkhabad; a. 189,603 sq. m.; p. (1939) 1,253,985.
- Turks and Caicos, Is., Caribbean Sea; dependency of Jamaica; about 30 sm. Is., only 8 of which are inhabited; a. 202 sq. m.; largest I. Grand Caicos, 25 m. by 12 m., and Grand Turk, 7 m. by 2 m.; the seat of government; ch. industry salt-raking; p. (1943) 6,133.
- Turku (Abo), *spt.*, S. Finland; Swedish and Finnish univs., arch episcopal see; p. (1950) 101,239.
- Turku-Pori (Åbo-Björneborg), *dep.*, Finland; a. 8,500 sq. m.; p. (1950) 630,959.



- Turner Valley, *dist.*, Alberta, Canada; oilfield; p. 1,157.
- Turnhout, *t.*, Belgium; nr. Antwerp; textiles, lace, playing-card mfr.; p. (1947) 32,135.
- Turnu Severin, *t.*, Romania; below the Iron Gate cataracts of R. Danube; grain, salt, petroleum; p. 29,362.
- Turriff, *burgh*, Aberdeen, Scot.; nr. R. Deveron; p. (1951) 2,964.
- Turton, *t.*, *urb. dist.*, Lancs, Eng.; 4 m. N. of Bolton; mfrs.; p. (1951) 10,951.
- Tuscaloosa, *t.*, Alabama, U.S.A.; st. univ.; p. (1950) 46,396.
- Tuscany, *region*, former *grand duchy*, Italy; includes provs. Arezzo, Florence, Leghorn, Siena, Grosseto, Lucca, Pisa, and Massa and Carrara; cereals, olive oil, wine, copper, lead, mercury, marble, textiles, porcelain; a. 8,876 sq. m.; p. (1951) 3,152,535.
- Tuticorin, *spt.*, Madras, India; cotton-spinning, salt, pearls; p. (1941) 76,614.
- Tuttlington, *t.*, Germany; on R. Danube; tanning, shoes, precision instruments; p. 17,225.
- Tuva, *region*, U.S.S.R.; formerly Tannu Tuva rep., bounded on E., W., and N. by Siberia, and on S. by Mongolia; pastoral; a. about 64,000 sq. m.; p. about 65,000.
- Tuxtla Gutierrez, *t.*, Chiapas, Mexico; alt. 1,500 ft.; centre for sisal, tobacco, coffee, cattle; p. (1940) 15,883.
- Tuxpan, *spt.*, Mexico, on G. of Mexico; p. (1940) 13,381.
- Tuy, *t.*, Spain; cath.; mineral springs; p. 13,500.
- Tuzla, *t.*, Yugoslavia; salt-springs, coal, timber, livestock, grain, fruit; p. (1948) 28,871.
- Tver, *see* Kalinin.
- Tweed, *R.*, S.E. Scot.; rises in Peebles, and reaches sea at Berwick; dividing Berwick from the English co. Northumberland; famous for its salmon fisheries; length 97 m.
- Twelve Pins, star-shaped *mtn. range*, Galway, Ireland; Benbaum, alt. 2,395 ft.
- Twickenham, *mun. bor.*, Middx., Eng.; on N. bank of R. Thames, S.W. of London; Rugby Football Union ground; includes Teddington and Hampton, (*q.v.*); p. (1951) 105,645.
- Tyldesley, *t.*, *urb. dist.*, Lancs, Eng.; 4 m. S. of Bolton; mfrs.; p. (1951) 18,096.
- Tyler, *c.*, Texas, U.S.A.; fruit, livestock, cotton; p. (1950) 38,968.
- Tyne, *R.*, Durham, and Northumberland, Eng.; formed by junction of N. and S. Tyne at Hexham; flows E. to sea at Tynemouth and S. Shields; valley gives easy route across mtns. from Newcastle to Carlisle; forms a continuous harbour (with shipbldg. and other works) from Newcastle to Tynemouth; length 80 m.
- Tynemouth, *t.*, *spt.*, *co. bor.*, Northumberland, Eng.; at mouth of R. Tyne, on its N. bank; incl. in its area the townships of Tynemouth, N. Shields, Cullercoats, Chirton, and Preston; favourite wat. pl. with old priory and cas.; gd. harbour, shipbldg., etc.; p. (1951) 66,544.
- Tyneside, *lge. conurbation*, S.E. Northumberland, N.E. Durham, Eng.; comprises highly industr. built-up area astride R. Tyne for 14 m. from its mouth to Scotswood Bridge; huge export of coal abroad and round Brit. csts.; shipbldg., heavy engineering; a. 90 sq. m.; p. (1951) 835,332. *See also* under Gateshead, Newcastle-on-Tyne, S. Shields, Tynemouth, Jarrow, Wallsend, Felling, Gosforth, Longbenton, Newburn, Whickham, Whitby Bay.
- Tyre, or Sur, *t.*, Lebanon, S.W. Asia; on W. cst.; p. 9,455.
- Tyrol, *mountainous region*, Alps, Europe; falls within Austria and Italy; between Munich and Verona which are linked by the Brenner Pass; the Tyrol embraces all the highest peaks of the Austrian Alps, culminating in the Ortler Spitz; two-fifths forest; cap. Innsbruck; mountain pasture, vineyards, silk industries; a. 4,884 sq. m.; p. of Austrian T. (1951) 427,465.
- Tyrone, *inland co.*, N. Ireland; agr. and dairying; cap. Omagh; a. 1,260 sq. m.; p. (1951) 132,049.
- Tyrrhenian Sea, part of Mediterranean between Italy and Corsica, Sardinia and Sicily.
- Tyumen, *t.*, U.S.S.R.; on R. Tura, between Molotov and Omsk; carpets, leather; p. (1939) 75,537.
- Tzulluching, *c.*, Szechwan, China; salt, petroleum; p. (estd. 1945) 291,791.
- Tzuyang, *see* Yenchow.

## U

- Uanapú or Anapú, *R.*, Brazil; trib. of R. Pará; length 400 m.
- Ubangi, *R.*, central Africa; trib. of R. Congo; with R. Congo forms W. boundary between Fr. Equatorial Africa and Belg. Congo; length 1,400 m.
- Ubangi-Shari, *terr.*, Fr. Equatorial Africa; cap. Bangui; a. 238,767 sq. m.; p. (1946) European 1,606, African 1,063,000.
- Ube, *spt.*, S. Honshu, Japan; p. (1950) 128,569.
- Ubeda, *t.*, Jaen, Spain; on R. Guadalquivir; in vineyard and fruit-growing dist.; old walls; p. 31,093.
- Uberaba, *t.*, Minas Gerais, Brazil; cattle, maize, manioc, rice, sugar; p. 33,786.
- Ubol, *t.*, E. Siam; p. 10,000.
- Ucayali, *R.*, Peru, S. America; head-stream of R. Amazon; over 1,400 m. long, navigable for 1,000 m.
- Uccle, *t.*, Belgium; nr. Brussels; industr.; p. (1947) 57,595.
- Ucha Reservoir, *see* Moscow Sea.
- Uckfield, *mkt. t.*, *rural dist.*, E. Sussex, Eng.; 8 m. N.E. of Lewes; p. (rural dist. 1951) 43,132.
- Udaipur, *t.*, Rajasthan, India; on bank of large L. amid wooded hills, 2,469 ft. above sea-level; marble palace of the Maharajah; temple of Siva; embroidery, cotton cloth; p. (1941) 59,648.
- Uddevala, *spt.*, S. Sweden; on fjord connected with L. Vänern; butter factories, porcelain wks.; p. (1951) 24,922.
- Udi, *t.*, S. Nigeria, Brit. W. Africa; 100 m. N. of Pt. Harcourt; impt. mining centre on Enugu coal-field; linked by rail to Kaduna and Pt. Harcourt.
- Udine, *t.*, N.E. Italy; between Alps and G. of Venice; old cas. (now barracks); silk, velvet, and cotton industries; p. (1951) 72,134.
- Uddington, *t.*, Lanark, Scot.; R. Clyde; 7½ m. E.S.E. of Glasgow; collieries, jam factory; p. 8,400.
- Udmurt, *autonomous Soviet Socialist Rep.*, part of R.S.F.S.R., U.S.S.R.
- Uelzen, *c.*, Lower Saxony, Germany; sugar asbestos, roofing; p. 12,793.
- Ufa, *t.*, U.S.S.R.; in W. Urals at confluence of Rs. Ural and Belala; iron and copper foundries and machinery wks., sawmills and flour-mills; p. (1939) 294,863.
- Uganda, *British protectorate*, E. Central Africa; ch. R. Nile; principal peaks: Elgon, 14,140 ft., Margherita, 16,794 ft.; Ls. inc. parts of Victoria, Edward, Albert, Rudolf, and whole of Kioga; moderate rainfall; cotton, rubber, cocoa, coffee, ivory, hides, and skins; connected by rail with Mombasa; cap. Entebbe; a. 93,981 sq. m.; p. (1952) 5,262,000 (inc. 3,000 Europeans).
- Uinta, *mtn. range*, Utah, U.S.A.; its highest points are Emmons (13,694 ft.), Gilbert Peak (13,687 ft.), and Wilson (13,300 ft.).
- Uist, *N. I.*, Outer Hebrides, Inverness, Scot.; separated from I. of Skye by Little Minch; length, 17 m., width 3-13 m.
- Uist, *S. I.*, Outer Hebrides, Inverness, Scot.; most S. lge. island of Outer Hebrides group; length 22 m., width 8 m.
- Uitenhage, *t.*, C. of Good Hope, S. Africa; summer resort, fruit, wool, rly. wks.; p. 28,000.
- Ujji, *vih.*, in sm. terr. same name (a. 920 sq. m.) on E. shore L. Tanganyika, E. Africa; where Stanley found Livingstone, 1871; p. 1,000.
- Ujiyama, *t.*, Japan; sacred city of Shintoism; p. (1947) 63,093.
- Ujjain, *t.*, Madhya Bharat, India; sacred c. and formerly cap. of Malwa; p. (1951) 129,817.
- Ujpest, *t.*, Hungary; nr. Budapest; p. 76,000.
- Ukerewe, *I.*, on L. Victoria, Central Africa.
- Ukraine, *constituent rep.*, U.S.S.R.; fertile "black earth" region; agr. wheat, maize, barley; tobacco, sheep, pigs; minerals, coal, iron-ore, manganese; mfrs., flour, sugar, brewing, chemicals, smelting, hydro-electric generation; cap. Kiev; a. 225,000 sq. m. p. 42,272,943.

Ulan Bator, *t., cap.*, Independent Rep. of Outer Mongolia; formerly known as Urga; *p.* about 100,000.

Ulan-Ude, *t.*, Siberia, U.S.S.R.; on L. Baikal; grain, tea, hides; *p.* (1939) 129,417.

Ulcini, *ancient c.*, Montenegro, Yugoslavia; tobacco, olive oil; *p.* 5,000.

Uleåborg (Oulu), *spt.*, Finland; on G. of Bothnia; shipbldg., exports pitch, timber, hides, butter; *p.* (1946) 34,105.

Ullapool, *t.*, Ross and Cromarty, Scot.; on N. shore of Loch Broom.

Ullswater, *L.*, on border Cumberland and Westmorland, Eng.; 8 m. long; outlet by R. Eamont to the Eden.

Ulm, *fortif. t.*, Württemberg, W. Germany; on R. Danube, S.E. Stuttgart; impt. rly. and strategic centre; cath. with lofty tower (528 ft.); clocks, linen, cutlery, confectionery, cottons, woollens, machinery, distilling; *p.* 62,472.

Ulster, *former prov.*, Ireland; now divided between N. Ireland (cos. Antrim, Armagh, Down, Fermanagh, Londonderry, Tyrone) and Rep. of Ireland (cos. Donegal, Monaghan, Cavan); a. 8,613 sq. m. See below and under individual headings.

Ulster, *prov.*, Rep. of Ireland; consists of cos. Donegal, Monaghan, Cavan; largely agricultural; a. 3,093 sq. m.; *p.* (1951) 253,285.

Ulva, *l.*, Argyll, Scot.; off W. est. of Mull; 5 m. long.

Ulverston, *t., urb. dist.*, N.W. Lancs, Eng.; nr. Morecambe Bay; paper-mills, hardware mfg.; iron, corn, brewing; *p.* (1951) 10,076.

Ulyanovsk, *t.*, U.S.S.R.; on R. Volga; leather, sawmills, woollens; *p.* (1939) 102,106.

Uman, *t.*, U.S.S.R.; iron foundries, flour-mills; *p.* 25,000.

Umbria, *region*, Italy; between Tuscany and the Marches, and Rome and the Abruzzi; comprising the prov. of Perugia; mountainous, fertile valleys; a. 3,271 sq. m.; *p.* (1951) 802,332.

Umeå, *R.*, Sweden; flows S.E. to the G. of Bothnia; length 250 m.

Umeå, *t.*, Sweden; at mouth of R. Umeå; timber tr.; *p.* 14,971.

Umtali, *t.*, S. Rhodesia; *p.* 9,736.

Umtata, *c.*, C. of Good Hope, S. Africa; cath.; veg. dehydration, fruit canning; rly. term.; *p.* 7,329.

Una, *R.*, N. Yugoslavia; trib. of R. Sava.

Unalaska, *lge. I.*, Alaska, U.S.A.; in Aleutian group; mountainous and treeless; principal port of Bering Strait.

Uncia, *t.*, Oruro dep., Bolivia; alt. 13,000 ft. in E. Cordillera of Andes, 60 m. S.E. of Oruro; site of impt. Patino tin-mines which produce over 50% of Bolivia's tin.

Ungava Bay, *arm of Hudson Strait*, projecting into Labrador, N.E. Canada; the territory of Ungava has lge. forests in the S., minerals are abundant, recent exploitation of impt. medium and low grade iron deposits.

Union of South Africa—see South Africa, Union of.

Union of Soviet Socialist Republics, *cty.*, Europe, Asia; stretches across two continents from the Baltic Sea to the N. Pacific Ocean and from the Arctic to the Black Sea, bounded on the W. by Finland, Poland, Hungary and Romania, in the S. by Turkey, Persia, Afghanistan, China, Mongolia, and Manchuria; The Union embraces the reps. of Russ. S.F.S., Ukraine, White Russia (Byelorussia), Azerbaijan, Georgia, Armenia, Turkmenistan, Uzbekistan, Tadzhikistan, Kazakhstan, Kirghizia, Finno-Karelia, Moldavia, Estonia, Latvia and Lithuania. The Union is the largest political state in the world and comprises one sixth of the earth's land surface. European portion, separated in the E. from Asia by Ural Mtns., is a vast low plain with Caucasus Mtns. in the S. In Asia the centre and N. is occupied by the vast plain of Siberia, rising in the S. to lofty mtn. ranges, Pamirs, Tien Shan, Sayan, Yablonovyy, Stanovoi, etc. Rivers are important: Dnieper, Volga, Ural and Don in Europe flowing southwards; Ob, Yenisei and Lena in Asia flowing northwards into Arctic Ocean; and Amur into Pacific Ocean. N. and central regions—long, cold winters; short, cool summers. S. regions—

temperate and sub-tropical; desert and semi-desert E. of Caspian Sea. In N. tundra and immense forests with lumbering and associated industries; agr., wheat, oats, barley, rye, flax, potatoes, sugar-beet, tobacco, cotton, vines, tea, rice; rich fisheries; impt. minerals: coal, oil, lignite, iron ore, manganese, chrome ore, platinum, copper, lead, zinc, nickel, uranium, asbestos, mica, apatite, nepheline, bauxite; largest hydro-electric plants in Europe, developed 2,362,000 h.p.; highly developed industries incl. metallurgical products, textiles, chemicals, cellulose-paper and lumbering, leather goods, foodstuffs preparation. Ch. spts., Leningrad, Murmansk, Arkhangel'sk, Vladivostok, Odessa, Sevastopol, Novorossisk, Batumi; cap. Moscow; a. 8,708,070 sq. m.; *p.* 211,384,985.

Union City, *t.*, N.J., U.S.A.; *p.* (1950) 55,537.

Union Springs, *t.*, Alabama, U.S.A.; *p.* (1950) 3,232.

Uniontown, *bor.*, Penns., U.S.A.; glasswks., iron foundries; *p.* (1950) 20,471.

United Kingdom, *cty.*, N.W. Europe; separated from continent of Europe by English Channel; consists of Gr. Britain (England, Wales, Scotland) and N. Ireland. See under separate headings.

United Provinces, India. See Uttar Pradesh.

United States, *federal rep.*, N. America; ch. physical features: Great Lakes, largest freshwater area in the world; ch. Rs.: Mississippi-Missouri, Rio Grande del Norte, Colorado, Hudson, Susquehanna, Savannah, Columbia; ch. mtns.: Rocky Mtns., Coast Range, Sierra Nevada, Appalachian Mtns.; Great Basin, great plains, Piedmont plateau, coastal plains; climate in N.E.—cool, temperate, rainfall all year round, warm summers, cold winters; in central plains and Great Basin—continental climate of extremes; in N.W.—cool temperate with abundant rainfall, warm summers, cold winters; in S.W. on Pacific est.—Mediterranean climate of very warm summers and drought, mild winters with rainfall, dense fogs off Pacific est.; in S. and S.E. sub-tropical, hot summers, mild winters with abundant rainfall in the S.E., decreasing towards the W.; ch. industries: agr., maize, wheat, oats, etc., fruit, potatoes, hay, alfalfa, cane- and beet-sugar, cotton, tobacco; pastoral farming, ranching, dairying, sheep, wool, cattle, pigs, horses; lumbering, timber, wood-pulp; fishing, off Grand Bank, Newfoundland, for cod, etc., and in W. for salmon; minerals: coal, petroleum, natural gas, phosphate, iron ore, copper, lead, gold, silver, zinc, aluminium, mercury; mfg. of all kinds; commerce; comprises 48 sts. and District of Columbia; cap. Washington; largest ts., New York, Chicago, Philadelphia; total land a. (excluding Alaska, Hawaii and other extra-territorial possessions); 3,022,357 sq. m.; *p.* (1950) 150,697,361.

University City, *t.*, Missouri, U.S.A.; *p.* (1950) 39,892.

Unst, *I.*, Shetlands; most N. of group; length 12½ m.

Unstrut, *R.*, Saxony, Germany; trib. of R. Saale, length 110 m.

Unter See, W. portion of L. of Constance.

Unterwalden, *old can.*, Switzerland; now subdivided into Obwalden and Nidwalden; dairying, fruit and livestock; ch. ts. are Sarnen and Stans.

Unter-Yberg, *vil.*, Switzerland; medicinal springs.

Upholland, *t., urb. dist.*, Lancs., Eng.; 4 m. W. of Wigan; *p.* (1951) 6,314.

Upper Austria, *prov.*, Austria; cap. Linz; a. 4,625 sq. m.; *p.* (1948) 1,190,834.

Upper Nile, *prov.*, Anglo-Egyptian Sudan, N.E. Africa; cap. Malakal; a. 92,270 sq. m.; *p.* (estd. 1951) 862,200.

Upper Seal Lake, Labrador, Newfoundland, Canada.

Upper Volta, *col.*, Fr. W. Africa; cap. Ouagadougou; a. 109,940 sq. m.; *p.* 3,037,000.

Uppingham, *mkt. t., rural dist.*, Rutland, Eng.; 4 m. S. of Oakham; famous school founded in 1584 by Archdeacon Robert Johnson (1540-1625); *p.* (rural dist. 1951) 5,476.

Uppsala, *co.*, E. Sweden; N. of L. Mälär; cap., Uppsala; a. 2,056 sq. m.; *p.* (1950) 154,677.



- Uppsala**, *t.*, cap. Uppsala, Sweden; on R. Sala; 45 m. from Stockholm; univ., cath.; p. (1951) 63,072.
- Upton-on-Severn**, *mkt. t., rural dist.*, Worcester-shire, Eng.; 5 m. N.W. of Tewkesbury; p. (rural dist. 1951) 15,340.
- Ur**, *anc.* Chaldean *c. Iraq*; 130 m. W.N.W. of Basra; ruins; flourished about 3,000 B.C.
- Ural Mtns.**, U.S.S.R.; mtns. separating Asia from Europe; 2,050 m. long; highest summit, Tolposis Mtn., 5,430 ft.
- Ural**, *R.*, U.S.S.R.; flows S.W. and S. to the Caspian Sea; length 1,000 m.
- Uralsk**, *t.*, U.S.S.R.; on R. Ural; grain-trading and cattle-mart centre; flour, leather, woollens, iron-ware; p. (1939) 66,301.
- Urambo**, *t.*, Tanganyika, Brit. E. Africa; a centre of the E. African groundnuts development by the British Overseas Food Corporation.
- Uranium City**, N. Saskatchewan, Canada; near N. shore of L. Athabasca, centre of Beaverlodge uranium mining area; founded 1951; p. (1953) approx. 500.
- Urbana**, *c.*, Ill., U.S.A.; on Embarrass R.; seat of st. univ.; p. (1950) 22,834.
- Urbana**, *c.*, Ohio, U.S.A.; mfgt.; p. (1950) 9,335.
- Urbino**, *t.*, N. Marche, Italy; cath., univ.; silk, cheese, olive oil; p. 20,375.
- Ure**, *R.*, N.R. Yorks, Eng.; flows E. and S.E. to the Swale to form the Ouse; length 50 m.
- Ures**, *t.*, Lower California, Mexico; p. 2,981.
- Uria**, *t.*, Turkey; nr. Syrian border; gd. local tr.; p. (1945) 36,635.
- Urga**, *see* Ulan Bator.
- Uri**, *can.*, Switzerland; S. of L. of Lucerne; forest and mtn.; traversed by St. Gotthard Rly. and R. Reuss; cap. Altdorf; a. 415 sq. m.; p. (1950) 28,556.
- Urmia** (Rizaieh), *t.*, Azerbaijan, Persia; birth-place of Zoroaster; p. 64,000.
- Urmia**, *L. of*, nr. Tabriz, N.W. Persia; 85 m. by 30 m.; salt and shallow.
- Urmston**, *urb. dist.*, Lancs. Eng.; p. (1951) 39,233.
- Urubamba**, *R.*, Peru, S. America; rises in E. Cordillera of Andes; forms one of head streams of R. Amazon; length 350 m.
- Uruguaiana**, *t.*, Brazil; on R. Uruguay; cattle centre; jerked beef, soap, candles; p. 22,000.
- Uruguay**, *rep.*, S. America; climate, temperate; moderate rainfall; vegetation temperate and sub-tropical grasslands; language, Spanish; religion, R. C.; cattle- and sheep-rearing; wheat, olives, grapes, gold; cap. Montevideo; a. 72,153 sq. m.; p. (1947) 2,225,000.
- Uruguay**, *R.*, S. America; rises in S. Brazil, and flows between Argentina and Brazil and Uruguay to Rio de la Plata; length 850 m.
- Urunchi**, *see* Tihwa.
- Urundi**, *see* Ruanda-Urundi.
- Urup**, *I.*, Kurile group, Pac. Oc.; 50 m. long; 12 m. wide.
- Usa**, *R.*, U.S.S.R.; flows E. from the Urals to the Pechora; length 220 m.
- Usedom** (Uznam), *I.*, Baltic Sea; off mouth of R. Oder; since 1945 the E. part belongs to Poland, the W. (the larger part) to Germany; I. is 30 m. long and 14 m. wide.
- Ushak**, *t.*, Turkey; connected by rail with Izmir; noted for pile carpet-weaving.
- Ushant**, *I.*, off est. of Finisterre, France; at entrance to English Channel; it was off Ushant that Lord Howe gained his great naval victory on the "glorious first of June," 1794.
- Ushuaia**, *t.*, Argentina; most southerly *t.* in world; sheep farming, timber, furs; freezing plant; p. 1,200.
- Usk**, *R.*, S. Wales and Monmouth, Eng.; flows S. to Bristol Channel; length 57 m.
- Uskudar** (Scutari), *t.*, Turkey; on the Bosphorus, opposite Istanbul; silks, cottons, muslin; p. (1945) 55,000.
- Uspallata Pass**, Andes, Argentina; used by the Mendoza-Valparaiso Transandine rly.
- Ust Kamenogorsk**, *t.*, Kazakhstan, U.S.S.R.; lead refining; impt. H.E.F. sta. nearby on R. Irtysh.
- Usti** (Aussig), *t.*, Czechoslovakia; on the Elbe; chemicals, coal; p. (1947) 66,323.
- Ustica**, *I.*, Italy; hilly; fruit, olives, grain, osiers; fishing; a. 3 sq. m.
- Ustka** (Stolpmünde), *spt.*, Poland; on Baltic Sea; p. 2,807.
- Usumacinta**, *R.*, Mexico and Guatemala, Central America; trib. of R. Tabasco; length 400 m.
- Usumbura**, *t.*, Ruanda-Urundi, E. Belg. Congo; cotton ginnery, soapwks.; exports cotton, coffee, hides; p. (estd. 1949) 17,183.
- Usuri**, *R.*, Manchuria, N. China; flows to R. Amur; length 340 m.
- Utah**, *W. st.*, U.S.A.; Mormons form about 91 per cent of the church membership of the st.; farming, wheat, maize, barley, rye, livestock, sugar-beet, fruits; copper, silver, lead, gold, coal; fruit-canning; cap. Salt Lake City; a. 84,916 sq. m.; p. (1950) 688,862.
- Utah**, *L.*, U.S.A.; 23 m. long and 4,400 ft. above sea-level, discharges by R. Jordan to the Great Salt L.
- Utakamand** (Ootacamund), *t.*, Madras, India; summer cap. of Madras government; on a plateau 7,230 ft. above sea-level; p. (1941) 29,850.
- Utica**, *c.*, N.Y., U.S.A.; on Mohawk R.; clothing and other mfnis.; p. (1950) 101,531.
- Utiel**, *t.*, Spain; W. of Valencia; brandies, wines; p. 12,411.
- Utrecht**, *prov.*, Netherlands; between Guelderland and N. and S. Holland; fertile agr., stock-raising and horticultural dist. S. of the Zuider Zee; a. 526 sq. m.; p. (1951) 195,121.
- Utrecht**, *c.*, Netherlands; on Old R. Rhine; univ., cath.; chemical and cigar factories; printing, machinery, woollens, silks, velvets; p. (1948) 187,238.
- Utrera**, *t.*, Spain; S.E. of Seville; industri.; p. 30,440.
- Uttar Pradesh**, *st.*, India; Himalayas on N. boundary, drained by Ganges and Jumna; splendid irrigation; wheat, rice, millet, barley, maize, cotton, sugar, oil-seeds; ch. ts. Allahabad Lucknow (cap.), Benares, Cawnpore, Agra, Meerut; a. 112,523 sq. m.; p. (1951) 63,254,118.
- Uttuxeter**, *t.*, *urb. dist.*, Staffs, Eng.; on R. Dove, 10 m. N.W. of Burton-on-Trent; p. (1951) 7,440.
- Uusimaa**, *dep.*, Finland; a. 4,435 sq. m.; cap. Helsinki; p. (1950) 665,313.
- Uvira**, *port*, Belg. Congo, Central Africa; on N.W. est. of L. Tanganyika; exports coffee, cotton, hides; bricks, cotton ginning.
- Uxbridge**, *mkt. t.*, *urb. dist.*, Middx., Eng.; on R. Colne, 18 m. W. of London; residtl.; light industries; p. (1951) 55,944.
- Uzbekistan**, *constituent rep.*, U.S.S.R.; intensive farming based on irrigation; rice, cotton, fruits, silk, cattle, sheep; cap. Tashkent; a. 159,170 sq. m.; p. 6,601,619.
- Uzen**, (Gr. and Little), *Rs.*, U.S.S.R., flowing 250 m. to the Caspian Sea.
- Uzgen**, *region*, Kirghiz, S.S.R., U.S.S.R.; where new coalfields are to be opened up.
- Uzhgorod**, *t.*, Carpatho-Ukraine S.S.R., U.S.S.R.; industri.; p. 25,000.
- Uzhoi Cape**, *promontory*, on Ob. Bay, N. Siberia, U.S.S.R.

## V

- Vaal**, *R.*, S. Africa; rises in Drakensberg Mtns., and flows between the Transvaal and Orange Free State to join the R. Orange nr. Kimberley; length 560 m.
- Vaasa** (Vaasa), *dep.*, Finland; cap. Vaasa; a. 15,062 sq. m.; p. (1950) 608,100.
- Vaasa**, *t.*, *pt.*, cap. Vaasa, Finland; on G. of Bothnia; oats, butter, cattle export; p. (1950) 35,030.
- Vác**, *t.*, Hungary; on R. Danube; exports wine, cattle; p. 22,277.
- Vadsø**, *t.*, on Varanger Fjord, N. Norway; p. 2,068.
- Vaduz**, *t.*, cap., Liechtenstein; p. (1950) 2,735.
- Váh**, *R.*, Czechoslovakia; trib. of R. Danube; length 200 m.
- Val de Chiana**, *see* Chiana, Val de.
- Valais**, *can.*, Switzerland; comprising upper valley of R. Rhône; surrounded by high mtns.; sparsely populated; cap. Sion; a. 2,021 sq. m.; p. (1950) 159,178.
- Valdai Hills**, U.S.S.R.; N.W. of Moscow; highest summit 1,100 ft.
- Valdepeñas**, *t.*, Central Spain; mineral springs, wine; p. 26,000.
- Valdivia**, *prov.*, S. Chile; cap. Valdivia; a. 7,721 sq. m.; p. (1952) 230,686.

- Valdivia, t., cap.** Valdivia, S. Chile; on R. Calle-calle, nr. the sea (port Corral); brewing and tanning; p. (1940) 49,481.
- Valdosta, t., Ga., U.S.A.;** rly. centre, cotton mills, light engineering; p. (1950) 20,046.
- Valence, t., cap.** Drôme, France; on left bank of R. Rhône; metal-founding, silks, hosiery, vineyards; p. (1946) 40,020.
- Valencia, prov., Spain;** on Mediterranean; agr., vineyards, olive-, fig-, and orange-growing, stock-rearing, silk, tapestry, carpet mfg.; cap. Valencia; a. 4,239 sq. m.; p. (1950) 1,347,912.
- Valencia, t., cap.** Valencia, Spain; on R. Turia, 3 m. from the Mediterranean; univ., museum, cath.; mnfs., linen, leather, cigars, silks, exports, wine, fruits, corn, etc.; p. (1950) 509,075.
- Valencia, l., S.W. Kerry, Ireland;** 6 m. by 2 m.
- Valencia, t., Venezuela, S. America;** cattle-raising, foundries, tanning, cottons, tobacco, coffee, sugar, beans; p. (1950) 88,674.
- Valencia, L., Venezuela;** a. 216 sq. m.; surrounded by swampy flats used for cattle-grazing.
- Valenciennes, forfd. t., Nord, France;** on R. Escaut; famous for lace; metallurgical industries, starch, chemicals, etc., coal, iron; p. (1946) 38,684.
- Valetta, see Valletta.**
- Valladolid, prov., Central Spain;** agr., vineyards, livestock, mnfs.; cap. Valladolid; a. 3,155 sq. m.; p. (1950) 347,768.
- Valladolid, t., cap.** Valladolid, Spain; on R. Pisuerga; seat of army corps, univ., cath.; thriving industries and tr.; p. (1950) 124,212.
- Valladolid, Mexico, see Morelia.**
- Vallecas, t., Spain;** nr. Madrid, in flat, fertile, vine-growing dist., through which flows the R. Manzanares; p. (1948) 82,386.
- Valle d'Aosta, region, N.W. Italy;** a. 1,260 sq. m.; p. (1951) 94,758.
- Valle del Cauca, dep., Colombia, S. America;** cap. Cali; a. 8,083 sq. m.; p. (1947) 889,580.
- Vallejo, c., California, U.S.A.;** exports fruit and corn, milling; p. (1950) 26,038.
- Vallepar, t., Chile;** agr. centre; dried fruit, wines; p. 8,472.
- Valletta, ch. t., spt., Malta;** on N.E. cst. of I.; strongly fortified, fine harbour; univ.; cath.; p. (1948) 18,600.
- Valleyfield, t., Quebec, Canada;** textiles, glazed paper; p. 17,052.
- Valona, see Vlonë.**
- Valparaíso, prov., Chile;** cap. Valparaíso; a. 1,860 sq. m.; p. (1952) 492,170.
- Valparaíso, c., spt., cap., Valparaíso, Chile;** the most imp. port on the Pacific cst. of S. America, and the ch. mfg., commercial, and industri. centre of the Republic of Chile; locomotives, rolling-stock, sugar-refining, fish-canning, cigars, etc.; p. (1940) 215,614.
- Van, forfd. c., Turkey;** on E. side of L. Van, S. of Erzurum; p. (1945) 14,266.
- Van, I., Turkey;** mountainous and pastoral, sulphur springs, petroleum wells; p. (1945) 126,919.
- Vancouver, spt., B.C., Canada;** terminus of transcontinental rlys.; lumbering, shipbldg., fishing; oil and sugar-refining; p. (1951) 344,833.
- Vancouver, t., Washington, U.S.A.;** dairying, milling, fruit, lumbering, canning; p. (1950) 41,664.
- Vancouver, I., B.C., Canada;** off W. cst.; mountainous, forests; coal, fisheries; cap. Victoria; a. 12,408 sq. m.; p. (1941) 121,933.
- Van Diemen Gulf, between Darwin and Coturp Peninsula, N. Terr., Australia.**
- Vänern, large L., Sweden;** W.N.W. of L. Vättern, with which it is connected by canal (and thence with the Baltic); a. 2,149 sq. m.
- Vänersborg, lake port, Sweden;** on a tongue of land between the R. Göta and the Vasobotten (the southernmost bay of L. Vänern); p. (1948) 13,948.
- Vannes, ch. t., Morbihan, France;** on S. cst. Brittany; shipbldg., ironwks., breweries, ropes, leather, oysters; p. (1946) 28,189.
- Var, R., Alpes-Maritimes, France;** flows S. to the Mediterranean Sea; length 60 m.
- Var, dep., S. France;** on the Mediterranean; pasture, vineyards, sericulture, wines, olives, paper; cap. Draguignan, Toulon largest c.; a. 2,333 sq. m.; p. (1946) 370,688.
- Varanger Fjord, an inlet of the Arctic Ocean into Finnmark, Norway's most N. prov.**
- Varazdin, t., Croatia, Yugoslavia;** on R. Drava; woollens, coal; p. (1947) 17,176.
- Varazdinski, t., Yugoslavia;** on R. Drava; coal-mining, woollens; p. 15,000.
- Varberg, spt., Halland, Sweden;** resort; granite quarries; p. 11,874.
- Vardar, R., Yugoslavia, Greece;** flows S. into G. of Thessalonika; length 280 m.
- Varde, t., W. Jutland, Denmark;** recently developed as agr. and route centre; food processing; p. 8,118.
- Varese, t., N. Italy;** silk-spinning, wine, paper, leather, aircraft; p. (1951) 52,815.
- Värmland, co., Sweden;** a. 7,427 sq. m.; p. (1950) 281,458.
- Varna, see Stalino.**
- Vasa, see Vaasa.**
- Vásárhely or Hódmező Vásárhely, t., Hungary;** wine, tobacco.
- Västeraås, t., cap., Västmanland, Sweden;** on N. bay of L. Malar; Gothic cath. (with episcopal library), 16th-century cas.; p. (1951) 59,990.
- Västerbotten, co., Sweden;** a. 22,839 sq. m.; p. (1950) 231,836.
- Västernorrland, co., Sweden;** a. 9,925 sq. m.; p. (1950) 283,754.
- Västmanland, co., Sweden;** N. of L. Malar; cap. Västerås; a. 2,611 sq. m.; p. (1950) 203,612.
- Vasto, t., Italy;** on Adriatic cst.; olives, silks, wines.
- Vathiós, spt., Samos I., Greece;** exports wine, olive oil, leather, tobacco, raisins.
- Vatican City, the Papal State of Italy;** p. (1948) 890.
- Vatna Jökull, mtn., Iceland;** elevated snowfield.
- Vättern, L., Sweden;** 25 m. S.E. L. Vänern; a. 733 sq. m.
- Vauchuse, dep., S.E. France;** agr. wines, sericulture, linen, silks, pottery; cap. Avignon; a. 1,381 sq. m.; p. (1946) 249,838.
- Vaud, or Pays de Vaud, can., W. Switzerland;** N. of L. of Geneva; timber, forests and vineyards; cap. Lausanne; a. 1,239 sq. m.; p. (1950) 377,585.
- Växjö, t., Sweden;** match-making, iron founding; p. (1951) 20,104.
- Vecht, R., Netherlands;** branch of Rhine, flows into Zuider Zee.
- Vecses, t., Hungary;** p. 18,494.
- Véjer de la Frontera, t., Spain;** nr. C. Trafalgar; agr. and stock-rearing; p. 10,110.
- Vejle, spt., Jutland, Denmark;** gd. harbour and tr.; p. 27,107.
- Veleki Beckereck, t., Yugoslavia;** on R. Begej; flour, leather, timber, sugar, wine, paper, agr. machinery; p. (1947) 32,821.
- Veles, t., Yugoslavia;** on R. Vardar, and main rly. to Belgrade; maize, silk; p. 14,866.
- Velez Malaga, c., Malaga, Spain;** famous for wine, raisins, sugar, olive oil; p. 28,894.
- Veliki Ustyug, t., U.S.S.R.;** on R. Sukhona; fur dressing; p. (1939) 23,882.
- Velletri, t., Italy;** foot of the Alban Hills overlooking Pontine Marshes; gd. wine; at this spot Garibaldi gained a victory over the King of Naples, 1849; p. 30,145.
- Vellore, t., Madras, India;** perfumes, etc.; p. (1951) 106,024.
- Veluwe, district, Gelderland, Netherlands;** located between Arnhem and IJsselmeer (Zuiderzee); low hills of glacial sands and sand-dunes; heathland and pine-woods; relatively low population density.
- Vendée or La Vendée, dep., W. France;** on Bay of Biscay; agr. pasturage, vineyards, fishery, sea-salt, coal, and some mnfs.; cap. La Rochesur-Yon; a. 2,692 sq. m.; p. (1946) 393,787.
- Vendôme, t., Loir-et-Cher, France;** on R. Loire; leather goods, cottons; p. (1946) 10,315.
- Venetia. (Veneto or Venetia Euganea), div., N.E. Italy;** between the Alps and the Adriatic; embraces provs. Vicenza, Verona, Venice, Udine, Treviso, Padua, Belluno, and Rovigo; cap. Venice; a. 7,098 sq. m.; p. (1951) 3,909,367.
- Venetia Tridentina, div., N. Italy;** mountainous, lying between Austrian and Swiss frontiers and Lake Garda; embraces provs. Trento and Bolzano; cap. Trento; a. 5,250 sq. m.; p. (1951) 728,559.
- Venezia Giulia, div., extreme N.E. Italy;** embraces provs. Gorizia and Trieste; provs. Pula and Fiume (Rijeka) now part of Yugoslavia; p. (1951) 1,281,415.



- Venezuela, *rep.*, S. America; on Caribbean est.; climate tropical, with temperate uplands, wet summers, dry winters, tropical forests, and grasslands (llanos); pearl fishing, coffee, cocoa, sugar, maize, cotton, indigo, rubber, balata, tobacco, petroleum (one of the largest oil-producing countries of the world), gold, copper, coal, asphalt; cap. Caracas; a. 352,143 sq. m.; p. (1950) 4,985,716.
- Venice, *maritime c.*, Italy; situated on I. in the lagoons, at head of the Adriatic; splendid architecture; rich in art treasures and historic associations; glassware, gold, silver, embroidery, lace, damask, shipbldg.; p. (1951) 316,228.
- Venlo, *t.*, Netherlands; on the Maas; brewing, leather, needles, tobacco; p. (1951) 45,795.
- Vennachar, *Loch*, Perth, Scot.; expansion of R. Teith.
- Ventimiglia, *t. est. resort*, Italy; on Mediterranean est. nr. French border; cath.; p. 17,081.
- Venisor, *t. urb. dist.*, I. of Wight, Eng.; on S. est.; 11 m. S. of Ryde; beautiful scenery, mild climate, tourist and health resort; p. (1951) 7,308.
- Ventotene I., Pontine Is., Italy; vineyards, fruit.
- Ventspils, *spt.*, Latvia, U.S.S.R.; p. (1935) 15,671.
- Veracruz, *c. port*, Veracruz, Mexico; on G. of Mexico; exports ores, precious metals, textiles, raw cotton, and petrol; p. (1950) 123,368.
- Veracruz, *prov.*, Mexico; contains volcano Orizaba; cap. Jalapa; a. 27,736 sq. m.; p. (1950) 2,030,833.
- Veraguas, *prov.*, Panama, central America; cap. Santiago; p. (1950) 106,998.
- Vercelli, *c.*, Piedmont, Italy; cath.; cottons, woollens, machinery, aircraft parts; exports rice; p. (1951) 41,951.
- Verde, *C.*, most W. point, Africa, Senegambia.
- Verden, *t.*, Lower Saxony, Germany; soap; p. 10,817.
- Verdun, *t.*, Quebec, Canada; p. (1951) 77,391.
- Verdun, *fortd. t.*, Meuse, France; on R. Meuse; 12th-century cath.; confectionery, liqueur, hardware factories; scene of famous battle in First World War; p. (1946) 14,609.
- Vereeniging, *t.*, Transvaal, S. Africa; coal; Peace Treaty between the British and the Boers was signed here, May 31st, 1902; p. (1946) 12,145.
- Verkhnendinsk, *t.*, R. Siberia, U.S.S.R.; nr. L. Baikal; air service established between the t. and Outer Mongolia.
- Verkhneural'sk, *t.*, U.S.S.R.; on Upper Ural R.; tanneries, distilleries.
- Verkhyansk, *t.*, Yakutsk A.S.S.R., U.S.S.R.; in N.E. Siberia; coldest place in world; mean January temp. of -58° F.; p. 10,000.
- Vermont, *st.*, New England, U.S.A.; adjoining Quebec prov., Canada; traversed by the Green Mtns.; farming, dairying, stock-raising, lumbering, grain, fruit, maple sugar; cap. Montpelier; a. 9,609 sq. m.; p. (1950) 377,747.
- Vernon, *t.*, B.C., Canada; fruit farming, canning; p. 5,209.
- Verona, *fortd. c.*, Venetia, Italy; on R. Adige; beautiful cath.; Roman antiquities; active tr. and industries; iron goods, machinery, paper, silk; p. (1951) 177,999.
- Verona, *prov.*, Venetia region, Italy; a. 1,188 sq. m.; p. (1951) 644,768.
- Verroia, *t.*, N. Greece; S.E. of Thessaloniki; ancient Berea; p. 18,898.
- Versailles, *c.*, Seine-et-Oise, France; 12 m. W.S.W. of Paris; famous royal palace; mkt. gardening, distilleries, etc.; Treaty of Versailles 1919; p. (1946) 70,141.
- Verulam, *t.*, Natal, S. Africa; sugar, tobacco, fruit plantations; p. 1,878.
- Verulamium, *site of anc. Roman t.*, Herts, Eng.; on R. Ver, opposite St. Albans; impt. during Roman occupation.
- Verviers, *t.*, Belgium; nr. Liège; cloth mnfs., glass; p. (1947) 40,673.
- Vesoul, *t.*, France; nr. Besançon; p. 11,325.
- Vest Fjord, strait, separates Lofoten Is. from mainland, Norway.
- Vestfold, *dist.*, Norway; a. 96,359 sq. m.; p. (1950) 154,582.
- Vesuvius, *famous active volcano*, S. Italy; on side of Bay of Naples; alt. 3,984 ft.; its eruption in A.D. 79 destroyed Pompeii and Herculaneum, and frequent eruptions have since occasioned havoc; a funicular railway from the base of the mountain to the edge of the crater has existed since 1880.
- Veurne, *t.*, W. Flanders, Belgium; sugar-refining; warehouses.
- Vevey, *t.*, Vaud, Switzerland; on N.E. shore of L. of Geneva; chocolate, watches, machinery; p. (1941) 12,598.
- Viacha, *t.*, Bolivia, S. America; rly. junction nr. La Paz; cement; p. 2,000.
- Viana do Castelo, *dist.*, Portugal; cap. Viana do Castelo; a. 814 sq. m.; p. (1950) 275,969.
- Viana do Castelo, *t.*, Portugal; at mth. of R. Lima, nr. Oporto; p. (1940) 13,984.
- Viareggio, *spt., resort.*, Italy; on Mediterranean, nr. Pisa; monument to the poet Shelley; p. 32,564.
- Viazma, *t.*, U.S.S.R.; N.E. of Smolensk; industr.
- Viborg, *t.*, Jutland, Denmark; cath.; distilleries, cloth, iron founding; p. 20,084.
- Viborg (Viipuri), *spt.*, Finno-Karelia, U.S.S.R.; timber exports.
- Vicente Lopez, *t.*, Buenos Aires, Argentina; p. 25,600.
- Vicenza, *c.*, Italy; woollens, cottons, silks, pottery, furniture making; p. (1951) 79,576.
- Vich (Vique), *c.*, Spain; nr. Barcelona; cath.; mnfs.; p. 15,516.
- Vichy, *t. wat. pl.*, Allier, France; 35 m. S. of Moulins; mineral springs, large export of waters; seat of Marshal Pétain's government during German occupation of France, Second World War; p. (1946) 29,370.
- Vicksburg, *c.*, Mississippi, U.S.A.; on cliffs above a "cut-off" L. on R. Mississippi; furniture, machinery; mftg. centre in cotton and timber region; prominent in American Civil War, Confederate surrender 1863; p. (1950) 27,948.
- Victoria, *st.*, Australian Commonwealth; mixed farming, grapes, mnfs., machinery, hardware, textiles, wine, gold, coal, tin; cap. Melbourne; a. 87,884 sq. m.; p. (1947) 2,054,701.
- Victoria, *c. cap.*, B.C., Canada; on Vancouver I., sawmills, cement, chemicals, fish-canning; p. (1951) 51,331.
- Victoria, *spt., cap.*, Espirito Santo st., Brazil; p. 42,873.
- Victoria, *t. cap.*, Seychelles, Indian Ocean; gd. harbour.
- Victoria, *t. cap.*, Labuan I., N. Borneo; fine harbour; p. (1931) 2,022.
- Victoria, *t. cap.*, Hongkong; p. (estd. 1948) 766,800.
- Victoria Falls, on the R. Zambesi, N. Rhodesia, Central Africa; were discovered by Dr. Livingstone in 1855; falls are 1,860 yd. wide and broken by islands and rocks.
- Victoria, *L.*, Kenya, Uganda, Tanganyika, Brit. E. Africa; largest L. of Africa; lies on the Equator; a. 25,000 to 26,000 sq. m.; discharges to the N. by R. Nile; 3,705 ft. above sea; discovered by Captain Speke in 1858.
- Victoria, *L.*, on Gr. Pamir, Central Asia; 13,870 ft. above sea-level; supposed to be ch. source of the R. Oxus.
- Victoria Land, *terr.*, N. Canada; S.E. of Prince Albert Land.
- Victoria Land, *region*, Antarctica; discovered by Ross in 1841.
- Victoria Nile, *R.*, Uganda, Brit. E. Africa; name of R. Nile from its source at L. Victoria until it enters L. Albert.
- Victoria Strait, separates Victoria I. from King William I., Arctic Canada.
- Victoria West, *t.*, C. of Good Hope, S. Africa; p. 2,535.
- Victoriaville, *t.*, Quebec, Canada; woodworking; p. 8,516.
- Vidin, *fortd. t.*, Bulgaria; on R. Danube; ruined mosque and palace; p. (1947) 18,580.
- Viedma, *t. cap.*, Rio Negro, Argentina; p. (1947) 6,000.
- Vienna, *cap.*, Austria; on branch of R. Danube; ranks also as prov.; univ. gothic cath. (St. Stephen's Church), Rathaus, Parliament bldgs., magnificent Prater park; thriving commerce and mnfs., silks, iron, steel, breweries, etc.; p. (1951) 1,766,102.
- Vienne, *R.*, France; trib. of the Loire; length 220 m.
- Vienne, *dep.*, W. France; grain, wine, cutlery, arms; cap. Poitiers; a. 2,711 sq. m.; p. (1946) 313,932.

- Vienne, *t.*, Isère, France; nr. Grenoble, on R. Rhône; textile industry and glove factories; p. (1946) 23,519.
- Vienne Haute, *dep.*, France; fruits, cereals, livestock, porcelain; cap. Limoges; a. 2,119 sq. m.; p. (1946) 336,313.
- Vientiane, *cap.*, Laos, Indo-China; p. (estd. 1948) 10,000.
- Viersen, *t.*, N. Rhine-Westphalia, Germany; velvets, silks, damask; p. 34,000.
- Vierzon, *t.*, Cher, France; nr. Bourges; mnfs.; p. 26,017.
- Viet-Nam, *rep.*, S.E. Asia; formerly within the French Union, covering 3 countries of Tongking, Annam, and Cochín-China; inhabited mainly by Annamite races.
- Vigevano, *t.*, Lombardy, Italy; on R. Ticino; cath.; silks; p. 33,719.
- Vigo, *fortd.*, *t.*, Galicia, Spain; on Río de Vigo; impt. fishery and shipping industries; flour, sugar, petroleum, leather; p. (1950) 118,154.
- Viipuri, *see* Viborg.
- Vila de João Belo (Chai Chai), *t.*, Mozambique, Port E. Africa; on R. Limpopo; exports sugar, rice, timber, maize; p. 4,000.
- Vila Nova de Gala, *t.*, Portugal; sub. of Oporto; on R. Douro; pottery, wine-casks, tobacco and glass factories; p. (1940) 34,398.
- Vila Real, *dist.*, Portugal; a. 1,636 sq. m.; p. (1950) 319,883.
- Vila Real, *t.*, Portugal; wines, wolfram; p. (1940) 7,980.
- Vilhelmina, *t.*, Sweden; nr. Angerman Alv; p. 11,136.
- Villa Ballester, *t.*, Argentina; sub. Buenos Aires; p. 31,500.
- Villa Cisneros, *spt.*, on cst. of Río de Oro, Spanish Sahara; p. 1,000.
- Villa del Pilar, *c.*, Paraguay; oranges.
- Villa Franca, *t.*, Lombardy, Italy; silk; p. 13,451.
- Villa Franca de los Barros, *t.*, Badajoz, Spain; wine and corn; p. 15,360.
- Villa Hermosa, *cap.*, Tabasco, Mexico; p. (1940) 25,114.
- Villa Maria, *t.*, Argentina; rly. junction; grain, timber, dairying; p. 23,054.
- Villach, *t.*, Austria; iron, timber, leather, beer; tourist centre; p. (1951) 30,061.
- Villanueva de la Serena, *t.*, prov., Badajoz, Spain; wine, wheat, hemp and fruit; p. 16,088.
- Villanueva y Geltru, *spt.*, Spain; nr. Barcelona; p. 17,091.
- Villarrica, *t.*, Paraguay; farming, tobacco, oranges.
- Villaviciosa, *spt.*, Spain; on N. cst. 10 m. E. of Gijón; p. 22,029.
- Villefranche, *t.*, Rhône, France; on R. Rhône, nr. Lyons; cottons, wines; p. (1946) 20,017.
- Villejuif, *t.*, sub. of Paris, France; p. 25,359.
- Villena, *t.*, Alicante, Spain; silk, salt, brandy; p. 19,065.
- Villeneuve St. Georges, *t.*, Seine-et-Oise, France; marshalling yards; p. (1946) 18,299.
- Villeurbanne, *t.*, Rhône, France; sub. Lyons; silk, rayon, metallurgy, chemicals, leather, glass; p. (1946) 82,399.
- Vilnius (Wilno, Vilna), *cap.*, Lithuanian S.S.R.; Polish from 1919 to 1939; univ., cath.; timber; p. (1940) 209,400.
- Vilvorde, *t.*, Brabant, Belgium; on R. Senne; oil and chemical factories; p. 25,655.
- Vinã del Mar, *t.*, Chile; p. (1940) 70,013.
- Vinaroz, *spt.*, *t.*, Spain; nr. mouth of R. Ebro; shipbldg.; p. 9,235.
- Vincennes, *t.*, Indiana, U.S.A.; milling, glass, steelwks.; p. (1950) 18,331.
- Vincennes, *sub.*, Paris, France; p. (1946) 49,226.
- Vindhya, *mtn. range*, India; separating the Deccan from the Ganges basin.
- Vindhya Pradesh, *st.*, Indian Union; cereals, oil seeds; coal, iron, copper, bauxite; cap. Rewah; a. 24,600 sq. m.; p. (1951) 3,577,431.
- Vinnitsa, *t.*, Ukraine, S.S.R., U.S.S.R.; on R. Bug, 120 m. S.W. of Kiev; agr. mk. *t.*; p. (1939) 92,659.
- Virginia, *st.*, U.S.A.; S. of Maryland; tobacco culture; famous for Natural bridge in Rock-bridge County and mineral springs; "Virginia Leaf" tobacco is the finest the U.S. produces; cap. Richmond; a. 40,815 sq. m.; p. (1950) 3,318,680. *See also* W. Virginia.
- Virginia City, Nevada, U.S.A.; on E. slope, Mt. Davidson; a. 6,205 ft.; silver-mining *dist.*; p. 952.
- Virginia Water, *artificial lake*, nr. Windsor, Berks, Eng.
- Virgin Is. (British), part of Leeward Is. group, W. Indies; a. 67 sq. m.; largest I., Tortola; fruit, vegetables, charcoal, rum, sugar, tobacco; p. (1952) 7,300.
- Virgin Isles (U.S.A.), group in the W. Indies; E. of Puerto Rico; purchased by U.S.A. from Denmark 1917, comprising the Is. of St. Croix, St. Thomas, and St. John, and about 60 sm. Is.; total a. 133 sq. m.; p. (1950) 26,665.
- Visby, *old spt.*, Sweden; on Gotland I. in Baltic Sea; p. 14,023.
- Viscaya, *Basque prov.*, Spain; on Bay of Biscay; mineral industries, shipping, etc.; cap. Bilbao; a. 836 sq. m.; p. (1949) 581,381.
- Vistula, *R.*, Poland; rising in Silesia, and flowing past Krakow and through Poland to the Baltic nr. Gdansk; navigable from Krakow to the sea; length 693 m.
- Vitebsk, *t.*, White Russia, U.S.S.R.; on R. Dvina, 354 m. W. of Moscow; farm implements, footwear, glass, gr. tr. in corn and cattle; p. (1939) 167,424.
- Viterbo, *c.*, Italy; N. of Rome; alum mines, matches; p. (1951) 44,396.
- Vitim, *R.*, E. Siberia, U.S.S.R.; flows to R. Lena; length 900 m.
- Vitória, *spt.*, Brazil; exports coffee, cocoa, fruit, iron ore; sugar refining, boots, shoes, textiles; p. (1947) 51,620.
- Vitoria, *cap.*, Alava, Spain; wine, hardware, mules, horses; p. (1950) 52,206.
- Vittoria, *t.*, Sicily, Italy; silk mfg.; p. 38,628.
- Vittorio Veneto, *t.*, Italy; N. of Venice; resort; mineral springs; silk; p. 24,234.
- Vizagapatam, *impt. spt.*, E. cst. India; Andhra *dist.*; expts. manganese and other mineral ores, tobacco, oil-seed, myrabalams and coir; *sm. shipyd.*; p. (1941) 70,243.
- Vizcaino Bay, Lower California, Mexico.
- Vizcaya, *prov.*, N. Spain; cap. Bilbao; a. 836 sq. m.; p. (1950) 569,188.
- Vizeu, *dist.*, Portugal; cap. Vizeu; a. 1,955 sq. m.; p. (1940) 465,563.
- Vizianagram, *t.*, Madras, India; p. (1941) 51,749.
- Vlaardingen, *fishng t.*, S. Holland, Netherlands; on R. Maas; p. (1951) 48,187.
- Vladimir, *c.*, U.S.S.R.; between Gorki and Moscow; cath.; farm produce, fruit, tobacco, cottons; p. (1939) 66,761.
- Vladimir-Volhynsky, *t.*, W. Ukraine S.S.R. (Volhynia), U.S.S.R.; p. 10,000.
- Vladivostok, *t.*, *ch. spt.*, Siberia, U.S.S.R.; univ. H.Q. Army of the Far East; terminus of the Trans-Siberian rly. and airline from Moscow; p. (1939) 206,432.
- Vliefand, *Frisian I.*, at entrance to Zuider Zee, Netherlands. [53,461.]
- Vlonë, (Valona), *prefecture*, Albania; p. (1930)
- Vlonë, *spt.*, Albania; on Strait of Otranto, Adriatic Sea; p. (1930) 9,100.
- Vltava, *R.*, Bohemia, Czechoslovakia; flows to R. Elbe, below Prague; length 262 m.
- Voghera, *t.*, Italy; silks; p. 30,422.
- Vol, *t.*, *impt. rly. junction*, Kenya, Brit. E. Africa; 90 m. N.W. of Mombasa on rly. to Nairobi; branch connection with Tanganyika rly. system allows agr. produce from Arusha and Moshi districts to pass through Mombasa as alternative to Tanga.
- Voiron, *t.*, Isère, France; on R. Isère nr. Grenoble; p. (1946) 12,598.
- Volchansk, *t.*, Ukraine, U.S.S.R.; tanneries, distilleries; p. 10,000.
- Volga, *R.*, U.S.S.R.; rises on Valdai plateau, flows in a serpentine course to the Caspian at Astrakhan; frozen in winter; length 2,325 m.
- Volhynia, *dist.*, part of Ukraine S.S.R., U.S.S.R.; on Polish frontier (Polish 1919-39); a. 13,750 sq. m.; now prov. of Lutsk and Rovno; p. (1931) 2,085,000.
- Volkhov, *R.*, U.S.S.R.; flows from L. Ilmen to L. Ladoga; length 130 m.
- Volkstust, *t.*, Transvaal, S. Africa; dairying; rly. workshops; p. 5,905.
- Vologda, *t.*, R.S.F.S.R., U.S.S.R.; lge. tr. in agr. produce, farm implements, leather, brewing; p. (1939) 95,194.
- Vólos, *spt.*, Greece; at head of G. of Vólos; p. (1951) 51,134.
- Volok, *t.*, U.S.S.R.; on R. Volga; gd. tr.; iron-wks., tanneries, milling; p. (1939) 55,053.



Volta, Upper, *see* Upper Volta.

Volta (White Volta), *R.*, Fr. W. Africa and Gold coast; rises in plateau, Upper Volta prov., flows S. through N. Terr., Ashanti and Gold Coast proper to Bight of Benin, 70 m. E. of Accra; forms main means of communication; length 950 m. *See also* Black Volta.

Volterra, *t.*, Italy; saline spring, alabaster; p. 19,054.

Voltri, *t.*, Italy; shrine; shipbldg., ironwks.; p. 10,000.

Vorarlberg, *prov.*, Austria; cap. Bregenz (*q.v.*); a. 1,004 sq. m.; p. (1951) 193,657.

Vordingborg, *S. t.*, Zealand, Denmark; p. 9,681.

Vorkuta, *dist.*, Siberia, U.S.S.R.; about 120 m. W. of mouth of R. Ob; new coal-mining centre which supplies entire European north U.S.S.R.

Voronezh, *region*, R.S.F.S.R., U.S.S.R.; agr., stock-rearing, woodwork and domestic mnfs.; cap. Voronezh.

Voronezh, *t.*, R.S.F.S.R., U.S.S.R.; on R. Voronezh nr. its junction with R. Don; impt. commercial centre; milling, brewing; p. (1939) 326,836.

Voroshilovgrad (Lugansk), *industl. t.*, Ukraine S.S.R., U.S.S.R.; located just S. of R. Donets in heart of Donbas industl. region, 90 m. N.E. of Stalino; impt. railway engineering factories; p. (1939) 213,000.

Vosges, *mn. chain*, E. France; 190 m. long; highest summit, the Ballon de Guebwiller (4,672 ft.).

Vosges, *E. frontier dep.*, France; agr., dairying, vineyards, textiles, coal, stone; cap. Epinal; a. 2,305 sq. m.; p. (1946) 342,315.

Voskresensk, *t.*, U.S.S.R.; S.E. Moscow; lignite, chemicals, fertilisers.

Voyusa, *R.*, rises in Greece, flows N.W. through Albania into Strait of Otranto.

Voznesensk, *t.*, Ukraine, U.S.S.R.; on R. Bug; cath.; distilling, brewing; p. 10,000.

Vranja, *t.*, Yugoslavia; flax and hemp culture and mnf.; nr. is health resort of Vranjaskas Banya; p. (1947) 12,404.

Vratca, *t.*, Bulgaria; on R. Vratsanska; jewellery, wine, silk, tanning; p. (1947) 19,448.

Vrede, *t.*, O.F.S., S. Africa; agr. centre; horse-breeding; p. 4,148.

Vrsac, *t.*, Yugoslavia; milling, wine, brandy; p. (1948) 24,615.

Vryburg, *t.*, C. of Good Hope, S. Africa; gold-field in neighbourhood; stock-raising; p. 7,198.

Vryheid, *t.*, Natal, S. Africa; coal, iron, copper, gold, silver, lead mines; p. 7,860.

Vulcan Pass, in the Carpathian Mtns., between Romania and Transylvania.

Vulcano, *I.*, Lipari group, Tyrrhenian Sea; located 12 m. off N.E. cst., Sicily; active volcano; gave its name as generic title for this type of mtn.

Vyatka, *see* Viatka.

Vychedga, *R.*, Komi A.S.S.R., U.S.S.R.; flows W. to N. Dvina R.; length 700 m.

Vyrnwy, *L.*, artificial reservoir, Montgomery, Wales; with a dam 1,180 ft. long furnishing water for Liverpool; 5 m. long with an a. of 1,121 acres.

Vyshni-Volochek, *t.*, R.S.F.S.R., U.S.S.R.; flour-milling, industl.; p. (1939) 63,642.

## W

Waag, *see* Vah.

Waal, *R.*, Netherlands; S. arm of R. Rhine.

Wabana, *see* Bell I.

Wabash, *c.*, Indiana, U.S.A.; rly. centre; p. (1950) 10,621.

Wabash, *R.*, Ohio and Indiana, U.S.A.; trib. of R. Ohio; length 550 m.

Wabash and Erie, *canal*, Indiana, U.S.A., longest canal in U.S.A.; 476 m. long.

Waco, *c.*, Texas, U.S.A.; on Brazos R.; univ.; cotton centre, woollens, grain, iron, leather; p. (1950) 84,706.

Wadai, *dist.*, Fr. Equatorial Africa; nr. L. Chad; desert and oases; pastoral; ivory, ostrich feathers; a. 17,000 sq. m.; p. (1947) 1,000,000.

Wadden Zee, *G.*, between W. Frisian Is. and N. Netherlands.

Waddington, *mtn.*, B.C., Canada; alt. 13,260 ft.

Wadebridge, *spt.*, rural *dist.*, Cornwall; at head of Camel estuary 6 m. N.W. of Bodmin; china clay; p. (rural dist. 1951) 16,146.

Wädenswil, *t.*, Zürich, Switzerland; on L. Zürich silk, wool textiles; wine, fruit; p. 10,000.

Wadi Halfa, *t.*, Anglo-Egyptian Sudan, N.E. Africa; on R. Nile; at 2nd cataract; rly. terminus of Sudan rlys.; p. 15,650.

Wad Medani, *t.*, cap., Blue Nile Prov., Anglo-Egyptian Sudan, Africa; grain, oil, soap; p. (1947) 56,600.

Wadsworth, *t.*, Ohio, U.S.A.; matches, valves, engineering; p. (1950) 7,966.

Wagadugu, *see* Ouagadougou.

Wager Bay, *inlet*, of Hudson Bay, N.W. Terr., Canada.

Wagga Wagga, *t.*, N.S.W., Australia; on R. Murrumbidgee; gold, pastoral centre, wines, tobacco; p. (1947) 15,340.

Wahiawa, *t.*, Oahu I., Hawaii; pineapples; p. (1950) 8,341.

Waigau, *I.*, off N. cst., Dutch New Guinea, Indonesia.

Waihi, *t.*, N.I., New Zealand; gold-mining; p. (1951) 3,889.

Waikaremoana, *L.*, N.I., New Zealand; hydro-electric power plant.

Waikato, *R.*, N.I., New Zealand; the longest in New Zealand; length 220 m.

Waikerie, *t.*, S. Australia; on lt. Murray; fruit, vines.

Waimate, *t.*, S.I., New Zealand; agr. centre, soft fruits; p. (1951) 2,907.

Wairakei, *t.*, N.I., New Zealand; on L. Taupo; health resort.

Wairoa, *bor.*, N.I., New Zealand; on R. Wairoa; p. (1951) 3,341.

Waizten, *t.*, Hungary; on R. Danube.

Wakamatsu, *t.*, Honshu, Japan; silk reeling; p. (1947) 56,275.

Wakamatsu, *t.*, Kyushu, Japan; lacquer ware, mnfs.; p. (1947) 75,196.

Wakatipu, *L.*, Otago, S.I., New Zealand; 52 m. long, 3 m. wide; 1,200 ft. deep; 1,070 ft. above sea-level.

Wakayama, *spt.*, Honshu, Japan; cotton; p. (1950) 191,337.

Wake I., Pac. Oc.; between Marianas and Hawaii; calling-place on trans-Pacific air-routes.

Wakefield, *c.*, *co. bor.*, W.R. Yorks, Eng.; on R. Calder; 8 m. S. of Leeds; cath.; woollens, brewing, soap, coal, iron, machinery; p. (1951) 60,380.

Wakefield, *t.*, Virginia, U.S.A.; George Washington's birthplace; p. 687.

Walachia, *dist.*, S. Romania; cereals, fruits; ch. t. Bucharest; a. 29,561 sq. m.; p. 5,029,212.

Walbrzych (Waldenburg), *t.*, Poland; coal, porcelain, iron ware; p. 66,372.

Walcheren, *I.*, Netherlands; 12 m. long, low-lying, agr.; was flooded to stop German advance in Second World War.

Waldeck, *see* Hessen-Nassau.

Wales, *principality*, S.W. of Gr. Britain; flanked by Irish Sea, St. George's Channel and Bristol Channel; mtns.; coal, slate, oats, barley, good pasturage, smelting tin, copper, iron; ch. c. Cardiff; a. 7,388 sq. m.; p. (1951) 1,706,787 (excluding Monmouthshire).

Walhalla, *t.*, Victoria, Australia; gold-mining; p. 2,000.

Walker, *t.*, Northumberland, Eng.; on R. Tyne; industl. sub. of Newcastle.

Wallaceburg, *t.*, Ontario, Canada; glass, brass, iron; sugar, flour; p. (1947) 4,986.

Wallaroo, *spt.*, S. Australia; copper-mining; p. 2,140.

Wallasey, *co. bor.*, on Mersey estuary, adjoining Birkenhead, Cheshire, Eng.; residtl. seaside resort (New Brighton); p. (1951) 101,331.

Walla Walla, *t.*, Washington, U.S.A.; on Mill Creek; cereal and fruit centre, agr. tools, flour, leather; p. (1950) 24,102.

Wallen See, *L.*, Switzerland; 11 m. long.

Wallington, *t.*, mun. *bor.*, Berks, Eng.; on R. Thames to N. of its gap between Chiltern Hills and Lambourn Downs; old cas.; malting; p. (1951) 3,514.

Wallington, *t.*, Conn., U.S.A.; steel, brass, silver and nickel ware; tools, wire; p. (1950) 11,994.

Wallington, *t.*, N.J., U.S.A.; curtains, paints; p. (1950) 8,910.

- Wallis Archipelago, *I. group*, S. Pacific; a. 40 sq. m.; dependency of French New Caledonia; p. (1946) 4,243.
- Wallsend, *t., mun. bor.*, Northumberland, Eng.; on N. bank of R. Tyne; 4 m. below Newcastle; coal-mining, shipbldg., engineering, iron- and aluminium-wks.; p. (1951) 48,645.
- Walmer, *t.*, Kent, Eng.; 2 m. S. of Deal; holiday resort; cas.; residence of Warden of Cinque Ports; p. 5,335.
- Walney, *I.*, off est. of Lancs, Eng.; opposite Barrow.
- Walpole, *t.*, Mass., U.S.A.; nr. Boston; p. (1950) 9,109.
- Walpole, *I.*, dep. of New Caledonia; Pac. Oc.; French possession, lies S.E. of Maré (Loyalty Is.).
- Walsall, *t., co. bor.*, Staffs, Eng.; 5 m. E. of Wolverhampton; coal, iron, limestone, leather, brushes; p. (1951) 114,514.
- Walsham, *N.*, see North Walsham.
- Walsingham, *C.*, on Cumberland Peninsula, Baffin I., Canada.
- Waltershausen, *t.*, Germany; mnfs.
- Waltham, *C.*, Mass., U.S.A.; nr. Boston; watch-making, textiles, motors, furniture, shoes, paper; p. (1950) 47,187.
- Waltham, Holy Cross, *t., urb. dist.*, Essex, Eng.; on R. Lea, 11 m. N. of London; abbey; mkt. gardening, cordite; p. (1951) 8,197.
- Walthamstow, *mun. bor.*, S.W. Essex, Eng.; industr. and residt. sub. of London; p. (1951) 121,069.
- Walton and Weybridge, *urb. dist.*, Surrey, Eng.; on R. Thames, 17 m. S.W. of London; engineering; anglers' resort; p. (1951) 38,091.
- Walton-le-Dale, *t., urb. dist.*, N.E. Lancs, Eng.; on R. Ribble, 2 m. E. of Preston; mkt. gardening, cottons; p. (1951) 14,711.
- Walvis Bay, *dist. and spl., adm.* by S.W. Africa; a. 374 sq. m.; fishing, whaling; p. 2,263.
- Wanchuan (Kalgan), *fortd.*, Chahar, China; nr. the Great Wall of China 110 m. N.W. of Peking; terminus of caravan routes from Central Asia; lge. tr. in tea, wool, hides; p. (estd. 1936) 70,000.
- Wandbeck, *t.*, Germany; sub. of Hamburg; beer, brandy, tobacco; p. 40,000.
- Wandsworth, *met. bor.*, S.W. London, Eng.; on R. Wandie and R. Thames; oil-mills, metal-wks., paper, brewing; p. (1951) 330,328.
- Wanganui, *c.*, N.I., New Zealand; on R. Wanganui; wool, grain, meat, dairy produce; p. (1951) 29,729.
- Wanganui, *R.*, N.I., New Zealand; length 160 m.
- Wangaratta, *t.*, Victoria, Australia; 145 m. from Melbourne; agr. dist.; p. (1947) 7,000.
- Wankie, *t.*, S. Rhodesia; alt. 2,448 ft.; coal, firebricks; game reserve; p. 10,000.
- Wanlockhead, *vil.*, Dumfries, Scot.; in Lowther Hills; lead-mines.
- Wansbeck, *R.*, Northumberland, Eng.; flows E. from Pennines into N. Sea 3 m. N. of Blyth; length 23 m.
- Wanstead and Woodford, *mun. bor.*, Essex, Eng.; residt. sub. of London; p. (1951) 61,620.
- Wantage, *mkt. t., urb. dist.*, Berks, Eng.; in Vale of the White Horse; hempen cloth, brass; p. (1951) 5,089.
- Wapakoneta, *t.*, Ohio, U.S.A.; nr. Pique; p. (1950) 5,797.
- Wapping, *Thames-side dist.*, London, Eng.; contains the London Docks; industr.; p. 3,200.
- Warangal, *t.*, Hyderabad, India; p. (1951) 133,130.
- Waratah, *t.*, N.S.W., Australia; sub. of Newcastle; coal, copper mines; p. (1947) 20,313.
- Waratah, *t.*, N. Tasmania, Australia; tin mining centre; p. 1,009.
- Warburg, *t.*, Germany; on R. Diemel; industr.
- Wardha, *R.*, Madhya Pradesh, India; trib. of R. Wainganga; length 254 m.
- Ware, *mkt. t., urb. dist.*, Herts, Eng.; on R. Lea; 2 m. N.E. of Hertford; malting, bricks; p. (1951) 8,253.
- Wareham, *mkt. t., mun. bor.*, Dorset, Eng.; on R. Frome, on N. of I. of Purbeck, 8 m. S.W. of Poole; brewing, bricks; p. (1951) 2,750.
- Waren, *t.*, Mecklenburg, Germany; timber, dairy-ing; resort; p. 10,363.
- Warkworth, *small spl.*, Northumberland, Eng.; nr. mouth of R. Coquet; cas.; agr., fishing; p. 713.
- Warminster, *t., urb. dist.*, Wilts, Eng.; on N. edge of Salisbury plain; agr. mkt., malting, engineering; p. (1951) 8,236.
- Warnemünde, *spl.*, Germany; ferry port for rail traffic between Berlin and Copenhagen; resort; p. 6,374.
- Warrego, *R.*, Queensland, N.S.W., Australia; trib. of R. Darling; length 400 m.
- Warren, *c.*, Ohio, U.S.A.; on Mahoning R.; coal- and iron-mining, iron and steel mfgt.; p. (1950) 49,896.
- Warren, *bor.*, Penns., U.S.A.; on Allegheny R.; natural gas, petroleum, oil-refining; furniture, tools; p. (1950) 14,849.
- Warrenpoint, *spl., urb. dist.*, Down, N. Ireland; at head of Carlingford Lough; holiday resort; p. (1951) 2,798.
- Warrenton, *t.*, C. of Good Hope, S. Africa; cheese-making; p. 2,655.
- Warrington, *t., co. bor.*, Lancs, Eng.; on R. Mersey, 14 m. E. of Liverpool; aluminium rolling and drawing, soap, brewing; p. (1951) 80,681.
- Warrnambool, *spl.*, Victoria, Australia; mkt., dairying; p. (1947) 9,993.
- Warsaw or Warszawa, *prov.*, Poland; on Vistula and Bug Rs.; a. 10,900 sq. m.; p. 2,235,042.
- Warsaw or Warszawa, *cap.*, Poland; on R. Vistula; cath., univ.; rly. centre; iron and steel, footwear, hosiery, sugar, tobacco; p. (estd. 1950) 600,767.
- Warsaw, *c.*, Indiana, U.S.A.; on Tippecanoe R.; p. (1950) 6,625.
- Warsop, *t., urb. dist.*, Notts, Eng.; 4 m. N.E. of Mansfield; limestone, gravel; p. (1951) 10,888.
- Warta, *R.*, Poland; trib. of R. Oder; length 450 m.
- Warwick, *t.*, Queensland, Australia; corn and vineyard dist.; p. (1947) 7,130.
- Warwick, *co.*, Eng.; coal, iron, limestone, fruit, livestock, motors, metal goods; co. t. Warwick; a. 976 sq. m.; p. (1951) 1,860,874.
- Warwick, *co. t., mun. bor.*, Warwick, Eng.; on R. Avon, 8 m. S.W. of Coventry; cas.; agr. implements, brewing, malting, rope, iron; p. (1951) 15,350.
- Warwick, *t.*, Rhode I., U.S.A.; on Narragansett Bay; cotton mnfs.; p. (1950) 43,028.
- Wasatch Mtns., *range*, Utah and Idaho, U.S.A.
- Wash, *The bay*, N. Sea between Lincs and Norfolk, Eng.; 22 m. long, 15 m. wide; partly reclaimed.
- Washa, *L.*, Louisiana, U.S.A.; 14 m. long.
- Washburne, *min. range*, Yellowstone National Park, U.S.A.; highest summit 10,345 ft.
- Washington, *t., urb. dist.*, Durham, Eng.; 5 m. S.E. of Gateshead; coal, engineering, chemicals; p. (1951) 17,795.
- Washington, *st.*, U.S.A.; coal, iron, minerals, forests, agr.; cap. Olympia; ch. ts. Seattle and Tacoma; a. 68,192 sq. m.; p. (1950) 2,378,963.
- Washington, *c., cap.*, U.S.A.; in Dist. of Columbia, on Potomac R.; White House, Capitol, 4 univs., etc.; printing, and engraving; p. (1950) 802,178.
- Washington, *t.*, Penns., U.S.A.; coal, petroleum, steel, glass, chemicals; p. (1950) 26,280.
- Washington I., Pacific Ocean (Gilbert and Ellice Is. col.); a. 6 sq. m., coral atolls; copra; p. 86.
- Washita, *R.*, Arkansas and Louisiana, U.S.A.; trib. of Red R.; length 400 m.
- Wasmes, *t.*, Belgium; nr. Mons; coalmining.
- Wasquehal, *t.*, Nord, France; textiles, chemicals, oil-refineries; p. (1946) 11,707.
- Wast Water, *L.*, Cumberland, Eng.; nr. Keswick; 3 m. long.
- Watchet, *t., urb. dist.*, Somerset, Eng.; on est. of Bristol Channel, 5 m. E. of Minehead; fishing; p. (1951) 2,592.
- Waterbury, *c.*, Conn., U.S.A.; on Naugatuck R.; watches, pins, brass goods, electric and photographic goods, chemicals; p. (1950) 104,477.
- Waterford, *co.*, Munster, Ireland; agr., livestock, fisheries; co. t., Waterford; a. 721 sq. m.; p. (1951) 75,062.
- Waterford, *co. t., spl.*, Waterford, Ireland; on R. Suir; cath.; brewing, fishing; p. (1951) 28,689.
- Waterloo, *vil.*, Belgium; battle, 1815; p. 7,362.
- Waterloo, *c.*, Iowa, U.S.A.; on Cedar R.; agr. produce and tools; p. (1950) 65,198.



- Waterloo, *t.*, N.Y., U.S.A.; on L. Seneca; p. (1950) 4,438.
- Waterloo-(with-Seaforth), *urb. dist.* Lancs., Eng.; at mouth of R. Mersey; N. sub. of Liverpool; residtl.; p. 15,447.
- Waterpoort, *t.*, Transvaal, S. Africa; on R. Sand; cattle; agr. centre.
- Watertown, *t.*, Conn., U.S.A.; plastics, textiles, hardware, wire products; p. (1950) 10,699.
- Watertown, *t.*, Mass., U.S.A.; on Charles R.; arsenal; p. (1950) 37,329.
- Watertown, *c.*, N.Y., U.S.A.; on Black R.; carriage wks., steam-engines, silk, agr. tools; p. (1950) 34,350.
- Watertown, *t.*, S. Dakota, U.S.A.; machinery, meat-packing; p. (1950) 12,699.
- Watertown, *c.*, Wisconsin, U.S.A.; on Rock R.; univ.; mnfs.; p. (1950) 12,417.
- Waterville, *c.*, Maine, U.S.A.; on Kennebec R.; univ.; cotton mnfs., rly. wks.; p. (1950) 13,287.
- Watervliet, *c.*, N.Y., U.S.A.; on Hudson R.; arsenal; iron goods, woollens, asbestos goods; p. (1950) 15,197.
- Watford, *t.*, *mun. bor.*, Herts., Eng.; on R. Colne, 16 m. N.W. of London; mkt.; many varied industries inc. light engineering, paper, printing, foodstuffs; p. (1951) 73,032.
- Wath, *t.*, *urb. dist.*, W.R. Yorks., Eng.; 4 m. N. of Rotherham; coal, quarrying; p. (1951) 13,927.
- Wating, *British I.*, Bahamas, W. Indies; reputed landing place of Columbus.
- Watlington, *t.*, Oxford, Eng.; at N. foot of Chiltern Hills, 5 m. S.W. of Princes Risborough; lace; p. 1,386.
- Watson's Bay, N.S.W., Australia; nr. Sydney; holiday resort.
- Wattenscheid, *t.*, Germany; coal, brushes, planes, iron ware; p. 60,823.
- Watton, *t.*, Norfolk, Eng.; on R. Wissey; mkt.; p. 1,413.
- Wattrelos, *t.*, Nord, France; nr. Lille; textiles, mnfs.; p. (1946) 35,000.
- Watu Bella Is., Moluccas, Indonesia; coconuts, sago.
- Wau, *cap.*, Bahr-el-Ghazal, Anglo-Egyptian Sudan, N.E. Africa; p. 6,000.
- Waukegan, *c.*, Ill., U.S.A.; on L. Michigan; summer resort; steel, brass, motors, sugar refining; livestock, agr. centre; p. (1950) 38,946.
- Waukesha, *t.*, Wisconsin, U.S.A.; health resort; p. (1950) 21,233.
- Wausau, *c.*, Wisconsin, U.S.A.; on Wisconsin R.; timber, paper, machinery, leather, silver fox farms; p. (1950) 30,414.
- Wauwatosa, *c.*, Wisconsin, U.S.A.; sub. of Milwaukee; p. (1950) 33,324.
- Waveney, *R.*, Norfolk and Suffolk, Eng.; length 50 m.
- Waverly, *t.*, Iowa, U.S.A.; on Cedar R.; p. (1950) 5,124.
- Waverly, *t.*, N.Y., U.S.A.; dairying, tr. centre; p. (1950) 6,037.
- Waxahachie, *t.*, Texas, U.S.A. rly. centre; p. (1950) 11,204.
- Waycross, *t.*, Georgia, U.S.A.; rly. wks., timber, naval stores, machinery, agr. products; p. (1950) 18,399.
- Waynesboro, *t.*, Penns., U.S.A.; industl.; p. (1950) 10,334.
- Wazan or Ouezzan, *sacred c.*, Morocco; p. 23,590.
- Waziristan, *dist.*, N.W. frontier, Pakistan; mtns.; a. 5,000 sq. m.; p. (1951) 264,000.
- Weald, The, wooded and pastoral tract S.E. Eng., extending from Folkestone, Kent, through Surrey, Hants, and Sussex to the sea about Beachy Head.
- Wear, *R.*, Durham, Eng.; rises in the Pennines, flows through Durham to N. Sea at Sunderland; length 60 m.
- Weaver, *R.*, Cheshire, Eng.; trib. of R. Mersey; length 45 m.
- Weaver Hills, Staffs., Eng.; alt. 1,300 ft.
- Webb City, *c.*, Missouri, U.S.A.; lead, zinc mining; p. (1950) 6,919.
- Webster, *t.*, Mass., U.S.A.; on French R.; textiles footwear; p. (1950) 12,160.
- Webster Grove, *t.*, Missouri, U.S.A.; p. (1950) 23,390.
- Weddell Sea, arm of S. At. Oc., Antarctica; whaling and sealing.
- Wednesbury, *t.*, *mun. bor.*, Staffs., Eng.; 8 m. N.W. of Birmingham; coal, iron, bricks, pottery, aluminium mnfs., rly. carriages; p. (1951) 34,758.
- Wednesfield, *urb. dist.*, Staffs., Eng.; nr. Wolverhampton; coalmining, locks and keys; p. (1951) 17,422.
- Wed Zem, *t.*, Fr. Morocco; impt. production of phosphate; p. 12,223.
- Weehawken, *t.*, N.J., U.S.A.; coal depot, rly. centre; mnfs.; p. (1950) 14,830.
- Weerd, *t.*, Netherlands; industl.; p. 20,241.
- Wei Ho, *R.*, Shensi, China; rises in highlands of Kansu, flows E. between highland of Shansi and Tsinling Shan to join Hwang Ho nr. Tungkwang; valley contains very fertile loess soils; formed cradle of Chinese civilisation; length approx. 500 m.
- Weiden, *t.*, Bavaria, Germany; cattle trade, lumber; porcelain, glass; p. 19,536.
- Weidenau, *t.*, N. Rhine-Westphalia, Germany; mining; iron, steel, copper; p. 10,913.
- Weihaiwei, *spt.*, Shantung, China; formerly British; coaling stn.; summer resort; p. (estd. 1946) 222,247.
- Weimar, *c.*, *cap.*, Thuringia, Germany; on R. Ilm; cloth, leather, book-printing tr.; residence of Goethe, Schiller, and Liszt; p. 49,327.
- Weinheim, *t.*, Baden, Germany; leather, wine, machinery, soap; cas.; p. 22,852.
- Weisshorn, *mtn. peak*, Switzerland; alt. 14,804 ft.
- Weisskirchen, *see* Bela Crkva.
- Wejh, *spt.*, Hejaz, Saudi Arabia.
- Welland, *t.*, Ont., Canada; on Welland Canal; p. 12,500.
- Welland, *R.*, Northants and Lincoln, Eng.; rises in Northampton Heights, flows N.E., enters The Wash 10 m. below Spalding; length 70 m.
- Welland, *canal*, Ontario, Canada; connects Ls. Erie and Ontario; length 27 m.
- Wellesley, *t.*, Mass., U.S.A.; residtl.; p. (1950) 20,549.
- Wellesley Is., *group*, in the Gulf of Carpentaria, belonging to Queensland, Australia.
- Wellingtonborough, *t.*, *urb. dist.*, Northants, Eng.; on R. Nene, 9 m. N.E. of Northampton; mkt., footwear, iron smelting, brewing; p. (1951) 23,220.
- Wellington, *mkt. t.*, *urb. dist.*, Shropshire, Eng.; 12 m. E. of Shrewsbury; coal, agr. tools, iron-wks.; its ancient name was Watling Town, because it stood on the line of Watling Street; p. (1951) 11,412.
- Wellington, *t.*, *cap.*, *spt.*, New Zealand; on N.I.; univ.; foundries, cold storage, soap, candles, footwear; p. (1951) 133,416.
- Wellington, *prov.*, N.J., New Zealand; a. 10,870 sq. m.; p. (1951) 391,533.
- Wellington, *t.*, C. of Good Hope, S. Africa; tanning, dried fruits, wine, jam; p. 9,000.
- Wellington, *L.*, Gippsland, Victoria, Australia; shallow; fishing.
- Wells, *c.*, *mun. bor.*, Somerset, Eng.; at W. foot of Mendip Hills; cath., bishop's palace; brush and paper mnfs.; p. (1951) 5,835.
- Wells-next-the-Sea, *t.*, *urb. dist.*, Norfolk, Eng.; anc. pt. on N. cst. of E. Anglia, 14 m. W. of Sheringham; whelks, cockles and mussels; p. (1951) 2,592.
- Wellsborough, *t.*, Penns., U.S.A.; p. (1950) 4,215.
- Wellston, *c.*, Ohio, U.S.A.; rly. centre; furniture; p. (1950) 5,691.
- Wellsville, *c.*, Ohio, U.S.A.; on Ohio R.; coal-mining, agr.; p. (1950) 7,854.
- Wels, *t.*, Austria; machinery, leather, paper; natural gas; p. (1951) 38,078.
- Welshpool, *t.*, *mun. bor.*, Montgomery, Wales; on R. Severn, 7 m. N. of Montgomery; nr. is Powis Castle; malting, flannel; p. (1951) 6,034.
- Welwyn, *t.*, Hertford, Eng.; one of "New Towns" designated 1946; incorporates bulk of Welwyn Garden City urb. dist. and extends S. and E. towards Hatfield and Hertford; p. (1951) 18,786.
- Welwyn Garden City, *t.*, *urb. dist.*, Herts., Eng.; 4 m. N.W. of Hertford; cereal products, light engineering, plastics; p. (1951) 18,296.
- Wem, *t.*, *urb. dist.*, Salop, Eng.; nr. Shrewsbury; mkt., flour, tanning, malting; p. (1951) 2,410.

- Wembley, *mun. bor.*, Middx., Eng.; N.W. sub. of London; light industry, sports centre; p. (1951) 131,369. [p. 26,619.]
- Wemyss, *par.*, Fife, Scot.; fishing pt., coalmining;
- Wemyss Bay, *t.*, Renfrew, Scot.; holiday resort, residential; imp. ctr. for Clyde steamers.
- Wenatchee, *t.*, Washington, U.S.A.; fruit (apple) ctr. and indus.; p. (1950) 13,072.
- Wenchow (Yungchia), *c. spl.*, Chekiang, China; nr. mouth of Wu Kiang 230 m. S.W. of Shanghai; textile, silk indus.; exp. wood, tea, agr. prod.; fishing; coastal tr.; p. (estd. 1946) 153,395.
- Wendover, *t.*, Bucks., Eng.; at N. foot of Chiltern Hills, 4 m. S.E. of Aylesbury, at entrance to wind gap; agr. mkt.; p. 2,500.
- Wener, *L.*, Sweden, *see* Väner.
- Wenersborg, *see* Vänersborg.
- Wengen, *vil.*, Bernese Oberland, Switzerland; alt. 4,200 ft.; resort; p. 1,230.
- Wenlock or Much Wenlock, *t. mun. bor.*, Salop, Eng.; on N.E. end of Wenlock Edge, 11 m. S.E. of Shrewsbury; iron and coal; p. (1951) 15,093.
- Wenlock Edge, *narrow ridge*, Shropshire, Eng.; extends 18 m. S.W. from Much Wenlock to Craven Arms; limestone; moorland, woodland on margins, particularly steep N.W. flank; width 1-1½ m., mainly above 950 ft. alt.
- Wensleydale, *N.R.*, Yorkshire, Eng.; valley in N. Pennines drained E. by R. Ure; cattle reared for fattening on lowland farms; some dairying (cheese); length 35 m.
- Wensum, *R.*, Norfolk, Eng.; flows to R. Yare at Norwich; length 30 m.
- Wentworth, *t. R. pt.*, N.S.W., Australia; at confluence of Rs. Murray and Darling; ships wulk downstream to Morgan and round to Adelaide.
- Wepener, *t.*, Orange Free State, S. Africa; battle 1900; p. 2,199.
- Werdau, *t.*, Germany; on R. Pleisse; textiles, machinery, paper, chemicals; p. 21,590.
- Werden, *t.*, Germany; on R. Ruhr; textiles, paper, leather, coalmining; p. 11,270.
- Werdohl, *t.*, N. Rhine-Westphalia, Germany; iron, steel, metal goods; p. 12,253.
- Wermelskirchen, *t. Land*, N. Rhine-Westphalia, Germany; hardware, textile indus.; p. 16,200.
- Wernigerode, *t. Land*, Saxony-Anhalt, Germany; paper, metal, leather indus.; p. 23,282.
- Wervicq, *t.*, Belgium; nr. Ypres; tobacco factories; p. 11,288.
- Wesel, *t.*, Germany; on R. Lippe; metal goods, cement, potteries, sugar-refineries, flour-mills; p. 24,136.
- Weser, *R.*, Germany; flows N. to N. Sea at Bremerhaven; navigable for 270 m.; total length 440 m.
- Wesermünde, *t.*, Bremen, Germany; nr. mouth of R. Weser; adjoins Bremerhaven; brewing, bricks; p. (1946) 77,491.
- Wessex, *ancient kingdom*, S. Eng.; included Berks, Hants, Wilts, Dorset, Somerset, and Devon.
- West Allis, *t.*, Wisconsin, U.S.A.; iron and steel goods; p. (1950) 42,959.
- West Bengal, *state*, India; delta of Ganges; rice, jute, oilseeds; cap. Calcutta; a. 29,476 sq. m.; p. (1951) 24,786,683.
- West Bridgford, *t. urb. dist.*, Notts, Eng.; at junction of Grantham canal with R. Trent; p. (1951) 24,838.
- West Bromwich, *t. co. bor.*, Staffs., Eng.; on R. Thame, 5 m. N.W. of Birmingham; coal, iron, smelting, machinery, tools and metal-wks.; p. (1951) 87,985.
- West Calder, *see* Calder, W.
- West Chester, *bor.*, Penns., U.S.A.; residtl. sub. Philadelphia; mkt. gardening, dairying, agr. tools; p. (1950) 15,168.
- West Flanders, *prov.*, Belgium; a. 1,249 sq. m.; *see also* Flanders.
- West Ham, *co. bor.*, Essex, Eng.; sub. to E. of London; bordered by Rs. Thames and Lea; residtl.; extensive docks, sugar-refining, rubber, soap, jute-wks.; p. (1951) 170,987.
- West Hartford, *t. Conn.*, U.S.A.; residtl. sub. of Hartford; metal goods, centre for dairying, tobacco-growing district; p. (1950) 44,402.
- West Hartlepool, *see* Hartlepool, W.
- West Haven, *bor.*, Conn., U.S.A.; sub. of New Haven; p. (1950) 32,010.
- West Indies or Antilles, *I. groups*, Atl. Oc.; extend between the csts. of Florida and Venezuela, separating the Caribbean Sea and the G. of Mexico from the Atlantic; sugar, tobacco, fruits, cotton, coffee, cocoa; p. 16,494,000.
- West Lothian (Linlithgow), *co.*, Scot.; agr., coal, iron; co. t. Linlithgow; a. 120 sq. m.; p. (1951) 83,576.
- West Monroe, *t. La.*, U.S.A.; sub. of Monroe; paper, cottonseed oil, wood products; p. (1950) 10,302.
- West New York, *t. N.J.*, U.S.A.; on Hudson R.; grain elevators, silks, rubber goods, cotton-seed oil; p. (1950) 37,683.
- West Orange, *t. N.J.*, U.S.A.; induslt.; p. (1950) 28,605.
- West Pittston, *bor.*, Penns., U.S.A.; coalmining; p. (1950) 7,230.
- West Point, *military stn.*, N.Y., U.S.A.; on Hudson R.; Military Academy; p. 1,550.
- West Riding, Yorkshire, *see* Yorkshire, West Riding.
- West Springfield, *t.*, Mass., U.S.A.; induslt.; p. (1950) 20,438.
- West Virginia, *st.*, U.S.A.; coal, salt, petroleum, agr. (cereals, tobacco), pastoral; cap. Charleston; a. 24,181 sq. m.; p. (1950) 2,005,552.
- West Warwick, *t.*, Rhode I., U.S.A.; p. (1950) 19,096.
- Westbrook, *c.*, Maine, U.S.A.; paper, cottons, silks; p. (1950) 12,284.
- Westbury, *t. urb. dist.*, Wilts, Eng.; at N. foot of Salisbury Plain; rly. junction; woollens, bricks, glove mfnis.; p. (1951) 5,264.
- Westerham, *t.*, Kent, Eng.; nr. Sevenoaks; mkt.; p. 3,168.
- Western Australia, *see* Australia, W.
- Westerwald, *plateau of old and volcanic rocks*, W. Germany; terminates in steep slope immediately E. of R. Rhine between Koblenz and Bonn; drained to Rhine by R. Lahn and R. Sieg; fertile soil; pastureland or deciduous woodland; sm. quantities of iron ore in Siegerland.
- Westfield, *t.*, Mass., U.S.A.; cigars, paper, machinery, bicycles, radiators; p. (1950) 20,962.
- Westfield, *t.*, N.J., U.S.A.; p. (1950) 21,243.
- Westgate-on-Sea, *t.*, Kent, Eng.; nr. Margate; agr., seaside resort; p. 4,554.
- Westhoughton, *urb. dist.*, S.E. Lancs, Eng.; coalmining, silks, cottons; p. (1951) 15,002.
- Westland, *prov.*, S. I., New Zealand; coal, timber, gold; cap. Hokitika; a. 4,880 sq. m.; p. (1951) 18,220.
- Westmanland, *see* Västmanland.
- Westmeath, *co.*, Leinster, Ireland; pasture, agr., dairying; with much bog; co. t. Mullingar; a. 708 sq. m.; p. (1951) 54,471.
- Westminster, *c.*, *metropolitan bor.*, London, Eng.; on N. bank of R. Thames; W. of City of London; contains Houses of Parliament, Westminster Abbey, Government offices, Royal Palaces (Buckingham Palace and St. James's); p. (1951) 98,895.
- Westmorland, *co.*, N.W. Eng.; covering part of the Lake District (Windermere, Ullswater, Grasmere, etc.); sheep, oats, building-stone, tourist industry; cap. Appleby; most populous t., Kendal; a. 789 sq. m.; p. (1951) 67,383.
- Weston-super-Mare, *t. mun. bor.*, Somerset, Eng.; on Bristol Channel, 20 m. S.W. of Bristol; holiday resort; p. (1951) 40,165.
- Westphalia, *see* N. Rhine-Westphalia.
- Westport, *spl.*, *urb. dist.*, Mayo, Ireland; on Westport Bay; mkt., cereals; p. (1946) 3,238.
- Westport, *spl.*, S.I., New Zealand; on R. Buller; cst. shipping; p. (1951) 5,509.
- Westport, *t.*, Conn., U.S.A.; residtl.; woollens, twine, soap, disinfectants; p. (1950) 11,667.
- Westray, *I.*, Orkney Is., Scot.; 10 m. long; p. 1,270.
- Westward Ho I., *vil.*, N. Devon, Eng.; on Bideford Bay; seaside resort.
- Westwood, *t.*, Queensland, Australia; coalmining.
- Wetherby, *t.*, W.R. Yorks, Eng.; on R. Wharfe; mkt., malting, brewing; p. 2,126.
- Wethersfield, *t.*, Conn., U.S.A.; oldest regular settlement in C.; large st. prison; agr. implements, seeds; p. (1950) 12,533.



- Wetter or Wettarn, *L.*, Sweden, *see* Vättern.
- Wetteren, *t.*, Belgium; on R. Schelde; textiles; p. 17,857.
- Wetterhorn, *mtn.*, Switzerland; alt. 12,165 ft.
- Wetzlar, *t.*, Germany; on R. Lahn; cath.; iron-mining, chemicals, gloves, optical instruments; p. 17,495.
- Wewoka, *t.*, Okla., U.S.A.; oil wells; agr., bricks, petrol; p. (1950) 6,747.
- Wexford, *maritime co.*, Leinster, S.E. Ireland; pasture, agr., dairying, fishing; cap. Wexford; a. 901 sq. m.; p. (1951) 89,993.
- Wexford, *t.*, cap., Wexford; Leinster, S.E. Ireland; on R. Slaney; p. (1946) 12,308.
- Wey, *R.*, Hants, Surrey, Eng.; rises in W. Weald, flows N. into R. Thames nr. Weybridge; cuts impt. gap through N. Downs at Guildford; length 35 m.
- Weybridge, *see* Walton and Weybridge.
- Weyburn, *t.*, S. Saskatchewan, Canada; p. (1951) 7,138.
- Weymouth and Melcombe Regis, *t.*, *mun. bor.*, Dorset, Eng.; on Weymouth Bay, 8 m. S. of Dorchester; boathldg., stone, bricks, holiday resort; p. (1951) 37,097.
- Weymouth, *t.*, Mass., U.S.A.; footwear mnf.; p. (1950) 32,630.
- Whales, Bay of, *inlet* in Ross Dep., Antarctica; exploration base.
- Whangarei, *t.*, New Zealand; agr., fruit; p. (1951) 11,847.
- Whangpoo, *R.*, Kiangsu, China; tidal creek upon which Shanghai is situated; runs 14 m. inland from Yantze-Kiang estuary nr. Woosung.
- Wharfe, *R.*, W.R. Yorks, Eng.; trib. of R. Ouse; length 60 m.
- Wheeling, *c.*, cap., W. Virginia, U.S.A.; on Ohio R.; rly. and commercial centre, iron and steel, pottery; p. (1950) 58,891.
- Whenside, *mtn.*, W.R. Yorks, Eng.; alt. 2,414 ft.
- Whickham, *t.*, *urb. dist.*, Durham, Eng.; nr. Gateshead; coalmining, iron and steel, chemicals, rope mnf.; p. (1951) 23,116.
- Whitburn, *burgh*, W. Lothian, Scot.; 20 m. S.W. of Edinburgh; coal, limestone; p. (1951) 5,232.
- Whitby, *spt.*, *urb. dist.*, N.R. Yorks., Eng.; at mouth of R. Esk, 17 m. N.W. of Scarborough; abbey; holiday resort; fisheries, shipbldg., jet mnfs.; p. (1951) 11,668.
- Whitby (formerly Windsor), *t.*, Canada; on L. Ontario; p. (1941) 5,046.
- Whitechurch, *t.*, *urb. dist.*, Salop, Eng.; 13 m. S.W. of Crewe; mkt., malting, cheese; p. (1951) 6,856.
- White, *R.*, Arkansas, U.S.A.; trib. of Mississippi R.; length 350 m.
- White, *R.*, Indiana, U.S.A.; trib. of Wabash R.; length 330 m.
- White, *R.*, Arkansas, Missouri, U.S.A.; trib. of Mississippi R.; 300 m. navigable; length 800 m.
- White Horse, *t.*, S. Yukon, Canada; once a gold "Boom Town"; p. (1951) 2,594.
- White Mtns., part of Appalachian system, New Hampshire, U.S.A.; highest summit, Mt Washington, 5,805 ft.
- White Nile (Bahr-el-Abiad), *R.*, Anglo-Egyptian Sudan, N.E. Africa; strictly, name applied to stretch of R. Nile between L. No and Khartoum; distance over 500 m.
- White Plains, *t.*, N.Y., U.S.A.; on Bronx R.; residtl.; battle 1776; p. (1950) 43,466.
- White Russia, *see* Byelorussia.
- White Sea or G. of Arkangel'sk, *inlet* of the Arctic Ocean, U.S.S.R.; a. 47,346 sq. m.
- Whiteadder, *R.*, Berwick, Scot.; trib. of R. Tweed; length 34 m.
- Whitefield, *urb. dist.*, Lancs, Eng.; cotton mnf.; p. (1951) 12,912.
- Whitehall, *t.*, N.Y., U.S.A.; at head of L. Champlain; timber tr.; p. (1950) 4,457.
- Whitehaven, *spt.*, *mun. bor.*, Cumberland, Eng.; on Solway Firth, 3 m. N. of St. Bees Head; coal, iron, chem. wks.; p. (1951) 24,624.
- Whitehead, *t.*, *urb. dist.*, Antrim, N. Ireland; at entrance to Belfast Lough; seaside resort; p. (1951) 1,862.
- Whitehouse, *t.*, Yukon, Canada; airport; oil refinery; p. 8,000.
- Whithorn, *royal burgh*, Wigtown, Scot.; 9 m. S. of Wigtown; cath.; p. (1951) 1,068.
- Whitley Bay, *t.*, *urb. dist.*, Northumberland, Eng.; 3 m. N. of Tynemouth; seaside resort; plastics; p. (1951) 32,257.
- Whitney, *mtn.*, Sierra Nevada, California, U.S.A.; alt. 14,898 ft.
- Whitstable, *spt.*, *urb. dist.*, Kent, Eng.; on Thames estuary, 6 m. N. of Canterbury; holiday resort, oysters; p. (1951) 17,467.
- Whittington or Whittington Moor, *par.*, Derby, Eng.; nr. Chesterfield; coalmining, iron, steel; p. 8,317.
- Whittlesey, *t.*, *urb. dist.*, I. of Ely, Eng.; in The Fens, 8 m. W. of March; bricks, mkt. gardening; p. (1951) 8,609.
- Whitworth, *urb. dist.*, S.E. Lancs, Eng.; cottons, coal, slate; p. (1951) 7,442.
- Whyalla, *spt.*, S. Australia; impt. steel and shipbldg. industries; exports ironstone and pigiron; p. 8,000.
- Wichita, *t.*, Kansas, U.S.A.; in Arkansas valley; rly. wks.; oil refineries and equipment; meat-packing centre in agr. and stock-raising region; p. (1950) 163,279.
- Wichita, *R.*, Texas, U.S.A.; trib. of Red R.; length 225 m.
- Wichita Falls, *t.*, Texas, U.S.A.; oil-refining; p. (1950) 68,042.
- Wick, *spt.*, *burgh*, Caithness, Scot.; on E. cst., 14 m. S. of John O'Groats; herring-fisheries centre; p. (1951) 7,161.
- Wicklow, *maritime co.*, Leinster, Ireland; pastoral and agr.; cap., Wicklow; a. 781 sq. m.; p. (1951) 62,500.
- Wicklow, *t.*, cap., Wicklow, Leinster, Ireland; on S.E. cst., 35 m. S. of Dublin; mkt.; sm. seaside resort; p. (1946) 3,197.
- Wicklow, *mtns.*, Wicklow, Ireland; highest summit, Lugnaquilla, 3,039 ft.
- Widnes, *t.*, *mun. bor.*, Lancs, Eng.; on R. Mersey, 12 m. E. of Liverpool; iron, copper, soda, candles, soap, manures; p. (1951) 48,775.
- Wiener Neustadt, *t.*, Lower Austria; 20 m. S. of Vienna; machinery, pottery; p. (1951) 30,509.
- Wieringermeer Polder, *reclaimed area*, N. Holland, Netherlands; located in N.W. of Zuider Zee; reclaimed in 1930, flooded by Germans and drained again 1945; largely meadowland; a. 78 sq. m.
- Wiesbaden, *t.*, Germany; spa; surgical instruments, chocolate; p. (1950) 220,741.
- Wigan, *t.*, *co. bor.*, S.W. Lancs, Eng.; 16 m. N.E. of Liverpool; coal, cotton, iron mnfs., chemicals; p. (1951) 84,546.
- Wight, I. of, English Channel; separated from Hants. by Spithead and The Solent; wheat, sheep, cement; holiday resort; ch. ts.: Newport, Cowes, Ryde; a. 147 sq. m.; p. (1951) 95,594.
- Wigston, *t.*, *urb. dist.*, Leicester, Eng.; 4 m. S. of Leicester; rly. wks.; p. (1951) 15,452.
- Wigton, *t.*, Cumberland, Eng.; mkt., textiles, malting; p. 3,521.
- Wigtown, *maritime co.*, S.W. Scot.; oats, wheat, agr., dairying; cap. Wigtown; a. 485 sq. m.; p. (1951) 31,625.
- Wigtown, *burgh*, Wigtown, Scot.; on Wigtown Bay, Solway Firth; fishery; p. (1951) 1,376.
- Wilcannia, *t.*, *R. pt.*, N.S.W., Australia; on R. Darling, 350 m. upstream from Wentworth; sends wool and minerals downstream to Morgan, Murray Bridge, Echuca for transhipment by rail to Adelaide or Melbourne.
- Wilhelmsburg, *t.*, Germany; S. of Hamburg; p. 25,403.
- Wilhelmshaven, *spt.*, Germany; 40 m. N.W. of Bremen; good harbour; p. (1950) 101,210.
- Wilkes-Barre, *c.*, Penns., U.S.A.; on Susquehanna R.; anthracite-mining, machinery, locomotives, iron and steel, textiles; p. (1950) 76,326.
- Wilkes Land, Antarctica; featureless plateau, alt. 9,500 ft.; immense glaciers; claimed by Australia.
- Wilkinsburg, *bor.*, Penns., U.S.A.; Pittsburgh sub.; residtl.; timber wks.; p. (1950) 31,418.
- Willamette, *R.*, Ore., U.S.A.; rises in Cascade Mtns., flows N. into Columbia R. below Portland; valley gives rich agric. land, wheat, root-crops, dairy produce, hard and soft fruits; ch. ts. Portland, Salem; length approx. 300 m.
- Willemstad, *t.*, cap., Netherlands Antilles; on Curacao I.; p. (1948) 40,597.

- Willenhall, *urb. dist.*, Staffs., Eng.; 4 m. E. of Wolverhampton; coal, iron, brass, locks; p. (1951) 30,695.
- Willesden, *mun. bor.*, Middx., Eng.; *impt. rly. junction*; residtl. and *industl.*; p. (1951) 179,647.
- Williamsburg, *c.*, Virginia, U.S.A.; oldest incorporated *c.* in America; p. (1950) 6,375.
- Williamsport, *c.*, Penns., U.S.A.; on Susquehanna R.; *ry. centre*, timber, machinery, silks; summer resort; p. (1950) 45,047.
- Williamstown, *spt., sub.*, Melbourne, Victoria, Australia; at mouth of Yarra Yarra R.; ship-bldg., *ry. wks.*, meat; p. (1947) 26,907.
- Williamstown, *c.*, Mass., U.S.A.; p. (1950) 5,015.
- Willimantic, *c.*, Conn., U.S.A.; on Willimantic R.; textiles, thread; p. (1950) 13,586.
- Wilmotte, *t.*, Ill., U.S.A.; residtl. sub. Chicago; p. (1950) 18,162.
- Wilmington, *c., spt.*, Delaware, U.S.A.; on Delaware R.; shipbldg., gunpowder, machinery, iron and steel-wks.; p. (1950) 110,356.
- Wilmington, *spt., N.C.*, U.S.A.; exports cotton, tobacco, timber, fertilizers; shipbldg., textiles, chemicals; p. (1950) 45,043.
- Wilslow, *t., urb. dist.*, Cheshire, Eng.; on R. Bollen, 6 m. S.W. of Stockport; residtl., cotton mnfs.; p. (1951) 19,531.
- Wilno, *see* Vilnius.
- Wilsden, *t.*, W.R. Yorks, Eng.; nr. Bradford; worsted mnfs.; p. 2,500.
- Wilson, *t.*, N.C., U.S.A.; tobacco, cotton, timber; p. (1950) 23,010.
- Wilson's Promontory, juts into Bass Strait, Victoria, Australia.
- Wilton, *t., mun. bor.*, Wilts, Eng.; on R. Wylve, 3 m. W. of Salisbury; mkt., carpets, felt; p. (1951) 2,857.
- Wiltshire, *S.W. inland co.*, Eng.; agr. and pastoral; cap. Salisbury; a. 1,345 sq. m.; p. (1951) 387,379.
- Wimbledon, *mun. bor.*, Surrey, Eng.; S.W. sub. of London; residtl.; famous common and internationally famous tennis tournament; p. (1951) 58,158.
- Wimborne Minster, *t.*, Dorset, Eng.; on R. Stour; p. 4,935.
- Wimmera, *N.W. dist.*, Victoria, Australia; a. 25,000 sq. m.; pastoral, areas of fruit-growing under irrigation.
- Winburg, *t.*, O.F.S., S. Africa; was the first cap. of O.F.S.; trading centre; p. 3,795.
- Wincanton, *t.*, Somerset, Eng.; at N.W. foot of Salisbury Plain; mkt., agr., brewing, cheese; p. 2,047.
- Winchcomb, *t.*, Gloucester, Eng.; nr. Cheltenham; silk, flour, tanning; cas.; p. 2,546.
- Winchelsea, *ancient t.*, Sussex, Eng.; 2 m. S.W. of Rye; formerly an *impt. walled spt.*, now 2 m. inland; p. 693.
- Winchester, *c., mun. bor.*, Hants, Eng.; on R. Itchen, 12 m. N. of Southampton; ancient cap. of the Saxons; cath., famous Public School, barracks; brewing, malting, agr. produce; p. (1951) 25,710.
- Winchester, *t.*, Kentucky, U.S.A.; agr., livestock; p. (1950) 9,226. [(1950) 15,509.]
- Winchester, *t.*, Mass., U.S.A.; sub. of Boston; p. Winchester, *c.*, Virginia, U.S.A.; in Shenandoah valley; p. (1950) 13,841.
- Windan, *see* Ventspils.
- Windermere, *largest Eng. L.*, in Westmorland and Lancs.; outlet to Morecambe Bay; 10 m. long, 1 m. wide.
- Windermere, *urb. dist.*, Westmorland, Eng.; on E. shore of L.; p. (1951) 6,306.
- Windsor, *t.*, Queensland, Australia; pastoral, sheep and cattle.
- Windhoek, *cap.*, S.W. Africa; fruit, silver, copper, lead; p. (1951) 20,490.
- Wind River Mtns., Wyoming, U.S.A.; range of Rockies; highest point, Fremont's Peak, alt. 13,576 ft.
- Windrush, *R.*, Oxford, Gloucester, Eng.; trib. of R. Thames.
- Windsor, *t.*, N.S.W., Australia; farming centre.
- Windsor, *c., port*, Ontario, Canada; on Detroit R., opposite Detroit; fruit, flour, canning, machinery; p. (1951) 123,849.
- Windsor, *t.*, Quebec, Canada; pulp, paper; p. 3,368.
- Windsor, *t.*, Conn., U.S.A., on Connecticut R.; p. (1950) 11,833.
- Windsor, New, *t., mun. bor.*, Berks, Eng.; on R. Thames, 20 m. W. of London; famous royal cas. (founded by William the Conqueror) and park, St. George's Chapel and the Royal Mausoleum; p. (1951) 23,181.
- Windward Is. (British), W. Indies; consisting of Grenada, St. Vincent, St. Lucia, and Dominica; a. 826 sq. m.; p. 299,000.
- Windward Is. (Netherlands), part of Netherlands Antilles, W. Indies; consisting of 3 Is.; Curaçao (a. 447 sq. m., p. (1948) 91,450), Aruba (a. 181 sq. m.; p. (1948) 47,932), Bonaire (a. 290 sq. m., p. (1948) 5,356).
- Windward Passage, *channel*, 60 m. wide, between Cuba and Haiti.
- Winfield, *c.*, Kansas, U.S.A.; on Walnut R.; educational and commercial centre, agr.; p. (1950) 10,264.
- Wingham, *t.*, N.S.W., Australia; agr.
- Winneba, *t.*, Gold Cst., W. Africa; p. (1948) 15,920.
- Winnebago, *L.*, Wisconsin, U.S.A.; 27 m. long.
- Winnipeg, *c., cap.*, Manitoba, Canada; at junction of Red and Assiniboine Rs.; caths., univ.; *ry. centre*; ch. world wheat mkt.; flour, brewing, cottons, agr. implements, machinery; p. (1951) 235,710.
- Winnipeg, *L.*, Manitoba, Canada; 40 m. N. of Winnipeg; 260 m. long, 25-60 m. wide; contains several large Is. (Reindeer, 70 sq. m.; Big L., 60 sq. m.).
- Winnipegosis, *L.*, Manitoba and Saskatchewan, Canada; a. (exclusive of Is.) 2,000 sq. m.; 50 m. W. of L. Winnipeg, into which it drains.
- Winnispesaukee, *L.*, New Hampshire, U.S.A.; 24 m. long.
- Winona, *c.*, Minn., U.S.A.; on R. Mississippi; *ry. centre*, timber, grain tr., medicines, shoes, furs; p. (1950) 25,031.
- Winoski or Onion, *R.*, Vermont, U.S.A.; length 90 m.
- Winschoten, *t.*, Netherlands; nr. German frontier; p. 13,342.
- Winsford, *urb. dist.*, Cheshire, Eng.; on R. Weaver; 4 m. S. of Northwich; salt; p. (1951) 12,745.
- Winslow, *t.*, Bucks, Eng.; mkt., agr. centre; p. 1,539.
- Winston-Salem, *ts.*, N. C., U.S.A.; tobacco and cotton mnfs.; p. (1950) 87,811.
- Winterswijk, *t.*, Netherlands; *industl.*; p. (1951) 22,318.
- Winterthur, *t.*, Zurich, Switzerland; on Eulach R.; *ry. centre*, locomotives, machines, cottons, wine; p. (1950) 66,925.
- Winthrop, *cst. t.*, Mass., U.S.A.; residtl. sub. of Boston, summer resort; p. (1950) 19,496.
- Wipper, *R.*, Germany, trib. of R. Rhine; length 50 m.
- Wirksworth, *t., urb. dist.*, Derby, Eng.; in Pennines, 5 m. S. of Matlock; p. (1951) 4,886.
- Wirral, *urb. dist.*, W. Cheshire, Eng.; between estuaries of Dee and Mersey; residtl.; p. (1951) 17,362.
- Wisbech, *t., mun. bor.*, of Ely Cambs., Eng.; on R. Nen, 11 m. from its mouth in the Wash; mkt. gardening, fruits, agr. implements; p. (1951) 17,430.
- Wisconsin, *st.*, U.S.A.; agr. (cereals), livestock, timber, minerals; cap. Madison; ch. t. Milwaukee; a. 56,154 sq. m.; p. (1950) 3,434,575.
- Wisconsin, *R.*, Wisconsin, U.S.A.; trib. of R. Mississippi; length 600 m.
- Wishaw, *burgh*, Lanark, Scot., joined with Motherwell; *ry. wks.*, engineering, coal, iron, steel.
- Wiske, *R.*, N.R. Yorks, Eng.; trib. of R. Swale; length 24 m.
- Wismar, *fortfd. spt.*, Germany; on the Baltic; shipbldg., sailcloth, paper; p. 27,493.
- Witbank, *t.*, Transvaal, S. Africa; power stn.; coalmining; carbide, cyanide; p. (1946) 14,237.
- Witham, *R.*, Rutland and Lincs, Eng.; flows into The Wash; length 80 m.
- Witham, *t., urb. dist.*, Essex, Eng.; 9 m. N.E. of Chelmsford; agr., mkt. gardening; p. (1951) 8,593.
- Withernsea, *t., urb. dist.*, E.R. Yorks, Eng.; on E. est. 15 m. E. of Hull; holiday resort; agr. fishing; p. (1951) 5,101.



- Withnell, *t.*, *urb. dist.*, Lancs, Eng.; at N. foot of Rossendale Fells, 3 m. S.W. of Blackburn; textiles, stone, paper; p. (1951) 2,923.
- Witney, *t.*, Oxford, Eng.; on R. Windrush, 10 m. W. of Oxford; woollens, blankets, gloves; p. 6,710.
- Witten, *t.*, Germany; on R. Ruhr; iron, glass, machinery; p. 72,610.
- Wittenberg, *t.*, Germany; on R. Elbe; univ.; machinery, textiles; centre of Reformation; Luther burnt Papal bull against him here in 1520; p. 24,840.
- Wittenberge, *t.*, Germany; on R. Elbe; woollens, rly. wks.; p. 25,652.
- Witwatersrand, *dist.*, Transvaal, S. Africa; gold-mining; p. (1946) 421,929.
- Wivenhoe, *t.*, *urb. dist.*, Essex, Eng.; on R. Colne; shipbldg., oysters; p. (1951) 2,381.
- Wloclawek, *t.*, *port.*, N. Poland; on R. Vistula; brewing, iron-wks., pottery; p. 48,126.
- Woburn, *t.*, Bedford, Eng.; 5 m. N.E. of Leighton Buzzard; mkt.; lace; p. 1,062.
- Woburn, *c.*, Mass., U.S.A.; chemicals, footwear; p. (1950) 20,492.
- Woking, *t.*, *urb. dist.*, Surrey, Eng.; 4 m. N. of Guildford; malting, paper mfg., printing; mkt., residt.; p. (1951) 47,612.
- Wokingham, *t.*, *mun. bor.*, Berks, Eng.; 5 m. S.E. of Reading; mkt., agr.; p. (1951) 8,716.
- Wolds, *The, chalk hill range*, Lincoln, E.R., Yorks., Eng.; pastoral; 45 m. long.
- Wolf Rock, *isolated rock, lighthouse*; at approach to English Channel from Bay of Biscay; 9 m. S.W. of Lands End, Cornwall.
- Wolfe, *I.*, in L. of 1,000 Is., St. Lawrence R., Canada.
- Wolfsberg, *t.*, Austria; holiday resort; p. 6,165.
- Wollaston, *L.*, N.W. Terr., Canada; 50 m. long.
- Wollongong, Greater, *t.*, N.S.W., Australia; coal-mining, iron- and steel-wks., dairying; p. (1947) 62,960.
- Wolmarasstad, *t.*, Transvaal, S. Africa; diamonds; p. 3,567.
- Wolsingham, *t.*, Durham, Eng.; on R. Wear; woollens, coal, agr. tools, marble; p. 3,535.
- Wolverhampton, *t.*, *co. bor.*, Staffs, Eng.; 15 m. N.W. of Birmingham; ironwks., coal, metal goods, electrical engineering, elec. apparatus, motor vehicles, rayon, nylon; p. (1951) 162,669.
- Wolverton, *t.*, *urb. dist.*, Bucks, Eng.; on R. Ouse, 15 m. S.W. of Bedford; rly-carriage wks.; p. (1951) 13,421.
- Wolyn (former Wollin), *I.*, Baltic Sea; off mouth of R. Oder; Polish; a. 133 sq. m.; p. 21,000.
- Wombwell, *urb. dist.*, W.R. Yorks, Eng.; at E. foot of Pennines, 7 m. N. of Sheffield; coal-mining, bricks; p. (1951) 18,337.
- Wonsan, *spt.*, N. Korea; exports rice, cattle, hides, fish; p. (estd. 1942) 122,185.
- Wonthaggi, *t.*, Victoria, Australia; coal; p. (1947) 4,280.
- Woodbridge, *t.*, *urb. dist.*, E. Suffolk, Eng.; on R. Deben; boatbldg., ironwks.; p. (1951) 5,310.
- Woodbridge, *t.*, N.J., U.S.A.; tiles, bricks, terracotta; p. (1950) 35,758.
- Woodbury, *t.*, N.J., U.S.A.; nr. Philadelphia; (1950) 10,931.
- Wood Green, *mun. bor.*, Middx., Eng.; N. sub., London; p. (1951) 52,224.
- Woodhall Spa, *t.*, *urb. dist.*, Lindsey, Lincs, Eng.; 4 m. S.W. of Horncastle; health resort; p. (1951) 1,671.
- Woodside, *burgh*, Aberdeen, Scot., on R. Don; paper; p. 7,698.
- Woodstock, *t.*, Ontario, Canada; on R. Thames; dairying, woollens, agr. tools; p. 12,461.
- Woodstock, *t.*, *mun. bor.*, Oxford, Eng.; on Glyne R. 7 m. N.W. of Oxford; glove mnfs.; Blenheim Palace; p. (1951) 1,713.
- Wooley Hole, *cave*, Mendip Hills, Somerset, Eng.; at foot of limestone hills, 2 m. N.W. of Wells; R. Axe emerges from the cave.
- Wooler, *t.*, Northumberland, Eng.; on R. Till; cattle, sheep mchts.; p. 1,577.
- Woolgar, *t.*, Queensland, Australia; gold.
- Woolwich, *metropolitan bor.*, London, Eng.; on S. bank of R. Thames; dockyard and arsenal; former Royal Military Academy; p. (1951) 147,824.
- Woomera, S. Australia; about 270 m. N.W. of Adelaide; atomic research testing ground, first weapon exploded here, Oct. 1952.
- Woonsocket, *c.*, Rhode I., U.S.A.; on Blackstone R.; textiles, rubber goods; p. (1950) 50,211.
- Wooster, *c.*, Ohio, U.S.A.; univ.; agr. centre; p. (1950) 14,005.
- Wootton Bassett, *see* Cricklade and Wootton Bassett.
- Worcestershire, *midland co.*, Eng.; W. of Warwick; agr., pasturage, hops, orchards, minerals, mnfs.; co. *t.*, Worcester; a. 699 sq. m.; p. (1951) 522,974.
- Worcester, *c.*, *co. bor.*, Worcestershire, Eng.; on R. Severn, 24 m. N. of Gloucester; cath.; porcelain wks., iron foundries; p. (1951) 69,700.
- Worcester, *t.*, C. Prov., S. Africa; wines, raisins, ostrich-farming, tanning; p. 18,899.
- Worcester, *c.*, Mass., U.S.A.; univ.; iron, footwear, tools; p. (1950) 203,486.
- Workington, *spt.*, *mun. bor.*, Cumberland, Eng.; on Solway Firth, at mouth of Derwent R.; coal, iron, steel, shipbldg., cycles, motors; p. (1951) 28,882.
- Workshop, *t.*, *mun. bor.*, Notts, Eng.; 15 m. S.E. of Sheffield; coalmining, timber, glassworks, brewing, malting; p. (1951) 31,033.
- Worms, *c.*, Germany; cath.; wine centre; chemicals, leathers, tobacco, machinery; p. 51,346.
- Worms Head, *promontory*, on Glamorgan est., Gower Peninsula, Wales.
- Worsborough, *urb. dist.*, W.R. Yorks, Eng.; coal-mining, timber-wks., gunpowder; p. (1951) 14,155.
- Worsley, *urb. dist.*, S.E. Lancs, Eng.; cottons, bricks, iron, coal; p. (1951) 27,363.
- Worthing, *t.*, *mun. bor.*, W. Sussex, Eng.; on S. est., 10 m. W. of Brighton; holiday resort, mkt., gardening; p. (1951) 69,375.
- Wotton-under-Edge, *t.*, Gloucester, Eng., nr. Stroud; mkt., agr. centre, woollens; p. 3,121.
- Wowoni L., Celebes, Indonesia.
- Wrangel, *I.*, Arctic Oc.; off N. cst., U.S.S.R.
- Wrangell, *t.*, Alaska, U.S.A.; p. (1950) 1,227.
- Wrangell, *mtn.*, Alaska, U.S.A.; alt. 17,500 ft.
- Wrath, *C.*, N.W. Sutherland, Scot.
- Wrekin, *hill*, Salop, Eng.; alt. 1,320 ft.
- Wrexham, *t.*, *mun. bor.*, Denbigh, Wales; 11 m. S.W. of Chester; brewing, coal; p. (1951) 30,962.
- Wroclaw (Breslau) *prov.*, Poland-Lower Silesia; industr., coal, ironwks., agr.; cap. Wroclaw; a. 9,552 sq. m.; p. (estd. 1950) 1,751,697.
- Wroclaw (Breslau), *c.*, Poland; on R. Oder; univ.; rly. carriages; glass, beet-sugar, chemicals; p. (estd. 1950) 279,373.
- Wrotham, *t.*, Kent, Eng.; nr. Sevenoaks; hops, fruit; p. 4,510.
- Wuchang, *c.*, Hupeh, China; on R. Yangtze-Kiang, opposite Hankow; cottons, tea; comm. centre; p. (estd. 1946) 174,367. *See* Wuhan.
- Wuchin, *see* Changchow.
- Wuchow, *river port*, Kwangsi, China; on Si-Kiang R.; tr. centre; exports tung oil, hides, aniseed; p. 90,000.
- Wuhan, *industl. c.*, Hupeh, China; at head of navigation by ocean-going steamers of Yangtze-Kiang; formed by amalgamation of Hankow, Hanyang, Wuchang; combined p. (estd. 1952) 1,200,000. *See also under separate headings.*
- Wuhshien, *see* Soochow.
- Wuhu, *treaty port*, Anhwei, China; on R. Yangtze-Kiang; tea, silk, coal; p. (estd. 1947) 203,550.
- Wupper, *R.*, Germany; trib. of R. Rhine; length 40 m.
- Wuppertal, *t.*, Germany; formed by amalgamation of Barmen and Elberfeld; textiles, leather, rayon, rubber goods; p. (1950) 363,224.
- Wurttemberg-Baden, *Land*, S.W. Germany; mountainous and afforested (Black Forest) with much mineral wealth; salt; cap. Stuttgart; a. 5,960 sq. m.; p. (1950) 3,907,848.
- Wurttemberg-Hohenzollern, *Land*, Germany; formed in 1947 from portion of Wurttemberg and former Prussian dist. of Hohenzollern; cap. Tübingen; a. 4,017 sq. m.; p. (1950) 1,242,204.
- Würzburg, *t.*, Germany; on R. Main; p. 55,604.
- Würzen, *t.*, Germany; on R. Mulde; cath., cas.; iron, machinery, biscuits; p. 18,000.
- Wushih, *c.*, Kiangsu, China; on N. shore of Tai Hu, 75 m. W. of Shanghai; silk, cotton-weaving; p. (estd. 1936) 272,209.

Wyalong, N.S.W., *see* West Wyalong.  
 Wyandotte, c., Mich., U.S.A.; on Detroit R.; chemicals; p. (1950) 36,846.  
 Wycombe, *see* High Wycombe.  
 Wye, R., Bucks, Eng.; rises in Chiltern Hills above High Wycombe, flows S.E. to R. Thames at Cookham.  
 Wye, R., Derby, Eng.; trib. of R. Derwent; length 20 m.  
 Wye, R., Eng. and Wales; rises in Plynlimmon, flows S.E. into R. Severn at Chepstow; length 130 m.  
 Wyndham, t., W. Australia; on Cambridge G.; p. 390.  
 Wymondham, t., Norfolk, Eng.; 9 m. S.W. of Norwich; mkt.; brewing, boots, brushes; p. 5,576.  
 Wyoming, st., U.S.A.; livestock, agr., coal-mining, minerals; cap. Cheyenne; a. 97,914 sq. m.; p. (1950) 290,529.  
 Wyoming, valley, N.E. Penns., U.S.A., on Susquehanna R.; coal; length 30 m.  
 Wyre, R., Lancs, Eng.; rises in Pennines, flows W. into Lancaster Bay at Fleetwood; length 28 m.  
 Wyvis, Ben, mtn., Scot., *see* Ben Wyvis.

## X

Xaltocán, L., Central Mexico.  
 Xanten, t., Rhine prov., Germany; cath.; p. 5,057.  
 Xanthi, t., Thrace, Greece; on R. Mesta; tobacco; p. (1951) 27,302.  
 Xanthus, *ruined* c., Turkey; on R. Xanthus.  
 Xanxere, t., Brazil; nr. R. Peixe.  
 Xauen, t., Spanish Morocco, N. Africa; p. 14,473.  
 Xenia, c., Ohio, U.S.A.; in Miami valley; twine, footwear, agr. centre; p. (1950) 12,877.  
 Xeres, *see* Jerez de la Frontera.  
 Xilitla, t., Mexico; p. 2,092.  
 Xingu, R., Brazil; trib. of the Amazon; navigable for steamers 110 m.; length 1,300 m.  
 Xochicalco, ruins, Mexico.  
 Xochimilco, L., Mexico; formerly contiguous with L. Tezcucuo.  
 Xochimilco, t., Mexico; on L. Xochimilco; p. 14,370.  
 Xoix, *anc. c.*, Lower Egypt; cap. in 17th century B.C.  
 Xucar or Jucar, R., Spain; length 200 m.

## Y

Y or Ij, arm, Zuider Zee, Netherlands; joined to N. Sea by canal.  
 Yablonovy, mtns., Siberia, U.S.S.R.; E. of L. Baikal; highest peak, Chokondo, alt. 8,048 ft.  
 Yaila Mtns., Ukraine, S.S.R., U.S.S.R.; form S.E. margin of Crimea Peninsula, extend from Sevastopol to Kerch; forested on middle slopes, pasture on upper slopes; forms marked climate barrier between mild winters of Mediterranean est. to the S. and cold winters to the N.  
 Yakima, t., Washington, U.S.A.; agr., livestock; (1950) 38,486.  
 Yakima, R., Washington, U.S.A.; trib. of Columbia R.; length 208 m.  
 Yakova, t., Albania; nr. Scutari.  
 Yakushima, I., Osumi Group, Japan; S. of Kyushu; mtns.; forest.  
 Yakutsk, A.S.S.R., U.S.S.R.; gold-mining; a. 1,580,253 sq. m.; p. (1939) 400,544.  
 Yakutsk, t., U.S.S.R.; on R. Lena; p. 10,913.  
 Yala, t., S. Siam; tin-mining.  
 Yalta, spt., U.S.S.R.; on Black Sea; p. 15,000.  
 Yalu, R., forms boundary between Manchuria and N. Korea; flows into Yellow Sea.  
 Yamagata, t., Honshu, Japan; mtns.; p. (1950) 104,891.  
 Yamaguchi, t., Honshu, Japan; p. (1947) 33,326.  
 Yamal, peninsula, U.S.S.R.; jutting into Arctic Ocean.

Yambol, t., Bulgaria; on R. Tunja; ruined mosque; corn tr.; p. (1947) 30,311.  
 Yamethin, dist., Upper Burma; teak forests, rice; ch. t. Yamethin; p. 9,291.  
 Yamna, t., Gambia, W. Africa; p. 6,700.  
 Yamina or Nyamina, t., Nigeria, Brit. W. Africa; on R. Niger; tr. centre.  
 Yana, R., Siberia, U.S.S.R.; length 1,000 m.  
 Yanago, t., Japan; business centre; cotton textiles; p. (1947) 50,027.  
 Yanao or Yanam, prov., t., formerly French Orissa, united with India 1954; p. (of prov.) (1948) 5,853, (of t.) (1941) 5,711.  
 Yanbu, spt., Arabia; on E. est. of Red Sea; port for Medina.  
 Yanco, t., N.S.W., Australia; fruit, rice, dairy-ing.  
 Yangchow (Chiangtu), c., Kiangsu, China; on Grand Canal; commercial centre; p. (estd. 1938) 127,392.  
 Yangchu, *see* Taiyuan.  
 Yangtze-Kiang, R., China; rises in plateau of Tibet, flows E. to E. China Sea, Pac. Oc. nr. Shanghai; traverses "Red Basin" of Szechwan, a deep gorge above Ichang, and finally a broad, level plain; many lge. cs. on its banks, Chungking, Ichang, Wuhan (Hankow, Hayang Wuchang), Nanking, Chinkiang; navigable by ocean-going vessels 1,800 m. to Ichang; total length 3,500 m.  
 Yankton, c., S. Dakota, U.S.A.; on R. Missouri; grain tr.; p. (1950) 7,709.  
 Yannina, *see* Ioannina.  
 Yao-Nan, c., Yunnan, China; salt tr., musk, etc.; p. 65,000.  
 Yaounde, cap., Fr. Cameroon, Africa; p. (1946) 50,000.  
 Yaoshow, c., Kiangsi, China; nr. L. Po-Yang; local tr.; p. 56,500.  
 Yap, I., Carolines, Pacific Ocean; a. 79 sq. m.; cable stn.; p. (1935) 6,650.  
 Yapura, R., Brazil and Colombia, S. America; trib. of R. Amazon; navigable for 600 m.; length 1,500 m.  
 Yaracuy, st., Venezuela; cap. San Felipe; p. (1941) 127,030.  
 Yare, R., Norfolk, Eng.; flows E. to N. Sea at Gorleston; length 50 m.  
 Yaritagua, t., Venezuela; tobacco, coffee, cocoa, sugar; p. 5,399.  
 Yarkand (Soche), c., Turkestan (Sinkiang), China; tr. centre; wheat, rice, beans, fruit, carpets, textiles; p. (estd. 1922) 60,000.  
 Yarkand, R., Turkestan (Sinkiang), China; trib. of Tarim R.; length 500 m.  
 Yarmouth, spt., Nova Scotia, Canada; shipbldg., fisheries; p. (1951) 8,106.  
 Yarmouth, par., I. of Wight, Eng.; on N.W. est., 8 m. W. of Newport; holiday resort; p. 893.  
 Yarmouth, Great, spt., co. bor., Norfolk, Eng.; at mouth of R. Yare; holiday resort; fisheries, herrings; p. (1951) 51,105.  
 Yaroslavl, t., U.S.S.R.; on R. Volga; cath.; tobacco, cotton, flour, textiles; p. (1939) 298,065.  
 Yarra, R., Victoria, Australia; length 100 m.  
 Yartsevo, t., U.S.S.R.; nr. Smolensk; cotton mills; p. 10,000.  
 Yass Canbera, *see* Canberra.  
 Yatsushiro, t., Kyushu, Japan; p. (1947) 41,281.  
 Yavary, R., S. America; on Brazilian-Peruvian frontier; trib. of R. Marañon; length 450 m.  
 Yawata, t., Kyushu, Japan; iron and steel; p. (1947) 154,646.  
 Yazoo, c., Mississippi, U.S.A.; on Yazoo R.; agr. tr.; p. (1950) 9,746.  
 Yazoo, R., Mississippi, U.S.A.; trib. of R. Mississippi; length 280 m.  
 Yazoo, district, Miss. st., U.S.A.; very flat, low-lying floodplain of R. Mississippi and R. Yazoo, extends 220 m. along R. from Memphis to Vicksburg; very fertile alluvial soil, but subject to disastrous floods; one of ch. cotton-growing districts in U.S.A.  
 Yecla, t., Spain; mkt.; p. 19,020.  
 Yeddo, old name of Tokyo, Japan.  
 Yekabpils, t., Kurland, Latvia, U.S.S.R.; on R. Dvina.  
 Yeletz, t., U.S.S.R.; on R. Sosna; grain and cattle tr.; p. 50,888.  
 Yell, I., Shetlands, Scot.; 17 m. long; p. 1,883.



Yellow R., *see* Hwang Ho.

Yellow Sea, *arm of Pacific Ocean* between China and Korea; length 600 m., greatest width 400 m.

Yellowhead Pass, B.C., Alberta, Canada; most N. and lowest of main passes across Rocky Mtns.; carries Canadian National Rly. on route from Edmonton to Vancouver and Prince Rupert; summit alt. 3,700 ft.

Yellowknife, *t.*, N.W. Terr., Canada; on N. shore of Gr. Slave L.; centre of impt. gold-mining district; linked by air to Edmonton (Alberta).

Yellowstone, L., Wyoming, U.S.A.; 20 m. long, 15 m. wide; alt. 7,740 ft.; in Y. National Park.

Yemen, *ind. kingdom and imamate*, Arabia; barley, wheat, millet, coffee; cap. Sana; a. 75,000 sq. m.; p. 4,000,000.

Yenakievo, *t.*, Ukraine, U.S.S.R.; non-ferrous metals, sulphuric acid; p. (1939) 88,246.

Yenangyaung, *t.*, R. *pt.*, Burma; on left bank of R. Irrawaddy, 280 m. N. of Rangoon; centre of Burma oilfields.

Yenchow (TzuYang), *t.*, Chekiang, China; S. of Hangchow; p. (estd. 1916) 150,000.

Yenesel, *R.*, Siberia, U.S.S.R.; rises in Sayan Mtns., flows N. into Arctic Oc.; ch. tribs. Upper, Stony and Lower Tunguska Rs.; length 3,300 m.

Yental, *see* Chefcoo.

Yeo or Ivel, *R.*, Dorset, Somerset, Eng.; trib. of R. Parrett; length 24 m.

Yeovil, *t.*, *mun. bor.*, Somerset, Eng.; on R. Yeo; 22 m. S.E. of Taunton; glove mnf., aeroplane wks., dairying; p. (1951) 23,337.

Yerevan, *cap.*, Armenia, U.S.S.R.; wine, brandy, machinery; p. 200,031.

Yeshil-Irmak, *R.*, Turkey; flows N. to Black Sea; length 200 m.

Yeshil Kul, *L.*, Chinese Turkestan (Sinkiang).

Yeste, *t.*, Spain; mnfs.; p. 10,000.

Yes Tor, 2nd highest summit, Dartmoor, Devon, Eng.; alt. 2,028 ft.

Yevpatoriya (Eupatoria), *spt.*, Crimea, U.S.S.R.; chemicals, leather, locks, dried fish; p. 10,000.

Yezd, *t.*, *prov. cap.*, Persia; caravan centre; p. (estd. 1949) 56,000.

Yezo, *see* Hokkaido.

Yibna, *t.*, Israel; S.E. of Er Ramle; p. 5,000.

Yiewsley and West Drayton, *urb. dist.*, Middx., Eng.; W. sub. of London; varied light industries; p. (1951) 20,488.

Yochow, *c.*, Hunan, China; at outlet of Tungting L. on the bank of the R. Yangtze; p. 4,800.

Yokkaichi, *industl. c.*, *spt.*, S. Honshu, Japan; on W. est. of Ise Bay, 23 m. S.W. of Nagoya; mnfs. silk, cotton and woollen goods; exports canned salmon, cheap pottery, textiles; imports raw wool and cotton; p. (1950) 123,870.

Yokohama, *ch. spt.*, Honshu, Japan; on W. side of Tokyo Bay; silks, tea tr.; p. (1953) 1,066,828.

Yokosuka, *spt.*, Honshu, Japan; S. of Tokyo; holiday resort; p. (1950) 250,533.

Yola, *t.*, N. Nigeria, Africa; nr. R. Benue; agr. tr.; p. 5,310.

Yonkers, *c.*, N.Y., U.S.A.; on Hudson R.; carpets, sugar, hats; p. (1950) 152,793.

Yonne, *dep.*, France; agr., wines, minerals; cap. Auxerre; a. 2,894 sq. m.; p. (1946) 266,014.

York, *c.*, *co. bor.*, *co. t.*, Yorks, Eng.; on R. Ouse; in central position in Vale of York; cath., cas.; mkt., rly. wks., confectionery; p. (1951) 105,336.

York, *I. group*, Torres Strait (between New Guinea and Australia).

York, *R.*, tidal estuary of Chesapeake Bay, U.S.A.

York, *c.*, Nebraska, U.S.A.; rly. centre; p. (1950) 6,178.

York, *bor.*, Penns., U.S.A.; agr. tools, confectionery, tobacco; p. (1950) 59,953.

York, *C.*, Hayes Peninsula, Greenland.

York, *C.*, Queensland, Australia; most N. pt. on mainland of Australia.

York Factory, *t.*, on Nelson R., Hudson Bay, Manitoba, Canada.

York, *Vale of, broad lowland*, Yorkshire, England; extends N. to S. between Pennines to W. and N. York Moors and York Wolds to E.; drained

to Humber by R. Ouse and tribs. from N., by Rs. Don and Trent from S.; flat apart from low transverse ridge Stamford Bridge to Harrogate; glacial and alluvial soils have required draining; crop farming, wheat, barley, root-crops, associated with fattening of beef cattle; settlement mainly marginal; ch. t. York; length 60 m.; width varies from 10 m. in N. to 30 m. in S.

Yorke, *peninsula*, S. Australia; separates Spencer G. and G. of St. Vincent; 100 m. long, 30 m. wide.

Yorkshire, *largest co.*, Eng.; divided into 3 Ridings, N., E., and W.; cap. York; a. 6,081 sq. m.; p. (1951) 4,516,362.

Yorkshire, *East Riding, administrative co.*, Yorks, Eng.; chiefly farming, pastoral on Wolds, arable elsewhere; ch. t. Hull; a. 1,172 sq. m.; p. (1951) 510,800.

Yorkshire, *North Riding, administrative co.*, Yorks, Eng.; chiefly farming, pastoral on Moors, mixed elsewhere; iron-ore mining in Cleveland Hills; heavy industries around Middlesbrough; ch. t. Middlesbrough; a. 2,128 sq. m.; p. (1951) 525,496.

Yorkshire, *West Riding, administrative co.*, Yorks, Eng.; pastoral farming on Pennines, but highly industrial on coalfield at foot of Pennines; woollens, steel, engineering, etc.; ch. ts. Leeds (in N.), Sheffield (in S.); a. 2,780 sq. m.; p. (1951) 3,480,066.

Yorkshire Moors, *hills*, N.R., Yorks, Eng.; inc. North York Moors, Cleveland Hills and Hambleton Hills; bounded to N. by Tees Valley, S. by Vale of Pickering, W. by Swale Valley, E. by sea; composed of oolitic limestone; good sheep pastures; impt. iron-ore deposits worked in Cleveland Hills; maximum alt. 1,489 ft.

Yorkshire Wolds, *hills*, E.R., Yorks, Eng.; extend N.E. from Humber and terminate in Flamborough Head; composed of chalk; smooth slopes and short grass give gd. sheep pasture; average alt. 600 ft.

Yorkton, *t.*, Saskatchewan, Canada; agr. centre; p. (1951) 7,054.

Yoruba, *dist.*, Nigeria; ch. ts., Oyo, Ibadan, Abeokuta, and Ilorin.

Yosemite Falls, 3 cataracts, of Yosemite Creek, California, U.S.A.

Youghal, *spt.*, *urb. dist.*, Cork, Ireland; on estuary of the Blackwater, Cork, Ireland; fisheries; p. (1946) 4,803.

Young, *t.*, N.S.W., Australia; p. 4,010.

Youngstown, *industl. t.*, Ohio, U.S.A.; on Beaver R., 60 m. N.W. of Pittsburgh; iron- and steel-making, heavy engineering; p. (1950) 168,330.

Yozgat, *t.*, Turkey; p. (1945) 11,576.

Ypacarai, *t.*, Central Paraguay; p. 8,214.

Ypres (Ieper), *t.*, Belgium; linen, lace, mnfs.; 2 battles, First World War; p. 16,488.

Ypsilanti, *c.*, Mich., U.S.A.; on Huron R.; agr. mkt., mnfs.; p. (1950) 18,302.

Yssel (Zuider Zee), *L.*, Netherlands; *see* IJsselmeer.

Yssingeaux, *t.*, Haute-Loire, France; nr. Le Puy; mnfs.; p. (1946) 6,777.

Ystad, *spt.*, S. Sweden; on Baltic Sea; sawmills, flour, sugar-mnfs.; p. 12,343.

Yuba, *R.*, California, U.S.A.; trib. of Feather-Sacramento R.

Yucatan, *st.*, Mexico; cereals, cotton; cap. Merida; a. 23,926 sq. m.; p. (1950) 516,357.

Yucatan, *strait*, connects G. of Mexico with Caribbean Sea.

Yudanamutana, *dist.*, S. Australia; copper-mining.

Yuen Kiang, *R.*, Hunan, China; length 400 m.

Yugoslavia, *see* Jugoslavia.

Yukon, *R.*, Canada-Alaska; flows N.W. and W. into Bering Strait; navigable for 1,200 m.; length 2,000 m.

Yukon, *prov.*, Canada; mountainous; coal, minerals; cap. Dawson; a. 207,076 sq. m.; p. (1951) 9,096.

Yuma, *t.*, Arizona, U.S.A.; at confluence of Rs. Gila and Colorado nr. Mexican-U.S.A. bdy.; centre of irrigated agriculture, obtaining water from Laguna and Imperial Dams; cotton, citrus fruits, alfalfa; p. (1950) 9,145.

Yungchia, *see* Wenchow.

Yunnan, *S.W. prov.*, China; adjoining Burma; mountainous; agr., minerals; cap. Kunming; a. 162,342 sq. m.; p. (1947) 10,853,000.

Yverdon, *t.*, Switzerland; cas.; tourist centre; p. 10,865.

Yvetot, *t.*, Seine-Inf., France; nr. Rouen; p. (1946) 7,134.

## Z

Zaandam, *t.*, N. Holland, Netherlands; paper, oil, timber, cement; p. (1951) 43,748.

Zabid, *t.*, Yemen, Arabia; old centre of learning; mkt.

Zabrze (Hindenburg), *t.*, Poland; coal, chemicals, glass, brewing; p. (estd. 1950) 128,005.

Zacapa, *t.*, Guatemala, Central America; p. (1940) 18,094.

Zacatecas, *st.*, Mexico; silver-mines; cereals, fruit, sugar; a. 28,122 sq. m.; p. (1940) 565,437.

Zacatecas, *t.*, cap., Zacatecas, Mexico; silver, pottery, commercial centre; p. (1950) 664,275.

Zacatula, *t.*, Mexico; nr. mouth of R. Balsas; mnfs.; p. 9,000.

Zadar (Zara), *spt.*, Yugoslavia; formerly Italian; cath.; maraschino, flour, glass; p. (1947) 14,847.

Zagazig, *t.*, Egypt; on Nile Delta; cotton, grain tr.; p. (1947) 82,912.

Zagreb, *t.*, Yugoslavia; on R. Sava; cath., univ.; linen, carpets, leather, tobacco; p. (1948) 290,667.

Zagros, *mnts.*, Persia; highest, Zardah Kuh, 14,921 ft.

Zahle, *t.*, Lebanon, S.W. Asia; on slopes of L. mtn.; p. (estd. 1950) 78,031.

Zakopane, *t.*, Poland; in High Tatra mtns.; tourist resort; p. 20,000.

Zakynthos, *see* Zante.

Zambesi, *R.*, S.E. Africa; flows E. to Mozambique Channel, Indian Ocean; navigable for 1,700 m.; length 2,200 m.

Zambesia, *prov.*, Mozambique; ch. *t.*, Quelimane.

Zamboanga, *t.*, Mindanao, Philippines; rice, sugar, tobacco, timber; p. (1948) 103,317.

Zamora, *prov.*, Spain; cap. Zamora; a. 40,825 sq. m.; p. (1950) 315,885.

Zamora, *t.*, cap., Zamora, Spain; on R. Duero; olive oil, wines; p. (1949) 42,859.

Zamosc, *old t.*, Poland; bentwood furniture mnf.; p. 20,389.

Zanesville, *t.*, Ohio, U.S.A.; textiles, pottery, machinery; p. (1950) 40,517.

Zante, *Ionian I.*, Greece; cap. Zakynthos; fruit (currants); devastated by severe earthquake, 1953; a. 277 sq. m.; p. (1951) 37,870.

Zanzibar, *I.*, E. Africa; cloves, coconuts, copra; cap. Zanzibar; a. 640 sq. m.; p. 137,731.

Zapala, *t.*, W. Argentina; in Andes; rly. term.; oilfield.

Zaporozhe (Dneprostrov), *indust.*, *t.*, Ukraine S.S.R., U.S.S.R.; on R. Dnieper, 45 m. S.E. of Dnieperpetrovsk; nr. Lenin (Dnieper) Dam and hydro-electric power-station (558,000 kW.); iron- and steel-works, heavy engineering industries; p. (1939) 289,000.

Zapotitlán, *t.*, Mexico; local tr. centre; p. 2,218.

Zaria, *t.*, N. Nigeria, Africa; cotton centre; p. 21,935.

Zara, *see* Zadar.

Zaragoza, *prov.*, Spain; cap. Zaragoza; a. 6,611 sq. m.; p. (1950) 621,768.

Zaragoza, *t.*, Spain; on R. Ebro; 2 cath., univ., citadel; captured by Moors 8th century, once cap. of Aragon; beer, spirits, woollens, iron ware; p. (1950) 264,256.

Zaruma, *t.*, Ecuador; mnfs.; p. 12,975.

Zary (Sorau), *t.*, Poland; textiles, machinery, glass, pottery; p. 18,328.

Zastron, *t.*, O.F.S., S. Africa; alt. 5,507 ft.; agr. centre; p. 4,083.

Zawiercie, *t.*, Poland; coal, iron, textiles, glass; p. 21,225.

Zdunska, *t.*, Poland; nr. Lodz; p. 25,000.

Zealand (Sjælland), *I.*, Denmark; between Kattegat and Baltic; a. (with Is. attached) 2,840 sq. m.; ch. *t.* Copenhagen; p. 1,251,661.

Zeebrugge, *spt.*, Belgium; connected with Bruges by ship canal; p. (1947) 8,450.

Zeehan, *spt.*, Tasmania, Australia; exports metal ores.

Zeeland, *prov.*, Netherlands; fishing; cap. Middelburg; a. 690 sq. m.; p. (1948) 262,589.

Zeeland, *vil.*, Mich., U.S.A.; nr. Grand Rapids; p. (1950) 3,075.

Zeerust, *dist.*, W. Transvaal, S. Africa; goldfield. Zella, *t.*, Brit. Somaliland, E. Africa; on G. of Aden; p. 1,000.

Zeist, *t.*, Netherlands; p. (1951) 43,265.

Zeitz, *t.*, Saxony, Germany; p. 35,604.

Zemun, *t.*, Yugoslavia; p. (1947) 28,083.

Zenjan or Zanzan, *t.*, cap. Khamseh, Persia; commercial centre, carpets; p. 30,100.

Zerbst, *t.*, Germany; on R. Nuthe, S.E. of Magdeburg; brewing, jewellery, machinery; p. 19,470.

Zermatt, *vil.*, Valais, Switzerland; at foot of Matterhorn; tourist centre; p. 1,000.

Zgierz, *t.*, Poland; nr. Lodz; linens; p. 21,690.

Zgorzelec, *see* Görlitz.

Zhdanov (Mariupol), *spt.*, Ukraine, U.S.S.R.; on Azov Sea; cereals, linseed, coal and iron; p. (1939) 222,427.

Zhitomir, *t.*, Ukraine, U.S.S.R.; commercial centre, ironwks.; p. 95,090.

Zile, *t.*, Turkey; cereals, fruit, wool, rugs; p. (1945) 16,290.

Zilgra, *t.*, Turkestan (Sinkiang), China; tr. centre.

Zillertal, *valley*, Tyrol, Austria; drained by R. Ziller, trib. of R. Inn; length 50 m.

Zillertal Alps, *mnts.*, Austria; in Tyrol.

Zinder, *t.*, Niger, Fr. W. Africa; terminus of Trans-Sahara motor route; tr. centre; p. 12,000.

Ziskov, *t.*, Czechoslovakia; sub. of Prague; p. 91,032.

Zittau, *t.*, Germany; on R. Mandau; woollens, linens, commercial centre; p. 39,719.

Zlatoust, *t.*, U.S.S.R.; in the Ural Mtns.; gold, iron, machinery; p. (1939) 99,272.

Zlin, *indust.*, *t.*, Moravia, Czechoslovakia; 40 m. E. of Brno; impt. leather industry; p. (1947) 45,737.

Znojmo or Znaim, *t.*, Czechoslovakia; pottery, textiles, mkt. gardening; p. 25,832.

Zomba, *t.*, cap., Nyasaland Protectorate, S. Africa; on N. flank of Shire Mtns., 40 m. N.E. of Blantyre; p. (estd. 1948) 6,000.

Zombor, *t.*, Hungary; cattle, grain; p. 33,000.

Zona Militar de Comodoro Rivadavia, *terr.*, Argentina, separated from Chubut terr. in 1946.

Zonguldak, *t.*, Turkey; p. (1945) 33,480.

Zorritos, *t.*, Tumbes dep., Peru, S. America; on cst., 10 m. from Ecuador bdy.; oil-field.

Zoutpansberg, *dist.*, N.E. Transvaal, S. Africa; goldfields, mtns.

Zrenjanin, *t.*, Vojvodina, Yugoslavia; p. (1948) 40,505.

Zug, *can.*, Switzerland; cap. Zug; a. 93 sq. m.; p. (1950) 42,239.

Zuider Zee, Netherlands; shallow area of water, now separated from N. Sea; partly reclaimed land.

Zulia, *st.*, Venezuela, S. America; cap. Maracaibo; p. (1941) 345,667.

Zululand, *prov.*, Natal; livestock, cereals, fruit, sugar, coffee, tea, gold, coal; a. 10,427 sq. m.

Zungeru, *t.*, Nigeria, Africa; on Lagos-Kano rly.; p. 1,000.

Zürich, *can.*, Switzerland; cottons, silks; a. 668 sq. m.; p. (1950) 777,002.

Zürich, *c.*, cap., Zürich, Switzerland; on L. Zürich; cath., univ.; paper, silks, cottons, machinery; p. (1950) 390,020.

Zutphen, *t.*, Netherlands; on R. Yssel; paper, tanning; p. (1951) 23,082.

Zwartebergen, *mnts.*, C. of Gd. Hope, Union of S. Africa; extend. 200 m. E. to W. flanked by Gr. Karroo to N., Little Karroo to S.; form impenetrable barrier except where broken across by headstreams of R. Gouritz; rise to over 7,000 ft.

Zwartsluis, *t.*, Netherlands; nr. Zwolle; p. 3,348.

Zweibrücken, *t.*, Germany; nr. Saarbrücken; p. 30,900.

Zwickau, *t.*, Germany; on R. Zwickhauser Mulde; coal, glass, motors, chemicals, machinery; p. (1946) 122,862.

Zwolle, *c.*, Netherlands; canal centre; cattle mkt., cottons, ironwks.; p. (1951) 49,957.

Zyrardow, *t.*, Poland; nr. Warsaw; mnfs.; p. 20,186.



# THE BRITISH COMMONWEALTH

The British Commonwealth of Nations comprises (a) the Sovereign States of the United Kingdom, Canada, Commonwealth of Australia, New Zealand, Union of South Africa, India, Pakistan, and Ceylon (including their dependent territories), (b) the Federation of Rhodesia and Nyasaland, (c) the Crown Colonies, Protectorates and other dependencies. (*See also "A Citizen's Guide".*)

## I.—MEMBERS OF THE COMMONWEALTH, AND THE FEDERATION OF RHODESIA AND NYASALAND (including territories for which members other than the U.K. are responsible).

Country	Land Area (sq. miles)	Recent Population Estimates
United Kingdom	94,205	50,535,000
Canada (incl. Newfoundland and Labrador)	3,845,774	14,692,000
Australia (Commonwealth of)	2,974,581	8,867,000
Norfolk Island— <i>Colony</i>	13½	1,148
Papua— <i>Colony</i>	90,540	375,861
New Guinea— <i>Trusteeship</i>	93,000	1,099,870
Nauru— <i>Trusteeship with New Zealand and the United Kingdom</i>	8½	3,434
Antarctic territory	2,472,000	—
New Zealand	103,736	2,007,508
Island Territories	203	21,267
Ross Dependency	175,000 (estimated)	—
Western Samoa— <i>Trusteeship</i>	1,133	88,565
South Africa (Union of)	472,494	12,646,375
Prince Edward and Marion Islands	135	—
South-West Africa— <i>Mandate</i>	317,725	360,040
India	1,269,640	356,829,485*
Sikkim	2,745	135,646
Pakistan	365,907	75,842,000*
Ceylon	25,332	8,103,648
Rhodesia and Nyasaland (Federation of)	487,640	6,483,000

\* Excluding Jammu and Kashmir, the future of which is at issue between India and Pakistan and is under consideration by the two Governments and by the United Nations.

## II.—TERRITORIES DEALT WITH BY THE COMMONWEALTH RELATIONS OFFICE.

Country	Status	Land Area (sq. miles)	Recent Population Estimates
South Africa:			
Basutoland	Colony	11,716	563,854
Bechuanaland	Protectorate	275,000	296,310
Swaziland	Protectorate	6,704	185,215
Indian Ocean, Maldivé Islands*	Protected State	115	87,000

\* A Protected State whose international relations are conducted by or in accordance with the advice of the United Kingdom Government, which does not interfere with the internal affairs of the Islands.

*Self-governing countries* within the British Commonwealth which entirely manage their own affairs are: Canada, Australia, New Zealand, South Africa, India, Pakistan, and Ceylon.

*Colonies* (properly called Crown Colonies) are overseas territories which have been annexed to the British Crown and are administered by Governors appointed by H.M. the Queen. The British Government is responsible for their external and internal affairs and for their defence. Their peoples are British subjects.

*Protectorates* are countries whose rulers have signed treaties giving Britain certain rights and responsibilities in them. Their peoples are not British subjects but British-protected persons.

*Condominiums*: countries jointly administered by the United Kingdom and another country.

### III.—BRITISH DEPENDENT TERRITORIES ADMINISTERED THROUGH THE COLONIAL OFFICE.

(Some of the very small, or practically uninhabited, islands have been omitted.)

Region and Territory	Status	Land Area (sq. miles)	Recent Population Estimates
<b>East Africa :</b>			
Somaliland Protectorate . . . . .	Protectorate	68,000	64,000
Kenya . . . . .	Colony and Protectorate	224,960	5,761,000
Tanganyika . . . . .	Trusteeship	362,688	7,943,000
Uganda . . . . .	Protectorate	93,981	5,262,000
Zanzibar and Pemba . . . . .	Protectorate	1,020	272,000
<b>Central Africa :</b>			
*Northern Rhodesia . . . . .	Protectorate	288,130	1,977,000
*Nyasaland . . . . .	Protectorate	49,177	2,460,000
<b>West Africa :</b>			
Gambia . . . . .	Colony and Protectorate	4,003	278,000
Gold Coast (inc. Togoland under U.K. Trusteeship) . . . . .	Colony Protectorate and Trusteeship Territory	91,843 13,041	4,409,000 410,000
Nigeria (inc. Cameroons under U.K. Trusteeship) . . . . .	Colony Protectorate and Trusteeship Territory	373,250	31,500,000
Cameroons . . . . .	Trusteeship Territory	34,081	1,500,000
Sierra Leone . . . . .	Colony and Protectorate	27,925	2,000,000
<b>Far East :</b>			
Federation of Malaya . . . . .	9 Malay States (under British Protection) and 2 Settlements	50,690	5,706,000
Singapore (inc. dependencies : Christmas I. and Cocos-Keeling Is.) . . . . .	Colony	291	1,123,400
Brunei . . . . .	Protected State	2,226	50,000
North Borneo . . . . .	Colony	29,387	337,000
Sarawak . . . . .	Colony	47,071	581,000
Hong Kong . . . . .	Colony	391	2,250,000
<b>Mediterranean :</b>			
Cyprus . . . . .	Colony	3,572	506,000
Gibraltar . . . . .	Colony	24	24,000
Malta and Gozo . . . . .	Internally self-governing Colony	122	315,000
<b>British Caribbean :</b>			
Barbados . . . . .	Colony	166	216,000
British Guiana . . . . .	Colony	83,000	458,780
British Honduras . . . . .	Colony	8,866	72,000
Jamaica . . . . .	Colony	4,411	1,460,000
Cayman Is. . . . .	Dependency of Jamaica	100	7,600
Turks and Caicos Is. . . . .	Dependency of Jamaica	166	6,660
<b>Leeward Islands :</b>			
Antigua and dependencies of Barbuda and Redonda . . . . .	Presidency of Leeward Is.	171	48,000
Montserrat . . . . .	Presidency of Leeward Is.	32	13,400
St. Christopher and Nevis, with Anguilla Virgin Islands . . . . .	Presidency of Leeward Is.	153	51,000
Trinidad and Tobago . . . . .	Presidency of Leeward Is.	67	7,300
<b>Windward Islands :</b>	Colony	1,981	664,000
Dominica . . . . .	Colony	305	56,000
Grenada . . . . .	Colony	133	81,000
St. Lucia . . . . .	Colony	238	82,000
St. Vincent . . . . .	Colony	150	71,000
<b>Western Pacific :</b>			
Fiji . . . . .	Colony	7,040	307,000
Pitcairn . . . . .	Colony	2	125
Tonga . . . . .	Protected State	269	50,000
<b>Western Pacific High Commission :</b>			
British Solomon Islands . . . . .	Protectorate	11,500	99,000
Gilbert and Ellice Islands . . . . .	Colony	369	38,000
New Hebrides . . . . .	Anglo-French Condominium	5,700	53,000
Central and Southern Line Islands . . . . .	—	—	Uninhabited
<b>Atlantic Ocean :</b>			
Bahamas . . . . .	Colony	4,404	83,000
Bermuda . . . . .	Colony	21	38,500
Falkland Islands (excluding dependencies)	Colony	4,618	2,300
St. Helena . . . . .	Colony	47	4,800
Ascension . . . . .	Dependency of St. Helena	34	170
Tristan da Cunha . . . . .	Dependency of St. Helena	38	281
<b>Indian Ocean :</b>			
Aden . . . . .	Colony and Protectorate	112,080	930,000
Mauritius (including dependencies) . . . . .	Colony	851	538,500
Seychelles . . . . .	Colony	156	37,000

\* Included in the Federation of Rhodesia and Nyasaland. Federal and Southern Rhodesian territorial matters dealt with through the Commonwealth Relations Office.

*Trust Territories* are those territories, former colonies of nations defeated in war, whose administration is entrusted to Britain or other Commonwealth country by the United Nations Trusteeship Council. They are governed on the same lines as Colonies. Their peoples are British-protected persons.

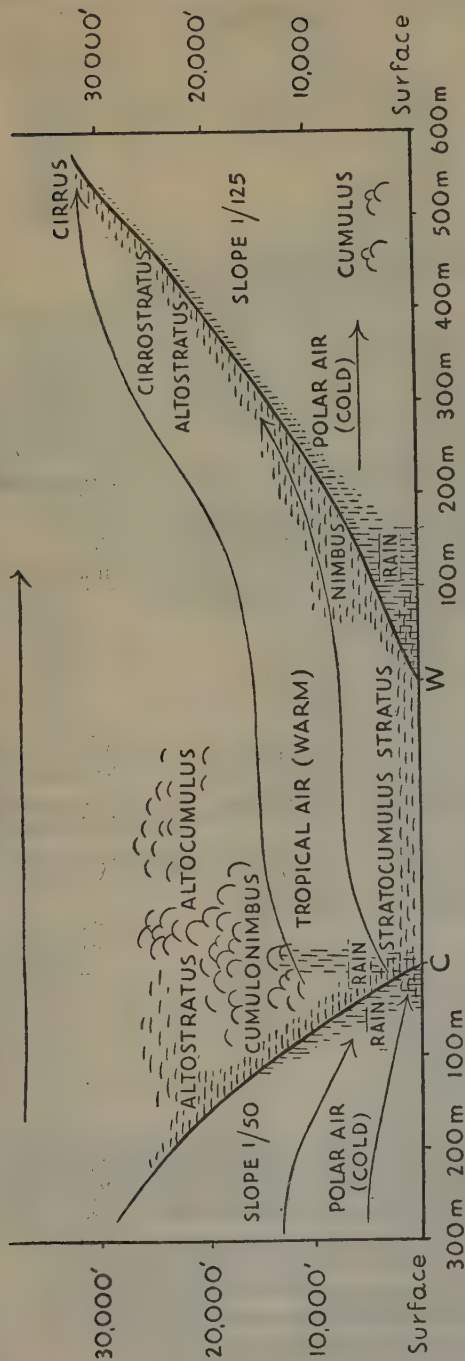


SEA AREAS USED IN WEATHER  
FORECASTS



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## CROSS SECTION OF A TYPICAL DEPRESSION



## FEATURES OF STRONG FRONTS

Cold Front		Warm Front	
Warm Sector		Warm Front	
Barometer steady or falling slowly	Barometer steady or falling slowly	Barometer falling: steady at front	Barometer falling: steady at front
Wind steady, perhaps increasing	Wind veers sharply, e.g. S.W. to W.N.W. or N.W. (sometimes with heavy squalls)	Wind backing and increasing: veering at front, e.g. S. to S.W.	Wind backing and increasing: veering at front, e.g. S. to S.W.
Temperature drops sharply	Temperature drops sharply	Temperature steady, rising at front, but not sharply	Temperature steady, rising at front, but not sharply
Humidity decreases sharply at front	Humidity decreases sharply at front	General increase in humidity	General increase in humidity
Visibility poor in heavy rain, otherwise marked improvement	Visibility poor in heavy rain, otherwise marked improvement	Visibility slowly deteriorating often with mist or fog at front	Visibility slowly deteriorating often with mist or fog at front
Rain (heavy with hail at times) at front, showers and bright intervals behind	Rain (heavy with hail at times) at front, showers and bright intervals behind	Extensive pre-frontal belt of heavy rain ceasing and becoming drizzle at front	Extensive pre-frontal belt of heavy rain ceasing and becoming drizzle at front
Clouds breaking and lifting. Cumulonimbus at front, cumulus, altostratus behind	Clouds breaking and lifting. Cumulonimbus at front, cumulus, altostratus behind	Clouds lowering and increasing. Usual sequence—cirrus, cirrostratus, altostratus, stratus, nimbus	Clouds lowering and increasing. Usual sequence—cirrus, cirrostratus, altostratus, stratus, nimbus



## LONGEST RIVERS

	River.	Approx. length in miles.
British Isles	Shannon	230
Europe	Volga	2,300
Europe excl. U.S.S.R.	Danube	1,750
U.S.S.R.	Yenisei	3,300
Asia, excl. U.S.S.R.	Yangtze	3,500
Africa	Nile	> 4,000
Australasia	Murray-Darling	1,900
South America	Amazon	< 4,000
North America	Missouri-Mississippi	8,900

## LARGEST LAKES

	Lake.	Approx. area in square miles.
British Isles	Neagh (N. Ireland)	150
Europe	Ladoga	7,100
Asia	Caspian	170,000
Africa	Victoria	26,000
Australasia	Eyre	4,000
South America	Maracaibo	5,000
North America	Superior	32,000

L. Superior and L. Victoria are the two largest fresh-water lakes in the world. The Caspian and the Aral "Seas" are the two largest salt-lakes.

## HIGHEST MOUNTAINS

	Mountain.	Height in feet.
British Isles	Ben Nevis (Scottish Highlands)	4,406
Europe	Elbruz (Caucasus)	18,526
Europe, excl. U.S.S.R.	Mont Blanc (Alps)	15,781
U.S.S.R.	Stalin Peak (Pamir-Alai)	24,590
Asia	Everest (Himalayas)	29,002*
Africa	Kilimanjaro (Tanganyika)	19,321
Australasia	Mt. Cook or Aorangi (Southern Alps, N.Z.)	12,349
South America	Aconcagua (Andes)	22,835
North America	McKinley (Alaska)	20,270

\* Surveyed and computed 1852; computed 1905 as 29,141 feet.

After Everest, the second and third highest mountains in the world are also in the Himalayas—K 2 (Godwin Austen), 28,250 feet, and Kanchenjunga, 28,146 feet.

Note: The greatest ocean depths yet recorded are: Marianas Trench, E. of Guam, between 5,882 and 5,940 fathoms; Horizon Deep (Tonga Trench), 5,814 fathoms; Mindanao Deep, E. of Philippines, 5,740 fathoms.

## LARGEST CONURBATIONS (CONTINUOUS URBAN AREAS)

	Conurbation.	Approx. pop. in millions.
British Isles	London	8½ <sup>a</sup>
Europe, excl. U.S.S.R. and	Berlin <sup>c</sup>	3½ <sup>b</sup>
British Isles	Paris <sup>d</sup>	4+
U.S.S.R.	Moscow	5+
Asia	Tokyo-Yokohama <sup>f</sup>	6+
Africa	Cairo	2½
Australasia	Sydney	1½
South America	Buenos Aires <sup>h</sup>	4½
North America	New York	10+ <sup>g</sup>

Note: Population figures cited for urban areas naturally vary according to the definition of the extent of the area—in 1951 the Census (night) population of the City of London was 5,268, of the County of London 3,348,336, and of Greater London, as defined by the Census, approximately an area within 15 miles range of Charing Cross and corresponding with the Metropolitan and City Police Districts, 8,346,137.

Some 60 conurbations have reached the "million" class; among them at least a dozen have more than 3 millions—in addition to the conurbations listed above there are Shanghai, Calcutta, Chicago, Leningrad, and Mexico City.

<sup>a</sup> Within 15 miles of Charing Cross. The smaller area of London County had 3·35 millions in 1951.

<sup>b</sup> Of this number 2·2 millions are in the western sector, and 1·2 millions in the eastern sector.

<sup>c</sup> Over 4½ millions in 1941. <sup>d</sup> Paris "ville" has 2½ millions.

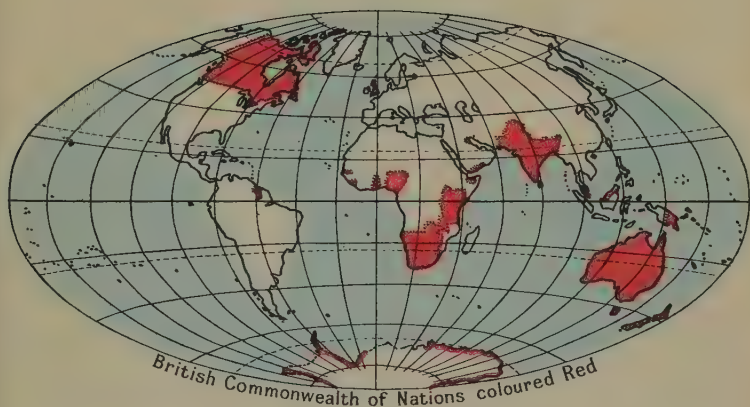
<sup>e</sup> Within 30 miles of Red Square live about 8 million people in the Moscow metropolitan area.

<sup>f</sup> In 1951, Tokyo, 5·4 millions; Yokohama, 0·8 million. <sup>g</sup> About 8 millions in 1940.

<sup>h</sup> Buenos Aires City itself has 3 millions. Buenos Aires is much the largest urban centre in the Southern Hemisphere.

<sup>i</sup> Within 15 miles of Manhattan. The smaller area of New York City contains about 8 millions, the larger area (4,400 square miles) of "Metropolitan New York" about 13 millions.

# ATLAS OF THE WORLD



## CONTENTS

	PAGE		PAGE
Political Divisions of the World . . . . .	2	U.S.S.R. . . . .	18
Europe . . . . .	3	Asia . . . . .	19
England and Wales . . . . .	4-5	South-Western Asia . . . . .	20
London, showing Electric Railways and Places of Interest . . . . .	6	Israel . . . . .	20
London District . . . . .	7	India, Pakistan, Ceylon and Burma . . . . .	21
Scotland . . . . .	8	China and Japan . . . . .	22
Ireland . . . . .	9	South-Eastern Asia . . . . .	23
France and adjoining Countries 10		Africa . . . . .	24
Germany, Poland & Central Europe . . . . .	11	West Africa . . . . .	25
Holland and Belgium . . . . .	12	Central and South Africa . . . . .	25
Denmark . . . . .	12	North America . . . . .	26
Switzerland . . . . .	13	Canada . . . . .	27
Scandinavia and Baltic Lands 14		United States . . . . .	28
Spain and Portugal . . . . .	15	Mexico, Central America & West Indies . . . . .	29
Italy, Central Europe and the Balkans . . . . .	16-17	South America . . . . .	30
		Australia and New Zealand 31	
		Pacific Ocean . . . . .	32





English Miles  
0 100 200 300 400 500  
Railways thus —





# ENGLAND AND WALES

English Miles

0 20 40 60 80 100

Railways thus —

N O R T H  
E A S T



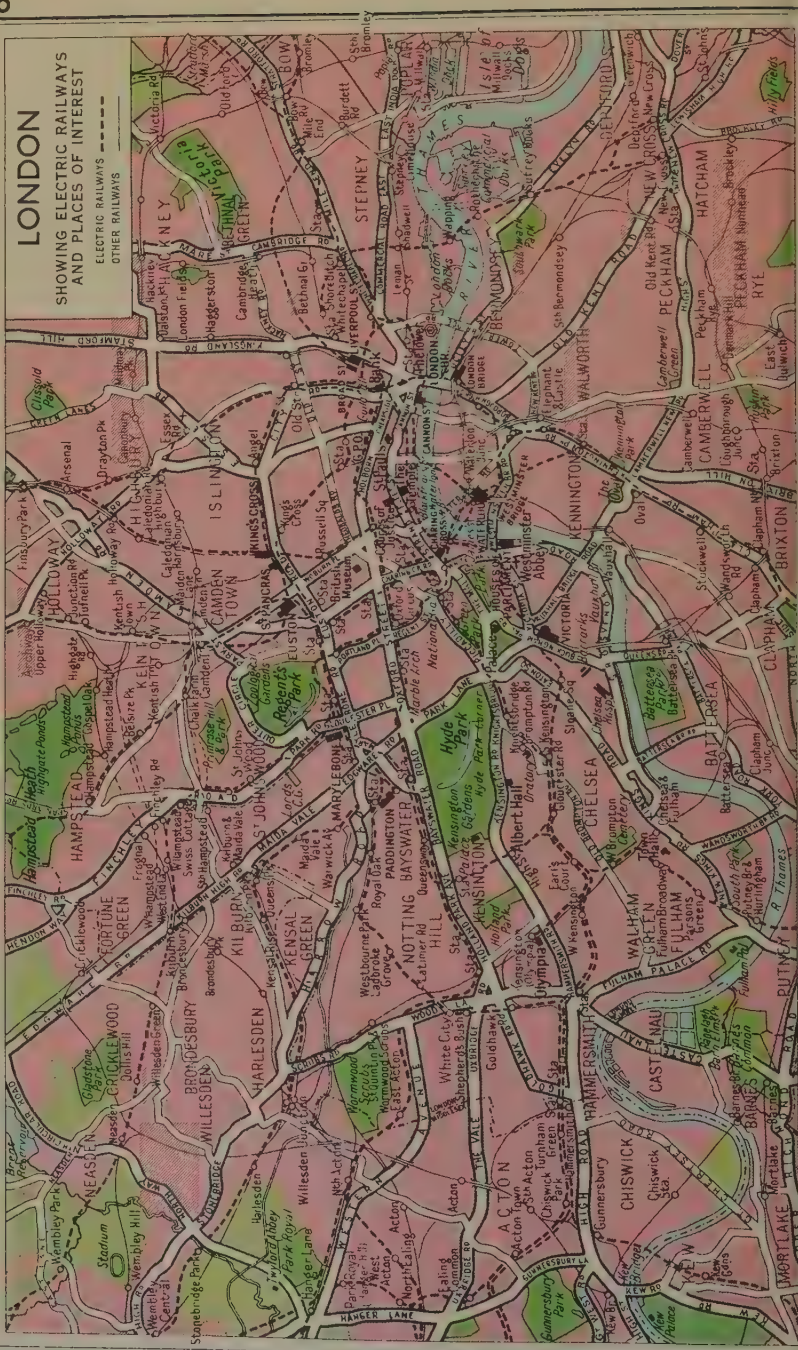




# LONDON

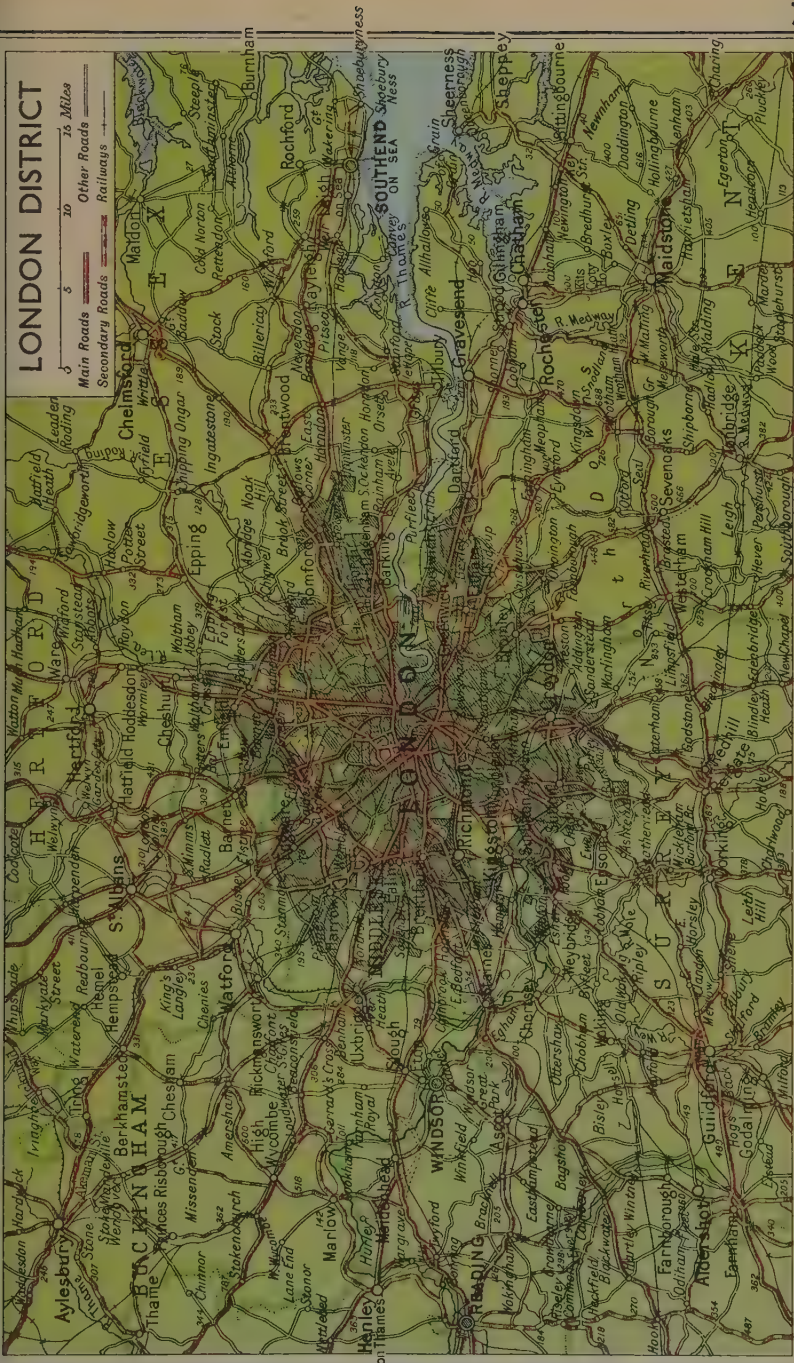
SHOWING ELECTRIC RAILWAYS  
AND PLACES OF INTEREST

ELECTRIC RAILWAYS  
OTHER RAILWAYS



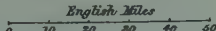
# LONDON DISTRICT

0 5 10 15 Miles  
 Main Roads  
 Secondary Roads  
 Other Roads  
 Railways









Railways thus —

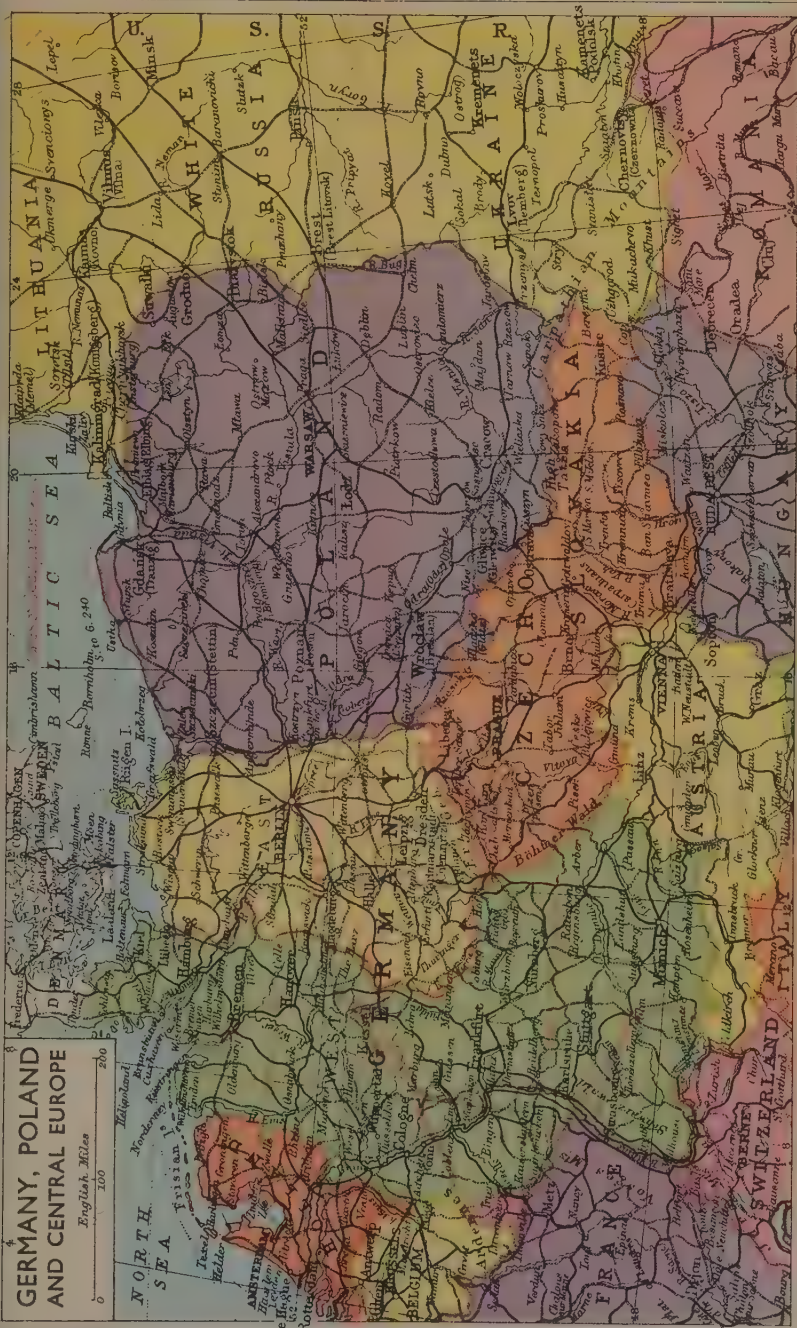




# GERMANY, POLAND AND CENTRAL EUROPE

English Miles

0 100 200





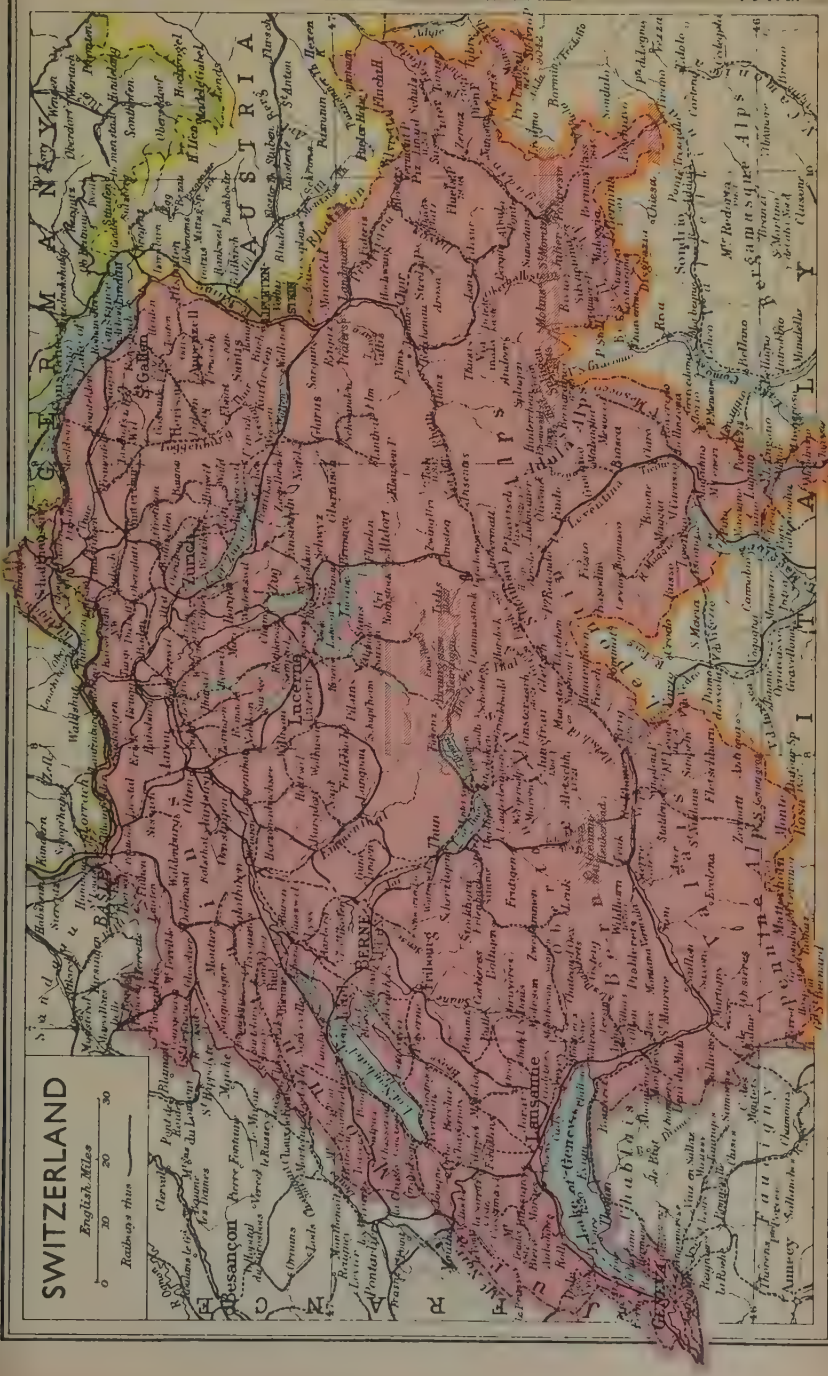


# SWITZERLAND

English Miles



Railways thus





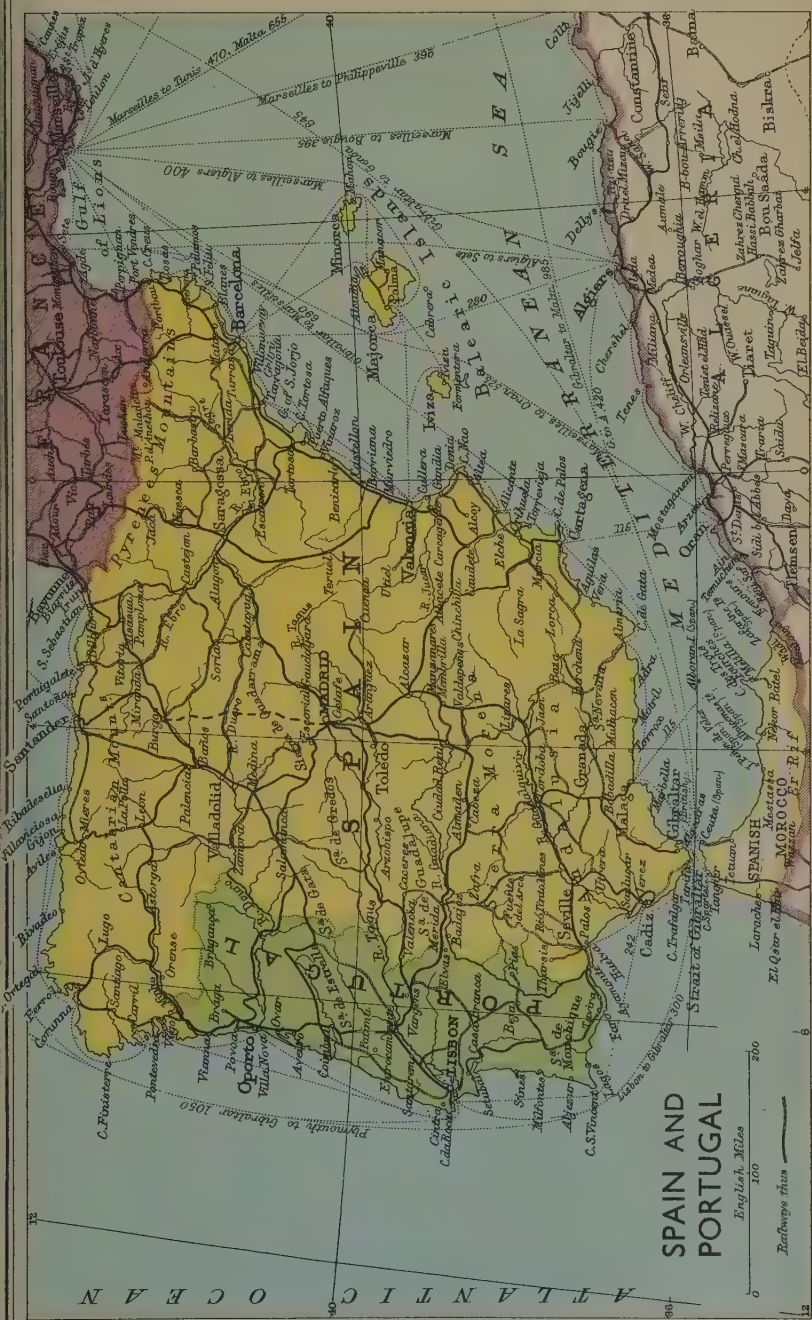


## SCANDINAVIA AND BALTIC LANDS

English Miles

Railways thus



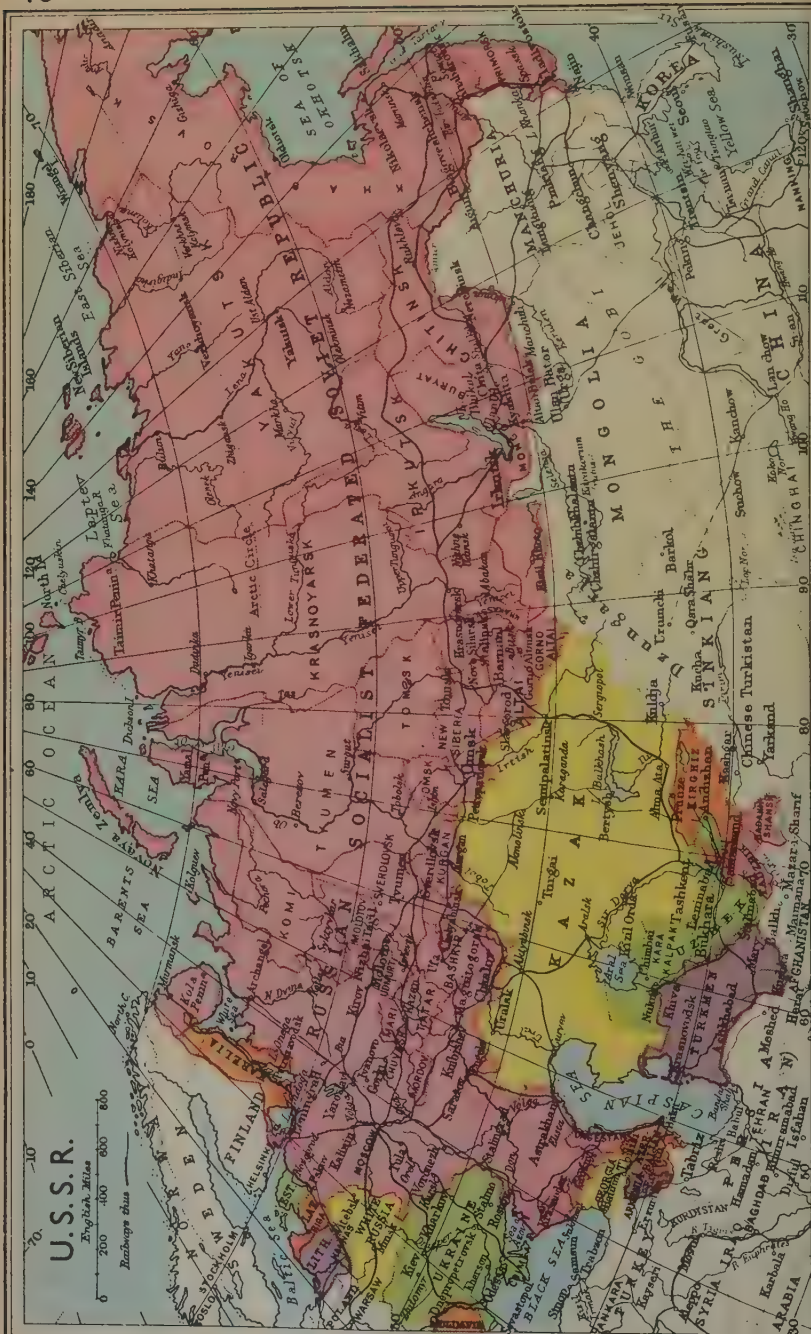




















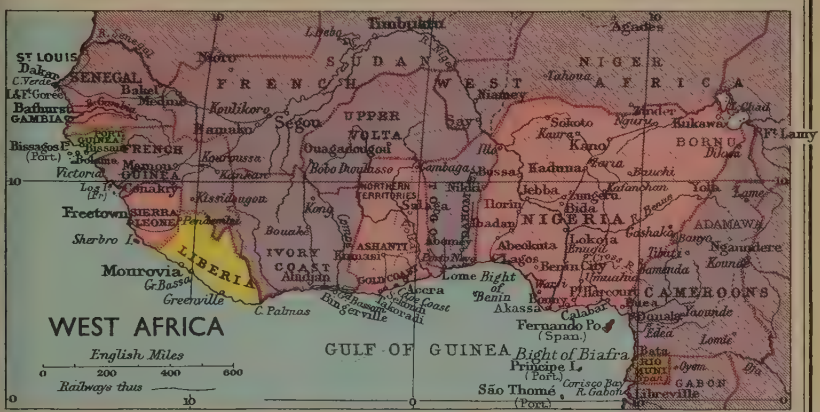










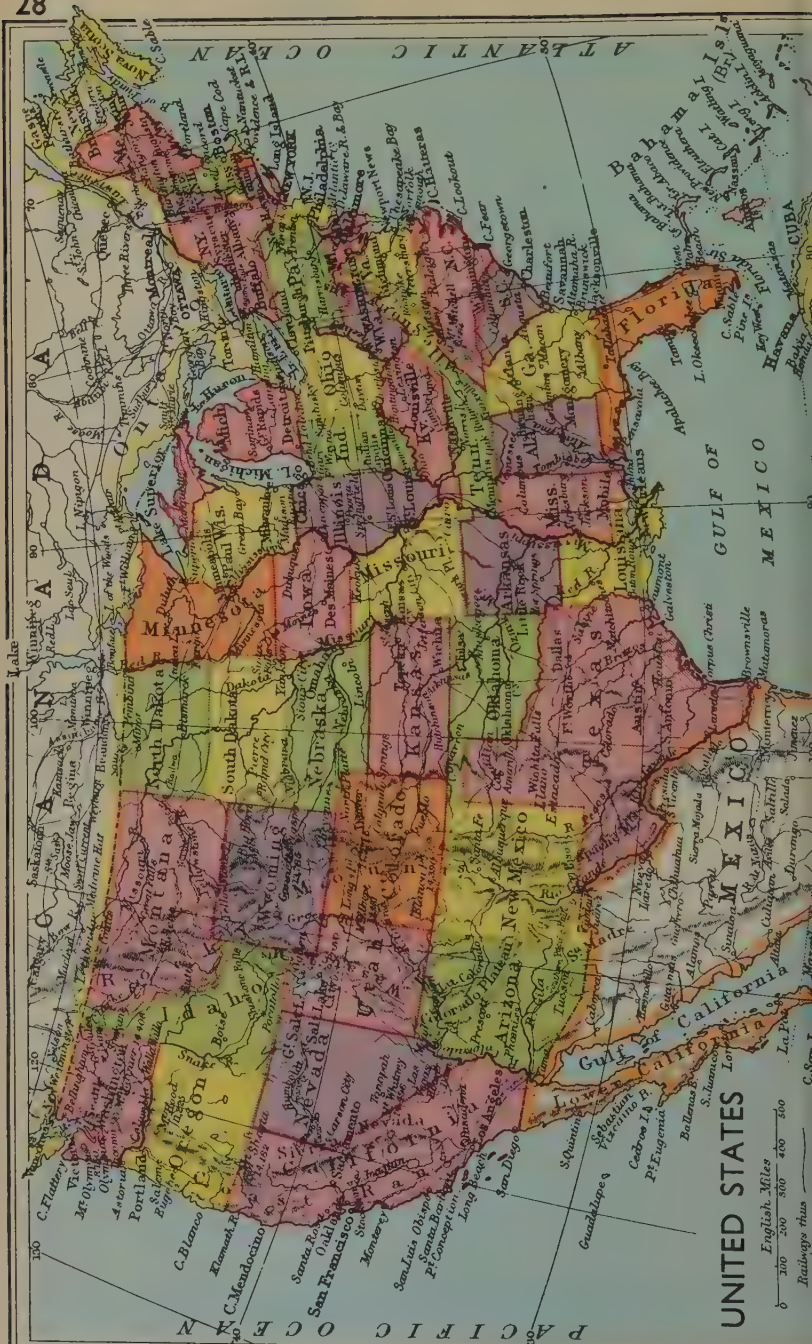
























# English Dictionary



## LIST OF CONTENTS

English Dictionary	417-514
Familiar Foreign Phrases	515-17
Abbreviations in Common Use	518-22



# English Dictionary

Space does not allow for a complete English dictionary, but only for a selection of words which the general reader might reasonably wish to look up. In revising it for the present edition, the aim has been to exclude words in such common use that their meaning and spelling are generally familiar, and to include those whose meaning, spelling and pronunciation may offer difficulty.

**Arrangement.**—The words are given in alphabetical order.

**Spelling.**—The most current form of English spelling is adopted.

**Meanings.**—The most usual meaning is given first, with variants following where necessary.

**Pronunciation.**—The pronunciation is given after each word, the different vowel-sounds being indicated by marks over them. Thus:—

ā is pronounced as in day, mate.  
 ă is pronounced as in at, fan, fad.  
 â is pronounced as in arm, father, half.  
 ē is pronounced as in eve, me.  
 ě is pronounced as in elk, mend.  
 ê is pronounced as in where, there.  
 î is pronounced as in ice, tide.  
 ĩ is pronounced as in pin, pit.  
 ĩ is pronounced as in machine.

ô is pronounced as in old, bold.  
 ô is pronounced as in odd, pot.  
 ô is pronounced as in storm, stork.  
 ù is pronounced as in mute, tube.  
 ŭ is pronounced as in up, tub.  
 ŭ is pronounced as in burn, urge.

th soft as in forth.  
 th hard as in them.

Consonant pronunciations are for the most part unvarying.

The pronunciation of short simple words was not deemed necessary to be given.

**Accent.**—The accented syllable of a word is marked thus: ' on the pronunciation spelling.

**Grammatical Classification.**—Immediately after each word its grammatical classification is indicated by the following abbreviations:—

adj. .... adjective.  
 adv. .... adverb.  
 con. .... conjunction.  
 excl. .... exclamation.

n. .... noun.  
 prep. .... preposition.  
 pron. .... pronoun.  
 v. .... verb.

## A

**Abacus**, ab'a-kus, *n.* a counting frame.  
**Abaft**, adv. and prep., in stern half of ship; astern of, behind.  
**Abandon**, a-ban'dun, *v.* to forsake; to give up.  
**Abandoned**, a-ban'dund, *adj.* deserted; wicked.  
**Abase**, ā-bās', *v.* to cast down; to humiliate.  
**Abasement**, ā-bās'ment, *n.* humiliation.  
**Abash**, a-bash', *v.* to cause shame.  
**Abate**, ā-bāt', *v.* to lessen.  
**Abatis**, a'bat-is, *n.* barricade of felled trees.  
**Abattoir**, a-bat-wār', *n.* a slaughter-house.  
**Abbess**, abb'ess, *n.* the head of a convent.  
**Abbot**, ab'ut, *n.* the head of an abbey.  
**Abbreviate**, ab-bré-vi-āt, *v.* to abridge; to shorten.  
**Abdication**, ab-di-kā'shun, *n.* renouncing office.  
**Abdomen**, ab-dō'men, *n.* lower part of belly.  
**Abduct**, ab-dukt', *v.* to carry off by force.  
**Abduction**, ab-dūk'shun, *n.* carrying off.  
**Aberation**, ab-ēr-ā'shun, *n.* wandering from right course.  
**Abet**, a-bet', *v.* to be accessory to.  
**Abeysance**, a-bā'ans, *n.* held in suspense.  
**Abhorrence**, ab-hor'rēns, *n.* great hatred.  
**Abide**, a-bid', *v.* to remain; to dwell; to wait for.  
**Ability**, a-bil'i-ti, *n.* skill, power.  
**Abjectness**, ab-jekt'ness, *n.* wretchedness; low condition.  
**Abjure**, ab-jūr', *v.* to repudiate solemnly.  
**Ablaze**, a-blāz', *adv.* on fire. [objects.  
**Ablution**, a-blū'shun, *n.* washing of persons or  
 Abnegate, ab'ne-gāt, *v.* to renounce.  
**Abnormal**, ab-nor'mal, *adj.* contrary to rule.  
**Aboard**, a-bord', *adv.* on a ship.  
**Abode**, a-bōd, *n.* dwelling place.  
**Abolish**, ab-ol'ish, *v.* to do away with.  
**Abolition**, ab-ol-ish'un, *n.* doing away with.  
**Abominable**, ab-om'in-ābl, *adj.* hateful.  
**Abominate**, ab-om'in-āt, *v.* to detest.  
**Aboriginal**, ab-o-rij'in-al, *adj.* primitive, native.  
**Aborigines**, ab-o-rij'in-ēz, *n.* a country's first inhabitants.  
**Abortion**, ab-or'shun, *n.* premature birth.  
**Abortive**, ab-or'tiv, *adj.* immature, untimely.  
**Abound**, a-bownd', *v.* to be plenteous.

**Abrade**, ab-rād', *v.* to rub off.  
**Abrasion**, a-brā'shun, *n.* a place worn by rubbing.  
**Abridgment**, a-brij'ment, *n.* a shortening.  
**Abrogate**, ab-ro-gāt, *v.* to repeal, or annul.  
**Abrupt**, a-brupt', *adj.* sudden.  
**Abscess**, ab'ses, *n.* a collection of pus or matter.  
**Abscond**, abs-kond', *v.* to escape secretly.  
**Absent**, abs-ent, *n.* *adj.* not present; inattentive.  
**Absent**, abs-ent, *v.* to keep away.  
**Absentee**, ab-sent-ē', *n.* one who is absent.  
**Absinth**, āb'sinth, *n.* a bitter alcoholic drink made from wormwood.  
**Absolute**, ab-sol-ūt, *adj.* without condition.  
**Absoluteness**, ab-sol-ūt'ness, *n.* completeness.  
**Abolution**, ab-so-lū'shun, *n.* remission.  
**Absolutism**, ab-sol-ūt'ism, *n.* government without  
 Absolve, ab-solv', *v.* to acquit. [restriction.  
**Absorb**, ab-sorb', *v.* swallow up.  
**Abstain**, abs-tān', *v.* to refrain from.  
**Abstemious**, abs-tēmi-us, *adj.* moderate.  
**Abstinent**, abs'tin-ent, *adj.* abstaining from.  
**Abstract**, abs-trakt', *v.* to remove; to condense.  
**Abstract**, āb'strakt, *n.* a précis or summary; theoretical, not concrete.  
**Abstraction**, abs-trak'shun, *n.* act of abstracting; absent-mindedness.  
**Abstruse**, abs-troos', *adj.* difficult to comprehend.  
**Absurd**, ab-surd', *adj.* unreasonable.  
**Abundant**, ab-und'ant, *adj.* plentiful.  
**Abuse**, ab-ūs, *n.* wrongful use.  
**Abut**, a-but', *v.* to adjoin; to end.  
**Abutment**, a-but'ment, *n.* that which adjoins.  
**Abysmal**, a-bis'ml, *adj.* without bottom.  
**Abyss**, a-bis', *n.* a bottomless chasm.  
**Acacia**, a-kā'shi-a, *n.* a leguminous plant.  
**Academy**, a-kād'e-mi, *n.* a higher school; a society for the advancement of art or science.  
**Acanthus**, a-kan'thus, *n.* a prickly plant; an architectural ornament.  
**Accede**, ak-sēd', *v.* to agree.  
**Accelerate**, ak-sel'er-āt, *v.* to put on speed.  
**Accent**, ak'sent, *n.* voice emphasis.  
**Accentuation**, ak-sent-ū-ā'shun, *n.* marking accents.

Accept, ak-sept', *v.* to receive or to agree to.  
 Acceptable, ak-sept'a-bl, *adj.* agreeable.  
 Acceptance, ak-sept'ance, *n.* agreement; an accepted bill.  
 Access, ak'ses, *n.* right of approach; increase.  
 Accessible, ác-sès'si-bl, *adj.* easy of approach.  
 Accessory, ak-ses'o-ri, *adj.* additional; aiding.  
 Accession, ak-sesh'ün, *n.* succeeding to; increase.  
 Accident, ak'sid-ent, *n.* a chance occurrence.  
 Acclamation, ak-lam-á-shun, *n.* shout of approval.  
 Acclimatise, ak-li'mat-iz, *v.* to become seasoned to a foreign climate or different conditions.  
 Acclivity, ak-liv'it-l, *n.* rising ground.  
 Accommodate, ak-om'ô-dat, *v.* to entertain; to adapt.  
 Accommodating, ak-om'ô-dating, *adj.* obliging.  
 Accompanist, ak-um'pan-ist, *n.* one who goes along with; instrumental aid to vocal solo.  
 Accompany, ak-um'pan-i, *v.* to go with.  
 Accomplice, ak-om'plis, *n.* companion in crime.  
 Accomplish, ak-kom'plish, *v.* to complete.  
 Accomplishment, *n.* completion; special ability.  
 Accord, ak-kórd', *v.* in agreement.  
 Accordance, ak-kórd'ans, *n.* harmony.  
 Accordion, ak-kor'di-on, *n.* a musical instrument with keyed bellows.  
 Accost, ak-kost', *n.* to speak to.  
 Account, ak-kownt', *v.* to reckon; *n.* statement.  
 Accountable, ak-kownt'a-bl, *adj.* responsible.  
 Accountant, ak-kownt'ant, *n.* one skilled in accounts.  
 Accoutre, ak-koo'ter, *v.* to equip.  
 Accoutrements, ak-koo'ter-ments, *n.* war equipments.  
 Accredited, ak-red'it, *v.* to authorise.  
 Accretion, ak-kre'shun, *n.* the process of growing.  
 Accrue, ak-kroo', *v.* to be added.  
 Accumulate, ak-küm'lát, *v.* to pile together.  
 Accuracy, ak-kür-as-i, *n.* precision, correctness.  
 Accurate, ak'ür-ät, *adj.* free from error.  
 Accursed, ak-kurs'ed, *adj.* under a curse; wicked.  
 Accuse, ak-küz', *v.* to blame; to charge.  
 Accustom, ak-kust'um, *v.* to render familiar.  
 Ace, ás, *n.* the one sign on dice, cards, etc.; an expert.  
 Acerbity, as-ér'bi-ti, *n.* bitterness.  
 Acetify, as-ét'i-fi, *v.* to turn sour.  
 Acetous, Acetic, *adj.* a quality of sourness.  
 Achievement, ak-chév'ment, *n.* something accomplished.  
 Achromatic, ak-ro-mat'ik, *adj.* colourless.  
 Acid, as'id, *adj.* sour.  
 Acidify, as-id-i-fi, *v.* to make acid.  
 Acidulate, as-id'ü-lät, *v.* to turn slightly sour.  
 Aciform, as'i-form, *adj.* needle-shaped.  
 Acknowledgment, ak-nol'ej-ment, *n.* admission, confession.  
 Acme, ak'mé, *n.* the supreme point.  
 Acne, ak'né, *n.* pimple.  
 Acolyte, ak'o-lit, *n.* church attendant.  
 Aconite, ak'o-nit, *n.* a plant, monk'shood.  
 Acorn, á-korn, *n.* seed of the oak.  
 Acotyledon, acotylé'don, *n.* plant without seed-lobes.  
 Acoustics, ak-ows'tiks, *n.* science of sounds.  
 Acquaint, ak-wánt', *v.* to inform. [friend.  
 Acquaintance, ak-wánt'ance, *n.* knowledge; a  
 Acquiesce, ak-wi-és', *v.* to agree to.  
 Acquirement, ak-wir'ment, *n.* something learned.  
 Acquisitiveness, ak-wiz'itiv-ness, *n.* desire to acquire.  
 Acquit, ak-wit', *v.* to release.  
 Acquittal, ak-wit'al, *n.* judicial release.  
 Acquittance, ak-wit'ance, *n.* a discharge.  
 Acre, á-ker, *n.* a square measure, 4,340 sq. yds.  
 Acriid, ak'rid, *adj.* biting.  
 Acrimony, ak'ri-móni, *n.* bitterness of speech or thought.  
 Acroamatic, ak-ro-á-mat'ik, *adj.* secret; select.  
 Acropolis, ak-ro'po-lis, *n.* a citadel.  
 Acrostic, ak-ros'tik, *n.* poem of which the initial letters of each line form a word.  
 Act, akt, *v.* to perform; to feign; *n.* deed; a section of a play.  
 Actinism, akt'in-izm, *n.* chemical force of sun's rays.  
 Action, ak'shun, *n.* activity; battle; lawsuit.  
 Actionable, ak'shun-abl, *adj.* liable to legal proceedings.  
 Activate, ak'tiv-ät, *v.* to render active.  
 Actor, Actress, *n.* stage player.  
 Actual, akt'ü-al, *adj.* real.  
 Actuary, akt'ü-ari, *n.* clerk; insurance officer.

Actuate, akt'ü-ät, *v.* to influence.  
 Acumen, ak-ü'men, *n.* quick perception.  
 Acuminate, ak-ü'min-ät, *adj.* taper pointed.  
 Acute, ak-üt', *adj.* keen.  
 Adage, ad'áj, *n.* proverb.  
 Adagio, a-dä-jé-o, *adv.* slow movement in music.  
 Adamant, ad'a-mant, *n.* diamond; very hard.  
 Adapt, ad-apt', *v.* to fit.  
 Adaptable, *adj.* that may be adapted.  
 Addenda, ad-den'da, *n.* plural of addendum.  
 Addendum, ad-den'dum, *n.* something to be added.  
 Adder, *n.* venomous snake.  
 Addicted, ad-ikt'ed, *adj.* devoted to.  
 Addition, ad-ish'un, *n.* the act of adding.  
 Add'le, Add'led, *adj.* putrid; empty.  
 Add'le-headed, *adj.* empty-brained.  
 Address, ad-dres', *v.* to speak or write to.  
 Adduce, ad-üs', *v.* to quote.  
 Adept, ad-épt', *n.* a proficient.  
 Adequate, ad'é-kwät, *adj.* sufficient.  
 Adhere, ad-hér', *v.* to stick to; to be unshaken.  
 Adherent, *adj.* sticking to; *n.* a follower.  
 Adhesive, ad-hés'iv, *adj.* sticky.  
 Adieu, a-dü, *adv.* farewell.  
 Adipose, ad'i-poz, *adj.* fatty.  
 Adit, ad'it, *n.* horizontal opening into mine.  
 Adjacent, ad-jä'sent, *adj.* near.  
 Adjective, ad-jék'tiv, *n.* a noun-qualifying word.  
 Adjoin, ad-join', *v.* to be next to.  
 Adjourn, ad-jurn', *v.* to postpone.  
 Adjudge, ad-jüdj', *v.* to decide; sentence.  
 Adjudicate, ad-joó'di-kät, *v.* to pronounce judicially.  
 Adjure, ad-jür', *v.* to charge on oath.  
 Adjust, ad-just', *v.* to regulate.  
 Adjustment, *n.* settlement.  
 Adjutant, ad'ju-tant, *n.* military officer.  
 Administer, ad-min'-is-ter, *v.* to manage.  
 Administration, ad-min'-is-trä'shun, *n.* act of administering.  
 Administrator, ad-min-is-trä'ter, *n.* one who controls or manages.  
 Admirable, ad-mer'al, *adj.* worthy of approval.  
 Admiral, ad'mer-al, *n.* naval commander in charge of a fleet.  
 Admiralty, ad'mer-al-ti, *n.* Board for conducting naval affairs.  
 Admire, ad-mir', *v.* to have in high regard.  
 Admissible, ad-mis'sibl, *adj.* allowable.  
 Admission, ad-mish'un, *n.* the thing admitted; leave to enter.  
 Admit, *v.* to let in; to concede.  
 Admix, *v.* to mix.  
 Admixture, ad-mix'tür, a mixture; the thing added.  
 Admon'ish, *v.* to reprove.  
 Adobe, a-dö'bä, *n.* sun-dried brick.  
 Adolescence, ad-o-les'ens, *n.* the time of youth.  
 Adore, a-dör', *v.* to worship.  
 Adorn, a-dörn', *v.* to ornament or embellish.  
 Adrift, a-drift', *adj.* or *adv.* floating at random.  
 Adroit, ad-raw'it, *adj.* dexterous.  
 Adulation, ad-ü-lä'shun, *n.* flattery.  
 Adult, ad-ült', *adj.* mature.  
 Adulterate, a-dult'-er-ät, *v.* to mix with impurity.  
 Adultery, a-dult'er-i, *n.* marital infidelity.  
 Adumbrate, ad-um'brät, *v.* to shadow faintly.  
 Advance, ad-vans', *v.* to go forward; promote.  
 Advantage, ad-vant'áj, *n.* superiority, gain.  
 Advent, *n.* coming; the four weeks preceding Christmas.  
 Adventitious, ad-vent-ish'us, *adj.* additional; casual.  
 Adventure, ad-vent'ür, *n.* risk; enterprise; surprising incident.  
 Ad'verb, *n.* a word modifying a verb, adjective, or other adverb.  
 Adversary, ad-ver-ser-i, *n.* an enemy or opponent.  
 Adversative, ad-vers-ä-tiv, *adj.* contrary; opposed.  
 Adverse, ad'vers, *adj.* in opposition; contrary.  
 Adversity, ad-vers'it-i, *n.* misfortune.  
 Advert, ad-vert', *v.* to refer to.  
 Advergency, ad-vert'en-si, *n.* attention to.  
 Advvertise, ad-ver-tiz, *v.* to notify publicly.  
 Advertisement, ad-vert-is-ment, *n.* public notification.  
 Advertiser, ad-ver-tiz'er, *n.* one who advertises.  
 Advice, ad-viz', *n.* counsel; notice.  
 Advise, ad-viz', *v.* to give counsel to.  
 Advisedly, ad-vis-ed-li, *adv.* deliberately.  
 Advocate, ad'vo-kät, *n.* one who pleads for.



- Advowee**, ad-vow'ē, *n.* one possessing an advowson.
- Advowson**, ad-vow'sun, *n.* right of presentation to a church living.
- Adz**, or **Adze**, *n.* a carpenter's tool.
- Ægis**, ē'jis, *n.* shield; protection.
- Ægrotat**, ē'grō-tāt, *n.* certificate of illness.
- Aerate**, ā-e'r-āt', *v.* to mix with air.
- Aerial**, ā-e'riāl, *n.* pertaining to the air.
- Aerie**, ā'ri or ē'ri, *n.* nest of bird of prey.
- Aeriform**, ā-e'r-i-form, *adj.* of the nature of air or gas.
- Aerify**, ā-e'r-if-i, *v.* to combine or fill with air.
- Aerodrome**, ā-e'r-ō-drōm, *n.* ground prepared for the landing of aeroplanes.
- Aerolite**, ā-e'r-ō-lit, *n.* meteoric stone.
- Aeronaut**, ā-e'r-o-naw't, *n.* professional balloonist.
- Aeronautics**, ā-e'r-o-naw'tiks, *n.* the science of air navigation.
- Aeroplane**, ā-e'r-ō-plān, *n.* an engine-propelled flying machine with plane or planes.
- Aerostatics**, ā-e'r-o-stat'iks, *n.* the science of elastic fluids or air equilibrium.
- Æsthetics**, ēs-thet'iks, *n.* science of taste and beauty.
- Affable**, af-fā-ble, *adj.* agreeable; easy mannered.
- Affair**, af-fār, *n.* business; transaction.
- Affect**, af-fekt', *v.* to influence; to move; to pretend.
- Affectation**, af-fekt-ā'shun, *n.* artificiality; pretence.
- Affecting**, af-fek'ting, *adj.* moving; touching.
- Affiance**, af-fi'ans, *n.* pledge of marriage.
- Affidavit**, af-fi-dā-vit, *n.* declaration on oath.
- Affiliate**, af-fi-lē-āt, *v.* to adopt.
- Affinity**, af-fi-nit'i, *n.* kinship; attraction.
- Affirm**, af-firm', *v.* to assert positively; to declare.
- Affirmation**, af-firm-ā'shun, *n.* what is affirmed.
- Affix**, af-fiks', *v.* to add.
- Affix**, af-fiks', *n.* word ending.
- Afflation**, af-flā'shun, *n.* breathing upon.
- Afflatus**, af-flā'tus, *n.* inspiration.
- Afflict**, af-flikt', *v.* to cause pain or grief.
- Affluence**, af-floo-ens, *n.* wealth; abundance.
- Afford**, af-fōrd', *v.* to yield; to be able to bear cost.
- Afforest**, af-for'est, *v.* to set apart as forest land.
- Affranchise**, af-fran'shiz, *v.* to emancipate; to free.
- Affray**, af-frā', *n.* a brawl or fight.
- Affright**, af-frit', *v.* to frighten.
- Affront**, af-frunt', *v.* to insult; to meet face to face.
- Afield**, a-fēld', *adj.* on the field.
- Aflame**, a-flām', *adj.* flaming.
- Afloat**, a-flōt', *adj.* floating; at sea.
- Aforesaid**, a-fōrsed, *adj.* before mentioned.
- Aft**, *adj.* stern of a vessel; behind.
- Aftermath**, *n.* the second mowing.
- Aftermost**, aft'er-mōst, *adj.* hindmost.
- Afterthought**, aft'er-thaw't, *n.* later reflection.
- Agape**, a-gāp', *adv.* gaping with wonder.
- Agaric**, ag-ar'ik, *n.* of the mushroom genus.
- Agate**, ag'ūt, *n.* a precious stone.
- Agave**, a-gāv', *n.* the American aloe.
- Agency**, ā-jen-si, *n.* business of an agent.
- Agenda**, ā-jend'ā, *n.* note of things to be done.
- Agent**, ā-jent, *n.* a person who acts for another; any natural force.
- Agglomerate**, ag-glom'er-āt, *v.* to mass together.
- Agglutinate**, ag-gloo'tin-āt, *v.* to make adhere.
- Aggrandize**, ag-gran-diz, *v.* to exalt; to enlarge in power.
- Aggravate**, ag-grā-vāt, *v.* to provoke; to make worse.
- Aggregate**, ag-gri-gāt, *v.* to collect; *n.* the sum total.
- Aggressive**, ag-gres'siv, *adj.* making the first attack.
- Aggressor**, ag-gres'or, *n.* one who makes the first attack.
- Aggrieve**, ag-grēv', *v.* to pain.
- Aghast**, ag-hast', *adj.* horrified.
- Agile**, ā-jil, *adj.* active.
- Agitate**, ā-j-i-tāt', *v.* to disturb; to discuss.
- Agitator**, ā-j-i-tā'tor, *n.* one who excites public attention.
- Aglow**, ā-glō, *adj.* warm, glowing.
- Agnate**, ag-nāt, *adj.* related on the paternal side.
- Agnomen**, *n.* an additional surname.
- Agnostic**, ag-nōz'tik, *n.* one who believes only in Agog, a-gog', *adj.* alert. [material evidences.
- Agony**, ā-gō-ni, *n.* extreme pain.
- Agrarian**, ag-rā'ri-an, *adj.* connected with land.
- Agreeable**, a-grē-abl, *adj.* pleasant; favourable to.
- Agriculture**, ag-ri-cult'ūr, *n.* the art of land cultivation.
- Agriculturist**, ag-ri-kult'ūr-ist, *n.* one who practises agriculture.
- Agrimony**, ag'ri-mun-i, *n.* a plant of the rose order.
- Aground**, a-grownd', *adj.* stranded.
- Ague**, ā-gū, *n.* a shivering fever.
- Ahead**, ā-hēd', *adv.* in advance.
- Aide-de-camp**, ād'dēh-kong, *n.* an officer who conveys a general's orders.
- Aigrette**, ā-gret, *n.* small heron ornament.
- Ailment**, āl'ment, *n.* affliction, disease.
- Air-pump**, *n.* an apparatus for pumping the air from a vessel.
- Airy**, ā'ri, *adj.* open to the air; light; unsubstantial.
- Aisle**, il, *n.* lateral division of any part of a church; passage between pews.
- Akimbo**, a-kim'bo, *adv.* with hands on hips.
- Akin**, a-kin', *adj.* related.
- Alabaster**, al-a-bas'ter, *n.* a kind of gypsum.
- Alacrity**, al-ak'rit-i, *n.* readiness; willingness.
- A-la-mode**, a-la-mōd', *adv.* in the fashion.
- Alarm**, al-ārm', *n.* notice of danger; surprise and fear.
- Alarmist**, al-arm'ist, *n.* one who causes alarm.
- Alarum**, al-ā'rūm, *n.* contrivance by which a clock rings loudly at a given hour.
- Alb**, *n.* a clerical vestment.
- Albeit**, awl-bē'it, *adv.* notwithstanding.
- Albino**, al-bi'no, *n.* human being or animal without pigment giving a white skin and hair and pink eyes.
- Album**, al'būm, *n.* white tablet used by the Romans; book for extracts, stamps, etc.
- Albumen**, al-bū'men, *n.* white of eggs.
- Albuminoid**, al-bū'min-oid, *n.* protein; meat-forming food.
- Albuminum**, al-bū'nūm, *n.* the white parts of wood below the bark.
- Alchemy**, al'-ki-mi, *n.* occult chemistry.
- Alcohol**, al'ko-hol, *n.* pure intoxicating spirit.
- Alcoran**, al-kō'ran, *n.* the Koran.
- Alcove**, al'kōv, *n.* a recess.
- Alder**, awl'der, *n.* a tree of the birch genus.
- Alderman**, awl'der-man, *n.* a civic dignitary.
- Alcemic**, al-em'bik, *n.* ancient vessel used in distillation.
- Alert**, al'ert, *adj.* ready, watchful. [lation.
- Alexandrine**, al'ex-an'drin, *n.* rhymed verse in lines of twelve syllables.
- Alfalfa**, al-fal'fa, *n.* lucerne, a species of clover.
- Alfresco**, āl-fre'scō, *adj.* open air.
- Algebra**, al'je-bra, *n.* arithmetic by symbols.
- Algerine**, al'je-reen, *adj.* pertaining to Algeria; *n.* a native of Algeria.
- Alias**, ā-lī-as, *adv.* otherwise; *n.* an assumed name.
- Alibi**, al-i-bi, *n.* plea that a person was elsewhere than in the place named.
- Alien**, ā-lien, *adj.* foreign.
- Alienate**, ā-lien-āt, *v.* to transfer; *adj.* estranged.
- Alight**, ā-lit', *v.* to descend from.
- Aliment**, āl'i-ment, *n.* nourishment; support.
- Alimony**, āl'i-mun-i, *n.* money allowed for support of separated wife.
- Aliquant**, āl'ikwōnt, *adj.* such part of a number that will not divide it without a remainder.
- Alkali**, al'ka-li, *n.* a salt which neutralises and combines with an acid.
- Alkaline**, al'ka-line, *adj.* possessing the properties
- Allah**, ā'lā, *n.* Arabic name for God. [of an alkali.
- Allay**, ā-lā', *v.* to lighten, relieve, or calm.
- Allegation**, al-le-gā'shun, *n.* an assertion.
- Allege**, al-lej', *v.* to assert.
- Allegiance**, al-lē-jē-āns, *n.* duty to head of State.
- Allegory**, āl'le-gor-i, *n.* a figurative description.
- Allegro**, āl'le-grō, *adv.* a quick movement in music.
- Alleviate**, al-lē-vē-āt, *v.* to lighten, or mitigate.
- Alley**, ā'lī, *n.* walk or narrow passage.
- All-hail**, awl-hāl, *excl.* salutation.
- Alliance**, al-lī-āns, *n.* being allied; marriage.
- Alligator**, al-ligā-tor, *n.* a large amphibious reptile.
- Alliteration**, al-lit'er-ā'shun, *n.* the repetition of the same letter at the beginning of successive words.
- Allocation**, al-lō-kā'shun, *n.* the act of placing or assigning.
- Allocation**, al-lō-kū'shun, *n.* formal address.
- Allopathy**, al-lōp'ā-thi, *n.* orthodox medical practice. [allotted.
- Allotment**, al-lot'ment, *n.* the act of allotting; part
- Allowance**, al-lōw'āns, *n.* the thing allowed; a stated portion of money granted.

- Alloy, al-loi', *n.* a mixture of two or more metals.  
 Allspice, awl'-spis', *n.* a West Indian spice which is supposed to contain the flavour of several other spices.  
 Allurement, al-lūr'ment, *n.* enticing.  
 Allusion, al-lū'zhun, *n.* a slight mention.  
 Alluvial, al-lū'vi-al, *adj.* soil deposited by rivers.  
 Ally, al-lī' *v.* to form a union or treaty.  
 Alma-mater, al'mē-mā'ter, *n.* college where educated.  
 Almanac, al'ma-nak, *n.* calendar of days, weeks, and months.  
 Almond, al'mund, *n.* tree and its fruit of the prunus family.  
 Almoner, al'mun-er, *n.* one who distributes alms.  
 Alms, amz, *n.* gifts to the poor.  
 Aloe, al'ō, *n.* a semi-tropical plant of the lily family.  
 Aloof, a-loof', *adv.* apart.  
 Alp, *n.* a high mountain.  
 Alpaca, āl-pāk'ā, *n.* Peruvian sheep; cloth made from wool of alpaca.  
 Alpenstock, al'pen-stōk, *n.* Alpine climbing staff.  
 Alpha, al'fā, *n.* first letter of the Greek alphabet.  
 Alphabet, al'fā-bet, *n.* the letters of a language.  
 Alpine, al'pīn, *adj.* pertaining to Alps.  
 Already, awl-red'ī, *adv.* previously.  
 Aisatian, al-sā'shi-an, breed of dog; appertaining to Alsatia.  
 Altar, awl'ter, *n.* an elevated place where sacrifices were offered; communion table.  
 Alter, awl'ter, *v.* to make different; to change.  
 Alterable, awl'ter-abl, *adj.* that can be altered.  
 Alternative, awl'ter-a-tiv, *adj.* possessing power to alternate, awl'ter-kāt, *v.* to dispute. [alter.  
 Altercation, awl'ter-kā'shun, *n.* contention.  
 Alternate, awl'ter-nāt, *v.* to follow by turns.  
 Alternately, awl'ter-nāt-lī, *adj.* in turns.  
 Alternative, awl'ter-na-tiv, *adj.* a choice of two things.  
 Although, awl-thō', *conj.* notwithstanding.  
 Altimeter, al-ti-mē'ter, *n.* instrument for measuring heights.  
 Altitude, al'ti-tūd, *n.* height.  
 Alto, al'tō, *n.* voice of high pitch.  
 Altruism, al'troo-izm, *n.* acting for others.  
 Aluminium, ā-lū-min'ium, *n.* a strong light-weight metal.  
 Aluminous, al-lū'mi-nūs, *adj.* containing alum.  
 Alumnus, al-um'nus, *n.* one educated at a college.  
 Amain, a-mān', *adv.* with main force.  
 Amalgam, a-mal'gam, *n.* a combination of differing elements.  
 Amalgamate, a-mal'gām-āt, *v.* to blend.  
 Amanuensis, a-man-ū-en'sis, *n.* one who writes to dictation; a secretary.  
 Amaranth, am'er-anth, *n.* a species of plants with richly coloured flowers.  
 Amass, a-mās', *v.* to collect in large numbers.  
 Amateur, am'āt-ūr, *n.* one who does a thing for pleasure and not for profit.  
 Amative, am'ā-tiv, *adj.* relating to love.  
 Amatory, am'at-ūrī, *adj.* pertaining to love; affectionate.  
 Amaze, a-māz', *v.* to surprise; *n.* astonishment.  
 Amazon, am'a-zon, *n.* female warrior; masculine woman.  
 Ambassador, am-bas'a-dūr, *n.* highest ranking diplomat sent by one power to another.  
 Amber, am'ber, *n.* a yellow fossil resin.  
 Ambidexter, am-bi-deks'tūr, *adj.* and *n.* able to use both hands alike.  
 Ambient, am'bi-ent, *adj.* going round; surrounding.  
 Ambiguous, am-big'ū-us, *adj.* doubtful, uncertain.  
 Ambit, am'bit, *n.* a circuit.  
 Ambition, am-bish'un, *n.* desire of power, fame.  
 Amble, am'būl, *v.* to go at an easy pace. [success.  
 Ambrosia, ām-brō'zia, *n.* nectar of the Greek Gods; something pleasing to the taste.  
 Ambulance, am'bū-lāns, *n.* carriage for the conveyance of the sick and wounded.  
 Ambuscade, am'bush-kād, *n.* troops concealed for attack.  
 Ambush, am'boosh, *n.* concealment ready for attack.  
 Ameliorate, am-ē-li-o-rāt, *v.* to improve. [lack.  
 Amen, ā-men', *excl.* so let it be.  
 Amenable, a-mē'nābl, *adj.* easy to handle.  
 Amende, ā-mend', *n.* a fine; penalty.  
 Amenity, am-en'i-tī, *n.* pleasantness.  
 Amerce, a-mērs', *v.* to fine.  
 Amethyst, am'ī-thist, *n.* a kind of quartz of a bluish-violet colour.
- Amiable, ā'mē-abl, *adj.* lovable, gentle.  
 Amicable, am'ik-abl, *adj.* friendly.  
 Amiss, a-mis', *adj.* wrong; in error.  
 Amity, am'ī-tī, *n.* friendship.  
 Ammonia, am-mō'ni-ā, *n.* a strong-smelling gas, a compound of nitrogen and hydrogen.  
 Ammunition, am-mūn-ish'un, *n.* projectiles used in shooting.  
 Amnesty, am'nest-i, *n.* political pardon.  
 Amoeba, a'mē'ba, *n.* the simplest of living creatures.  
 Amorous, am'ūr-us, *adj.* inspired with love.  
 Amorphous, am-or'fūs, *adj.* of irregular shape.  
 Amount, a-mownt', *v.* to add up to; to result in; *n.* the total sum.  
 Ampere, ahm'pair, *n.* unit of electrical current.  
 Amphibian, am-fīb'i-an, *n.* pertaining to amphibian animals.  
 Amphitheatre, am-fth-ē'tr, *n.* an oval or circular edifice or open space for public performances.  
 Ample, am'pl, *adj.* sufficient, spacious.  
 Amplify, am'pli-fī, *v.* to extend; to increase.  
 Amplitude, am'pli-tūd, *n.* largeness; abundance.  
 Amuck, ā-mūk, *adv.* madly; in a mad frenzy.  
 Amulet, am'ū-let, *n.* an article carried as a charm.  
 Amuse, a-mūz, *v.* to divert; to entertain.  
 Anabaptist, ana-bap'tist, *n.* one who believes in adult baptism only.  
 Anachronism, an-ak'rōn-ism, *n.* a mistake in time, whereby a thing is allotted to a wrongful date.  
 Anaconda, ana-kon'da, *n.* a large tropical water snake.  
 Anemia, an-ē'mia, *n.* condition of blood weakness.  
 Anæsthetic, an-ēs-thet'ik, *adj.* producing insensibility to pain.  
 Anagram, an'a-gram, *n.* words or sentences formed by changing the order of the letters.  
 Analogous, an-al'ō-gus, *adj.* bearing resemblance.  
 Analyst, an'ā-list, *n.* one who analyzes. [to.  
 Analyze, an'ā-liz, *v.* to break down into elements.  
 Anapest, an'ā-pest, *n.* a poetic term signifying a foot of three syllables, two short and the third long.  
 Anarchy, an'ar-ki, *n.* governmental confusion.  
 Anathema, an-āth'i-ma, *n.* solemn denunciation.  
 Anathematize, an-āth'im-at-iz, *v.* to pronounce accursed.  
 Anatomy, an-at'omi, *n.* the art of physical dissection; science of the bodily structure.  
 Ancestry, an'ses-trī, *n.* line of ancestors.  
 Anchor, ang'kūr, *n.* piece of metal for holding ships at a certain spot. [anchor in.  
 Anchorage, ang'kūr-ij, *n.* spot convenient to anchor.  
 Anchorite, ang'kūr-it, *n.* a religious recluse.  
 Anchovy, an-chō'vī, *n.* a small sea fish.  
 Ancillary, an'sil-ūr-i, *adj.* subservient.  
 Andante, an-dan'tē, *adj.* a slow even movement in music.  
 Andean, an-dē-an, *adj.* of the nature of the Andes.  
 Androgynous, an-dro'i-nus, *adj.* having both male and female characteristics.  
 Anecdote, an'ek-dōt, *n.* a brief story.  
 Anemometer, an-em'ōm-e-tr, *n.* a wind measuring instrument.  
 Anemone, a-nem'ō-nī, *n.* a plant of the Ranunculaceæ.  
 Ament, a-nent', *prep.* concerning. [family.  
 Aneroid, an'ē-roid, *adj.* a mechanical barometer.  
 Aneurism, an'ūr-izm, *n.* a tumour of an artery.  
 Angel, ān'jel, *n.* heavenly messenger.  
 Angelus, an'jel-us, *n.* the "Ave Maria"; the bell rung in Roman Catholic Churches to command the Angelic Salutation.  
 Anger, angēr, *n.* strong resentful emotion.  
 Angina, an-jī'na, *n.* throat inflammation.  
 Angle, ang'ul, *n.* a corner; the space between two lines which meet at a point.  
 Anglican, ang'lik-an, *adj.* English.  
 Anglicize, ang'li-siz, *v.* to render in English form.  
 Angiophobia, ang-glo-fō'bī-a, *n.* dislike of England.  
 Angora, ang'ō-ra, *n.* variety of rabbit; cloth made from angora wool.  
 Anguish, ang'wish, *n.* extreme mental or physical  
 Angularity, ang'ū-lar'it-i, *n.* with angles. [pain.  
 Aniline, an'il-in, *n.* a coal tar product used in dyeing.  
 Animadvert, an-im-ad-vert', *v.* to blame or censure.  
 Animalcule, an-im-al'kūl, *n.* a very minute animal.  
 Animalism, an'im-al-izm, *n.* the condition of having animal appetites.  
 Animate, an'im-āt, *v.* to enliven.  
 Animosity, an-im-os'itī, *n.* hatred.  
 Animus, an'im-us, *n.* intention; prejudice.  
 Anise, an'is, *n.* umbelliferous herb.



- Ankle**, an'kul, *n.* the joint connecting the foot.
- Anna**, an'a, *n.* an Indian coin. [with the leg.]
- Annals**, an'ulz, *n.* records of events according to years. [great heat and gradual cooling.]
- Anneal**, an-el', *v.* to temper glass or metals by.
- Annex**, an-neks, *v.* to add to, or take possession of.
- Annexation**, an-neks-á'shun, *n.* act of adding to or joining.
- Annihilate**, an-ni'hil-át, *v.* to reduce to nothing.
- Anniversary**, an-ni-ver-sár-i, *adj.* an annual happening, or celebration.
- Annotate**, an-no-tát, *v.* to make notes upon.
- Announce**, an-nouns', *v.* to notify; to make known.
- Annoyance**, an-noy'áns, *n.* that which vexes.
- Annual**, an-nü-al, *adj.* yearly.
- Annuity**, an-nü-it-i, *n.* a yearly fixed payment.
- Annul**, an-nül, *v.* to make void.
- Annular**, an-nü-lar, *adj.* ring-shaped.
- Annulose**, an-nü-lös, *adj.* having rings.
- Annunciation**, an-nun-si-á'shun, *n.* the act of announcing. [current.]
- Anode**, an'öd, *n.* the positive pole of a galvanic.
- Anodyne**, an'o-din, *n.* a medicine that relieves pain.
- Anoint**, an-oint', *v.* to spread with ointment or oil.
- Anomalous**, an-om'á-lus, *adj.* irregular; contrary.
- Anomaly**, an-om'á-li, *n.* irregularity. [to rule.]
- Anon**, a-non', *adv.* immediately, instantly.
- Anonymous**, a-non'im-us, *adj.* without name.
- Anserine**, an-ser-in, *adj.* pertaining to geese; silly.
- Answer**, an-ser, *v.* to reply to. [be answered.]
- Answerable**, an-ser-ábl, *adj.* accountable; able to.
- Antagonist**, an-tag'o-nist, *n.* an opponent; one who contends with another.
- Antagonistic**, an-tag-o-nis'tik, *adj.* opposed.
- Antarctic**, ant-árk'tik, *adj.* opposite the arctic; the south polar region.
- Ante**, an'té (*prefix*), before.
- Antecedent**, an-té-sé'dent, *adj.* previous in time.
- Antechamber**, an'te-chám-ber, *n.* small room leading to a larger.
- Antedate**, an'te-dát, *v.* to assign to an earlier date.
- Antediluvian**, an-te-dil-ü-vian, *adj.* before the Flood.
- Antelope**, an'te-löp, *n.* a hollow-horned ruminant.
- Antennæ**, an'ten-é, feelers of insects, crustaceans, etc.
- Antepenult**, an-te-pen-ult', *n.* the last syllable but two of a word.
- Anterior**, an-té-ri-or, *adj.* prior, before.
- Anthem**, an'them, *n.* a sacred song.
- Anther**, an'ther, *n.* the top of a flower stamen, containing pollen.
- Anthology**, an-thol'o-jí, *n.* a collection of flowers, poems, hymns, or epigrams.
- Anthracite**, an'thra-sit, *n.* coal composed mostly of carbon.
- Anthrax**, an'thraks, *n.* an infectious disease caused by bacilli, common in sheep and cattle.
- Anthropology**, an-throp-ol'o-jí, *n.* the science of man.
- Anthropoid**, an'thro-poid, *adj.* resembling man.
- Anthropomorphism**, an'throp-o-morf'izm, *n.* the ascribing of human form to the Deity.
- Anthropophagy**, an'thro-pof'a-jí, *n.* cannibalism.
- Anti**, ant-i, (*prefix*), against, opposed.
- Antic**, anti'k, *adj.* odd; grotesque.
- Antichrist**, an'ti-krist, *n.* an opposer of Christ and Christianity.
- Anticipate**, an-tis'i-pát, *v.* to forestall.
- Anticlimax**, an-ti-klí-máks, *n.* the opposite of climax.
- Antidote**, an'ti-döt, *n.* counteracting substance.
- Antifebrile**, anti-feb'ríl, *adj.* against fever.
- Antimony**, an'ti-mun-i, *n.* a brittle crystalline metal. [for chairs.]
- Antimacassar**, an-ti-ma-kás'er, *n.* a loose covering.
- Antipathy**, an-tip'á-thí, *n.* dislike; repugnance.
- Antiphony**, an-tif'o-ní, *n.* singing or chanting in alternation.
- Antipodes**, an-tip'ödéz, *n.* places on the opposite side of the earth.
- Antipyrin**, an-ti-plí-rin, *n.* a white powder obtained from coal tar products.
- Antiquarian**, an-ti-kwár-i-an, *n.* pertaining to antiquities.
- Antiquary**, an'ti-kwar-i, *n.* one who studies ancient evidence; one who collects antiquities.
- Antiquated**, an-ti-kwát'ed, *adj.* old or out of.
- Antique**, an-ték', *adj.* ancient. [fashion.]
- Antiquity**, an-tik'wit-i, *n.* times long past.
- Antiseptic**, an-ti-sep'tik, *adj.* against putrefaction.
- Antithesis**, an-tith'-é-sis, *n.* opposite meanings.
- Antithetic**, an-ti-thet'ik, *adj.* opposite; opposed.
- Antitype**, an'ti-tip, *n.* corresponding to a type.
- Antler**, an'tler, *n.* the branch of a stag's horn.
- Anvil**, an'vil, *n.* an iron block for hammering metal upon.
- Anxious**, ank'shus, *adj.* uneasy; doubtful; con-
- Aorta**, á-or'ta, *n.* the main artery. [cerned.]
- Apace**, á-pás', *adv.* quickly.
- Apathetic**, ap-a-thet'ik, *adj.* without feeling.
- Apathy**, ap'á-thí, *n.* indifference.
- Ape**, áp, *n.* species of large monkey.
- Aperient**, ap-é-ri-ent, *adj.* opening; purgative.
- Aperitif**, F. *apéritif*, *n.* an alcoholic drink taken before a meal as an appetizer.
- Aperture**, ap'er-tür, *n.* an opening.
- Apex**, á-peks, *n.* the top or point of anything.
- Apelion**, á-fé-li-on, *n.* the point of a planet's orbit most distant from the sun.
- Aphonia**, af-ó-ni-á, *n.* dumbness.
- Aphorism**, af-ó-rizm, *n.* a brief statement of a scientific principle; a pithy saying or maxim.
- Apiary**, á-pl-ar-i, *n.* place where bees are kept.
- Apiculture**, á-pl-kul-tür, *n.* bee keeping.
- Apocalypse**, á-pök-á-lips, *n.* the last book of the New Testament.
- Apocrypha**, a-pök'rif-á, *n.* doubtful or uninspired religious writings.
- Apocryphal**, a-pök'rif-al, *adj.* of doubtful origin.
- Apogee**, ap'o-jee, *n.* the point of an orbit most distant from the earth.
- Apollyon**, ap-ol'-i-on, *n.* Satan.
- Apologetic**, ap-ol-o-jet'ik, *adj.* excusing.
- Apologue**, ap'ol'og, *n.* a fable or parable.
- Apoplexy**, ap-o-plek-sí, *n.* loss of control.
- Apostasy**, ap-ost'-á-sí, *n.* abandonment of faith.
- Apostate**, ap-est'át, *n.* one who forsakes his religion.
- Apostatise**, ap-ost'át-iz, *v.* to fall away from.
- Apostle**, ap-os'til, *n.* one sent to preach a doctrine.
- Apostrophe**, ap-os'tró-fé, *n.* breaking away from the current of speech to address some person apart. [drugs.]
- Apothecary**, ap-óth'ík-ar-i, *n.* one who deals in.
- Apothegm**, ap'óth-em, *n.* a short, pithy saying.
- Apotheosis**, ap-óth-é-o-sis, *n.* a deification or glorification.
- Appanage**, ap'pan-áj, *n.* a provision for younger sons; an adjunct or attribute.
- Apparatus**, ap-par-á'tus, *n.* instruments or materials.
- Apparel**, ap-par'el, *n.* body covering; dress.
- Apparent**, ap-pár'ent, *adj.* visible; evident.
- Apparition**, ap-par-ish'un, *n.* a ghostly appearance.
- Appeal**, ap-pél, *v.* to call upon; to remove to a higher court.
- Appear**, ap-pér, *v.* to become visible.
- Appearance**, ap-pér'áns, *n.* the act of appearing; outward show.
- Appease**, ap-péz', *v.* to pacify; to allay.
- Appellant**, ap-pel'ant, *n.* one who appeals.
- Appellate**, ap-pel'át, *adj.* pertaining to appeals.
- Appellative**, ap-pel'át-ív, *n.* a name general to all of the same kind.
- Append**, ap-pend', *v.* to attach one thing to another.
- Appendage**, ap-pen'dij, *n.* something attached.
- Appendicitis**, ap-pen-di-sít'is, *n.* inflammation of the vermiform appendix.
- Appendix**, ap-pend'iks, *n.* a supplement.
- Appertain**, ap-per-tán', *v.* to connect with, or belong to.
- Appetite**, ap-plí-tít, *n.* desire for food; hunger, thirst.
- Appetizing**, ap-pet-tíz'ing, *adj.* tempting to the appetite.
- Applaud**, ap-plawd', *v.* to praise by hand-clapping or
- Applause**, ap-plawz', *n.* loud praise. [cheering.]
- Apple**, ap'l, *n.* fruit of the apple-tree.
- Appliance**, ap-plí'áns, *n.* a thing applied; a small tool or machine.
- Applicable**, ap-plik-ábl, *adj.* that which may be ap-
- Applicant**, ap-plik-ánt, *n.* one who applies. [plied.]
- Apply**, ap-plí, *v.* to put to; to study; to administer.
- Appoggiatura**, ap-pod-ja-tú-ra, *n.* the introduction of notes of embellishment in a melody.
- Appoint**, ap-point', *v.* to fix; to settle; to equip.
- Appportionment**, ap-pór-shun-ment, *n.* share of proportion allotted.
- Apposite**, ap-po-zít, *adj.* in agreement with.
- Appraise**, ap-práz', *v.* to value. [mated.]
- Appreciable**, ap-pré-shi-able, *adj.* that can be esti-

- Appreciate**, ap-prē'shī-āt, *v.* to esteem properly; to advance the price of.
- Apprehend**, ap-prē-hend', *v.* to seize; to know; to fear.
- Apprehensive**, ap-prē-hen'siv, *adj.* quick to note; fearful.
- Apprentice**, ap-pren'tis, *n.* one bound to learn a trade or art.
- Apprise**, ap-priz', *v.* to inform.
- Approach**, ap-prōch, *v.* to draw near.
- Approval**, ap-pro-bā'shun, *n.* sanction, approval.
- Appropriate**, ap-prō'pri-āt, *v.* to take as one's own.
- Appropriateness**, ap-prō'pri-āt-ness, *n.* suitability.
- Appropriation**, ap-prō-pri-ā'shun, *n.* application to special use.
- Approval**, ap-proo'val, *n.* the act of approving.
- Approve**, ap-proov', *v.* to like; to sanction.
- Approximate**, ap-proks'im-āt, *adj.* about or near.
- Appurtenance**, ap-pūr'tē-nans, *n.* that which belongs to something else.
- Apron**, ā'prun, *n.* a protective piece of cloth or leather worn in front of the body.
- Apropos**, ap-ro-pō', *adv.* appropriately; in reference to.
- Apse**, aps, part of the choir of a church.
- Apt**, *adj.* ready; adaptable; quick.
- Apterus**, ap'ter-us, *adj.* without wings.
- Aptitude**, ap'tit'ūd, *n.* fitness.
- Aquaforis**, ak-wā-for'tis, *n.* nitric acid. [colour.]
- Aquamarine**, ā-kwa-ma-rēn', *n.* the beryl; *adj.* sea.
- Aquarium**, ak-wā'ri-um, *n.* a place for keeping aquatic animals and plants in.
- Aquatic**, ak-wāt'ik, *adj.* pertaining to water.
- Aquatint**, ā-kwa-tint, *n.* copper etching.
- Aqueduct**, ak-wi-dūkt, *n.* an artificial channel for the conveyance of water.
- Aqueous**, ā-kwi-us, *adj.* watery; deposit left by water.
- Aquiline**, ak-wil'in, *adj.* curved like the eagle's beak.
- Arabic**, ar'ā-bik, *adj.* relating to the language of the Arabs.
- Arable**, ar'abl, *adj.* land under the plough.
- Arbiter**, ar'bi-ter, *n.* one chosen to decide a dispute.
- Arbitrator**, ar-bi-trā'tor, *n.* same as arbiter.
- Arbitrament**, ar-bit'ra-ment, *n.* the decision of the arbiter or arbitrator.
- Arbitrary**, ar'bi-trer-i, *adj.* despotic; wilful.
- Arbitrate**, ar'bi-trāt, *v.* to act as arbitrator.
- Arbour**, ā'būr, *n.* an enclosed seat or recess in a garden.
- Arc**, ārk, *n.* a segment of a circle.
- Arcadian**, ārk-ā'dian, *adj.* pastoral.
- Archæology**, ārk-ē-ol'o-jī, *n.* the science of antiquities.
- Archaism**, ārk'ā-izm, *n.* something obsolete.
- Archangel**, ārk-ān'jel, *n.* a superior angel.
- Archbishop**, ārch-bish'up, *n.* the higher form of bishop.
- Archdeacon**, ārch-dē'kūn, *n.* a chief deacon; a priest who assists the Bishop in the work of the diocese.
- Archer**, ārch'er, *n.* one who shoots arrows.
- Archetype**, ārk'i-tip, *n.* an original model.
- Archiepiscopal**, ārk-i-ep-is'ko-pal, *adj.* pertaining to an archbishopric.
- Archipelago**, ārk-i-pe'l-ā-go, *n.* a group of islands.
- Architect**, ārk'i-tek't, *n.* a designer of buildings.
- Architecture**, ārk'i-tek't'ūr, *n.* the science of building.
- Architrave**, ārk'it-rāv, *n.* the part surrounding a door or window.
- Archives**, ārk'ivs, *n.* repository for public records; also the records themselves.
- Archness**, ārch'nes, *n.* cunning.
- Arctic**, ārk'tik, *adj.* relating to the north polar regions.
- Arcuate**, ārk-kū-āt, *adj.* bent like a bow. [regions.]
- Ardent**, ār'dent, *adj.* passionate; earnest.
- Arduous**, ār'dū-us, *adj.* difficult; laborious.
- Area**, ā'ri-ā, *n.* the amount of a surface; a yard or enclosed space.
- Arena**, ā-rē'na, *n.* place or floor where public exhibitions are given.
- Arenaceous**, ār-i-nā'seus, *adj.* dry, sandy, arid.
- Argent**, ār'jent, *n.* silver, or silver-like.
- Argillaceous**, ār-jil-ā'shē-us, *adj.* of the nature of clay.
- Argol**, ār'gol, *n.* the crust that forms on wine vessels and from which tartaric acid is obtained.
- Argon**, ār'gon, *n.* a constituent element of the atmosphere. [valuable products.]
- Argosy**, ār'go-sī, *n.* a ship of olden times laden with treasure.
- Argot**, āh'go, *n.* French slang.
- Argument**, ār'gū-ment, *n.* the proof or reason ad-
- Argus**, ār'gus, *n.* a quick-eyed person.
- Aria**, ā'ri-ā, *n.* song for one voice with accompaniment.
- Arid**, ā'rīd, *adj.* dry; parched.
- Aries**, ā'ri-ēz, *n.* the first sign of the zodiac, the Ram.
- Aristocracy**, ār-is-tok'rā-sī, *n.* nobility.
- Aristocrat**, ār'is-tō-krat, *n.* one of the aristocracy.
- Arithmetic**, ār-ith'mē-tik, *n.* the science of numbers.
- Ark**, *n.* a houseboat.
- Armada**, ār-mā'dā, *n.* a fleet of warships.
- Armament**, ār-mā-ment, *n.* armed forces; munitions of war.
- Armillary**, ār'mil-ār-i, *adj.* in rings or circles.
- Armistice**, ār'mis-tis, *n.* a truce.
- Armour**, ārm'ur, *n.* defensive arms or dress; plating of warships. [for family arms.]
- Armorial**, ārm'ō-ri-al, *adj.* pertaining to armour.
- Armoury**, ārm'ō-ri, *n.* the place in which arms are made or stored.
- Armpit**, ārm'pit, *n.* the hollow under the shoulder.
- Arms**, ārmz, *n.* weapons of war.
- Army**, ār'mī, *n.* body of men trained for war.
- Army-corps**, ār'mī-kōr, *n.* a large military unit.
- Aroma**, ā-rō'mā, *n.* odour.
- Arack**, ār'rak, *n.* an Eastern fermented juice.
- Arraignment**, ār-rān'ment, *n.* a calling to account.
- Arrangement**, ā-rān'jment, *n.* the act of putting in order.
- Arvant**, ār'rānt, *adj.* downright.
- Arras**, ār'ras, *n.* a kind of tapestry.
- Array**, ār-rā', *n.* order, dress.
- Arrears**, ār-rērs', *n.* what is left behind; unpaid dues.
- Arrest**, ār-rest', *v.* to seize; to attract the attention.
- Arrive**, ā-riv', *v.* to get to a place. [tion.]
- Arrogant**, ār-rō-gant, *adj.* overbearing.
- Arrogate**, ār'rō-gāt, *v.* to make claim.
- Arondissement**, ār-rond'ēs-māng, *n.* a section of a French geographical department.
- Arsenal**, ār-se-nāl, *n.* place for naval stores, or for their manufacture.
- Arsenic**, ār-se-nik, *n.* a mineral poison.
- Arson**, ār'son, *n.* wilful burning.
- Art**, ārt, *n.* skill in painting, music, etc.
- Artery**, ār'ter-i, *n.* a blood-vessel conveying blood from the heart; a main thoroughfare.
- Artesian**, ār-tē'zi-an, *adj.* a type of well in which the water fountains to the surface.
- Arthritis**, ār'thri'tis, *n.* joint inflammation, gout.
- Artichoke**, ār'ti-chōk, *n.* a plant with edible tubers.
- Article**, ārt'ikl, *n.* a distinct element or part; a clause of a document; a literary composition.
- Articulate**, ār-tik'ū-lāt, *adj.* clear, distinct; *v.* to joint; to sound distinctly.
- Artifice**, ār'ti-fis, *n.* the work of an artificer; a trick.
- Artificer**, ār'ti-fis-er, *n.* a workman. [trick.]
- Artificial**, ār'ti-fish'al, *adj.* not natural.
- Artillery**, ār'til'ūr-i, *n.* the heavier weapons of war; the men who work them.
- Artisan**, ārt'i-zan, *n.* a mechanic; a worker skilled with his hands.
- Artist**, ārt'ist, *n.* one who practises an art.
- Artless**, ār'tless, *adj.* simple, unsophisticated.
- Aryan**, ā'ri-an, *adj.* pertaining to the main body of the Indo-European races.
- Asafetida**, ās-ā-fē'ti-dā, *n.* a gum-resin.
- Asbestos**, āz-bes'tōs, *n.* an incombustible mineral substance.
- Ascend**, as-send', *v.* to climb or mount.
- Ascendancy**, as-send'en-sī, *n.* having control.
- Ascertain**, as-sēr-tān', *v.* to obtain information of.
- Asctic**, as-set'ik, *n.* one who denies himself ordinary worldly pleasures. [denial.]
- Asceticism**, as-set'i-sim, *n.* the practice of self-denial.
- Ascribe**, ā-skrib', *v.* to assign, or impute.
- Ascription**, ā-skrip'shun, *n.* act of ascribing.
- Aseptic**, ā-sep'tik, *adj.* not liable to putrefy.
- Asexual**, ā-sēx'ū-al, *adj.* without sex.
- Ashamed**, ā-shāmd', *adj.* made to feel shame.
- Ashlar**, āsh'lēr, *n.* plain dressed stone.
- Aside**, ā-sīd', *adv.* on one side, apart; *n.* words said to oneself.
- Asinine**, ās-i-nin, *adj.* ass-like. [to oneself.]
- Askance**, ā-skāns', *adv.* sideways.
- Askew**, ā-sku, *adv.* crooked, obliquely.
- Asparagus**, as-par'ā-gus, *n.* a culinary plant.
- Aspect**, ās'pekt, *n.* view, appearance, situation.
- Aspen**, ās'pen, *n.* the trembling poplar.
- Asperity**, ās-per'it-i, *n.* harshness.
- Asperse**, ās-pērs', *v.* to slander.
- Aspersio**, ās-per'shun, *n.* slander.
- Asphalt**, ās-falt', *n.* a bituminous substance used for paving.



**Asphyxia**, as-fik'si-a, *n.* suffocation.  
**Aspirant**, as-pir-ant, *n.* one who aspires.  
**Aspirate**, as-pir-ät, *v.* to utter with full breath.  
**Assail**, as-säl, *v.* to attack.  
**Assailant**, as-säl-ant, *n.* one who attacks.  
**Assassin**, as-as'in, *n.* one who suddenly murders.  
**Assassinate**, as-as'in-ät, *v.* to kill suddenly.  
**Assault**, as-saw't, *n.* a sudden attack.  
**Assay**, as-sä, *v.* to assess the elements of metal in an ore or alloy.  
**Assayer**, as-sä'er, *n.* one who assays.  
**Assemblage**, as-sem'blij, *n.* a gathering of persons or things.  
**Assembly**, as-sem'blij, *n.* the art of assembling; the  
**Assent**, as-sent', *v.* to agree. [persons assembled].  
**Assert**, as-sert', *v.* to declare.  
**Assess**, as-ses', *v.* to fix a sum, tax, or value.  
**Assessment**, as-ses'ment, *n.* act of assessing; valuation.  
**Assessor**, as-ses'or, *n.* one who assesses.  
**Assets**, as'sets, *n.* things having value. [tion].  
**Asseveration**, as-sever-ä'shun, *n.* solemn declaration.  
**Assiduity**, as-sid'ü-ti, *n.* diligence, application.  
**Assiduous**, as-sid'ü-us, *adj.* unwearied. [transfer].  
**Assign**, as-sin', *v.* to particularise; to appoint; to  
**Assignment**, as-sin'ment, *n.* the thing assigned; document of transfer.  
**Assimilate**, as-sim'il-ät, *v.* to become like; a homogeneous part of something; as, to assimilate one's food.  
**Assimilation**, as-sim'il-ä'shun, *n.* rendering similar.  
**Assistant**, as-sis'tant, *n.* one who helps; lending aid.  
**Assize**, as-siz', *v.* to assess; *n.* a statute of regulation of prices, etc.; county sittings of judges.  
**Assizer**, as-siz'er, *n.* an officer of weights and measures.  
**Associate**, as-so'shi-ät, *v.* to join with; *n.* companion; partner.  
**Assonance**, as-son-äns, *n.* of kindred sound.  
**Assort**, as-sort', *v.* to separate into classes.  
**Assortment**, as-sort'ment, *n.* a collection of things selected.  
**Assuage**, as-swä'j, to soften, reduce, allay.  
**Assuagement**, as-swä'jment, *n.* abatement.  
**Assuetude**, as-wë-tud, *n.* habit.  
**Assume**, as-süm', *v.* to take for granted. [rogant].  
**Assuming**, as-süm'ing, *adj.* haughty, affected, assurance.  
**Assurance**, as-sür-äns, *n.* confidence; insurance.  
**Assure**, as-sür', *v.* to make certain.  
**Asterisk**, as'ter-isk, *n.* a star sign [\*] in printed matter, referring to a note at foot or in margin.  
**Asteroid**, *n.* one of the inferior planetary bodies.  
**Asthma**, ast'ma, *n.* an affection of the breathing  
**Astir**, a-ster', *prep.* in motion. [organs].  
**Astonish**, as-ton'ish, *v.* to cause surprise.  
**Astound**, as-townd', *v.* to amaze.  
**Astragal**, *n.* semicircular moulding round a column.  
**Astrakhan**, äs-trä-kän', *n.* curly wool from young lambs. It came originally from Astrakhan.  
**Astral**, *adj.* pertaining to stars.  
**Astringent**, as-trin'jent, *adj.* binding, contracting.  
**Astrology**, as-trol'o-jij, *n.* study of influence of stars on human affairs. [bodies].  
**Astronomy**, as-tron'o-mij, *n.* study of the heavenly  
**Astuteness**, as-tüt'ness, *n.* craftiness, cleverness.  
**Asunder**, a-sun'der, *adv.* in parts.  
**Asylum**, as-il'um, *n.* a place of refuge.  
**Asymmetry**, ä-sim'i-trij, *n.* want of proportion.  
**Atavism**, at-ä-vism, *n.* recurrence of ancestral characteristics.  
**Atelier**, at-el'yä, *n.* studio or workshop.  
**Atheism**, ä'the-izm, *n.* disbelief in God.  
**Athenæum**, äth-ë-në-um, *n.* temple of learning; a club.  
**Athlete**, äth'lët, *n.* a contender in muscular feats.  
**Athletic**, äth-lët'ik, *adj.* vigorous and strong.  
**Athwart**, ä-thwaw't', *prep.* across.  
**Atlantic**, ä-tlan'tik, *adj.* pertaining to Atlas or to the Atlantic Ocean.  
**Atlas**, ätläs, *n.* a collection of maps; the upper part of the vertebral column.  
**Atmosphere**, at'mos-fër, *n.* the air. [stance].  
**Atom**, ä'tom, *n.* the smallest unit of material substance.  
**Atomic**, ät-om'ik, *adj.* pertaining to atoms.  
**Atone**, ät-on', *v.* to make reparation for.  
**Atrocious**, ä-trö'shus, *adj.* abominable, wicked.  
**Atrabilious**, ät-rä-bil'i-us, *adj.* melancholic, acrimonious. [house].  
**Atrium**, ä'tri-um, *n.* the entrance hall of a Roman  
**Atrophy**, ä'tro-fi, *n.* a wasting away. [seize].  
**Attach**, at-tach', *v.* to bind to; to connect; to

**Attaché**, ä-tä-shä', *n.* one of an ambassador's staff who has special duties.  
**Attack**, ä-tak', *v.* to assault.  
**Attain**, ä-tän', *v.* to obtain; to reach.  
**Attainder**, ä-tän'der, *n.* the act of attainting; deprivation of civil rights.  
**Attaint**, ä-tänt', *v.* to convict; to deprive of rights.  
**Attempt**, ät-tempt', *v.* to try.  
**Attend**, ät-tend', *v.* to accompany; to be present.  
**Attendant**, ät-tend-ant, *adj.* accompanying; *n.* one who attends.  
**Attention**, ä-tën'shun, *n.* concentrating one's mind; attitude of alertness.  
**Attentive**, ät-tent'iv, *adj.* courteous; solicitous; careful. [out].  
**Attenuate**, ät-ten'ü-ät, *v.* to make thin; lengthen  
**Attestation**, ät-test-ä'shun, *n.* act of attesting.  
**Attic**, ä'tik, *n.* rooms below the roof of a house; pertaining to Athens; elegant.  
**Atticism**, ä'ti-sizm, *n.* dry wit.  
**Attire**, ät-tir', *v.* to dress; to array.  
**Attitude**, ät'tit-üd, *n.* posture; position.  
**Attorney**, ät-tür'nij, *n.* a lawyer; one who acts for  
**Attract**, ä-trakt', *v.* to draw; allure. [another].  
**Attraction**, ät-trak'shun, *n.* act of attracting.  
**Attractive**, ät-trakt'iv, *adj.* alluring; open to admiration.  
**Attribute**, ät-trib'üt, *v.* to assign or ascribe.  
**Attribute**, ät-trib'üt, *n.* a characteristic.  
**Attrition**, ät-tri'shun, *n.* friction.  
**Attune**, ät'tün', *v.* to put in tune.  
**Auburn**, aw'burn, *adj.* reddish-brown.  
**Auction**, aw'k'shun, *n.* a public sale.  
**Audacious**, aw-dä'shus, *adj.* bold, impudent.  
**Audacity**, aw-das'it-i, *n.* daring, impudence.  
**Audible**, aw-dibl, *adj.* to be heard.  
**Audience**, aw'di-ens, *n.* an assembly of listeners; the act of hearing; a ceremonial interview.  
**Audit**, aw'dit, *n.* an inspection of accounts.  
**Auditor**, aw'dit-or, *n.* one who audits; a hearer.  
**Augean**, aw-jë'an, *adj.* difficult; filthy.  
**Auger**, aw-gër, *n.* a carpenter's boring tool.  
**Augment**, awg-ment', *v.* to add to.  
**Augur**, aw-gur, *n.* a diviner.  
**Augury**, aw-gur-i, *n.* an omen.  
**August**, aw-gust, *n.* the eighth month.  
**August**, aw-gust', *adj.* imposing, majestic.  
**Aural**, aw'ral, *adj.* connected with the ear.  
**Aureola**, aw-ri'ö-lä, *n.* halo of golden colour.  
**Auric**, aw'rik, *adj.* pertaining to gold.  
**Auricula**, aw-rik'ü-lä, *n.* a variety of primrose.  
**Auricular**, aw-rik'ü-lar, *adj.* by hearing or report.  
**Auriculate**, aw-rik'ü-lät, *adj.* ear-shaped.  
**Auriferous**, aw-rif'er-us, *adj.* gold-bearing.  
**Aurist**, aw-rist, *n.* an ear specialist.  
**Aurora Borealis**, aw-rö-rä bö-rë-ä'lis, *n.* the northern lights.  
**Auspices**, aw'spis-ëz, *n.* patronage; protection.  
**Auspicious**, aw'splish-us, *adj.* of good omen.  
**Austere**, aw-stër', *adj.* stern; haughty; severe.  
**Austerity**, aw-stër'it-i, *n.* severity of manner.  
**Austral**, aw'stral, *adj.* southern.  
**Authentic**, aw-then'tik, *adj.* genuine.  
**Authenticate**, aw-then'tik-ät, *v.* to give validity to.  
**Authenticity**, aw-then'tis'it-i, *n.* the quality of being authentic. [of books].  
**Author**, aw'thur, *n.* one who originates; a writer  
**Authoritative**, aw-thor'it-ät-iv, *adj.* having proper  
**Authority**, aw-thor'it-i, *n.* legal right. [sanction].  
**Authorization**, aw-thor-i-zä'shun, *n.* sanction by  
**Authorize**, aw-thor-iz, *v.* to sanction. [authority].  
**Autobiography**, aw-to-bi-og'raf-i, *n.* self-written biography.  
**Auto-car**, o'to-kär, *n.* a self-propelled road vehicle.  
**Autocrat**, aw'to-krät, *n.* an absolute ruler.  
**Autocratic**, aw-to-krät'ik, *adj.* in the manner of an autocrat.  
**Auto-da-fé**, aw'to-dä-fä', *n.* act of faith; the punishment accorded to heretics by the Inquisition.  
**Autograph**, aw'to-gräf, *n.* one's own writing.  
**Automatic**, aw-to-mat'ik, *adj.* self-acting, *n.* a revolver.  
**Automaton**, aw-tom-ä-ton, *n.* a self-moving machine.  
**Automobile**, o-to-mö'bil, or o-to-mö-bil', *adj.* self-moving; a motor-car.  
**Autonomous**, aw-ton'o-mus, *adj.* pertaining to self-government.  
**Autumn**, aw'tum, *n.* the third season of the year.  
**Auxiliary**, awg-zil'i-ar-i, *adj.* subsidiary.  
**Avail**, a-väl, *v.* to be of use to; to take advantage of.

**Avalanche**, áv-á-lansh, *n.* a falling mass of snow or ice.  
**Avarice**, áv-á-ris, *n.* keen desire for money or property.  
**Ave-Maria**, áv-á-ma-ré-á, *n.* the salutation to the Virgin.  
**Avenge**, á-venj', *v.* to take vengeance upon.  
**Avenue**, áv'en-ú, *n.* an approach; a tree-bordered road; a main thoroughfare.  
**Aver**, á-ver', *v.* to assert.  
**Average**, áv'er-ij, *n.* the mean value.  
**Averse**, á-vers', *adj.* contrary to; disliking.  
**Aversion**, á-ver'shun, *n.* dislike; hatred; repugnance.  
**Avert**, á-vert', *v.* to divert or prevent.  
**Aviary**, á-vi-ar-í, *n.* a place for keeping birds.  
**Avidity**, áv-id'it-í, *n.* eagerness.  
**Avocation**, áv-o-ká'shun, *n.* occupation.  
**Avoid**, á-void', *v.* to shun, to escape from.  
**Avoidance**, á-voi'dáns, *n.* the act of shunning.  
**Avoirdupois**, áv-ór-dú-poi-z', *n.* weights system in which 16 oz. go to the pound.  
**Vouch**, á-vowch', *v.* to assert.  
**Avow**, á-vow', *v.* to declare.  
**Avowedly**, á-vow'ed-ly, *adv.* openly.  
**Avuncular**, á-vung'kú-lar, *adj.* relating to an uncle.  
**Awaken**, á-wá'ken, *v.* to rouse from sleep; to excite interest.  
**Award**, á-wórd', *n.* a judgment or decision.  
**Aware**, á-wár, *adj.* conscious.  
**Awful**, áw'ful, *adj.* dreadful; causing awe.  
**Awkward**, áwk'wórd, *adj.* clumsy.  
**Awl**, *n.* a tool for making holes in leather.  
**Awning**, áwn'ing, *n.* a covering from the sun.  
**Awry**, á-ri', *adj.* twisted; distorted.  
**Axillary**, áks-il'ar-í, *adj.* relating to the armpit.  
**Axiom**, áks'í-om, *n.* a self-evident truth.  
**Axis**, áks'is, *n.* the point or line on which a thing revolves.  
**Axle**, áks'ül, *n.* the rod on which a wheel revolves.  
**Ayah**, á'ya, *n.* an Indian woman servant.  
**Azotic**, áz-ót-ik, *adj.* nitrogenous.  
**Azure**, ázh'úr, *adj.* sky-blue.

## B

**Babble**, bab'bl, *v.* childish prattle; murmuring  
**Babel**, bábl, *n.* confused sounds. [sounds.]  
**Baby**, bá-bl, *n.* an infant; one under age.  
**Baccarat**, bak-ar-á', *n.* a card game.  
**Bacchanalia**, bak-an-á'll-a, *n.* drinking revels.  
**Bachelor**, batch'el-or, *n.* an unmarried man.  
**Bacillus**, ba-sil'us, *n.* rod-shaped bacteria.  
**Backbite**, bak'bit, *v.* to slander in the absence of the slandered.  
**Background**, bak'ground, *n.* the back of a scene or picture; obscurity.  
**Backslide**, bak-slíd', *v.* to lapse from faith or principle.  
**Backward**, bak'wórd, *adv.* towards the back or past.  
**Bacteria**, bak-tér'-é-a, *n.* uni-cellular plants which are usually parasitic.  
**Badge**, badj, *n.* something worn or carried as distinguishing mark.  
**Badinage**, bad'in-ázh, *n.* banter, chaff.  
**Baffle**, báff'l, *v.* to hinder.  
**Bagatelle**, bag-á-tel', *n.* a mere nothing; a game with board, balls, and cue.  
**Baggage**, bag'ij, *n.* an army's necessities; personal luggage.  
**Bagpipe**, bag'píp, *n.* a wind instrument, blown with air bag.  
**Bail**, báil, *n.* security for an accused person.  
**Bailee**, báil-é', *n.* one who holds goods in trust.  
**Bailie**, báil', *n.* a Scottish municipal officer.  
**Baillif**, bá'lif, *n.* a court official; landholder's steward.  
**Bailiwick**, báil'í-wík, *n.* a bailiff's territory.  
**Bait**, báit, *n.* food to lure fish; temptation.  
**Baize**, báiz, *n.* coarse cloth used for coverings.  
**Bake**, báik, *v.* to cook by heat in oven.  
**Bakery**, bá'kur-í, *n.* a place in which bread and cakes are baked.  
**Balance**, bal'áns, *n.* a weighing apparatus; amount required to equalise two sides of an  
**Bald**, báwld, *adj.* hairless. [account.]  
**Balderdash**, bal'der-dash, *n.* senseless talk.  
**Baleen**, bá-lén, *n.* whalebone.  
**Balk**, báwk, *n.* a beam of rafter; *v.* to check, to disappoint.  
**Ball**, báwl, *n.* any round substance; an assembly of dancers.

**Ballad**, bal'ád, *n.* a simple song, a form of narrative verse.  
**Ballast**, bal'ást, *n.* weight added to a ship of light cargo to keep her steady.  
**Ballet**, bal'lá, *n.* a dance with pantomimic action.  
**Balloon**, bal-loon', *n.* an inflated bag of paper or silk that floats in the air.  
**Ballot**, bal'út, *n.* a voting ticket; secret voting; *v.* to select by balloting.  
**Balm**, bálm, *n.* an ointment.  
**Balmy**, bálm'í, *adj.* fragrant, soothing.  
**Balsam**, báwl'sám, *n.* genus of herbaceous plants; an ointment.  
**Baluster**, bá'l-us-ter', *n.* thick railing of either stone, wood, or metal which supports a continuous horizontal rail.  
**Balustrade**, bal-us-trád', *n.* a row of balusters.  
**Bamboo**, bam-boó', *n.* a hollow Asiatic reed.  
**Bamboozle**, bam-booz'l, *v.* to confuse.  
**Banal**, ban'ál, *adj.* trifling, absurd. [lands.]  
**Banana**, ban-á'neh, *n.* a nutritious fruit of tropical  
**Band**, band', *n.* any material used to bind things with; a body of musicians; a company associated for any set purpose. [purposes.]  
**Bandage**, band'dij, *n.* strip of cloth for binding  
**Bandana**, band-dan'á, *n.* an Oriental handkerchief of silk or cotton.  
**Bandbox**, band'boks, *n.* a light receptacle for hats, Bandit, band'dit, *n.* a robber, an outlaw. [etc.]  
**Bandoleer**, band-do-lér', *n.* ammunition belt.  
**Bandoline**, band-do-lin, *n.* hair stiffening substance.  
**Bandy**, band'di, *n.* crooked; a bent club used in a ball game.  
**Banian**, ban'yán, *n.* an Indian tree whose branches take root.  
**Banish**, ban'ish, *v.* to expel; to order into exile.  
**Banister**, ban'is-ter, same as baluster.  
**Banjo**, ban'jo, *n.* a stringed instrument of the guitar order.  
**Bank**, bangk, *n.* a mound; a place where money is deposited. [and current as money.]  
**Bank-note**, bank-nót, *n.* note issued by a bank  
**Bankrupt**, bank'rúpt, *n.* one who becomes insolvent.  
**Bankruptcy**, bank'rúpt-sí, *n.* the condition of being  
**Banner**, ban'úr, *n.* military flag. [bankrupt.]  
**Banns**, báns, *n.* proclamation of intended marriage.  
**Banquet**, bank'wet, *n.* a feast.  
**Banshee**, ban'shé, *n.* an Irish female fairy.  
**Bantam**, ban'tum, *n.* a variety of small fowl.  
**Banter**, ban'ter, *n.* raillery.  
**Baptism**, bap'tizm, *n.* a religious ceremony by sprinkling of, or immersion in, water.  
**Baptist**, bap'tist, *n.* one who believes in baptism.  
**Barb**, bárb, *n.* a jagged point.  
**Barbarian**, bar-bá-ri-an, *n.* a savage.  
**Barbarism**, bar'ber-izm, *n.* savage life.  
**Barbarous**, bar'ber-us, *adj.* savage, cruel.  
**Barbecue**, bar-bi-kew, *v.* to roast whole.  
**Barber**, barb'úr, *n.* one who shaves and dresses  
**Bard**, bárd, *n.* a poet, a singer. [hair.]  
**Bardic**, bard'ík, *adj.* pertaining to bards.  
**Barege**, bar-ázh', *n.* a light silky fabric.  
**Bargain**, bar'gen, *n.* a contract; a favourable purchase.  
**Barge**, bárij, *n.* a flat-bottomed boat. [chase.]  
**Baritone**, bar'l-tón, *n.* voice between tenor and bass.  
**Barley**, bar'lé, *n.* grain from which malt is made.  
**Barn**, bárn, *n.* building for storage of grain, etc.  
**Barnacle**, bar'nákl, *n.* a shellfish that sticks to ships' bottoms and rocks; irons put on horses' noses to keep them quiet.  
**Barometer**, bar-om'itúr, *n.* an instrument for measuring the pressure of the atmosphere.  
**Baron**, bar'un, *n.* the lowest title of rank in the House of Peers.  
**Baronage**, bár-un-áj, *n.* the whole of the barons.  
**Baronet**, bár'ó-net, *n.* the lowest British hereditary  
**Baronetcy**, bár-un-net-sí, *n.* rank of baronet. [title.]  
**Barony**, bár-un-í, *n.* the territory of a baron.  
**Barque**, bárk, *n.* a small ship.  
**Barrack**, bár'uk, *n.* a building for soldiers.  
**Barrage**, bár-áj, *n.* an artificial bar for deepening a river; mass firing in war.  
**Barratry**, bar-ra-trí, *n.* fraudulent practices in connection with ships.  
**Barrel**, bá'rul, *n.* a cylindrical cask.  
**Barrenness**, bár'un-ness, *n.* unfruitfulness.  
**Barricade**, bár'l-kád, *n.* temporary fortification.  
**Barrier**, bár'í-ur, *n.* a defence; a boundary.  
**Barrister**, bár'is-tur, *n.* a member of the legal bar.  
**Barter**, bártur, *v.* to exchange.  
**Basalt**, bás-awlt, *n.* an igneous rock.



**Base**, *bās*, *n.* mean; foundation; the chief ingredient.

**Base-ball**, *bās' bawl*, an American game similar to rounders.

**Basement**, *bās'ment*, *n.* the lowest storey of a building.

**Bashful**, *bash'ful*, *adj.* shy.

**Basil**, *bāz'il*, an aromatic herb.

**Basin**, *bās'in*, *n.* an open dish; a dock.

**Basis**, *bās'is*, *n.* foundation.

**Bask**, *bāsk*, *v.* to lie in the sun. [rushes.

**Basket**, *bāsk'et*, *n.* a receptacle made of cane or

**Bas-relief**, *bā-ri-leef*, *n.* figures sculptured or carved in low relief.

**Bassinet**, *bās-si-net*, *n.* a light kind of cradle.

**Bassoon**, *bā-soon*, a bass-toned wind instrument.

**Bastard**, *bast'ard*, *n.* a child born out of wedlock.

**Baste**, *bāst*, *v.* to beat; to pour fat over meat.

**Bastille**, *bās-teel*, *n.* an old Paris prison destroyed in 1789.

**Bastinado**, *bās-tin-ā-dō*, *v.* punishment by beating the soles of the feet. [fortified building.

**Bastion**, *bās'ti-on*, *n.* a tower at the angles of a

**Batch**, *n.* a set; a collection of things.

**Bathos**, *bā'thos*, *n.* ludicrous writing or speech.

**Baton**, *bāt'on*, *n.* a conductor's wand; a staff or

**truncheon**.

**Battalion**, *bāt'al-yun*, *n.* a body of soldiers.

**Batten**, *bāt'tun*, *v.* to get fat.

**Beater**, *bāt'er*, *v.* to beat; *n.* ingredients beaten into paste.

**Battery**, *bāt'er-ī*, *n.* an equipment of cannon; a cell or cells for storing electricity.

**Battledore**, *bāt'l'dōr*, *n.* a bat for playing shuttlecock.

**Battlement**, *bāt'l'ment*, *n.* an embrasured wall.

**Battue**, *bāt-too'*, *n.* game driving for convenience of shooting.

**Bauble**, *baw'bl*, *n.* a trifle; a plaything.

**Bauxite**, *bōk'sit*, *n.* raw mineral from which aluminium is made.

**Bawd**, *n.* a procurer or procuress of women for immoral purposes.

**Bay**, *bā*, *adj.* a reddish-brown colour; an inlet of the sea; the space between two columns.

**Bayonet**, *bā'o-net*, a stabbing instrument fixed to the muzzle of a rifle.

**Bay-window**, *bā'win-dō*, *n.* a projecting window.

**Bazaar**, *bā-zār*, *n.* an oriental market place; a

**baire**, *bēch*, *n.* the foreshore. [fancy fair.

**Beacon**, *bē'kun*, *n.* a signal fire on a hill.

**Bead**, *bēd*, *n.* a little pierced ball through which a string can be threaded.

**Beadroll**, *bēd'rōl*, *n.* a list or names.

**Beadsman**, *bēds'man*, *n.* formerly an official employed to pray for others.

**Beagle**, *bē'gl*, *n.* a small hound.

**Beaker**, *bē'ker*, *n.* a drinking cup.

**Beam**, *bēm*, *n.* a supporting piece of timber or iron.

**Bean**, *bēn*, *n.* the name of several varieties of plants bearing pods and seeds.

**Bear**, *bār*, *v.* to support or endure.

**Beard**, *bērd*, *n.* the hair of the chin.

**Bear-garden**, *bār'gard-un*, *n.* the place where bears are confined; a noisy assembly.

**Bearing**, *bā'ing*, *n.* behaviour; attitude.

**Beast**, *bēst*, *n.* any four-footed animal; a vulgar person.

**Beatific**, *bē-at-if'ik*, *adj.* making blessed or happy.

**Beatification**, *bē-at-if-ik-ā'shun*, *n.* act of beatify.

**Beatitude**, *bē-at'it-ūd*, *n.* divine happiness. [ing.

**Beau**, *bō*, *n.* a man of fashion; a dandy; a lover.

**Beau-ideal**, *bō-i-dē'al*, *n.* an ideal standard of excellence.

**Beauteous**, *bū'ti-us*, *adj.* abounding in beauty.

**Beautiful**, *bū'ti-ful*, *adj.* fair; pleasing; admirable.

**Beautify**, *bū'ti-fi*, *v.* to render beautiful.

**Beauty**, *bū'ti*, *n.* a combination of attractive qualities.

**Beaver**, *bē'ver*, *n.* an amphibious rodent.

**Be calm**, *bi-kām*, *v.* to make calm.

**Because**, *bi-kawz'*, *adv.* and *conj.* by reason of.

**Beckon**, *bēk'un*, *v.* to signal to.

**Bedchamber**, *bēd'chām-ber*, *n.* sleeping room.

**Bedding**, *bēd'ing*, *n.* materials for the bed.

**Bedridden**, *bēd'ridn*, *adj.* confined to bed.

**Bedstead**, *bēd'stēd*, *n.* frame of a bed.

**Beech**, *bēch*, *n.* a forest tree with smooth bark.

**Beef**, *n.* ox or cow flesh.

**Beef-eater**, *bēf'ē-tur*, *n.* a yeoman of the guard.

**Bee-hive**, *bē'hiv*, *n.* receptacle for keeping bees.

**Bees**, *bēvs*, *n.* cattle.

**Befitting**, *bi-fīt'ing*, *adj.* suitable.

**Belogged**, *bi-fogd'*, *adj.* obscured in fog; confused.

**Befool**, *bi-fool'*, *v.* to deceive, or make look foolish.

**Before**, *bi-fōr'*, *prep.* in front of or in presence of.

**Beget**, *bi-ge't'*, *v.* to produce or generate.

**Beggar**, *bēg'ār*, *n.* one who begs.

**Beggarly**, *bēg'ār-ly*, *adj.* mean, poor.

**Beguilement**, *bi-gil'ment*, *n.* allurements.

**Begum**, *bē'gum*, *n.* an Indian princess.

**Behalf**, *bi-hāf*, *n.* favour or benefit.

**Behave**, *bi-hāv'*, *v.* to bear or conduct properly.

**Behaviour**, *bi-hā'vi-or*, *n.* conduct; good manners.

**Behest**, *bi-hēst'*, *n.* command.

**Behind**, *bi-hind*, *prep.* at the rear of.

**Behoof**, *bi-hoof'*, *n.* benefit.

**Behove**, *bi-hoov'*, *v.* be necessary for.

**Beknown**, *bi-nōn'*, *adj.* known.

**Belabour**, *bi-lā'br*, *v.* to beat.

**Belated**, *bi-lā'tēd*, *adj.* too late.

**Belaud**, *bi-lawd'*, *v.* to praise.

**Belch**, *belch*, *v.* to void wind by the mouth.

**Beleaguer**, *bi-lē'gur*, *v.* to besiege.

**Beltry**, *bēl'fri*, *n.* tower where bells are kept.

**Belie**, *bi-li*, *v.* to contradict; falsify.

**Belief**, *bi-lēf'*, *n.* faith.

**Belittle**, *bi-lit'l*, *v.* to make small. [shade.

**Belladonna**, *bēl'la-dōn-nā*, *n.* the deadly night-

**Belles-lettres**, *bēl-let'r*, *n.* choice literature.

**Bellicose**, *bēl'ik-ōs*, *adj.* contentious.

**Belligerent**, *bēl'ij'ur-ent*, *adj.* carrying on warfare; *n.* a Power or person waging war.

**Bell-metal**, *bēl'metl*, *n.* metal from which bells are

**Bellow**, *bēl'ō*, *v.* to cry out violently. [made.

**Bellows**, *bēl'ōz*, *n.* an instrument for blowing the fire. Also used in church and cinema organs.

**Bell-wether**, *bēl'wēth-r*, *n.* the leader of a flock of sheep.

**Belly**, *bēl'*, *n.* the lower part of the body.

**Belong**, *bi-lōng'*, *v.* to pertain to.

**Bench**, *bēnsh*, *n.* a long seat. [inns of court.

**Bencher**, *bēnsh'ur*, *n.* a senior member of one of the

**Beneath**, *bi-nēth*, *prep.* under, or lower.

**Benedict**, *bēn'i-dikt*, *n.* a newly-married man.

**Benediction**, *bēn-i-dik'shun*, *n.* a blessing.

**Benefaction**, *bēn-i-fāk'shun*, *n.* a good deed.

**Beneficed**, *bēn-i-fist*, *adj.* owning a benefice.

**Beneficent**, *bēn-ef'i-sent*, *adj.* charitable.

**Beneficial**, *bēn-i-fish-ul*, *adj.* advantageous.

**Beneficiary**, *bēn-i-fish'ur-i*, *n.* one who enjoys or expects to enjoy an estate held in trust.

**Benefit**, *bēn'i-fit*, *n.* a favour.

**Benevolent**, *bēn-ēv'o-lent*, *adj.* charitable; generous.

**Benighted**, *bi-nit'ed*, *adj.* overtaken by night;

**Benignity**, *bēn-ig'nit-i*, *n.* kindness. [ignorant.

**Benison**, *bēn'i-sun*, *n.* blessing.

**Bent**, *n.* tendency; bias; *adj.* curved.

**Benumb**, *bi-nūm'*, *v.* to make numb.

**Bepraise**, *bi-prāz'*, *v.* to praise excessively.

**Bequest**, *bi-kwēth'*, *v.* to will personal property.

**Bequest**, *bi-kwēst'*, *n.* the thing bequeathed.

**Berate**, *bē'rat'*, *v.* to scold. [bereaved.

**Bereavement**, *bi-rēv'ment*, *n.* the state of being

**Beret**, *bē'rā*, *n.* a soft round hat.

**Berry**, *bē'rē*, *n.* a small pulpy fruit; a seed.

**Berth**, *bērth*, *n.* a sleeping place on board ship.

**Beryl**, *bē'ril*, *n.* a precious stone.

**Beseech**, *bi-seēch'*, *v.* to implore.

**Beseeming**, *bi-sē'ming*, *n.* worthy.

**Beset**, *bi-set'*, *v.* to besiege; to assail.

**Besetting**, *bi-set'ing*, *adj.* perplexing.

**Beshrew**, *bi-shroo'*, *v.* to curse.

**Besides**, *bi-sidz'*, *prep.* in addition.

**Besiege**, *bi-sēj'*, *v.* to lay siege to.

**Besmeared**, *bi-smēr'*, *v.* to bedaub.

**Besom**, *bē-zum*, *n.* a sweeping implement.

**Besot**, *bi-sot'*, *v.* to render stupid.

**Bespeak**, *bi-spēk'*, *v.* to engage beforehand.

**Bestial**, *bēs'ti-āl*, *adj.* beastlike; rude.

**Bestir**, *bi-ster'*, *v.* to become active.

**Bestowal**, *bi-stow'al*, *n.* the act of bestowing.

**Bestrew**, *bi-stroo'*, *v.* to scatter loosely.

**Betake**, *bi-tāk'*, *v.* to take oneself to.

**Bethink**, *bi-thīngk'*, *v.* to recall.

**Betimes**, *bi-tīms'*, *adv.* in good time.

**Betoken**, *bi-tōk'n*, *v.* to give sign of.

**Betray**, *bi-trā'*, *v.* to deceive.

**Betroth**, *bi-trōth'*, *v.* to become affianced.

**Better**, *bē'tr*, *adj.* comparative of good.

**Betterment**, *bē'tr'ment*, *n.* improvement.

**Between**, *bi-twēn'*, *prep.* in the middle of.

**Bevel**, *bēv'ul*, *n.* a slanting edge.

**Beverage**, *bēv'er-idj*, *n.* liquid refreshment.

**Bevy**, *bēv'i*, *n.* a brood, flock or company.

**Bewail**, *bi-wā'l*, *v.* to mourn.

**Bewilder**, *bi-wil'der*, *v.* to perplex.

- Bewitching, bi-witch'ing, *adj.* charming.  
 Bey, bāi, *n.* a Turkish governor.  
 Beyond, bi-yond', *prep.* farther; out of reach.  
 Bezel, bez'l, *n.* the setting of a precious stone.  
 Bezique, bi-zēk, *n.* a card game.  
 Bias, bi'as, *n.* a leaning to one side.  
 Bible, bi'bl, *n.* the Old and New Testaments.  
 Biblical, bib'lik-al, *adj.* relating to the Bible.  
 Bibliography, bib-lē-ōg'raf-i, *n.* list of books.  
 Bibliomaniac, bib-lē-ō-mā'ni-ak, *n.* a person possessed of a mania for books.  
 Bibulous, bib'ū-lus, *adj.* pertaining to drink.  
 Biceps, bi-seps, *n.* the muscle of the upper part of the arm.  
 Bicker, bik'ur, *v.* to contend querulously.  
 Bicycle, bi-sikl, *n.* a two-wheeled cycle.  
 Biennial, bi-en-al, *adj.* every two years.  
 Bier, bē, *n.* carriage or frame for conveying the dead.  
 Bifacial, bi-fā'shi-al, *adj.* having two similar faces.  
 Bifidate, bif'id-āt, *adj.* cloven in two.  
 Bifurcation, bi-fur-kā shun, *n.* two-forked division.  
 Bigamy, big'ā-mi, *n.* being married to more than one person.  
 Bight, bit, *n.* a small bay.  
 Bigot, big'ut, *n.* a blind supporter.  
 Bigotry, big'ō-tri, *n.* excess of zeal.  
 Bilateral, bi-lāt'er-al, *adj.* with two sides.  
 Bilbo, bil'bō, *n.* a rapier.  
 Bile, bil, *n.* a bitter fluid secreted by the liver.  
 Bilge, bilj, bulging part of a ship.  
 Bilious, bil'i-us, *adj.* having an unsettled stomach.  
 Bilingual, bi-ling'wal, *adj.* concerning two languages.  
 Billabong, *n.* (Austral.), branch of river that comes to a dead end.  
 Bill, *n.* an account; a hatchet; a bird's beak.  
 Billet, bil'et, *n.* a small log; a little note. [balls.  
 Billiards, bil'i-urds, *n.* a table game with cue and  
 Billion, bil'i-on, *n.* a million millions (Eng.) a thousand millions (U.S.A.).  
 Billow, bil'ō, *n.* a sea-wave.  
 Billycock, bil'f-cōk, *n.* a hard, round-crowned hat; a type of bowler.  
 Bimetallism, bi-met'al-izm, *n.* a monetary system in which silver and gold are on equal footing.  
 Binary, bi-nar-i, *adj.* two-fold.  
 Binnacle, bin'ikl, *n.* the case in which the ship's compass is kept.  
 Binocle, bin'o-kl, *n.* a telescope for both eyes.  
 Binocular, bin-ok'ū-ler, *adj.* two-eyed.  
 Binomial, bi-nōm'i-al, *adj.* consisting of two parts.  
 Biogenesis, bi-ō-jen'ēs-is, *n.* natural generation.  
 Biograph, bi-ō-graf, *n.* an apparatus by which photographed objects are shown in motion.  
 Biography, bi-ō-graf-i, *n.* personal history.  
 Biology, bi-ō-lō-jī, *n.* the science of life.  
 Bipartite, bipart'it, *adj.* in two equal parts.  
 Biped, bi'ped, *n.* a two-footed animal.  
 Biplane, bi'plan, *n.* a flying machine with two  
 Birch, *n.* a tree, *v.* to whip. [planes.  
 Biretta, bir-ē'ta, *n.* a square cap worn by ecclesiastics.  
 Birth, berth, *n.* the act of bearing offspring.  
 Biscuit, bis'kit, *n.* small cake of twice-baked bread.  
 Bisect, bi-sekt', *v.* to divide into two parts.  
 Bishop, bish'up, *n.* an ecclesiastic having direction of a diocese.  
 Bismuth, biz'muth, *n.* a reddish-white metal.  
 Bison, bi'son, *n.* a wild animal of the buffalo species.  
 Bistre, bist'er, *n.* a warm brown pigment.  
 Bitters, bit'erz, *n.* extract of bitter herbs.  
 Bitumen, bi-tū-men, *n.* impure mixture of hydrocarbons; mineral pitch; asphalt.  
 Bivalve, bi'valv, *n.* an animal with two shells.  
 bivouac, biv'oo-ak, *n.* soldiers' camping place at night in the open.  
 Bizarre, biz-ār', *adj.* odd, extravagant.  
 Blab, *v.* to tell secrets.  
 Blackball, blāk'bawl, *v.* to reject on a ballot.  
 Blackguard, blāk'gārd, *n.* vulgar fellow.  
 Blackleg, blāk'leg, *n.* a swindler; a man who works for wages against which others have struck.  
 Blackletter, blāk'letr, *n.* old English printing type.  
 Blackmail, blāk'māl, forced tribute; hush money.  
 Black-rod, blāk'rod', *n.* a Parliamentary official.  
 Blacksmith, blāk'smith, *n.* a worker in iron.  
 Bladder, blādr, *n.* a sac in the abdomen which holds the urine.  
 Blade, blād, *n.* a leaf of grass; the cutting part of a knife.  
 Blamable, blām'abl, *adj.* deserving of blame.  
 Blame, blām, *v.* to censure, to find fault with.  
 Blanch, blānsh, *v.* to whiten.  
 Blanc-mange, blā-mawngzh', *n.* a jelly prepared with flour and milk.  
 Blandishment, blān'dish-ment, *n.* flattery.  
 Blandness, blān'dness, *adj.* gentleness.  
 Blank, *adj.* empty; without marks; vacant.  
 Blanket, blāngk'et, *n.* a woollen bed covering.  
 Blare, blār, *v.* to make a loud noise.  
 Blaspheme, blas-fēm', *v.* to swear.  
 Blasphemy, blas-fi-mi, *n.* profane speaking.  
 Blast, *n.* a gust of wind.  
 Blatant, blā'tant, *adj.* noisy.  
 Blazon, blā'zn, *v.* to notify publicly.  
 Blazony, blāz'on-ri, *n.* the drawing of coats of  
 Bleach, bleetch, *v.* to whiten. [arms.  
 Bleak, blēk, *adj.* cold, cheerless.  
 Bleakness, blēk'ness, *n.* the condition of being  
 Blear, blēr, *adj.* dim, blurred. [bleak.  
 Bleat, blēt, *v.* a sheep's cry.  
 Bleb, *n.* a blister.  
 Blemish, blem'ish, *n.* defect, stain.  
 Blench, blēnsh, *v.* to shrink or flinch.  
 Blend, *v.* to mix.  
 Bless, *v.* to invoke happiness upon.  
 Blessing, blēss'ing, *n.* a wish for happiness.  
 Blight, blit, *n.* name given to several diseases and pests of plants.  
 Blind, blind, *adj.* without sight.  
 Blindfold, blind'fold, *adj.* with the eyes bandaged.  
 Blindside, blind'side, *n.* the side on which a person sees no risk.  
 Bliss, *n.* supreme happiness.  
 Blister, blis'ter, *n.* a watery bubble on the skin.  
 Blithe, blith, *adj.* gay, happy.  
 Blizzard, bliz'erd, *n.* a severe snowstorm.  
 Bloated, blō'ted, *adj.* puffed out.  
 Bloater, blō'ter, *n.* a cured herring.  
 Blob, *n.* a drop of liquid.  
 Block, *n.* a mass of wood or stone; an obstruction.  
 Blockade, blōk-ād', *n.* a state of siege.  
 Blockhead, blōk'hēd, *n.* a stupid person.  
 Block-system, blōk'sist-em, *n.* a signalling method by which two trains cannot be in one section at once.  
 Blonde, blond, *n.* a fair-complexioned person.  
 Bloody, blūd'i, *adj.* of the nature of blood; blood-stained, murderous.  
 Bloom, *v.* to come into flower; to flourish.  
 Bloomer, bloom'er, *n.* a divided skirt; an error.  
 Bloomy, bloom'er-i, *n.* a forge for iron.  
 Bloch, blotsh, *n.* a spot on the skin.  
 Blotter, blot'ur, *n.* a blotting book.  
 Blouse, blouz, *n.* a loose outer bodice.  
 Blow, *n.* a knock; a sudden calamity; a current of air.  
 Blower, blō'er, *n.* a machine for creating air blasts.  
 Blow-pipe, blō'pīp, *n.* a pipe through which air is blown.  
 Blowzy, blowz'i, *adj.* untidy; dishevelled.  
 Blubber, blub'ur, *n.* the fat of whales.  
 Bludgeon, blud'jun, *n.* a cudgel.  
 Blue-book, blōo'book, *n.* Parliamentary papers.  
 Blues, blōoz, *n.* depression of spirits.  
 Blue-stocking, blōo'stock-ing, a literary lady of pedantic style.  
 Bluff, bluf, *adj.* pretence; *n.* a cliff. [take.  
 Blunder, blun'der, *v.* to make an error; *n.* a mis-  
 Blunderbuss, blun'der-būs, *n.* an old-fashioned  
 Blunt, *adj.* rough-edged. [hand-gun.  
 Blur, blūr, *n.* a stain, spot, or blemish.  
 Blurt, *v.* to speak abruptly.  
 Blushing, blush'ing, *n.* the act of turning red.  
 Bluster, blus'tr, *v.* to swagger noisily; *n.* boastfulness.  
 Boa, bō-ā, *n.* a garment of fur or feathers worn round the neck by ladies.  
 Boar, bō-ēr, *n.* a male pig.  
 Board, bawrd, *n.* a thin sheet of timber; food.  
 Boarder, bawrd'ur, *n.* a person who is boarded.  
 Boast, bōst, *v.* to brag.  
 Boatswain, bō'sun, *n.* a ship's petty officer.  
 Bobbin, bob'in, *n.* a reel on which thread is wound.  
 Bobtail, bob'tāl, *n.* a short tail.  
 Bode, bōd, *v.* to foreshadow.  
 Bodge, bōj, *v.* to do deficient work. [bust.  
 Bodice, bōd'is, *n.* a woman's garment covering the  
 Boding, bōd'ing, *n.* an omen. [printer's instrument.  
 Bodkin, bod'kin, *n.* blunt needle with large eye;  
 Bodyguard, bod'i-gārd, *n.* a personal guard.  
 Bogey, bō'gi, *n.* imaginary evil character; a score in golf.



Boggle, bogl, *v.* to hesitate, or start.  
 Buggy, bog'g'l, *adj.* marshy.  
 Bogie, bô'g'l, *n.* a small waggon that runs on rails.  
 Bogus, bôg'us, *adj.* sham.  
 Bohemian, bô-hé-mi-an, *n.* and *adj.* a person of irregular habits.  
 Boisterous, bois'ter-us, *adj.* turbulent; noisy; wild.  
 Boll, bôl, *n.* a pod or seed vessel.  
 Bolster, bôl'ster, *n.* a long pillow.  
 Bolt, *n.* a bar; an arrow; a thunderbolt; *v.* to fasten with a bolt.  
 Bolus, bô'lus, *n.* a large pill.  
 Bomb, bôm, *n.* an explosive projectile. [bombs.  
 Bombardment, bom-bard'ment, *n.* attacking with Bombast, bom'bast, *n.* pompous language.  
 Bombastic, bom-bas'tik, *adj.* inflated.  
 Bombazine, bom-bâ-zên', *n.* a twilled fabric.  
 Bonanza, bom-an'za, *n.* a rich mine.  
 Bond, *n.* that which binds; connecting link; a document covenanting to pay.  
 Bondage, bon'dij, *n.* captivity.  
 Bondsman, bondz'man, *n.* a slave or surety.  
 Bonfire, bon fir, *n.* an open-air fire.  
 Bonnet, bon'et, *n.* a head covering.  
 Bonny, bon'ny, *adj.* handsome; pleasing.  
 Bonus, bô'nus, *n.* a sum in excess of the usual interest or salary.  
 Bonze, bonz, *n.* a Buddhist priest.  
 Booby, boo'bi, *n.* a stupid fellow. [gether.  
 Book, book, *n.* written or printed matter bound to  
 Book-keeping, book'keep-ing, *n.* the art of accounts.  
 Bookmaker, book'mâkr, *n.* one who receives bets.  
 Bookworm, book'wurin, *n.* a man devoted to reading.  
 Boom, *n.* a pole on which a sail is fixed; a barrier; a noise; a sudden increase.  
 Boomerang, boom'er-ang, *n.* a missile used by Boon, *n.* gift, benefit. [Australian natives.  
 Boor, *n.* a rough peasant.  
 Boorish, boor'ish, *adj.* awkward.  
 Booth, *n.* a covered temporary erection.  
 Bootless, boot'less, *adj.* useless.  
 Boot-tree, boot-tree, *n.* a last.  
 Booty, boot'y, *n.* plunder.  
 Border, baw'rder, *n.* an edge, margin, or boundary.  
 Bore, bôr, *v.* to pierce; *n.* one that wearies.  
 Boreal, bô'ri-al, *adj.* relating to the north wind.  
 Born, bawrn, *v.* brought into life.  
 Borough, bur'ô, *n.* a corporate town.  
 Bosh, *n.* nonsense.  
 Bosky, *adj.* woody.  
 Bosom, booz'um, *n.* the breast.  
 Bossy, bos'y, *adj.* knobby.  
 Botany, bot'â-ni, *n.* the science of plants.  
 Botch, *n.* a swelling; badly performed work.  
 Bother, both'er, *v.* to perplex.  
 Bottle, bot'l, *n.* a vessel for holding liquids.  
 Bottom, bot'om, *n.* the lowest part.  
 Bottomry, bot'omr-i, *n.* mortgage of a ship.  
 Boudoir, boo-dwaw'r, *n.* a lady's private room.  
 Bough, bow, *n.* a branch of a tree.  
 Boulder, bôl'der, *n.* a large stone.  
 Boulevard, boo-li-vâr, *n.* a promenade bordered with trees.  
 Bounce, bowns, *v.* to rebound; *n.* a swagger.  
 Bound, bownd, *v.* to leap; held together; *n.* limit.  
 Boundary, bow'n'der-l, *n.* a defined limit, border.  
 Bounded, bow'n'den, *adj.* obligatory.  
 Bounty, bown'ti, *n.* a gift.  
 Bouquet, boo-kâ, *n.* a bunch of flowers.  
 Bourgeois, bur-jois', *n.* a kind of printing type; a member of the middle class.  
 Bourn, boorn, *n.* a limit or goal.  
 Bourse, boorse, *n.* an exchange.  
 Bout, bowt, *n.* a turn or round.  
 Bovine, bô'vin, *adj.* connected with cattle.  
 Bowels, bow'êlz, *n.* the entrails.  
 Bower, bow'er, *n.* a shady recess.  
 Bowl, bôl, *n.* a domestic basin; a wooden ball.  
 Bowline, bô'lin, *n.* a kind of knot; rope used on a sail.  
 Bowsprit, bô-sprît, *n.* a spar at the head of a ship.  
 Bowstring, bô'string, *n.* the string of a bow; string used in Turkey for strangling criminals.  
 Boxer, bok'ser, *n.* one who fights with gloves or  
 Boycott, boy'kot, *v.* to refuse dealings with. [fists.  
 Boyhood, boy'hood, *n.* the state of being a boy.  
 Brace, brâs, *v.* to draw together; *n.* a carpenter's  
 Bracelet, brâs'let, *n.* a wrist ornament. [tool.  
 Bracken, brâk'en, *n.* a species of fern.  
 Bracket, brâk'et, *n.* a support fastened to the wall.

Brackish, brâk'ish, *adj.* saltish.  
 Brad, *n.* a small nail.  
 Braggadocio, brag-ga-dô'si-ô, *n.* a boaster.  
 Braggart, brag'ert, *n.* a boaster.  
 Brahmin, brâ'min, *n.* a high-caste Hindu.  
 Braid, brâd, *v.* to plait; *n.* plaited cord.  
 Brain, brân, *n.* the centre of the nervous system; the intellect.  
 Braise, brâz', *v.* to cook slowly in a small quantity of liquid.  
 Brake, brâk, *n.* a contrivance for slackening the speed of vehicles.  
 Bramble, bram'bl, *n.* a prickly shrub with edible berries.  
 Bran, brân, *n.* outer skin of wheat berry.  
 Brand, brând, *n.* a piece of burnt wood; a particular mark.  
 Brandish, brand'ish, *v.* to wave or flourish.  
 Brandy, brand'i, *n.* a spirit distilled from wine.  
 Brasher, brâ'zi-er, *n.* a vessel for holding fire.  
 Brass, *n.* an alloy of copper and zinc.  
 Brassière, brâs'i-êr, *n.* a narrow piece of material used by women to support their breasts.  
 Bravado, brâ-vâ'do, *n.* a swaggerer.  
 Brave, brâv, *adj.* courageous.  
 Bravery, brâ-ver-i, *n.* courage.  
 Bravo, brâ'vo, *n.* well done; a hired assassin.  
 Bravura, brâ-vû-râ, *n.* florid music.  
 Brawl, *n.* a noisy quarrel.  
 Brawny, braw'ni, *adj.* strong, muscular.  
 Bray, brâ, *v.* to pound; *n.* a donkey's cry.  
 Braze, brâz, *v.* to solder.  
 Brazen, brâzun, *adj.* pertaining to brass; impudent.  
 Breach, brêch, *n.* an opening; law breaking.  
 Bread, bred, *n.* food made from flour or meal.  
 Breadth, bred'th, *n.* width.  
 Break, brâk, *v.* to snap; to crush; to tame.  
 Breakage, brâ'kij, *n.* the action of breaking.  
 Breaker, brâ'ker, *n.* a wave that breaks on the shore.  
 Breakfast, brek'fust, *n.* first meal of the day.  
 Breakwater, brâk'waw-ter, *n.* an erection to break the force of water.  
 Bream, brêm, *n.* a small fresh-water fish.  
 Breast, brêst, *n.* the part of the body next below the neck.  
 Breastwork, brêst'work, *n.* an earthwork.  
 Breath, brêth, *n.* the air passing through the lungs.  
 Breathe, brêth, *v.* to respire.  
 Bred, *v.* brought forth; brought up.  
 Breech, brêch, *n.* that part of a gun behind the barrel; the hind part of a thing.  
 Breeches, brê'chez, *n.* a garment worn by men on the lower limbs.  
 Breaching, brê'ching, *n.* part of a horse's harness.  
 Breech-loader, brêch'lô-der, *n.* a fire-arm loaded at  
 Breed, brêd, *v.* to generate; to train. [the breech.  
 Breeding, brêd'ing, *n.* producing; bringing up.  
 Breeze, brêz, *n.* wind.  
 Brethren, brêth'ren, *n.* plural of brother.  
 Brevet, brev'et, *n.* extra rank above an officer's pay.  
 Breviary, brev'i-ar-i, *n.* book of the Roman Catholic service.  
 Brevier, brev'êr, *n.* a kind of printing type.  
 Brevity, brev'i-ti, *n.* shortness.  
 Brewery, broo'er-i, *n.* a brew-house.  
 Bribe, brib, *n.* a corrupt gift.  
 Brickbat, brîk'bat, *n.* a piece of brick; a missile.  
 Bridal, brid'al, *n.* pertaining to marriage.  
 Bride, brid, *n.* a woman about to be or newly  
 Bride-cake, brid'kâk, *n.* wedding cake. [married.  
 Bridegroom, brid-groom, *n.* a man about to be or newly married.  
 Bridesmaid, bridz'mâd, *n.* a woman who attends the bride.  
 Bridge, bridj, *n.* a structure spanning a river, stream, or canal; card game.  
 Bridle, brid'l, *n.* harness worn on horses' heads.  
 Brief, brêf, *n.* short; statement of case for counsel.  
 Brier, brî'er, *n.* wild rose.  
 Brig, brig, *n.* a two-masted vessel.  
 Brigade, brig-ad', *n.* a body of troops.  
 Brigadier, brig-a-dêr, *n.* an officer in command of  
 Brigand, brig-and, *n.* a robber. [a brigade.  
 Brigantine, brig'an-tên, *n.* a small two-masted  
 Brill, *n.* a fish. [vessel.  
 Brilliant, bril'yant, *adj.* glittering, sparkling, splendid; *n.* a fine diamond.  
 Brim, *n.* the brink of a stream or lake; the edge of a vessel; the rim of a hat.  
 Brimful, brim'fool, *adj.* completely full.

- Brimstone, brim'ston, *n.* sulphur.  
 Brindled, brin'd'led, *adj.* marked with spots or streaks.  
 Brine, brin, *n.* salt water.  
 Brink, bringk, *n.* the edge.  
 Briny, brin-i, *adj.* salty.  
 Brisk, *adj.* quick, active.  
 Brisket, bris'ket, *n.* the part next to the ribs.  
 Bristle, bris-tl, *n.* short, stiff hair.  
 Brittle, brit'l, *adj.* easily broken, fragile. [or tap.  
 Broach, bröch, *n.* a boring instrument; *v.* to pierce  
 Broadcast, brawd-kast, *adj.* to disseminate widely;  
 to put out over the radio.  
 Broadside, brawd'sid, *n.* the side of a ship; a dis-  
 charge of guns from it.  
 Brocade, bro-käd', *n.* a figured silk fabric.  
 Broccoli, brok'ö-l, *n.* a kind of cauliflower.  
 Brocket, brok'et, *n.* a two-year-old red deer.  
 Brogue, brög, *n.* a thick coarse shoe; dialect.  
 Broil, broil, *n.* a disturbance; a form of cooking.  
 Bromide, brö'mid, *n.* a sedative used to calm the  
 nerves or to induce sleep; a long or boring  
 speech.  
 Bronchial, bronk'i-al, *adj.* relating to the bron-  
 chiae. [bronchiæ.  
 Bronchitis, bronk-i'tis, *n.* inflammation of the  
 Broncho, bronk'ö, *n.* an untamed horse.  
 Bronze, bronz, *n.* an alloy of copper and tin.  
 Brooch, bröch, *n.* an ornamental pin.  
 Brood, brood, *v.* to meditate; to cover as with  
 Brook, brook, *n.* a small stream. [wings.  
 Broom, broom, *n.* a sweeping implement; the  
 name of a class of wild shrubs.  
 Broth, *n.* thick soup.  
 Brother, brüth'er, *n.* a male of the same parents.  
 Brow, *n.* the forehead; the ridge over the eyes;  
 the Browbeat, brow'bët, *v.* to bully. [edge of a hill.  
 Brown, *n.* a dark reddish colour.  
 Brownie, brow'ni, *n.* a Scotch domestic fairy.  
 Browze, browz, *v.* to feed on leaves or shoots of  
 Bruise, brooz, *v.* to crush. [plants.  
 Bruiser, brooz'er, *n.* one who bruises; a prize  
 fighter.  
 Brunette, broo-net', *n.* a dark-complexioned  
 Brunt, brunt, *n.* the shock of contest. [woman.  
 Brush, *n.* an instrument for dispersing dust.  
 Brushwood, brush'wood, *n.* a thicket.  
 Brusque, brusq, *adj.* abrupt.  
 Brutality, broo-tä-l'i-ti, *n.* being brutal.  
 Brute, broot, *n.* one of the lower animals; *adj.*  
 rude, vulgar.  
 Bryony, bri'ö-ni, *n.* a hedge-row plant.  
 Bubble, bub'l, *n.* an air bladder of water; a  
 fraudulent scheme.  
 Buccaneer, buk-ä-nër', *n.* a pirate.  
 Buck, buk, *n.* the male of deer and other animals;  
 a dashing fellow.  
 Bucket, buk'et, *n.* a vessel for carrying liquids.  
 Buckle, buk'l, *n.* an ornament or instrument for  
 fastening things.  
 Buckler, buk'ler, *n.* a small shield.  
 Buckram, buk'ram, *n.* a coarse cotton fabric.  
 Bucolic, bü-kol'ik, *adj.* rustic.  
 Budge, buj, *v.* to move.  
 Budget, buj'et, *n.* a collection of things; minis-  
 terial financial statement.  
 Buff, buf, *n.* a light yellow colour; a kind of  
 leather.  
 Buffalo, buf'a-lö, *n.* a wild ox.  
 Buffer, bufer, *n.* a contrivance for lessening the  
 force of concussion.  
 Buffet, buf'et, *n.* a blow; *v.* to strike.  
 Buffoon, buf-oon', *n.* one who makes fun.  
 Buffoonery, buf-oon'erl, the practice of fun-  
 making.  
 Bugbear, bug'bär, *n.* a nuisance or hindrance.  
 Buggy, bug'i, *n.* a light vehicle.  
 Bugle, bü'gl, *n.* a horn.  
 Build, bild, *v.* to erect; to depend upon.  
 Builder, bild'er, *n.* one who erects.  
 Bulb, *n.* a plant with an onion-like root.  
 Bulbous, bulb'us, *adj.* bulb-like.  
 Bulge, bulj, *n.* a protuberance.  
 Bulk, *n.* size, magnitude; the chief part.  
 Bulkhead, bulk'héd, *n.* a partition in a ship.  
 Bull, bool, *n.* the male of the cow; a Papal letter.  
 Bullet, bool'et, *n.* a projectile fired from a gun.  
 Bulletin, bool'ët-in, *n.* official report.  
 Bull-finch, bool'finsh, *n.* a kind of singing finch.  
 Bullion, bool'yun, *n.* uncoined gold and silver.  
 Bullseye, boolz'i, *n.* the centre of a target; a  
 sweet.  
 Bully, bool'i, *n.* a blustering ruffian. [water.  
 Bulrush, bool'rush, *n.* a large rush that grows in
- Bulwark, bool'werk, *n.* a fortification.  
 Bumper, bump'er, *n.* a large glass or cup.  
 Bumpkin, bump'kin, *n.* a country clown.  
 Bumptious, bump'shus, *adj.* boastful, self-  
 assertive.  
 Bunch, *n.* things tied or growing together.  
 Bundle, bun'dl, *n.* things loosely held together.  
 Bungalow, bung'a-lö, *n.* a house of one storey.  
 Bungle, bung'l, *n.* a clumsy blunder.  
 Bunion, bun'yun, *n.* a swelling on the big toe.  
 Bunk, *n.* a sleeping berth; *v.* to disappear.  
 Bunkum, bunk'um, *n.* clap-trap; nonsense.  
 Bunting, bunt'ing, *n.* cloth for flags. [navigation.  
 Buoy, boi, *n.* a floating mark indicating danger to  
 Buoyancy, boi'an-si, *n.* power of floating; light-  
 heartedness.  
 Bur, bur, *n.* the prickly seed-case of certain plants.  
 Burden, ber'den, *n.* a load.  
 Bureau, bü-rö, *n.* a writing table; a room or de-  
 partment for business. [of government.  
 Bureaucracy, bü-ok-ras-i, *n.* a centralised system  
 Burgeon, bur'jon, *v.* to grow quickly; to sprout.  
 Burgess, bur'jess, *n.* an inhabitant of a borough.  
 Burgher, burg'her, *n.* same as burgess.  
 Burglar, burg'ler, *n.* a housebreaker.  
 Burgomaster, burgo-mäs-tr, *n.* the chief magis-  
 trate of a Belgian or German town.  
 Burial, ber-i-al, *n.* the act of interment.  
 Burlesque, bur-lesk', *n.* a comic performance.  
 Burly, bur'li, *adj.* large, strong, bluff.  
 Burn, bern, *n.* a small stream; *v.* to consume by  
 Burnish, bur'nish, *v.* to polish. [fire.  
 Burrow, bur'ö, *n.* ground shelter for animals.  
 Bursar, burs'ar, *n.* treasurer of a college.  
 Bursary, burs'ar-i, *n.* a scholarship.  
 Burst, *v.* to break open suddenly.  
 Bush, boosh, *n.* a thick shrub.  
 Bushel, boosh'el, *n.* a measure of eight gallons.  
 Business, biz'ness, *n.* trade; employment.  
 Buskin, busk'in, *n.* a short boot worn by tragic  
 actors.  
 Bust, *n.* the head and upper part of the human  
 body.  
 Bustle, bus'l, *v.* to be busy; *n.* pad worn by ladies.  
 Busybody, biz'i-bod-i, *n.* a meddling person.  
 Butcher, booch'er, *n.* one who slaughters animals  
 Butchery, booch'er-i, *n.* slaughter. [for food.  
 Butler, but'ler, *n.* a male servant having charge of  
 wine, plate, etc.  
 Butt, *n.* a large cask; *v.* to strike with the head.  
 Butt-end, but'end, *n.* the heavy end.  
 Butter, but'er, *n.* a substance made by churning  
 milk or cream.  
 Buttery, but'er-i, *n.* domestic store-room.  
 Buttress, but'res, *n.* an outside support to a wall.  
 Buxom, buk'som, *adj.* lively, hearty, jolly.  
 Buzz, *n.* a humming noise.  
 Buzzard, buz-erd, *n.* a bird of prey.  
 Byre, bir, *n.* a cow-house.  
 By-word, bi-werd, *n.* an object of common remark.  
 Byzantine, biz-an'tin, *adj.* relating to Byzantium.

## C

- Cabal, ka-bal', *n.* a party of secret plotters.  
 Cabinet, kab'i-net, *n.* small room; private con-  
 sulting room; a case of drawers; the Cabinet  
 is a body consisting of the chief Ministers of  
 State.  
 Cable, kä'bl, *n.* a rope or chain.  
 Caboose, ka-boos', *n.* a ship's cooking place.  
 Cabriolet, kab-ri-o-lä', *n.* a one-horse vehicle.  
 Cacao, ka-kä'o, *n.* a tropical plant bearing seeds  
 from which cocoa and chocolate are made.  
 Cache, kash, *n.* a hiding-place.  
 Cachexy, ka-kek'si, *n.* an impoverished body or  
 mind.  
 Cachinnation, kak-in-ä'shun, *n.* loud laughter.  
 Cachou, ka-shoo', *n.* a sweetmeat. [fowls.  
 Cackle, kak'l, *n.* peculiar noise made by geese and  
 Cacophony, kak-öf'o-ni, *n.* discordant sounds.  
 Cactus, kak'tus, *n.* a hard prickly plant.  
 Cadaverous, ka-dav'er-us, *adj.* sickly-looking.  
 Caddie, kad'i, *n.* a golf attendant.  
 Caddy, kad'i, *n.* a small box.  
 Cadence, kä'dens, *n.* rhythmic fall of the voice.  
 Cadet, kä-det', *n.* a younger son; a naval or  
 military student.  
 Cade, kadj, *v.* to beg.  
 Cadi, kä'di, *n.* a Mahomedan judge.  
 Caesarean, si-zär'i-än, *adj.* a birth in which the  
 baby is taken from the womb through the  
 abdomen wall.



Cairn, kă'rn, *n.* stones piled up as a landmark or memorial.

Caitiff, kă'tiff, *n.* a low fellow.

Cajole, ka-jôl', *v.* to coax by flattery.

Calamity, kal-am'ti, *n.* misfortune.

Calcareous, kal-kă're-us, *adj.* containing chalk.

Calcine, kal-sin', *v.* to convert from calcium carbonate to calcium oxide by burning; to burn to a powder.

Calcium, kal'si-um, *n.* a metallic element.

Calculable, kal'ku-labl, *adj.* capable of calculation.

Calculate, kal'ku-lăt, *v.* to reckon.

Calculator, kal'ku-lăt-or, *n.* one who calculates.

Calculus, kal'ku-lus, *n.* stone; an advanced branch of mathematics.

Caldron, cauldron, kaw'dron, *n.* large kettle for boiling liquids.

Calendar, kal'en-der, *n.* table of days, months, etc.

Calender, kal'end-er, *n.* a press for dressing cloth.

Calibre, kal'i-ber, *n.* size, strength.

Calico, kal'i-kô, *n.* cotton cloth.

Caligraph, kal'i-graf, *n.* a writing machine.

Caligraphy, kal-lig'ra-fi, *n.* penmanship.

Calipers, kal'ip-ers, *n.* instrument used for measuring diameter of curved objects, thickness, etc.

Caliphate, kal'ifăt, *n.* the office of caliph.

Calisthenics, kal-is-then'iks, *n.* athletics.

Calk, kawk, *n.* the point of a horse-shoe; *v.* to fill up. [name.]

Call, kawl, *v.* to cry out; to pay a short visit; to callous, kal'us, *adj.* unfeeling.

Callow, kal'ô, *adj.* featherless; beardless.

Calomel, kal'o-mel, *n.* a compound of mercury and

Caloric, kal'o-rik, *n.* heat. [chlorine.]

Calorie, kăl-o-rî, *n.* a measure of heat.

Calumniate, kal-um'niăt, *v.* to slander.

Calumny, kal'um-ni, *n.* a slanderous statement.

Calvinism, kal'vin-izm, *n.* the doctrines of Calvin.

Calyx, kal'iks, *n.* the outer cup of a flower.

Cambrian, kam'brian, *adj.* connected with Wales.

Cambric, kam'brik, *n.* fine linen.

Camel, kam'el, *n.* a humped Asiatic or African

Cameo, kam'ê-o, *n.* a gem carved in relief. [animal.]

Camera, kam'eră, *n.* apparatus for taking photo-

Camisade, kam'i-săd, *v.* a night attack. [graphs.]

Camlet, kam'let, *n.* a fine cloth.

Camomile, kam'o-mil, *n.* a bitter herb.

Camouflage, kam'oo-flăj, *v.* to disguise.

Campaign, kam-păn', *n.* a plain; military operations.

Campanile, kam-pan-ê-lă, *n.* a bell-tower.

Campanology, kam-pan-ol'o-jî, *n.* the art of bell-

making, or bell-ringing. [an army.]

Camp-follower, kamp'foll'ô-er, *n.* one who follows

Camphorated, kam'for-ăt-ed, *adj.* imbued with camphor.

Canaille, kăn-ni', *n.* the mob; rabble.

Canal, kănal', *n.* an artificial waterway.

Canard, kă-năr', *n.* a false story.

Canary, kă-nă'ri, *n.* a yellow singing bird; canary

Cancel, kam'sel, *v.* to erase. [colour.]

Canalculated, kam'sel-ăt-ed, *adj.* reticulated.

Cancer, kam'ser, *n.* a malignant tumour.

Candelabrum, kan-del-ă-brum, *n.* frame for branching lights.

Candescence, kam-des'ens, *n.* a white heat.

Candid, kam-did, *adj.* frank; ingenuous.

Candidate, kam'did-ăt, *n.* one who offers himself.

Canine, kă-nin', *adj.* relating to the dog.

Canister, kam'is-ter, *n.* a box of wood or tin.

Canker, kang'ker, *n.* anything that corrupts; gangrene.

Cankerous, kang'ker-us, *adj.* corroding.

Cannel, kam'el, *n.* soft bituminous coal. [flesh.]

Cannibal, kam'i-bl, *n.* a savage who eats human

Cannonade, kam'ô-năd, *n.* an attack with cannon.

Canny, kam'i, *adj.* shrewd, knowing.

Canoe, kă-noo', *n.* a small boat.

Canon, kan'on, *n.* a church dignitary; a law or regulation.

Cañon, kan-yun, *n.* a gorge or ravine.

Canonical, kam-on'ik-al, *adj.* according to canon.

Canonicals, kam-on'ik-als, *n.* regulation clerical attire.

Canonise, kam'on-iz, *v.* to enroll among the saints.

Canon-law, kam-on-law, *n.* ecclesiastical law.

Canopy, kam'o-pi, *n.* an overhead covering.

Cant, kânt, *n.* hypocritical speech.

Cantaloupe, kam'tă-loop, *n.* a kind of melon.

Cantankerous, kam-tang'ker-us, *adj.* perverse.

Cantata, kam-tă'ta, *n.* a choral composition.

Canteen, kan-tên', *n.* a soldier's tavern; a soldier's liquor vessel.

Canter, kan'ter, *v.* an easy gallop.

Canticle, kan'tik'l, *n.* a church song.

Cantilever, kan-'ti-lê-ver, *n.* projection for supporting bridges, &c.

Canto, kan'tô, *n.* a division of a poem.

Canton, kan'ton, *n.* a division of a province.

Cantonment, kan-ton'ment, *n.* troops' quarters.

Cantrip, kan'trip, *n.* a wild antic.

Canvas, kan'vas, *n.* a coarse cloth.

Canvass, kan'vas, *v.* to solicit votes; to sift; to discuss.

Caoutchouc, kow'tchuk, *n.* india-rubber.

Capable, kă'pă-bl, *adj.* possessing ability.

Capacious, ka-pă'shus, *adj.* having capacity of holding.

Cap-à-pie, kap-a-pê, *adv.* from head to foot.

Cape, kăp, *n.* a shoulder-covering; a point of land.

Caper, kap'er, *v.* to skip round; *n.* the pickled bud of the caper shrub.

Capillary, ka-pil'er-i, *adj.* with the fineness of hair.

Capital, kap'it-al, *adj.* chief, principal; *n.* a chief city; money invested.

Capitalise, kap'it-al-iz, *v.* to convert into capital.

Capitalist, kap'it-al-ist, *n.* one who owns capital.

Capitally, kap'it-al-i, *adj.* finely. [heads.]

Capitation, kap-it-ă-shun, *n.* the numbering of

Capitol, kap'it-ol, *n.* the temple of Jupiter at Rome; the Congress house in the United States.

Capitular, kap-it'ul-lar, *n.* a statue of an ecclesiastical chapter; a member of chapter.

Capitulate, kap-it'ul-lăt, *v.* to yield.

Capon, kă'pon, *n.* a young castrated cock.

Caprice, ka-prês', *n.* a changeful mood.

Capricious, ka-prish'us, *adj.* changeable.

Capricorn, kap-rî-korn, *n.* one of the zodiac signs.

Capstan, kap'stan, *n.* an apparatus for winding

Capsule, kap'sul, *n.* a seed vessel. [cable.]

Captain, kap-tin, *n.* a chief officer.

Caption, kap'shun, *n.* legal arrest; title or explanation at the bottom of a picture.

Captious, kap-shus, *adj.* critical.

Captive, kap'tiv, *v.* to fascinate; to subdue.

Captive, kap'tiv, *n.* a prisoner.

Captivity, kap-tiv'it-i, *n.* imprisonment.

Capture, kap'tur, *n.* an arrest.

Capuchin, kap'û-chin', *n.* a Franciscan monk.

Caracal, kar-ă-kal, *n.* a lynx.

Carafe, ka-raf', *n.* a water-bottle.

Caramel, kar-a-mel, *n.* burnt sugar; a sweetmeat.

Carat, kar'at, *n.* a weight of four grains; 1-24th part of pure gold.

Caravan, kar-a-van, *n.* a company of travellers; a house on wheels.

Caravansary, kar-a-van'ser-i, *n.* a rude wayside

Caraway, kar-a-wă, *n.* an aromatic plant. [inn.]

Carbine, kăr-bin, *n.* a short musket.

Carbon, kăr'bon, *n.* an element of which charcoal is a pure example.

Carbonise, kăr'bon-iz, *v.* to make into carbon.

Carboy, kăr'boi, *n.* a glass bottle in frame.

Carbuncle, kăr'bung'kl, *n.* a bright red precious stone; a tumour.

Carcass, kăr'kas, *n.* a dead body.

Cardiac, kăr'di-ak, *adj.* pertaining to the heart.

Cardinal, kăr'din-al, *adj.* principal; *n.* a dignity of the Church of Rome; an American bird.

Careen, kă-rên', *v.* to move a ship on to her side.

Career, kă-rêr', *n.* a course; mode of life; *v.* to move rapidly.

Caress, ka-res', *v.* to fondle.

Caret, ka'ret, *n.* a sign denoting a word left out.

Cargo, kăr'gô, *n.* freight. [ness.]

Caricature, kăr'ik-at-ure, *n.* an exaggerated likeness.

Caries, kăr'i-êz, *n.* decayed bone.

Carillon, kăr'il-on, *n.* chime of bells.

Cariole, kăr'i-ôl, *n.* a light vehicle.

Cariou, kăr'i-us, *adj.* decayed.

Carmelite, kăr-mel-it, *n.* a monk of that order.

Carminative, kăr-mi-nă'tiv, *n.* a medicine that relieves flatulence.

Carmine, kăr'min, *n.* crimson colour.

Carnage, kăr'năj, *n.* slaughter.

Carnal, kăr'nal, *adj.* sensual.

Carnation, kăr-nă'shun, *n.* a garden flower of the dianthus family; flesh colour.

Carnelian, kăr-nê'l-an, *n.* a red stone used as a jewel.

Carnival, kăr'niv-al, *n.* open-air revelry.

Carnivorous, kăr-niv'er-us, *adj.* flesh-eating.

Carol, kăr'ul, *n.* a song; *v.* to sing.

Carotid, ka-rot'id, *adj.* pertaining to the arteries of the neck.

- Carousal, ka-roo'zal, *n.* a drinking bout.  
 Carouse, ká-rowz', *v.* to revel.  
 Carp, kárp, *v.* to cavi; *n.* a common fish.  
 Carpenter, kár'pen-ter, *n.* a worker in timber for buildings.  
 Carriage, kár-ij, *n.* a vehicle; behaviour.  
 Carrier, kár'i-er, *n.* one who conveys goods for the  
 Carrion, kár'i-on, *n.* putrid flesh. [public.  
 Carte-blanche, kárt-blansh', *n.* blank paper; freedom to do what one pleases.  
 Carte-de-visite, kárt-de-vis-ét', *n.* a small photograph.  
 Cartel, kárt-el, *n.* a challenge. [graph.  
 Cartesian, kár'téz-yan, *adj.* relating to the philosophy of Descartes.  
 Cartilage, kár'til-áj, *n.* gristle. [making.  
 Cartography, kárt-og'raf'i, *n.* the science of map-making.  
 Cartoon, kár-toon', *n.* a large sketch or design.  
 Cartouche, kár-toosh', *n.* a cartridge case.  
 Cartridge, kár'trij, *n.* a paper-covered charge for a gun.  
 Caruncle, kár-ung'kl, *n.* a fleshy excrescence.  
 Carve, kárv, *v.* to cut.  
 Cascade, kás'kád, *n.* a waterfall.  
 Case, kás, *n.* a box. [hardening to malleable iron.  
 Caseharden, kás'hárd-en, *v.* to give a steel surface.  
 Casemate, kás'mát, *n.* a bomb-proof chamber.  
 Casement, kás'ment, *n.* window frame.  
 Cashier, kash-ér', *n.* a cash-keeper; *v.* to dismiss.  
 Cashmere, kash-mér', *n.* cloth made from Cashmere goat's wool.  
 Casing, kás'ing, *n.* covering.  
 Casino, kas-é'no, *n.* a public assembly room.  
 Cask, kask, *n.* a small barrel.  
 Casket, kas'ket, *n.* a small case.  
 Cassia, kas'ya, *n.* a leguminous plant used as a herb.  
 Cassock, kas'ók, *n.* a black clerical robe.  
 Cast, kast, *v.* to throw or fling; to add up.  
 Castanet, kast-a-net', *n.* a time-tapping instrument held in the hand by dancers.  
 Caste, kast, *n.* social class.  
 Castellan, kas'tel-an, *n.* the governor of a castle.  
 Castellated, kast'el-á-ted, *adj.* castle-like.  
 Caster, kast'er, *n.* a small wheel on legs of furniture.  
 Castigate, kast'ti-gát, *v.* to beat; to chastise.  
 Casting-vote, kast'ing-vót, *n.* a chairman's deciding vote when other votes are equal.  
 Castle, kás'l, *n.* a fortified mansion.  
 Castrate, kas'trát, *v.* to deprive of generative power.  
 Casual, kazh'ü-al, *adj.* occasional, accidental.  
 Casualty, kas'ü-al-ti, *n.* an accident.  
 Casuist, kas'ü-ist, *n.* a student of conscience.  
 Casuistry, kaz'ü-is-tri, *n.* the science of conscience.  
 Cataclysm, kat'a-klizm, *n.* a deluge, a revolution.  
 Catacomb, kat'a-kóm, *n.* a subterranean burying place. [echoes.  
 Catacoustics, kat-a-koo'stik, *n.* the science of  
 Catafalque, kat-á-falk', *n.* a bier.  
 Catalepsy, kat-a-lep-si, *n.* an atrophy of the limbs.  
 Catalogue, kat-á-log, *n.* a list.  
 Catalyst, kat-á-list, *n.* a chemical substance which produces change in other substances without being changed itself.  
 Cataplasm, kat-á-plasm, *n.* a poultice.  
 Catapult, kat-á-pult, *n.* an apparatus for throwing stones, arrows, etc.  
 Cataract, kat-á-rákt, *n.* a great waterfall.  
 Catarrh, ká-tár, *n.* discharge of mucus from the nose or throat.  
 Catastrophe, ká-tas'tro-fí, *n.* a calamity.  
 Catch, katch, *v.* to seize; to clutch; to overtake; *n.* a tripping song for several voices.  
 Catchpenny, katch'pen-i, *n.* something worthless offered for sale.  
 Catchup, katch'up, *n.* a flavouring sauce; also ketchup.  
 Catch-word, katch'werd, *n.* an oft-repeated word.  
 Catechetical, kat-i-ke't'ik-al, *adj.* pertaining to Catechism, kat'i-kiz, *v.* to question. [catechism.  
 Catechism, kat'i-kizm, *n.* a religious summary.  
 Catechu, kat'e-shoo, *n.* a substance obtained from trees and used in tanning.  
 Catechumen, kat-e-kü'men, *n.* one who is taught the principles of Christianity.  
 Categorical, kat-e-gor'ik-al, *adj.* positive.  
 Category, kat'i-gor-i, *n.* a class or order.  
 Catena, kat-é-na, *n.* a connected series.  
 Catenary, kat-é-nar-i, *adj.* chain-like.  
 Cater, ká'ter, *v.* to provide for.  
 Caterpillar, kat'er-pil-er, *n.* a grub.  
 Caterwaul, kat'er-wawl, *n.* a cat's cry; a discordant noise.
- Catfish, kat'fish, *n.* a large sea fish.  
 Catgut, kat'gut, *n.* string made from animals' intestines.  
 Cathartic, kath-árt'ik, *adj.* purgative.  
 Cathedral, kath-é'dral, *n.* the church to which a bishop is attached.  
 Cathode, kath'ód, *n.* the negative pole of an electric battery. [ing to Roman Catholics.  
 Catholic, kath'ó-lik, *adj.* general, orthodox; relating to Roman Catholic doctrine.  
 Catholicism, kath-ó-lis-izm, *n.* universality; Roman Catholic doctrine.  
 Catholicity, kath-o-lis't-i, *n.* liberality of view.  
 Catkin, kat'kin, *n.* a tuft of small male flowers.  
 Catseye, kats'ey, *n.* a species of quartz; a reflective stud set in the road as an aid to motorists.  
 Catspaw, kats'paw, *n.* a dupe.  
 Cattle, kat'l, *n.* animals of pasture; bovines.  
 Cautious, kaw'kus, *n.* a private political body.  
 Caudal, kaw'dal, *adj.* pertaining to the tail.  
 Caudle, kaw'dl, *n.* a spiced drink.  
 Caul, kaw'l, *n.* a membrane covering the head of children when born.  
 Cauliflower, kaw'li-flor, *n.* a kind of cabbage.  
 Causality, kawz-ál'i-ti, *n.* the working of a cause.  
 Cause, kawz, *n.* motive; lawsuit.  
 Causeway, kawz'wá, *n.* a raised pathway.  
 Caustic, kaw'stik, *adj.* burning.  
 Cauterize, kaw'ter-iz, *v.* to burn with caustic.  
 Cautery, kaw'ter-i, *n.* cauterizing instrument.  
 Cautious, kaw'shuus, *adj.* wary. [on horseback.  
 Cavalcade, kav'al-kád, *n.* a procession of people.  
 Cavalier, kav-á-lér', *n.* one in attendance on a lady; a knight.  
 Cavalry, kav'al-ri, *n.* horse soldiers.  
 Caveat, ká'vi-at, *n.* a formal notice.  
 Cavern, kav'ern, *n.* a hollow in the ground; a cave.  
 Cavernous, kav'er-nus, *adj.* hollow.  
 Caviare, kav-i-ár', *n.* food made from salted roes.  
 Caviil, kav'il, *v.* to make trifling objections.  
 Cayenne, ká-én', *n.* red pepper.  
 Cazique, ka-zék, *n.* an Indian chief.  
 Cease, sés, *v.* to stop.  
 Ceaseless, sés'les, *adj.* without ceasing.  
 Cede, séd, *v.* to yield.  
 Cedilla, se-di'llá, *n.* a mark under the letter c, to indicate the soft sound.  
 Ceiling, sé'ling, *n.* the roof of a room.  
 Celandine, sel'an-din, *n.* a spring flower.  
 Celebrant, sel'e-brant, *n.* an officiating priest.  
 Celebrate, sel'e-brát, *v.* to commemorate.  
 Celebrity, sel-eb'ri-ti, *n.* fame; an eminent person.  
 Celerity, sel-er'it-i, *n.* swiftness.  
 Celery, sel'er-i, *n.* a kitchen vegetable.  
 Celestial, sel-est'i-al, *adj.* heavenly.  
 Celibacy, sel-i-bas-i, *n.* the unmarried state.  
 Cellar, sel'ar, *n.* a room below the ground floor.  
 Cellular, sel'ü-ler, *adj.* containing cells.  
 Celluloid, sel'ü-loid, *n.* an elastic material obtained from pyroxilin.  
 Celt, *n.* one of a primitive race now represented by the Bretons, the Welsh, the Irish, and the Scottish Highlanders.  
 Celtic, sel'tik, *adj.* according to Celtic customs.  
 Cement, se-ment, *n.* cohesive substance used to weld bricks, etc., together.  
 Cemetery, sem'i-ter-i, *n.* burying ground.  
 Cenotaph, sen'o-taf, *n.* monument to one buried elsewhere.  
 Censer, sen'ser, *n.* pan in which incense is burnt.  
 Censor, sen'sor, *n.* one who examines books, plays, or papers, for the protection of public morals.  
 Censorious, sen-só'ri-us, *adj.* expressing censure.  
 Censure, sens'ür, *n.* blame.  
 Census, sens'us, *n.* the numbering of the people.  
 Centaur, sen'tawr, *n.* a mythological monster, with a man's head and a beast's body.  
 Centenary, sen'tin-ár-i, *n.* a hundred.  
 Centennial, sen-ten'tal, *adj.* hundredth anniversary.  
 Centesimal, sen-tes'i-mal, *adj.* hundredth.  
 Centigrade, sen'ti-grád, *adj.* possessed of a hundred degrees; a scale used for measuring temperature.  
 Central, sen'tral, *adj.* pertaining to the centre.  
 Centralisation, sen-tral-i-zá-shun, *n.* concentration of government.  
 Centre, sen'tr, *n.* the middle.  
 Centrifugal, sen-trif'ü-gal, *adj.* tending from centre.  
 Centripetal, sen-trip'it-al, *adj.* with a force impelling centrewards.



Centuple, sen'tū-pl, *adj.* hundredfold.  
 Centurion, sen-tū'ri-on, *n.* the captain of a Roman Century, sent ū-ri, *n.* a hundred. [hundred].  
 Cephalic, se-fal'ik, *adj.* pertaining to the head.  
 Ceraceous, ser-ā'shus, *adj.* wax-like.  
 Ceramic, se-ram'ik, *adj.* relating to fine pottery.  
 Cereal, sē-re-al, *adj.* relating to grain; *n.* grain.  
 Cerebral, ser'e-bral, *adj.* pertaining to the brain.  
 Cerebration, ser-e-brā'shun, *n.* brain-action.  
 Cerement, sēr'ment, *n.* grave clothes.  
 Ceremonial, ser-e-mō'ni-al, *n.* outward form.  
 Ceremonious, ser-e-mō'ni-us, *adj.* with ceremony.  
 Ceremony, ser'e-mun-i, *n.* a formal rite or function.  
 Certain, ser'tin, *adj.* sure.  
 Certainty, ser'tin-ti, *n.* fixed state; without doubt.  
 Certificate, ser-tif'i-kāt, *n.* written proof.  
 Certify, ser'ti-fi, *v.* to make known; to declare by  
 Certitude, ser'ti-tūd, *n.* certainty. [writing].  
 Cerulean, ser-ū'lī-an, *adj.* dark blue.  
 Cervical, ser'vik-al, *adj.* pertaining to the neck.  
 Cessation, ses-ā'shun, *n.* ceasing.  
 Cession, sesh'un, *n.* a giving up.  
 Cesspool, ses'pool, *n.* a pool into which drain-  
 age is run.  
 Chaconne, shak-on', *n.* an old slow dance.  
 Chafe, chāf, *v.* to rub against.  
 Chaffer, chaf'er, *v.* to bargain.  
 Chafing-dish, chāf'ing-dish, *n.* a heated metal dish  
 in which hot viands are served.  
 Chagrin, sha-grēn', *n.* annoyance, vexation.  
 Chain, chān, *n.* a connection of links; a train of  
 events.  
 Chairman, chār'man, *n.* a presiding officer; one  
 who presides at a meeting.  
 Chaise, shāz, *n.* a light open vehicle.  
 Chalcedony, kal-sed'o-ni, *n.* a mineral of the  
 quartz order.  
 Chalice, chal'is, *n.* a cup.  
 Challenge, chal'enj, *v.* to defy; to invite to a con-  
 test.  
 Chalybeate, kal-ib'e-āt, *adj.* containing iron.  
 Chamber, chāmber', *n.* an upper room.  
 Chamberlain, chām'ber-lin, *n.* an officer of state.  
 Chambermaid, chām'ber-mād, *n.* a bedroom  
 servant.  
 Chameleon, kam-ē'lī-un, *n.* a lizard that changes  
 Chamber, cham'fer, *n.* a bevel. [its colour].  
 Chamois, sha-moi', *n.* a kind of antelope.  
 Champ, champ, *v.* to chew.  
 Champagne, sham-pān', *n.* a sparkling French  
 Champagne, sham-pān', *n.* an open country. [wine].  
 Champion, cham'pi-un, *n.* a defender; a con-  
 testant who has defeated all others of the same  
 class.  
 Chancel, chan'sel, *n.* the eastern part of a church.  
 Chancellor, chan'sel-or, *n.* a judge or state official.  
 Chancery, chan'ser-i, *n.* a high court.  
 Chandelier, shan-de-lēr', *n.* a branching framework  
 for lights.  
 Chandler, chand'ler, *n.* a general dealer.  
 Change, chānj, *n.* alteration; petty cash; *v.* to  
 alter; to exchange.  
 Changeable, chānj'abl, *n.* fickle.  
 Changing, chānj'ing, *n.* a child changed for  
 another.  
 Channel, chan'el, *n.* a passage; sea current; strait.  
 Chanticleer, chan'ti-klēr, *n.* a cock.  
 Chaos, kā'os, *n.* confusion.  
 Chaotic, kā-ōt'ik, *adj.* confused.  
 Chapel, chap'el, *n.* a place of worship.  
 Chaperon, shap'e-rōn, *n.* one who protects a lady.  
 Chapter, chap'i-ter, *n.* the head of a column.  
 Chaplain, chap'lin, *n.* a clergyman appointed to  
 special duties.  
 Chapter, chap'ter, *n.* a division of a book; a  
 gathering of Cathedral clergy.  
 Char, chār, *n.* a small fish.  
 Character, kar'ak-ter, *n.* a sign or distinctive  
 mark; moral qualities.  
 Characterize, kar'ak-ter-iz, *v.* to describe by  
 special qualities.  
 Charade, sha-rād, *n.* a kind of riddle.  
 Charcoal, chār-kōl, *n.* carbonised wood.  
 Charge, chārij, *v.* to accuse; to set a price.  
 Chargeable, chārij'abl, *adj.* liable to be charged.  
 Charger, chār'er, *n.* a war horse.  
 Charily, chār'il-i, *adj.* warily.  
 Charitable, char'it-abl, *adj.* benevolent.  
 Charity, char'it-i, *n.* generosity; kindness.  
 Charivari, shā'ri-vā-ri, *n.* wild tumult.  
 Charlatan, shār'lā-tan, *n.* a quack; a pretender.  
 Charlatanry, shār'lā-tan-ri, *n.* pretence.

Charnel-house, chār'nel-hōws, *n.* a place for the  
 bones of the dead.  
 Chart, chārt, *n.* a map of the sea.  
 Charter, chār'ter, *n.* a deed conferring rights.  
 Charwoman, chār'woom-an, *n.* a woman hired by  
 the day for domestic work.  
 Chary, chār'i, *adj.* cautious.  
 Chase, chās, *v.* to pursue; to hunt.  
 Chasm, kazm, *n.* a cleft.  
 Chassis, shahs'ē, *n.* the framework of a motor  
 Chaste, chāst, *adj.* pure; virtuous. [vehicle].  
 Chasten, chās'n, *v.* to punish; to purify.  
 Chastise, chās'tiz, *v.* to punish.  
 Chastity, chas'tit-i, *n.* purity.  
 Chasuble, chaz'ū-bl, *n.* an ecclesiastical vestment.  
 Chatelaine, shat'ē-lān, *n.* a lady's chain ornament.  
 Chatel, chat'l, *n.* property.  
 Chatter, chat'er, *v.* to talk idly; *n.* idle talk.  
 Chatfy, chat'i, *adj.* talkative.  
 Chauffeur, shof'er, *n.* a motor-car driver.  
 Chauvinism, shō'vin-izm, *n.* extravagant patriot-  
 Cheat, chēt, *v.* to deceive; to defraud. [ism].  
 Check, chek, *v.* to restrain.  
 Checker, chek'er, *v.* to variegate.  
 Checkers, chek'erz, *n.* game of draughts.  
 Checkmate, chek'māt, *n.* final move in a game of  
 chess; defeat.  
 Cheek, chek, *n.* side of face; impudence.  
 Cheer, chēr, *n.* comfort; good things; meat and  
 drink; *v.* to comfort.  
 Cheerful, chēr'ful, *adj.* lively.  
 Cheerless, chēr'les, *adj.* gloomy.  
 Cheese, chēz, *n.* food made from curdled milk.  
 Chef, shef, *n.* a head cook.  
 Chemical, kem'ik-al, *adj.* relating to chemistry.  
 Chemise, she-mēz', *n.* a woman's undergarment.  
 Chemistry, kem'is-tri, *n.* the science of substances.  
 Cheque, chek, *n.* an order on a bank.  
 Cherish, chēr'ish, *v.* to treat kindly; to nourish.  
 Cherry, chēr'i, *n.* a tree of the Prunus family.  
 Cherub, cher'ub, *n.* a winged spirit.  
 Cherubim, cher'ū-bim, *n.* plural of cherub.  
 Chess, ches, *n.* see "Sports and Pastimes."  
 Chest, ches't, *n.* a large box; the thorax.  
 Chestnut, ches'nut, *n.* a forest tree; the nut  
 thereof. [frame].  
 Cheval-glass, she-val'glas, *n.* a large mirror on a  
 Cheveril, chev'er-il, *n.* a kind of kid-skin leather.  
 Cheviot, chev'i-ot, *n.* a kind of cloth; a breed of  
 sheep.  
 Chiaroscuro, kyār'os-kū-ro, *n.* light and shade.  
 Chicanery, she-kan'er-i, *n.* trickery.  
 Chicken, chik'en, *n.* a young fowl.  
 Chide, chid, *v.* to censure; to blame.  
 Chieftain, chēf'ten, *n.* the head of a clan.  
 Chiffonier, shif-o-nēr', *n.* a decorated cupboard.  
 Childblain, chil'blān, *n.* a local inflammation.  
 Child's-play, childz plā, *n.* something easy.  
 Childhood, child'hood, *n.* infancy.  
 Chill, chil, *n.* coldness; *v.* to depress.  
 Chime, chim, *n.* the sound of bells.  
 Chimerical, kim'er'ik-al, *adj.* wild, fanciful.  
 Chimney, chim'nī, *n.* a channel for letting out  
 smoke.  
 Chimpanzee, chim-pan'zē, *n.* a large kind of ape.  
 China, chī'na, *n.* porcelain.  
 Chine, chin, *n.* the spine.  
 Chink, chink, *v.* to jingle.  
 Chintz, chintz, *n.* glazed calico.  
 Chiropathy, ki-rog'raf-i, *n.* penmanship.  
 Chiromancy, ki-ro-man-si, *n.* fortune-telling.  
 Chiropodist, kirop'o-dist, *n.* a hand and foot  
 Chirp, chirp, *n.* a bird-note. [doctor].  
 Chirrup, chir'up, *n.* sound made by birds and  
 Chisel, chiz'l, *n.* an iron or steel tool. [insects].  
 Chit, chit, *n.* a babe; *v.* to sprout.  
 Chivalrous, shiv'al-rus, *adj.* gallant.  
 Chivalry, shiv'al-ri, *n.* the feudal knighthood  
 system; courtesy.  
 Chive, chiv, *n.* a small bulb of the onion kind.  
 Chloral, klō'ral, *n.* a colourless oily liquid.  
 Chloric, klō'rik, *adj.* of or from chlorine.  
 Chlorine, klō'rin, *n.* a heavy poisonous gas.  
 Chlorite, klō'rit, *n.* a soft green mineral.  
 Chloroform, klō'ro-form, *n.* a volatile liquid used  
 as anæsthetic.  
 Chlorophyll, klō'rō-fil, *n.* green pigment in plants.  
 Chlorosis, klō-rō-sis, *n.* green sickness.  
 Chocolate, chok'o-lāt, *n.* a preparation made from  
 cacao seeds.  
 Choice, chois, *adj.* select.  
 Choir, kwir, *n.* a body of singers.

Choke-damp, chōk'damp, *n.* gas which accumulates in mines.

Choler, kol'er, *n.* anger; bile.

Cholera, kol'er-a, *n.* an infectious disease.

Choleric, kol'er-ik, *adj.* angry; petulant.

Choral, kō'ral, *adj.* pertaining to a chorus.

Chord, kord, *n.* union of sounds.

Chorister, kor'is-ter, *n.* a member of a chorus.

Chorus, kō'rus, *n.* a company of singers; a piece of

Chouse, chows, *v.* to cheat. [music sung in parts.

Chowder, chow'der, *n.* a compound of fish and

Chrism, krizm, *n.* holy oil. [biscuits.

Christen, kris'en, *v.* to baptise.

Christendom, kris'en-dom, *n.* the regions where

Christianity prevails.

Christian, krist'i-an, *n.* a believer in Christ.

Christianity, krist-i-an'it-i, *n.* the religion of Christ.

Christmas, kris'mas, *n.* festival to commemorate

the birth of Christ.

Christmas-box, kris'mas-boks, *n.* a Christmas

present.

Chromatic, krō-mat'ik, *adj.* pertaining to colours.

Chromite, krō'mit, *n.* a mineral compound.

Chromo-lithograph, krō-mo-lith'o-graf, *n.* a litho-

graph in colours.

Chronic, kron'ik, *adj.* lasting; deep-seated.

Chronicle, kron'ik'l, *n.* a record. [time.

Chronological, kron-o-loj'ik-al, *adj.* in order of

Chronology, kron-ol'o-jī, *n.* the science of time.

Chronometer, kron-om'e'ter, *n.* a time-measuring

instrument.

Chrysalis, kris'a-lis, *n.* the pupa of an insect.

Chrysanthemum, kris-an'the-mum, *n.* a genus of

large flowering garden plants.

Chrysolite, kris'o-lit, *n.* a precious stone.

Chub, *n.* a small plump river fish.

Chuck, *n.* the cluck of a hen.

Chuckle, chuck'l, *n.* a low laugh; the cry of a hen.

Chuffy, chuf'f, *adj.* surly.

Chump, chump, *n.* an end of wood.

Chunk, chunk, *n.* a short thick piece.

Church, church, *n.* an edifice devoted to worship.

Churchman, church'man, *n.* a member of a church.

Churchwarden, church'wawrd-en, *n.* a church

Churl, churl, *n.* a clown; a rude fellow. [official.

Churlish, chur'lish, *adj.* rude.

Churn, churn, *n.* a machine used for butter-mak-

ing.

Chute, shūt, *n.* a long covered incline down which

things can be dropped.

Chutney, chut'ni, *n.* a sweet pickle.

Chyle, kil, *n.* a fluid drawn from food while in the

intestines.

Chyme, kim, *n.* food pulp in the stomach.

Cicatrix, sik-ā'trix, *n.* a scar over a wound.

Cicerone, chich'er-ō'ni, *n.* a guide.

Cider, si-der, *n.* a beverage made from apples.

Cigar, si-gār, *n.* tobacco leaves rolled for smoking.

Ciliary, sil'i-ar-i, *adj.* pertaining to the eye-lids.

Cimolite, sim'ō-lit, *n.* a kind of clay.

Cincture, singk'tur, *n.* a girdle.

Cinema, sin'e-mā, *n.* a place in which films are

shown.

Cinerary, sin'er-ar-i, *adj.* relating to ashes.

Cingalese, sing'ga-lēz, *n.* native of Ceylon.

Cinnamon, sin'a-mon, *n.* a spice.

Cinquefoil, singk'foil, *n.* an architectural term for

a five-petalled flower.

Cipher, si-fer, *n.* in arithmetic 0: nothing; a code.

Circle, sirk'l, *n.* within a circumference; *v.* to move

Circlet, sirk'let, *n.* a small circle. [round.

Circuit, sirk'it, *n.* a district.

Circuitous, sirk'it-us, *adj.* roundabout.

Circular, sirk'ul-ar, *adj.* round; *n.* a note sent

Circulate, sirk'ul-āt, *v.* to spread. [round.

Circulation, sirk'ul-ā'shun, *n.* act of circulating;

number of copies sold of a newspaper or

periodical.

Circumambient, sirk-kum-am'bi-ent, *adj.* going

round.

Circumcise, sirk'kum-siz, *v.* to cut off the foreskin.

Circumference, sirk'kum-fer-ens, *n.* the outer circle,

or area of a thing. [vowel (ā).]

Circumflex, sirk'kum-fleks, *n.* sound sign over a

Circumlocution, sirk-kum-lo-kū'shun, *n.* round-

about mode of speaking.

Circumscribe, sirk'kum-scrib, *v.* to limit, to enclose.

Circumspect, sirk'kum-spect, *adj.* prudent, cautious.

Circumstantial, sirk'kum-stan'shal, *adj.* in detail.

Circumvallation, sirk-kum-val-ā'shun, *n.* a sur-

rounding wall.

Circumvent, sirk-kum-vent', *v.* to deceive; to out-

wit.

Circus, sir'kus, *n.* a circular building for enter-

tainments.

Cist, sist, *n.* a stone tomb.

Cistercian, sis-ter'si-an, *n.* an order of monks.

Cistern, sis'tern, *n.* a storage tank for water.

Citadel, sit'ā-del, *n.* a city fortress.

Citation, si-tā'shun, *n.* a summons; a quotation.

Cite, sit, *v.* to quote; to summon.

Citizen, sit'i-zen, *n.* a resident of a city having

civic rights.

Citrate, sit'rāt, *n.* a salt.

Citric, sit'rik, *adj.* acid.

Citron, sit'ron, *n.* a fruit.

Civet, siv'et, *n.* a perfume from the civet-cat.

Civic, siv'ik, *adj.* relating to a city or town govern-

ment.

Civil, siv'il, *adj.* non-military; secular.

Civilian, siv-il'i-an, *n.* one engaged in civil pur-

Civility, siv-il'it-i, *n.* politeness. [suits.

Civilization, siv-il-i-zā'shun, *n.* state of being

Civilize, siv-il-iz, *v.* to refine. [civilized.

Civily, siv'il-i, *adv.* politely.

Claim, klām, *v.* to demand; *n.* the thing claimed.

Claimant, klām'ant, *n.* one who claims.

Clairvoyance, klār-vo'ans, *n.* supposed mesmeric

power of divining things.

Clam, klām, *n.* a small bivalve shell-fish.

Clamant, klām'ant, *adj.* loud calling.

Clammy, klām'i, *adj.* moist; sticky.

Clamour, klām'or, *n.* uproar.

Clamp, klāmp, *n.* iron or timber fastening contriv-

Clan, clan, *n.* a family; a tribe. [ance.

Clandestine, klan-des'tin, *adj.* secret.

Clang, klang, *n.* a sharp sound.

Clangour, klang'or, *n.* a harsh sound.

Clannish, klan'ish, *adj.* clan-like.

Clapper, klap'er, *n.* a bell tongue.

Clap-trap, klap'trap, *n.* ranting speech.

Claret, klār'et, a red wine.

Clarify, klār'i-fi, *v.* to make clear.

Clarinet, klār-i-net', *n.* a large woodwind musical

instrument.

Clarion, klār'i-on, *n.* a kind of trumpet.

Clash, klash, *v.* to collide.

Clashing, klash'ing, *n.* a collision; opposition.

Clasp, klasp, *v.* to clutch; to grasp; to embrace.

Classic, klas'ik, *adj.* pertaining to the ancient

literature of Greece and Rome; of the best

literature.

Classification, klas-if-ik-ā'shun, *n.* forming into

classes.

Classify, klas'i-fi, *v.* to arrange according to

Clatter, klāt'er, *n.* a rattling noise. [classes.

Clause, klawz, *n.* a paragraph.

Claustral, klawz'tral, *adj.* secluded.

Clavicle, klāv'ikl, *n.* the collar-bone.

Clavier, klāv'ier, *n.* a musical keyboard.

Claw, klaw, *n.* nail of an animal; *v.* to scratch.

Clean, klēn, *adj.* free from dirt.

Clearance, klēr'ans, *v.* the act of clearance or

removal.

Clearing, klēr'ing, *n.* land cleared from wood.

Clearing-house, klēr'ing-hows, *n.* a place of bank-

ing or business exchange.

Cleavage, klē'ij, *n.* a breakage in rocky strata.

Cleave, klēv, *v.* to hold fast to; to separate by

force.

Cleaver, klē'ver, *n.* one who cleaves; a butcher's

Clef, klef, *n.* a musical sign. [chopper.

Cleft, kleft, *n.* a crack, a fissure.

Cleg, kleg, *n.* the horse-fly.

Clematis, klem-ā'tis, *n.* a climbing plant.

Clemency, kleme'n-si, *n.* leniency.

Clement, klem'ent, *adj.* gentle; merciful.

Clerestory, klēr-stō-ri, *n.* the upper row of windows

in the nave of churches.

Clergy, klēr'ji, *n.* ministers of a church.

Clergyman, klēr'ji-man, *n.* a church minister.

Clerical, klēr'ik-al, *adj.* connected with clerking.

Clerk, klār, *n.* a person employed in an office; a

Clever, klē'ver, *adj.* able; skilful. [clergyman.

Client, klī'ent, *n.* one for whom a lawyer or other

professional man acts.

Cliff, klif, *n.* a precipice.

Climacteric, klī-mak'ter-ik, *n.* a critical time.

Climate, klī'māt, *n.* atmospheric condition.

Climatic, klī-mat'ik, *adj.* pertaining to climate.

Climatology, klī-mat-ol'o-jī, *n.* the science of

Climax, klī'maks, *n.* a culmination. [climates:

Climb, klīm, *v.* to ascend.

Clime, klīm, *n.* climate; country.

Clinch, klinsh, *v.* to fasten firmly.

Cling, kling, *v.* to hold to.



Clinic, klin'ik, *adj.* relating to a bed; *n.* the teaching of surgery at the bedside.  
 Clinker, kling'k'er, *n.* scales of oxide of iron.  
 Clipper, klip'er, *n.* a fast sailing vessel; one who clips.  
 Clippie, kli'pi, *n.* a tram or bus conductress.  
 Clique, klék, *n.* a party or group of persons.  
 Cloak, klós, *adj.* an outer garment; that which conceals; *v.* to conceal.  
 Clock, klok, *n.* an instrument for indicating the time. [gular].  
 Clockwork, klok'werk, *n.* clock machinery; re-  
 cloister, klois'ter, *n.* a covered arcade of a monastic  
 Clonic, klon'ik, *adj.* spasmodic. [institution].  
 Close, klós, *adj.* shut, confined, narrow; *n.* a small field; *v.* to make close.  
 Closet, klos'et, *n.* a small private room.  
 Closure, klós'ur, *n.* act of closing.  
 Cloth, kloth, *n.* textile material.  
 Clothe, klóth, *v.* to dress.  
 Clothes, klóth, *n.* attire, raiment.  
 Clothier, kló'thi-er, *n.* a maker or vendor of cloth.  
 Clothing, kló'thing, *n.* garments. [gloomy].  
 Cloudy, klowd-i, *adj.* made dark by clouds;  
 Clout, klout, *n.* a piece of material used for mend-  
 Clove, klóv, *n.* a spice. [ing; a blow].  
 Cloven, kló'ven, *adj.* divided, split.  
 Clover, kló'ver, *n.* a species of leguminous fodder  
 Clown, klown, *n.* a rustic; a fool. [plants].  
 Clownish, klown'ish, *adj.* clown-like.  
 Cloy, kloj, *v.* to satiate.  
 Club, klub, *n.* a heavy stick; an association.  
 Club-footed, klub-foot-ed, *adj.* with deformed feet.  
 Clue, kloo, *n.* thread; link of connection.  
 Clump, klump, *n.* a cluster of trees; a group of objects.  
 Clumsy, klum'si, *adj.* awkward, ill-shaped.  
 Cluster, klus'ter, *n.* a bunch.  
 Clutch, klúch, *v.* to seize; *v.* to grip.  
 Coach, kóch, *n.* a large carriage; *v.* to bring forward educationally.  
 Coadjutor, kó-ad-jú'tor, *n.* a helper.  
 Coagulate, kó-ag-ú-lát, *v.* to thicken.  
 Coagulation, kó-ag-ú-lá'shun, *n.* curdling; clot.  
 Coal, kól, *n.* a combustible mineral substance.  
 Coalesce, kó-al-és, *v.* to unite.  
 Coalition, kó-al-ish'un, *n.* the act of uniting.  
 Coarse, kórs, *adj.* gross, unrefined.  
 Coarseness, kórs'ness, *n.* roughness.  
 Coast, kóst, *n.* shore.  
 Coaster, kós'ter, *n.* a coasting vessel.  
 Coast-guard, kóst-gárd, *n.* a body of men who guard the coast.  
 Coat, kót, *n.* an outer garment; *v.* to cover.  
 Coax, kóks, *v.* to persuade.  
 Cob, kob, *n.* a horse for heavy weights; a head of maize.  
 Cobalt, kó bawlt, *n.* a metal; a blue pigment.  
 Cobble, kob'l, *v.* to mend.  
 Coble, kob'l, *n.* a small boat.  
 Cobra, kób'ra, *n.* a serpent.  
 Cobweb, kob'web, *n.* the web of the spider.  
 Coccyx, kok'siks, *n.* the lower bone of the vertebral column. [insect].  
 Cochineal, koch'i-nél, *n.* scarlet dye-stuff from an  
 Cockade, kok-ád', *n.* a badge worn in the hat.  
 Cockatoo, kok-a-too', *n.* a kind of parrot.  
 Cockatrice, kok'a-tris, *n.* a fabulous serpent.  
 Cockerel, kok'er-el, *n.* a young cock.  
 Cock-eye, kok'i, *n.* a squinting eye.  
 Cockle, kok'l, *n.* an edible ribbed bivalve.  
 Cock-loft, kok'loft, *n.* a loft near the roof.  
 Cockney, kok'nj, *n.* a Londoner.  
 Cockpit, kok'pit, *n.* space for cock-fights; a room for the wounded on a war-ship.  
 Cockroach, kok'róch, *n.* blackbeetle.  
 Cocoa, kó'kó, *n.* the seed of the cacao tree; the beverage from the prepared seed.  
 Cocoon, kó-koon', *n.* silken sheath spun by silk-  
 Codex, kó'deks, *n.* a code. [worms].  
 Codicil, kó'dis-il, *n.* supplement to a will.  
 Codification, kó-dif-ik-á'shun, *n.* the act of codifying.  
 Codify, kó'di-fi, *v.* to classify laws.  
 Coefficient, kó-eff-ish'ent, *n.* that which acts together with another thing.  
 Coequal, kó-é'kwál, *adj.* jointly equal.  
 Coerce, kó-ers', *v.* to compel.  
 Coercive, kó-er'siv, *adj.* possessing power of coercion.  
 Co-essential, kó-es-en'shal, *adj.* like in essence.  
 Coeval, kó-é'vál, *adj.* of the same age; contemporary.

Co-existent, kó'egz-is'tent, *adj.* existing together.  
 Coextensive, kó-eks-ten'siv, *n.* extending equally.  
 Coffin, kof'er, *n.* a chest.  
 Coffin, kof'in, *n.* case in which bodies are buried.  
 Cogency, kó'jen-si, *n.* convincing power.  
 Cogent, kó'jent, *adj.* convincing.  
 Cogitate, kof'it-át, *v.* to reflect.  
 Cogitation, kof-it-á'shun, *n.* meditation.  
 Cognac, kó'ni-ak, *n.* brandy.  
 Cognate, kóg'nát, *adj.* of similar kind.  
 Cognition, kog-nish'un, *n.* sure knowledge.  
 Cognizance, kon'i-zans, *n.* judicial or private recognition.  
 Cognizant, kon'i-zant, *adj.* possessing knowledge of.  
 Cognomen, kog-nó'men, *n.* a surname; a nickname.  
 Cohabit, kó-hab'it, *v.* to live as married people.  
 Coheir, kó-ár, *n.* joint heir.  
 Cohere, kó-hér, *v.* to stick together.  
 Coherent, kó-hé'rent, *adj.* connected; consistent.  
 Cohesive, kó'hé'siv, *adj.* of sticking quality.  
 Coiffure, kof'úr, *n.* a head-dress.  
 Coign, koin, *n.* a corner which projects; view-  
 Coil, kóil, *v.* to wind; *n.* a ring of rope. [point].  
 Coinage, koin'ij, *n.* the money currency.  
 Coincide, kó-in-sid', *v.* to agree with.  
 Coincidence, kó-in-sid-ens, *n.* act of coinciding.  
 Coleoptera, kol-é-op'ter-a, *n.* a species of double-winged insects.  
 Colic, kol'ik, *n.* a severe pain in the bowels.  
 Collaboration, kol-ab-o-rá'shun, *n.* united labour.  
 Collapse, kó-laps', *n.* a breakdown; failure.  
 Collar, kol'er, *n.* a thing worn about the neck.  
 Collate, kol-át', *v.* to bring together.  
 Collateral, kol-lat'er-al, *adj.* parallel.  
 Collation, kol-á'shun, *n.* the act of collating  
 repast.  
 Colleague, kol'ég, *n.* one associated with others.  
 Collect, kol'ekt', *v.* to get together.  
 Colleen, kol-eén, *n.* an Irish girl.  
 College, kol'ij, *n.* an educational institution.  
 Collegiate, kol-é-ji-át, *adj.* relating to a college.  
 Collie, kól'ie, *n.* a sheep-dog.  
 Collier, kol'i-er, *n.* a coal miner; a coal boat.  
 Colliery, kol'i-er-i, *n.* a coal mine.  
 Collimation, kol-im-á'shun, *n.* the line of sight.  
 Collision, kol-izh'un, *n.* state of being crashed together.  
 Collocation, kol-ó-ká'shun, *n.* the act of arranging.  
 Collop, kol'op, *n.* a slice of meat.  
 Colloquialism, kol-ó'kwí-al-izm, *n.* a familiar  
 Colloquy, kol'ó'kwí, *n.* conversation. [phrase].  
 Collusion, kol-ú'zhun, *n.* a secret understanding.  
 Collusive, kol-ú'siv, *adj.* with collusion.  
 Colon, kó'lon, *n.* the punctuation mark (:).  
 Colon, kó'lon, *n.* part of the large intestines.  
 Colonel, kur-nal, *n.* an officer commanding a regiment.  
 Colonisation, kol-on-i-zá'shun, *n.* the act of colonis-  
 Colonnade, kol-o-nád, *n.* a range of columns. [ing].  
 Colony, kol'ó-ni, *n.* a dependent country; a settle-  
 Colossal, kol-ós'al, *adj.* gigantic. [ment].  
 Colosseum, Coliseum, kol-ós-é-um, *n.* Vespasian's  
 amphitheatre in Rome; any colossal place of  
 entertainment.  
 Colossus, kó-lo'sus, *n.* gigantic statue.  
 Colour, kul'er, *n.* hue; shade.  
 Colour-blind, kul'er-blind, *adj.* blind as to certain  
 colours.  
 Colporteur, kol'port-er, *n.* a pedlar of tracts.  
 Colt, kólt, *n.* a young horse.  
 Colter, *n.* the front knife of a plough.  
 Column, kol'um, *n.* an upright support of a build-  
 ing; a body of troops; a row of printed lines.  
 Colza, kol'za, *n.* a brassica plant from whose seeds  
 colza oil is prepared.  
 Coma, kó'ma, *n.* sleep; stupor.  
 Comatose, kóm-a-tóz, *adj.* drowsy.  
 Comb, kóm, *n.* a toothed instrument for straighten-  
 ing the hair; the wattle on the top of head of  
 a fowl.  
 Combat, kom'bat, *n.* an encounter; a fight; a  
 struggle.  
 Combative, kom'bá-tiv, *n.* quarrelsome.  
 Combine, kom-bin', *v.* to unite.  
 Combustible, kom-bus'tibl, *adj.* capable of burning.  
 Combustion, kom-bust'yún, *n.* burning.  
 Comedian, kom-é'di-an, *n.* an actor.  
 Comedy, kom'i-dj, *n.* a humorous play.  
 Comely, kum'li, *adj.* graceful.  
 Comestibles, kum-es'ti-blz, *n.* eatables.  
 Comet, kom'et, *n.* a nebulous heavenly body with  
 Comfit, kum'fit, *n.* a sweetmeat. [a tail].

- Comfort, kum'fɜrt, *n.* enjoyment, ease; *v.* to cheer.
- Comfortable, kum'fɜr-təbl, *adj.* feeling comfort.
- Comity, kom'it-i, *n.* courtesy.
- Comma, kom'ā, a punctuation mark (,).
- Command, kom-mānd', *v.* to order; to take charge of; to lead.
- Commandant, kom-mān'dant, *n.* an officer having command.
- Commandeer, kom-man-dēr', *v.* to take over for public use; to take forcibly.
- Commander, kom-mān'der, *n.* one who commands; the chief general.
- Commandment, kom-mānd'ment, *n.* a precept.
- Commemoration, kom-mem-ō-rā'shun, *n.* a celebration.
- Commemorative, kom-mem'ō-ra-tiv, *adj.* tending to celebrate.
- Commence, kom-mens', *v.* to begin.
- Commend, kom-mend', *v.* to praise. [measure.
- Commensurate, kom-mens'ūr-āt, *adj.* of equal
- Comment, kom'ment, *n.* note of explanation; re-
- Commentary, kom'ment-ar-i, *n.* comment. [mark.
- Commentator, kom-men-tā'tur, *n.* one who makes comments. [trade.
- Commerce, kom'ers, *n.* international or individual
- Commercial, kom-ērsh'al, *adj.* relating to commerce.
- Commination, kom-in-ā'shun, *n.* denunciation.
- Commingle, kom-ing'l, *v.* to blend.
- Commissariat, kom-iz-er-ā'shun, *n.* pity.
- Commissariat, kom-iss-ā-ri-āt, *n.* victualling department of an army.
- Commissary, kom'is-ar-i, *n.* one having charge.
- Commission, kom-ish'un, *n.* act of committing; a percentage. [soldier.
- Commissionaire, kom'iss-i-on-ā-ir, *n.* ex-regular
- Commit, kom-it', *v.* to give in charge; to entrust.
- Committal, kom-it'al, *n.* commitment.
- Committee, kom-it'ē, *n.* a body charged with direction or investigation. [head-dress.
- Commode, kom-mōd', *n.* a sideboard; a box;
- Commodious, kom-ō'di-us, *adj.* roomy; convenient.
- Commodity, kom-od'it-i, *n.* article; profit; convenience.
- Commodore, kom'ō-dōr, *n.* a naval officer.
- Common, kom'un, *adj.* ordinary; *n.* land held in common.
- Commonage, kom'un-ij, *n.* right of pasturage on a common.
- Commonalty, kom'un-al-ti, *n.* the general body of the people.
- Commoner, kom'un-er, *n.* one of the people.
- Commonplace, kom'on-plās, *n.* an ordinary saying.
- Commons, kom'unz, *n.* House of Commons.
- Commonweal, kom'un-wēl, *n.* the common good.
- Commonwealth, kom'un-wēlth, *n.* the government of a free state; the public good.
- Commotion, kom-mō'shun, *n.* disorder, confusion.
- Commune, kom-ūn', *v.* to converse. [excitement.
- Communicant, kom-ūn'i-kant, *n.* a partaker of the Holy Communion.
- Communicate, kom-ūn'i-kāt, *v.* to impart.
- Communicative, kom-ūn'i-kā-tiv, *adj.* inclined to communicate.
- Communism, kom-ū-ni-on, *n.* mutual intercourse.
- Communism, kom-ū-nizm, *n.* the theory of equal rights in property. [the public.
- Community, kom-mū'nit-i, *n.* a body of persons;
- Commutation, kom-mū-tā'shun, *n.* exchange; substitution. [another.
- Commute, kum-ūt', *v.* to exchange one thing for
- Compact, kom'pakt, *n.* an agreement; a league;
- Compact, kom'pakt', *adj.* close, fine.
- Companionable, kom-pan'yun-əbl, *adj.* sociable.
- Company, kum'pan-i, *n.* persons assembled together; trading body.
- Comparable, kom'per-əbl, *adj.* that may be compared.
- Comparative, kom-pār-ā-tiv, *adj.* by comparison.
- Compare, kom-pār, *v.* to examine one against another. [ing.
- Comparison, kom-par'is-on, *n.* the act of comparing
- Compartment, kom-pār'tment, *n.* a separate division; an enclosed space.
- Compass, kum'pas, *n.* a circle; space; magnetic needle; *v.* to obtain; to surround.
- Compasses, kum'pas-es, *n.* instruments for drawing circles and for guiding ships.
- Compassion, kum-pash'on, *n.* commiseration, sympathy, pity. [agreeing or harmonising.
- Compatibility, kom-pat-i-bil'it-i, *n.* the quality of
- Compatible, kom-pat'i-bl, *adj.* consistent with.
- Compatriot, kom-pā'tri-ot, *n.* of the same country.
- Compeer, kom-pēr, *n.* an equal, companion.
- Compel, kom-pel', *v.* to force.
- Compendious, kom-pen'di-us, *adj.* brief, short.
- Compendium, kom-pen'di-um, *n.* summary, abridgment.
- Compensate, kom-pens'āt, *v.* to recompense.
- Compensation, kom-pen-sā'shun, *n.* recompense.
- Compere, kōm'pēr, *n.* one who introduces or comments upon an entertainment.
- Compete, kom-pēt', *v.* to strive. [to live upon.
- Competence, kom-pi-tens, *n.* a sufficiency; enough
- Competent, kom-pi'tent, *adj.* able, suitable, sufficient.
- Competition, kom-pē-tish'un, *n.* rivalry; a contest.
- Competitor, kom-pet'it-or, *n.* one who competes.
- Compilation, kom-pi-lā'shun, *n.* act of compiling, or work compiled.
- Compile, kom-pil', *v.* to collect; to gather from books.
- Complacence, kom-plā'sens, *n.* satisfaction, pleasure.
- Placental, kom-plā'sent, *adj.* with willingness; satisfied.
- Complain, kom-plān', *v.* to grumble; to lament.
- Complainant, kom-plā'nant, *n.* one who complains; a plaintiff.
- Complaint, kom-plānt', *n.* a complaining; fault-finding.
- Complaisance, kom-plā'zans, *n.* obligingness.
- Complaisant, kom-plā'zant, *adj.* ready to please.
- Complement, kom-pli'ment, *n.* a filling up.
- Complemental, kom-pli'ment'al, *adj.* completing.
- Complex, kom'pleks, *adj.* intricate.
- Complexion, kom-plek'shun, *n.* colour; general appearance of the skin.
- Complexity, kom-pleks'it-i, *n.* state of being complicated.
- Compliant, kom-pli'ant, *adj.* yielding. [plex.
- Complicate, kom'pli-kāt, *v.* to render confused.
- Complication, kom-pli-kā'shun, *n.* an entanglement.
- Complicity, kom-plis'it-i, *n.* being an accomplice.
- Compliment, kom-pli'ment, *n.* an expression of regard. [ing praise.
- Complimentary, kom-pli'ment-ar-i, *adj.* expressing
- Compline, kom'plin, *n.* the last canonical service of the day.
- Component, kom-pō'nent, *n.* an element.
- Compose, kom-pōz', *v.* to originate in music, art, or literature; to settle. [author; a musician.
- Composer, kom-pōz'er, *n.* one who composes; an
- Compos mentis, kom'pos ment'is, *adj.* phrase, sane.
- Composite, kom'po-sit, *adj.* made up of parts.
- Composition, kom-po-zish'un, *n.* a mixture; a thing written or composed.
- Compositor, kom-poz'it-er, *n.* one who sets type.
- Compost, kōm'pōst, *n.* humus made from rotted vegetation.
- Composure, kom-pō'zūr, *n.* calmness.
- Compound, kom-pownd', *v.* to mix; to settle.
- Compound, kom'pownd, *n.* a mass; a mixture.
- Comprehend, kom-prē-hend, *v.* to understand.
- Comprehensible, kom-prē-hens'ibl, *adj.* that may be understood.
- Comprehension, kom-prē-hen'shun, *n.* intelligence to understand.
- Comprehensive, kom-prē-hens'iv, *adj.* extensive.
- Compress, kom-press', *v.* to force together; to concentrate.
- Compression, kom-presh'un, *n.* the act of compressing, kom-priz', *v.* to include. [pressing.
- Compromise, kom-prō-miz, *n.* an agreement by mutual concession.
- Comptroller, kom-trō'ler, *n.* one who controls.
- Compulsion, kom-pul'shun, *n.* force.
- Compulsive, kom-pul'siv, *adj.* coercive.
- Compulsory, kom-pul'sor-i, *adj.* compelling.
- Compunction, kom-pungk'shun, *n.* remorse; mis-giving.
- Computable, kom-pūt'əbl, *adj.* calculable.
- Computation, kom-pūt-ā'shun, *n.* calculation.
- Comrade, kom-rād, *n.* companion.
- Con, kon, *v.* to study; to look over.
- Concatenation, kon-kat-in-ā'shun, *n.* united links.
- Concave, kon'kawz, *n.* a co-operating cause.
- Concave, kon'kāv, *adj.* curved, as applied to the inner or hollow side of an object.
- Concavity, kon-kav'it-i, *n.* being concave.
- Conceal, kon-sēl', *v.* to hide.
- Concede, kon-sēd', *v.* to surrender; to admit.



Conceit, kon-sét', *n.* excessive self-esteem.  
 Conceited, kon-sét'ed, *adj.* vain.  
 Conceitableness, kon-sév'abl-ness, *n.* capability of being conceived.  
 Conceive, kon-sév', *v.* to form; to understand.  
 Concentrate, kon-sen-trát, *v.* to bring close together; to compress.  
 Concentration, kon-sen-trá'shun, *n.* the act of bringing together.  
 Concentric, kon-sen-trík, *adj.* with a common  
 Concept, kon-sept, *n.* an idea; a notion. [centre.  
 Concern, kon-sern', *v.* to relate to.  
 Concert, kon-sert, *n.* a musical entertainment;  
 Concert, kon-sert', *v.* to plan. [union.  
 Concerted, kon-sert'ed, *adj.* planned, arranged.  
 Concertina, kon-sér'té'na, *n.* a musical instrument, with bellows.  
 Concession, kon-sesh'un, *n.* a conceding; the thing conceded.  
 Conch, kongk, *n.* a shell.  
 Conchology, kong-kol'ó-jí, *n.* the science of shells.  
 Conciliate, kon-sil'í-át, *v.* to gain favour.  
 Concise, kon-sis', *adj.* terse, short.  
 Conclave, kon-kláv, *n.* meeting-place of cardinals.  
 Conclude, kon-klúd, *v.* to finish.  
 Conclusion, kon-klú'shun, *n.* end, inference.  
 Conclusive, kon-klú'siv, *adj.* final.  
 Concoct, kon-kokt', *v.* to make up.  
 Concoction, kon-kok'shun, *n.* a mixture; a plot.  
 Concomitant, kon-kom'it-ant, *adj.* joined with.  
 Concordance, kon-kórd'ans, *n.* accord; an index to leading passages of a book.  
 Concordant, kon-kórd'ant, *adj.* harmonious.  
 Concordat, kon-kórd'at, *n.* a treaty between the Pope and some secular power.  
 Concourse, kon-kórs, *n.* an assembly of people.  
 Concrete, kon-kkrét, *n.* a material made from aggregate and cement; *adj.* real; tangible.  
 Concubine, kon-kú-bin, *n.* a mistress.  
 Concur, kon-kur', *v.* to go together; to agree.  
 Concurrence, kon-kur'ens, *n.* union; agreement.  
 Concurrent, kon-kur'ent, *adj.* running together; agreeing.  
 Concussion, kon-kush'un, *n.* a violent clashing together.  
 Condemn, kon-dem', *v.* to blame; to declare guilty.  
 Condensation, kon-den-sá'shun, *n.* consolidation.  
 Condense, kon-dens', *v.* to compress.  
 Condenser, kon-dens'er, *n.* one who, or that which, condenses.  
 Condescend, kon-dě-send', *v.* to be affable to inferiors.  
 Condescending, kon-dě-send'ing, *adj.* courteous to inferiors.  
 Con dign, kon-dfn', *adj.* adequate.  
 Condiment, kon-di-ment, *n.* seasoning.  
 Condition, kon-dish'un, *n.* the existing state; rank; arrangement.  
 Conditional, kon-dish'un-al, *adj.* depending on condition.  
 Conditioned, kon-dish'und, *adj.* possessing a certain quality.  
 Condole, kon-dól, *v.* to sympathize.  
 Condolence, kon-dó'lens, *n.* sympathy to one in  
 Condone, kon-dón', *v.* to forgive. [grief.  
 Condo, kon-dór, *n.* a large vulture.  
 Conduce, kon-dús', *v.* to contribute.  
 Conductive, kon-dú'siv, *adj.* tending.  
 Conduct, kon'dukt, *n.* behaviour.  
 Conduct, kon'dukt', *v.* to guide; to lead.  
 Conductor, kon-dukt'or, *n.* one who conducts; a manager. [water.  
 Conduit, kon'dit, *n.* a channel for conducting  
 Cone, kón, *n.* a pointed substance with a circular base.  
 Confabulation, kon-fab-ú-lá'shun, *n.* a familiar  
 Confection, kon-fek'shun, *n.* a sweetmeat. [chat.  
 Confederacy, kon-fed'er-á-sí, *n.* a leagued body.  
 Confederate, kon-fed'er-át, *n.* an accomplice; *adj.* banded together. [a league.  
 Confederation, kon-fed'er-á'shun, *n.* an alliance;  
 Confer, kon-fer', *v.* to talk together; to bestow.  
 Conference, kon-fer'ens, *n.* the act of conferring.  
 Confess, kon-fes', *v.* to admit.  
 Confessedly, kon-fes'ed-lí, *adv.* admittedly.  
 Confessional, kon-fesh'un-al, *n.* the place where a priest hears confessions.  
 Confessor, kon-fes'or, *n.* a priest who hears confessions. [confided.  
 Confidant, kon'fi-dant, *n.* one to whom secrets are  
 Confide, kon-fid', *v.* to trust; to tell privately.  
 Confidence, kon'fid-ens, *n.* trust, belief.

Confident, kon'fi-dent, *adj.* sure, positive.  
 Confidential, kon-fi-den'shal, *adj.* in confidence.  
 Configuration, kon-fig-ú-rá'shun, *n.* external out-  
 Confine, kon'fin, *n.* border, limit. [line.  
 Confine, kon'fin', *v.* to imprison.  
 Confinement, kon-fin'ment, *n.* imprisonment, de-  
 tention; the act of giving birth to a baby.  
 Confirm, kon-firm', *v.* to make certain; to sanction.  
 Confirmatory, kon-firm'át-or-í, *adj.* confirming.  
 Confiscate, kon'fis-kát, *v.* to annex; to attach.  
 Confiscation, kon-fis-ká'shun, *n.* the act of taking over or annexing.  
 Conflagration, kon-fla-grá'shun, *n.* a destructive  
 Conflict, kon'flikt, *n.* struggle, contest. [fire.  
 Conflict, kon'flikt', *v.* to oppose; to contend.  
 Confluence, kon'flú-ens, *n.* a flowing together.  
 Confluent, kon'flú-ent, *adj.* joining, merging.  
 Conform, kon-form', *v.* to render similar; to  
 Conformable, kon-form'abl, *adj.* suitable. [adapt.  
 Conformation, kon-form-á'shun', *n.* special shape.  
 Conformity, kon-form'it-í, *n.* likeness.  
 Confound, kon-fownd', to confuse; to abash.  
 Fraternity, kon-frá-tern'it-í, *n.* a brotherhood.  
 Confront, kon-frunt', *v.* to face. [Confucius.  
 Confucianism, kon-fú-si-an-izm, *n.* the doctrines of  
 Confuse, kon-fúz', *v.* to bewilder; to abash.  
 Confusion, kon-jest', *n.* the condition of being confused.  
 Confutation, kon-fú-tá'shun, *n.* the act of confut-  
 Confute, kon-fút', *v.* to disprove. [ing.  
 Congeal, kon-jél', *v.* to become solid. [gealing.  
 Congelation, kon-jel-á'shun, *n.* the act of con-  
 Congener, kon-jé-ner, *n.* of the same nature.  
 Congenial, kon-jé-ni-al, *adj.* similar in spirit.  
 Congenital, kon-jen'it-al, *adj.* so born.  
 Conger, kong'ger, *n.* a large sea eel.  
 Congeries, kon-jé-ri-éz, *n.* a collection of particles.  
 Congest, kon-jest', *v.* to accumulate.  
 Conglomerate, kon-glóm'er-át, *adj.* gathered in a mass.  
 Congratulate, kon-grat'ú-lát, *v.* to express gladness on some happy event.  
 Congregate, kong-gré-gát, *v.* to assemble.  
 Congregation, kong-gré-gá'shun, *n.* an assemblage.  
 Congregationalism, kong-gré-gá'shun-al-izm, *n.* the independent form of worship.  
 Congress, kong'gress, *n.* a conference; the U.S. legislative body.  
 Congruity, kong-grú't-í, *n.* suitability.  
 Congruous, kong-grú-us, *adj.* suitable.  
 Conic, kon'ik, *adj.* in the form of a cone.  
 Conics, kon'iks, *n.* the study of conic sections.  
 Conifer, kon-if'er, *n.* cone-bearing plant.  
 Conjectural, kon-jekt'ú-rál, *adj.* involving sup-  
 position.  
 Conjecture, kon-jekt'úr, *n.* a guess; to surmise.  
 Conjoin, kon-join', *v.* to unite.  
 Conjoint, kon-joint', *adj.* united.  
 Conjugal, kon-jú-gal, *adj.* relating to marriage.  
 Conjugate, kon-jú-gát, *v.* to express the parts of a  
 Conjunct, kon-jungkt', *adj.* conjoined. [verb.  
 Conjunction, kon-jungk'shun, *n.* a meeting; a connecting word. [events.  
 Conjunction, kon-jungkt'úr, *n.* combination of  
 Conjunction, kon-jú-rá'shun, *n.* enchantment.  
 Conjure, kun'jer, *v.* to practise sleight-of-hand.  
 Conjure, kon-júr', *v.* to solemnly implore; to cause to appeal.  
 Conjuror, kun'jer-er, *n.* one who conjures.  
 Connate, kon'át, *adj.* inborn; congenital.  
 Connect, kon-ekt', *v.* to join together; to associate.  
 Connexion or Connection, kon-nek'shun, *n.* that which connects.  
 Connivance, kon'vans, *n.* a secret understanding.  
 Connive, kon-iv', *v.* to wink at a fault; to combine.  
 Connoisseur, kon-ně-sehr', *n.* a critical expert.  
 Connubial, kon-ú-bi-al, *adj.* relating to marriage.  
 Conquer, kong'ker, *v.* to subdue; to overcome.  
 Conqueror, kong'ker-er, *n.* one who conquers.  
 Conquest, kong'kwest, *n.* the act of conquering.  
 Consanguineous, kon-sang-gwin'ús, *adj.* related by blood.  
 Conscience, kon'shens, *n.* an inner sense of duty.  
 Conscientious, kon-shi-en'shus, *adj.* scrupulous.  
 Conscious, kon'shus, *adj.* having perception of.  
 Consciousness, kon'shus-ness, *n.* state of aware-  
 ness; self-perception.  
 Conscript, kon-skript, *n.* a compulsory soldier.  
 Conscription, kon-skrip'shun, *n.* compulsory enlistment.  
 Consecrate, kon-sě-krát, *v.* to make sacred.  
 Consecration, kon-sě-krá'shun, *n.* the act of devoting to holy purpose.

- Consecutive, kon-sek'-ū-tiv, *adj.* succeeding in  
 Consensus, kon-sen'sus, *n.* unanimity. [order.  
 Consent, kon-sent', *v.* to agree; to comply.  
 Consequence, kon'sē-kwens, *n.* result.  
 Consequent, kon'sē-kwent, *adj.* resulting.  
 Consequential, kon-sē-kwen'shal, *adj.* casual;  
 pompous.  
 Conservation, kon-ser-vā'shun, *n.* act of conserv-  
 ing.  
 Conservative, kon-serv'ā-tiv, *adj.* tending to con-  
 serve; the name of a political party.  
 Conservatory, kon-serv'ā-tor-i, *n.* greenhouse.  
 Conserve, kon-serv', *v.* to retain.  
 Conserve, kon'serv, *n.* fruit or other preserve.  
 Consider, kon-sid'er, *v.* to ponder.  
 Considerable, kon-sid'er-ābl, *n.* important; large.  
 Considerate, kon-sid'er-āt, *adj.* thoughtful.  
 Consideration, kon-sid'er-ā'shun, *n.* importance;  
 deliberation.  
 Consign, kon-sin', *v.* to transfer; to entrust.  
 Consignee, kon-sin-ē', *n.* one to whom anything is  
 consigned.  
 Consigner, kon-si'ner, *n.* one who consigns.  
 Consignment, kon-sin'ment, *n.* the thing con-  
 signed; act of consignment.  
 Consist, kon-sist', *v.* to exist; to agree.  
 Consistency, kon-sist'en-si, *n.* substance; degree of  
 density.  
 Consistent, kon-sist'ent, *adj.* uniform.  
 Consistory, kon-sist'o-ri, *n.* a place of assembly.  
 Consolation, kon-so-lā'shun, *n.* comfort; sym-  
 Console, kon-sōl', *v.* to comfort. [pathy.  
 Consolidate, kon-sol'i-dāt, *v.* to make solid.  
 Consols, kon'sols, *n.* short for consolidated an-  
 nuities; a form of Government stock.  
 Consonance, kon'so-nans, *n.* agreement.  
 Consonant, kon'so-nant, *adj.* consistent; any  
 letter except a vowel.  
 Consort, kon'sort, *n.* companion.  
 Consort, kon'sort', *v.* to associate.  
 Conspicuous, kon-spi-k'ū-us, *adj.* prominent.  
 Conspiracy, kon-spir'ā-si, *n.* a banding together.  
 Conspirator, kon-spir'a-tor, *n.* one who conspires.  
 Conspire, kon-spir', *v.* to plot.  
 Constable, kon'stabl, *n.* an officer; a policeman.  
 Constabulary, kon-stab'ū-lar-i, *n.* a body of con-  
 stancy, kon'stan-si, *n.* fidelity. [stables.  
 Constant, kon'stant, *adj.* fixed.  
 Constellation, kon-stel'ā'shun, *n.* a group of stars.  
 Consternation, kon-ster-nā'shun, *n.* terror.  
 Constipation, kon-stip-ā'shun, *n.* inactive state of  
 bowels.  
 Constituency, kon-stit'ū-en-si, *n.* a body of voters.  
 Constituent, kon-stit'ū-ent, *n.* a voter; *adj.*  
 an Constitute, kon'stit-ūt, to establish. [element.  
 Constitution, kon-stit'ū-shun, *n.* the system of  
 government; man's physical state.  
 Constrain, kon-strān', *v.* to compel.  
 Constraint, kon-strānt', *n.* confinement; compul-  
 sion.  
 Constrict, kon-strikt', *v.* to contract or bind close.  
 Constriction, kon-strik'shun, *n.* contraction.  
 Construct, kon-strukt', *v.* to build.  
 Constructive, kon-strukt'iv, *adj.* capable of con-  
 structing.  
 Construe, kon-stroo', *v.* to interpret; to explain.  
 Consubstantial, kon-sub-stan'shal, *adj.* of the same  
 nature. [doctrine of the substantial presence.  
 Consubstantiation, kon-sub-stan-shi-ā'shun, *n.* the  
 Consul, kon'sul, *n.* a representative of a govern-  
 ment looking after its interests in a foreign  
 town.  
 Consulate, kon'sul-āt, *n.* office of consul.  
 Consultation, kon-sult-ā'shun, *n.* an interview be-  
 tween a professional man and his client or  
 patient.  
 Consume, kon-sūm', *v.* to destroy; to burn up.  
 Consummate, kon-sum'āt, *v.* to perfect.  
 Consumption, kon-sum'shun, *n.* the act of consum-  
 ing; a pulmonary disease.  
 Contact, kon'takt, *n.* touch.  
 Contagion, kon-tā'jun, *n.* infection.  
 Contagious, kon'tā'jus, *adj.* capable of infection.  
 Contaminate, kon'tam'in-āt, *v.* to pollute.  
 Contemn, kon'tem', *v.* to despise.  
 Contemplate, kon'tem-plāt, *v.* to reflect; to study.  
 Contemporaneous, kon-temp-o-rā-nē-us, *adj.* exist-  
 ing at the same time.  
 Contemporary, kon-temp'o-rā-ri, *n.* one who exists  
 at the same time; a co-existing publication.  
 Contempt, kon'tempt', *n.* scorn.  
 Contemptible, kon'tempt'ibl, *adj.* despicable.  
 Contend, kon-tend', *v.* to struggle; to oppose.
- Content, kon-tent', *adj.* satisfied, pleased; *n.* satis-  
 Contentment, kon-ten'shun, *n.* strife. [faction.  
 Contentious, kon-ten'shus, *adj.* quarrelsome.  
 Contentment, kon-tent'ment, *n.* satisfaction.  
 Contents, kon-tents', *n.* things contained; index.  
 Conterminous, kon-ter'min-us, *adj.* co-extensive.  
 Contest, kon-test', *v.* to dispute.  
 Contest, kon'test, *n.* conflict.  
 Context, kon'tekst, *n.* connecting passages.  
 Contexture, kon-tekst'ur, *n.* the structure of a  
 Contiguity, kon-ti-gū-it-i, *adj.* nearness. [thing.  
 Continenence, kon'tin-ens, *n.* self-restraint.  
 Continent, kon'tin-ent, *n.* mainland; a large  
 division of the earth's surface. [pening.  
 Contingency, kon-tin'jen-si, *n.* an accidental hap-  
 Contingent, kon'tin'jent, *adj.* dependent upon  
 something happening; *n.* a band or company.  
 Continual, kon-tin'ū-āl, *adj.* unceasing.  
 Continuation, kon-tin-ū-ā'shun, *n.* unbroken  
 succession.  
 Continue, kon-tin'ū, *v.* to remain; to persist.  
 Continuity, kon-tin'ū-it-i, *n.* condition of being  
 Comfort, kon-tort', *v.* to distort. [continuous.  
 Contour, kon'toor, *n.* an outline.  
 Contra, kon'tra, *adv.* against. [hibited goods.  
 Contraband, kon'tra-band, *adj.* illegal; *n.* pro-  
 Contrabandist, kon'tra-band-ist, *n.* a smuggler.  
 Contrabass, kon'tra-bās, *n.* the double bass viol.  
 Contract, kon-trakt', *v.* to draw together; to bar-  
 Contract, kon'trakt, *n.* an agreement. [gain.  
 Contraction, kon-trak'shun, *n.* the act of making  
 smaller.  
 Contractor, kon-trakt'or, *n.* one who undertakes  
 a job of work at a price, under contract.  
 Contradict, kon-tra-dikt', *v.* to assert to the con-  
 trary. [consistent.  
 Contradictory, kon-tra-dikt'or-i, *adj.* contrary; in-  
 Contradistinction, kon-tra-dis-tink'shun, *n.* dis-  
 tinctly contrasted.  
 Contralto, kon-tral'to, *n.* the alto voice.  
 Contraries, kon'tra-ri-z, *n.* things opposed.  
 Contrary, kon'tra-ri, *adj.* opposite; at variance.  
 Contrast, kon-trast', *v.* standing or putting in  
 opposition.  
 Contravene, kon-tra-vēn', *v.* to oppose.  
 Contravention, kon-tra-vēn'shun, *n.* opposition.  
 Contretemps, kon'tr-tang', *n.* an inopportune  
 incident. [literary composition.  
 Contribute, kon-trib'ūt, *v.* to give; to supply a  
 Contributory, kon-trib'ū-to-ri, *adj.* helping.  
 Contribute, kon'trit, *adj.* penitent.  
 Contrition, kon-trish'un, *n.* grief; remorse.  
 Contrivance, kon-tri'vans, *n.* a thing contrived.  
 Contrive, kon-triv', *v.* to project; to invent.  
 Control, kon-trōl', *v.* to command; to direct.  
 Controller, kon-trōl'er, *n.* a checker of accounts.  
 Controversialist, kon-tro-ver'shal-ist, *n.* one who  
 indulges in controversy.  
 Controversy, kon-tro-ver-si, *n.* written discussion.  
 Controvert, kon-tro-vert', *v.* to refute; to deny.  
 Contumacy, kon'tū-ma-si, *n.* resistance to author-  
 Contumelious, kon'tū-mēl'us, *adj.* insolent. [ity.  
 Contumely, kon'tū-mel-i, *n.* insolence; reproach.  
 Contusion, kon-tū'zhun, *n.* a bruise.  
 Conundrum, kon-nūn'drum, *n.* a riddle.  
 Conurbation, kon'er-ba-shun, *n.* continuous urban  
 area.  
 Convalescence, kon-val-es'ens, *n.* recovery of  
 health.  
 Convalescent, kon-val-es'ent, *n.* one recovering.  
 Convection, kon-vek'shun, *n.* transmission of elec-  
 tricity or heat by currents. [assemble.  
 Convene, kon-vēn', *v.* to summon together; to  
 Convenient, kon-vēni-ent, *adj.* suitable, near.  
 Convent, kon'vent, *n.* a place where nuns live  
 together.  
 Conventicle, kon-vent'ikl, *n.* place of worship.  
 Convention, kon-ven'shun, *n.* common usage; an  
 assembly. [established by usage.  
 Conventionalism, kon-ven'shun-al-izm, *n.* what is  
 Converge, kon-verj', *v.* to tend to one point.  
 Conversant, kon-vers'ant, *adj.* familiar with.  
 Conversation, kon-vers-ā'shun, *n.* familiar talk.  
 Conversazione, kon-ver-sat-si-ō-ne, *n.* a meeting  
 for discussion. [intercourse with.  
 Converse, kon-vers', *v.* to talk with; to have  
 Conversely, kon-vers'li, *adv.* in reverse order.  
 Conversion, kon-ver'shun, *n.* change of view.  
 Convert, kon-vert', *v.* to change; to bring over to  
 one's opinion. [converted.  
 Convertible, kon-vert'ibl, *adj.* that which may be  
 Convex, kon'veks, *adj.* outwardly curving.  
 Convey, kon-vā', *v.* to carry; to transmit; to steal.



- Conveyance, kon-vā'ens, *n.* any 'vehicle; deed transferring property.
- Conveyancer, kon-vā'ens-er, one who draws up deeds relating to property.
- Convict, kon-vikt', *v.* to prove or declare guilty.
- Convict, kon'vikt, *n.* a prisoner condemned for crime. [of being convicted.]
- Conviction, kon-vik'shun, *n.* proof of guilt; state
- Convince, kon-vins', *v.* to satisfy.
- Convivial, kon-viv'i-al, *adj.* jovial.
- Convocation, kon-vō-kā'shun, *n.* act of convoking; a synod.
- Convoke, kon-vōk', *v.* to summon together.
- Convolvulus, kon-vol'vū-lus, *n.* bindweed.
- Convoy, kon'voi, *v.* to accompany for protection.
- Convulse, kon-vuls', *v.* to agitate.
- Cony, kō'nī, *n.* a rabbit.
- Cookery, kook'er-i, *n.* the science of cooking.
- Coolie, kool'i, *n.* an Oriental labourer.
- Coop, koop, *n.* a tub or box; *v.* to confine.
- Cooperage, koop'er-ij, *n.* a cooper's workshop.
- Co-operate, ko-op'er-āt, *v.* to work with.
- Co-operative, ko-op'er-at-iv, *adj.* working together.
- Co-optation, ko-opt-ā'shun, *n.* the act of election into an association by its own members.
- Co-ordinate, ko-aw'r'din-āt, *adj.* ranking the same.
- Co-ordinates, ko-aw'r'din-āts, *n.* similar elements.
- Coot, koot, *n.* a water-fowl.
- Copal, kō'pal, *n.* a resinous substance.
- Co-partnership, *n.* sharing in profits, etc., of employers and employees. [match.]
- Cope, kōp, *n.* a covering; *v.* to engage with; to Cope, kō'ping, *n.* the top course of a wall.
- Copious, kō'pi-us, *adj.* abundant.
- Copper, kop'er, *n.* a red-brown metal; a copper
- Copperas, kop'er-as, *n.* sulphate of iron. [vessel.]
- Copice, kop'is, *n.* a copse.
- Coprolite, kop'ro-lit, *n.* fossilised excrement.
- Cops, kops, *n.* a small wood.
- Copt, kopt, *n.* a descendant of the ancient Egyptians; member of the Coptic Church.
- Copula, kop'ū-la, *n.* that which connects.
- Copulate, kop'ū-lāt, *v.* to unite sexually.
- Copy, kop'ī, *n.* an imitation.
- Copyhold, kop'ī-hold, *n.* land held of a manor.
- Copyst, kop'ī, *n.* one who copies.
- Copyright, kop'ī-rit, *n.* right in an original production, kō-ke't', *n.* a flirt. [duction.]
- Coracle, kop'ā-kl, *n.* a small row-boat.
- Coral, kor'al, *n.* a substance found in the sea.
- Corbel, kor'bel, *n.* a projection from a wall.
- Cordage, kord'āj, *n.* a ship's rigging.
- Cordial, kor'di-al, *n.* a beverage; *adj.* hearty.
- Cordon, kor'don, *n.* a badge; a guarding line of soldiers.
- Corduroy, kor'du-roi, *n.* a kind of fustian.
- Cordwainer, kord'wā-ner, *n.* a shoemaker; a worker in cordwain.
- Core, kōr, *n.* the heart; the inner part.
- Co-respondent, ko-res-pon'dent, *n.* a co-defendant in a divorce suit.
- Cormorant, kor-mo-rant, *n.* a web-footed sea-bird.
- Cornea, kor'nē-a, *n.* the front membrane of the eye.
- Cornelian, kōr-nē'l-an, *n.* a chalcedonic, precious
- Corner, korn'er, *n.* an angle. [stone.]
- Cornet, korn'et, *n.* a brass instrument.
- Cornetcy, kor'net-sī, *n.* a cornet rank.
- Cornice, korn'is, *n.* moulding close to ceiling.
- Cornucopia, korn'ū-kō'pi-a, *n.* horn of plenty.
- Cornute, korn'ūt, *v.* to make a cuckold of.
- Corolla, kor-ol'ā, *n.* the inner whorl of a flower.
- Corollary, kor-ol'ar-i, *n.* an inference from facts.
- Corona, kor-ō'na, *n.* the projecting part of a cornice; the moon's halo.
- Coronach, kor-ō-nah, *n.* funeral dirge.
- Coronation, kor-o-nā'shun, *n.* the crowning of a monarch.
- Coroner, kor-ō-ner, *n.* one who presides at inquests.
- Coronet, kor-ō-net, *n.* a small crown worn by nobles.
- Corporal, kor-po-rāl, *n.* a petty officer; *adj.* relating to the body.
- Corporate, kor-po-rāt, *adj.* pertaining to a corporation.
- Corporation, kor-po-rā'shun, *n.* a corporate body.
- Corporeal, kor-pō-rē-al, *adj.* material.
- Corps, kōr, *n.* a body of soldiers.
- Corpse, kōrps, *n.* a dead body.
- Corpulence, kor-pū-lens, *n.* fatness; obesity.
- Corpuscle, kor-pus'l, *n.* a minute particle.
- Corpuscular, kor-pus'kū-lar, *adj.* relating to corpuscles.
- Corral, kor-āl, *v.* to surround; *n.* cattle enclosure.
- Correct, kor-ekt', *v.* to make accurate; *n.* right.
- Correlate, kor'e-lāt, *v.* to be mutually akin.
- Correspond, kor-es-pond', *v.* to agree with; to exchange letters. [written letters.]
- Correspondence, kor-es-pond'ens, *n.* suitability;
- Correspondent, kor-res-pond'ent, *adj.* agreeing with; *n.* one who writes letters.
- Corridor, kor'i-dōr, *n.* a passage-way.
- Corrigenda, kor-i-jend'ā, *n.* corrections.
- Corroborate, kor-ob'ō-rāt, *v.* to confirm.
- Corrode, kō-rōd', *v.* to rust; to eat away.
- Corrosive, kor-ō'siv, *adj.* having the quality of corrosion.
- Corrugate, kor'ū-gāt, *v.* to draw into folds.
- Corrupt, kor-upt', *v.* to defile, to bribe; *adj.* debased. [tion, perishable.]
- Corruptible, kor-upt'ibl, *adj.* capable of corruption.
- Corruption, kor-up'shun, *n.* impurity.
- Corrage, kor'sāj, *n.* bodice.
- Corsair, kor'sār, *n.* a pirate.
- Corselet, kors'let, *n.* a cuirass.
- Corset, kors'et, *n.* stays.
- Cortège, kor-tāzh', *n.* a procession.
- Cortes, kor'tez, *n.* Spanish parliament.
- Coruscate, kor-us-kāt, *v.* to flash.
- Corvette, kor-vet', *n.* a small war vessel.
- Cosmetic, koz-met'ik, *n.* a preparation for the complexion, koz'mik, *adj.* of the universe. [plexion.]
- Cosmic, koz'mik, *adj.* of the universe.
- Cosmogony, koz-mog-ō-nī, *n.* the theory of origin.
- Cosmography, koz-mog'raf-i, *n.* science of the earth's constitution. [world as a whole.]
- Cosmology, koz-mol'ō-jī, *n.* the science of the Cosmopolitan, koz-mo-pol'it-an, *n.* one who is at home anywhere.
- Cosmos, koz'mos, *n.* the physical world.
- Costal, kost'al, *adj.* pertaining to the ribs.
- Costermonger, kost'er-mung-ger, *n.* an itinerant vendor of eatables.
- Costive, kost'iv, *adj.* constipated.
- Costume, kost'um, *n.* dress.
- Cosy, kō'zī, *adj.* snug; *n.* a teapot cover.
- Coterie, kō'ter-i, *n.* a group of persons with similar
- Cotillion, ko-tī'l-yun, *n.* a kind of dance. [aims.]
- Cotton, kot'un, *n.* the produce of the cotton plant; cloth made therefrom.
- Couch, kowch, *n.* a seat; a bed; *v.* to stoop down; to hide.
- Cough, kōf, *n.* noise made by throwing off phlegm.
- Council, kown'sil, *n.* a deliberative assembly.
- Councillor, kown'sil-er, *n.* a member of a council.
- Counsel, kown'sel, *n.* advice; an advocate.
- Counsellor, kown'sel-or, *n.* one who counsels.
- Count, kownt, *v.* to number; *n.* esteem; a foreign title.
- Countenance, kown'ten-ans, *n.* the face; *v.* to favour.
- Counter, kown'ter, *adv.* against; *n.* a shop table.
- Counteract, kown'ter-akt', *v.* to go against.
- Counterbalance, kown'ter-bal'ans, *v.* to weigh against. [thing false.]
- Counterfeit, kown'ter-fēt, *v.* to imitate; *n.* some-Countermand, kown'ter-mānd, *v.* to revoke.
- Countermand, kown'ter-mārch, *v.* to march back.
- Countermark, kown'ter-mārk, *n.* a mark of ownership put on goods. [motion.]
- Countermotion, kown'ter-mō-shun, *n.* an opposing
- Counterpane, kown'ter-pān, *n.* a bed covering.
- Counterpart, kown'ter-pārt, *n.* a part that corresponds to another. [a plot.]
- Counterplot, kown'ter-plot, *v.* to plot to thwart
- Counterpoint, kown'ter-point, *n.* the art of combining melodies.
- Counterpoise, kown'ter-poiz, *v.* to weigh against.
- Counterscarp, kown'ter-skārp, *n.* the opposite side of a ditch to that occupied by the besieged.
- Countersign, kown'ter-sin, *n.* an authorising mark.
- Counterstroke, kown'ter-strōk, *n.* a return stroke.
- Countervail, kown'ter-vāl', *v.* to avail against.
- Countess, kown'tess, *n.* wife or widow of an earl or
- Countless, kownt'les, *adj.* innumerable. [count.]
- Country, kun'tri, *n.* a kingdom; any land; a rural
- County, kown'tī, *n.* a shire. [district.]
- Couple, kup'l, *n.* a pair; *v.* to join.
- Couplet, kup'let, *n.* two lines of rhyme.
- Coupling, kup'ling, *n.* a connection.
- Coupon, koo'pong, *n.* a certificate that can be cut
- Courage, kur'āj, *n.* bravery. [off.]
- Courier, koo'ri-er, *n.* a messenger.
- Course, kōrs, *n.* progress; career; race-ground; *v.* to run; to hunt.
- Coursing, kōrs'ing, *n.* hunting over a course.
- Court, kōrt, *n.* an enclosed space; a hall of justice; the surroundings of a sovereign; *v.* to solicit.

Courteous, kurt'ê-us, *adj.* polite.  
 Courtesan, kur'tê-zan, *n.* a prostitute.  
 Courtesy, kur'ti-si, *n.* civility.  
 Courtier, kôrt'ier, *n.* a frequenter of court.  
 Courtly, kôrt'li, *adj.* elegant.  
 Court-martial, kôrt-mar-shal, *n.* a court of officers.  
 Courtship, kôrt'ship, *n.* the act of wooing.  
 Cousin, kuz'n, *n.* the son or daughter of an uncle.  
 Cove, kôv, *n.* a small inlet.  
 Covenant, kuv'en-ant, *n.* a mutual agreement.  
 Cover, kuv'er, *v.* to spread over; to conceal; *n.* a wrapping; a lid; a retreat of game.  
 Coverlet, kuv'er-let, *n.* a bed covering.  
 Covert, kuv'ert, *adj.* secret; concealed.  
 Coverture, kuv'ert-ur, *n.* shelter; the condition of being a married woman.  
 Covet, kuv'et, *v.* to desire.  
 Covetousness, kuv'et-us-ness, *n.* a strong desire for.  
 Covey, kuv'i, *n.* a brood of game.  
 Coward, kow'ard, *n.* one lacking in courage.  
 Cower, kow'er, *v.* to shrink down; to crouch.  
 Cowl, kowl, *n.* a monk's hood.  
 Coxcomb, koks'kôm, *n.* a fop.  
 Coxswain, kok'swân, *n.* helmsman of a boat; one who has charge of a ship's boat and its crew under an officer.  
 Cozen, kuz'en, *v.* to cheat.  
 Cozenage, kûz'en-aj, *n.* fraud in bartering.  
 Crabbed, krab'd, *adj.* ill-natured, harsh.  
 Crack, krak, *v.* to split; to emit a sharp sound; *n.* a cleavage.  
 Cracker, krak'er, *n.* a firework; a biscuit.  
 Cradle, krâld, *n.* a small bed for infants; a frame.  
 Craft, kraft, *n.* cunning; trade.  
 Craftsman, krafts-man, *n.* one engaged in a craft.  
 Crafty, kraft'i, *adj.* deceitful; with skill.  
 Crag, krag, *n.* a high rock.  
 Cramp, kramp, *n.* a spasm; *v.* to hinder; to confine.  
 Cran, kran, *n.* a Scotch measure for herrings.  
 Cranberry, kran'ber-i, *n.* an evergreen shrub with edible berries.  
 Crane, krân, *n.* a long-legged bird; an appliance for lifting heavy weights.  
 Cranial, krân-i-al, *adj.* pertaining to the skull.  
 Craniology, krân-i-ol'ô-jî, *n.* the study of skulls.  
 Cranium, krân-i-um, *n.* the skull.  
 Crank, krangk, *n.* a crook or bend; a whim.  
 Cranny, kran'i, *n.* a chink; a fissure.  
 Crash, krash, *v.* to dash into.  
 Grass, kras, *adj.* coarse.  
 Crate, krât, *n.* a wicker case.  
 Crater, krâ'ter, *n.* the mouth of a volcano.  
 Cravat, kra-vat', *n.* a kind of neckcloth.  
 Crave, krâv, *v.* to ask for; to beg; to seek.  
 Craven, krâ'ven, *n.* a coward; *adj.* cowardly.  
 Crawl, kraw, *n.* the crop of fowls.  
 Crawl, krawl, *v.* to creep.  
 Crayon, krâ'on, *n.* a chalk pencil for drawing.  
 Craze, krâz, *n.* a passion; *v.* to confuse; to impair.  
 Craziness, krâ'zi-ness, *n.* silliness. [mentally].  
 Crazy, krâ'zi, *adj.* deranged.  
 Cream, krêm, *n.* butterfat in milk.  
 Crease, krês, *n.* mark made by folding.  
 Create, krê-ât', *v.* to originate.  
 Creation, krê-â'shun, *n.* formation.  
 Creator, krê-â'tor, *n.* one who creates; the Supreme Being.  
 Crèche, krâsh, *n.* a public nursery.  
 Credence, krê'dens, *n.* belief.  
 Credentials, kre-den'shals, *n.* letters of personal testimony.  
 Credible, kred'ibl, *adj.* to be believed.  
 Credit, kred'it, *n.* esteem, trust.  
 Creditable, kred'it-a-bl, *adj.* trustworthy.  
 Creditor, kred'it-or, *n.* one to whom money is due.  
 Credulity, kred-û'lit-i, *n.* easiness of belief.  
 Creed, krêd, *n.* an exposition of belief.  
 Creek, krêk, *n.* a small inlet or bay.  
 Creeper, krê'per, *n.* a climbing plant.  
 Cremation, krê-mâ'shun, *n.* the burning of the cremated, krê-nâ'ted, *adj.* scalloped. [dead].  
 Crenelated, kren-el-â'ted, *adj.* indented, battlemented.  
 Creole, krê'ôl, *n.* a person of European descent born in South America or the West Indies.  
 Creosote, krê'ô-sôt, *n.* oil obtained from tar.  
 Crepuscular, krep-usk'û-lar, *adj.* relating to twilight.  
 Crescent, kres'ent, *adj.* shaped like the new moon.  
 Cress, kres, *n.* a plant used in a salad.  
 Cresset, kres'et, *n.* an iron vessel for holding fire.

Crest, krest, *n.* the summit; a cock's comb; the surmounting symbol of a coat of arms.  
 Crestfallen, krest'fawl-en, *adj.* disheartened.  
 Cretaceous, krê-tâ'shus, *adj.* chalk-like; name given to a geological era.  
 Cretinism, krê'tin-izm, *n.* mentally and physically stunted.  
 Cretonne, kre-tôn', *n.* a figured cotton fabric used for furniture coverings, etc.  
 Crevasse, kre-vas', *n.* a crack or opening in a crevice, krev'is, *n.* a crack. [glacier].  
 Crib, krib, *n.* a child's bed; *v.* to shut in; to steal.  
 Crick, krik, *n.* a spasm.  
 Cricket, krik'et, *n.* a kind of grasshopper; a summer team game.  
 Crier, kri'er, *n.* a court officer; a bellman.  
 Criminal, krim'in-al, *n.* one guilty of crime; *adj.* pertaining to crime.  
 Criminality, krim-in-al'it-i, *n.* guilt.  
 Crimp, krimp, *v.* to plant; *n.* a decoy.  
 Crimple, krimp'l, *v.* to curl.  
 Crimson, krim'zn, *n.* a deep red colour.  
 Cringe, krinj, *v.* to bend fawningly.  
 Crinkle, kringk'l, *v.* to wrinkle.  
 Cripple, krip'l, *n.* one who is lame.  
 Crisis, krî'sis, *n.* a critical time.  
 Crisp, krisp, *adj.* brittle, brisk.  
 Criterion, kri'tê-ri-on, *n.* a standard of judging.  
 Critical, krit'ik-al, *adj.* discriminating.  
 Criticise, krit'î-siz, *v.* to pass judgment on.  
 Criticism, krit'î-sizm, *n.* the act of criticising.  
 Critique, krit-êk', *n.* a printed criticism.  
 Croak, krôk, *v.* to grumble; *n.* the cry of a frog.  
 Crochet, krô'shâ, *n.* a kind of fancy work.  
 Crocodile, krok'o-dil, *n.* a large reptile.  
 Crone, krôn, *n.* an old woman.  
 Crony, krô'ni, *n.* a familiar friend.  
 Crook, krook, *n.* a curve; a staff; (colloq.) a dishonest person.  
 Croon, kroon, *v.* to hum.  
 Cross, kros, *n.* a gibbet; the instrument on which Christ was crucified; emblem of the Christian religion.  
 Crotchety, kroch'ê-ti, *adj.* whimsical, faddy.  
 Croton-oil, krô'ton-oil, *n.* a purgative oil.  
 Croup, kroop, *n.* throat disease.  
 Croupier, kroo'pi-er, *n.* taker in of stakes at gaming table; assistant chairman at public dinner.  
 Crow, krô, *n.* a bird; the cry of the cock; *v.* to crowbar, krô'bâr, *n.* an iron lever. [boast].  
 Crowd, krowd, *n.* a collection of people; a mob.  
 Crown, krown, *n.* a regal head adornment; the top.  
 Crucial, kroo'shi-al, *adj.* testful. [of anything].  
 Crucible, kroo'sibl, *n.* a melting-pot.  
 Crucifix, kroo'si-fiks, *n.* a cross; the sacred emblem of the Cross.  
 Crucifixion, kroo-si-fik'shun, *n.* death on the Cross.  
 Cruciform, kroo'si-form, *adj.* in the form of a cross.  
 Crucify, kroo'si-fi, *v.* to put to death by nailing to.  
 Crude, kroad, *adj.* rough, raw. [a cross].  
 Crudity, kroad'it-i, *n.* unfinished, rude.  
 Cruel, kroo'el, *adj.* hard-hearted, stern, inhuman.  
 Cruelty, kroo'el-ti, *n.* harshness; brutality.  
 Cruet, kroo'et, *n.* stand for condiments.  
 Cruise, krooz, *v.* to sail about.  
 Crumb, krumb, *n.* a fragment.  
 Crumble, krumb'l, *v.* to break in small pieces.  
 Crumpet, krump'et, *n.* a thick pancake that is toasted and eaten with butter.  
 Crumple, krump'l, *v.* to crease or wrinkle.  
 Crunch, krunch, *v.* to crush with the teeth.  
 Crupper, krup'er, *n.* the leather that passes under a horse's tail.  
 Crusade, kroo-sâd', *n.* a military expedition to the Holy Land; any daring combined undertaking. [crusade].  
 Crusader, kroo-sâ'd-er, *n.* one taking part in a.  
 Cruse, krooz, *n.* an earthen pot.  
 Crush, krush, *v.* to break by pressure; to ruin.  
 Crust, krust, *n.* outer covering.  
 Crustaceous, krus-tâ'shus, *adj.* relating to shell.  
 Crusty, krust'i, *adj.* with a crust; surly. [fish].  
 Crutch, krutch, *n.* a support for one who is lame.  
 Cruz, kruks, *n.* a cross; a difficulty.  
 Crypt, kript, *n.* an underground chapel.  
 Cryptic, krip'tik, *adj.* hidden; secret.  
 Cryptogamy, kript-og'â-mi, *n.* the science of flowerless plants.  
 Cryptography, kript-og'raf-i, *n.* secret writing.  
 Crystal, krist'al, *adj.* transparent; glassy; *n.* a clear mineral.  
 Crystalline, krist'al-liz, *v.* to form into crystals.  
 Crystallography, krist-al-og'raf-i, *n.* the science of crystals.



Cube, kûb, *n.* a solid with square sides.  
 Cubiform, kû'bi-form, *adj.* in cube shape.  
 Cubit, kû'bit, *n.* an ancient measure.  
 Cuckold, kuk'old, *n.* a man deceived by his wife.  
 Cuckoo, kôôk'oo, *n.* a well-known bird.  
 Cucumber, kû'kum'ber, *n.* a long green fruit used in salads.  
 Cud, kud, *n.* food that is re-chewed by ruminants.  
 Cuddy, kud'i, *n.* a ship's cabin.  
 Cudgel, kuj'el, *n.* a staff.  
 Cue, kû, *n.* a hint; the tail; a rod used in billiards.  
 Cuff, kuf, *n.* a blow; wrist covering; *v.* to strike.  
 Cuirass, kwe-ras', *n.* a breast covering.  
 Cuirassier, kûr-ras-ër', *n.* a soldier armed with a cuirass.  
 Cuisine, kwe-zên', *n.* cooking department.  
 Cul-de-sac, kul-de-sak', *n.* a blind alley.  
 Culinary, kû'lin-ri, *adj.* relating to cooking.  
 Cull, kul, *v.* to select.  
 Cullender, kul'en-der, *n.* a strainer.  
 Culm, kulm, *n.* stalk of corn or grass.  
 Culminate, kul'min-ât, *v.* to get to the extreme.  
 Culpable, kul'pâ-bl, *adj.* guilty. [point.  
 Culprit, kul'prit, *n.* one to blame, or accused.  
 Cult, kult, *n.* system.  
 Cultivate, kul'ti-vât, *v.* to till.  
 Culture, kul'tûr, *n.* refinement; learning.  
 Culvert, kul'vert, *n.* a covered water channel.  
 Cumbersome, kum'ber-sum, *adj.* burdensome.  
 Cumbrous, kum'brus, *adj.* heavy.  
 Cumulate, kûm'û-lât, *v.* to heap together.  
 Cumulative, kûm'û-lâ-tiv, *adj.* regularly increas-  
 ing.  
 Cumulus, kûm'û-lus, *n.* a large woolly kind of  
 cloud.  
 Cuneiform, kû-nê'i-form, *adj.* in the style of the  
 ancient Babylonian writing characters.  
 Cuniform, kû'ni-form, *adj.* wedge-shaped.  
 Cunning, kun'ing, *adj.* sly, crafty; *n.* skill.  
 Cupboard, kub'erd, *n.* a storing-place for usable  
 and eatable things.  
 Cupid, kûp'id, *n.* the god of love.  
 Cupidity, kû-pid'it-i, *n.* greed.  
 Cupola, kû'po-la, *n.* a spherical vault, or concave  
 ceiling.  
 Curable, kûr'abl, *adj.* healable.  
 Curacao, koo-râ-sô'a, *n.* a liqueur.  
 Curacy, kû'ra-si, *n.* the benefice of a curate.  
 Curate, kû'rât, *n.* an assistant clergyman.  
 Curative, kûr'ra-tiv, *adj.* tending to cure.  
 Curator, kû-râ'tor, *n.* a caretaker.  
 Curb, kurb, *v.* to check.  
 Curbstone, kurb'stone, *n.* a stone placed on the  
 edge of a street footway.  
 Curlew, kur'fû, *n.* an evening bell.  
 Curiosity, kû-ri-ô's'it-i, *n.* inquisitiveness.  
 Curioso, kû-ri-ô'so, *n.* a curio collector.  
 Curious, kû'rî-us, *adj.* strange; rare; inquisitive.  
 Curlew, kur'lû, *n.* a wading bird.  
 Curmudgeon, kur-mud'jen, *n.* an ill-disposed per-  
 son.  
 Currant, kur'ant, *n.* a kind of fruit. [son.  
 Currency, kur'en-si, *n.* the coinage.  
 Current, kur'ent, *adj.* running; *n.* a stream.  
 Curricule, kur'ikl, *n.* a two-wheeled horse-drawn  
 vehicle.  
 Curriculum, kur-ikl'û-lum, *n.* a course of study.  
 Curry, kur'i, *n.* a peppery sauce; *v.* to dress  
 leather. [Invoked evil.  
 Curse, kûrs, *v.* to denounce; to execrate; *n.* the  
 Cursed, kûrs'ed, *adj.* despicable, hateful.  
 Curseive, kûrs'iv, *adj.* flowing [of writing].  
 Cursory, kûrs'ô-ri, *adj.* superficial.  
 Curtail, kur'tâl, *v.* to shorten.  
 Curtain, kur'tin, *n.* enclosing drapery; a screen.  
 Curvature, kurv'â-tûr, *n.* a bending.  
 Curvet, kur-vet', *n.* a curving leaping movement  
 of a horse. [lines.  
 Curvilinear, kur-vil-in-ê-ar, *adj.* bounded by curved  
 lines.  
 Cushion, koosh'un, *n.* a pillow or stuffed seat.  
 Custard, kust'ard, *n.* a baked compound of milk  
 and eggs.  
 Custodian, kust-ô'di-an, *n.* a guardian. [and eggs.  
 Custody, kus'to-di, *n.* a keeping in charge; im-  
 prisonment.  
 Custody, kus'tom, *n.* use; habit. [prisonment.  
 Customary, kust'om-ar-i, *adj.* according to usage.  
 Customer, kust'om-er, *n.* a purchaser.  
 Custom-house, kust'om-hows, *n.* a building where  
 customs are collected.  
 Customs, kust'oms, *n.* duties on exports or imports.  
 Cutaneous, kû-tâ-ne-us, *adj.* pertaining to the skin.  
 Cuticle, kû'tik-l, *n.* the outer skin.  
 Cutlass, kut'las, *n.* a broadsword.  
 Cutler, kut'ler, *n.* one who makes or deals in  
 knives, etc.

Cutlery, kut'ler-i, *n.* articles made by cutlers.  
 Cutter, kut'er, *n.* a small ship.  
 Cycle, s'ikl, *n.* a circle; a round of time; a bicycle.  
 Cycloid, s'iklôid, *n.* a figure like a circle.  
 Cyclone, s'iklôn, *n.* a rotary storm.  
 Cyclopædia, si-klop-ê-di-a, *n.* the quintessence of  
 an encyclopædia concentrated in one volume.  
 Cyclopean, si-klop'i-an, *adj.* gigantic.  
 Cyclops, si'klops, *n.* a fabled race of one-eyed  
 giants.  
 Cygnet, sig'net, *n.* a young swan. [diameter.  
 Cylinder, sil'in-der, *n.* a circular body of equal  
 cylindrical, sil'in-drik-al, *adj.* in cylinder form.  
 Cymbal, sim'bal, *n.* a clashing musical instrument.  
 Cynic, sin'ik, *n.* a morose sneerer; a Greek school  
 of philosophy.  
 Cynical, sin'ik-al, *adj.* sarcastic, satirical.  
 Cynicism, sin'is-izm, *n.* heartlessness.  
 Cynosure, sin'ô-shoor, *n.* that which arrests  
 attention.  
 Cypress, si-pres, *n.* a coniferous tree. [attention.  
 Cyst, sist, *n.* sac containing morbid matter in  
 animal or plant.

## D

Dabble, dab'l, *v.* to play in water; to meddle with.  
 Dace, däs, *n.* a small river fish.  
 Dactyl, dak'til, *n.* in poetry, a foot of three  
 syllables.  
 Dado, dâ'do, *n.* the lower section of a wall-space;  
 body of a pedestal.  
 Daffodil, daf'ô-dil, *n.* a yellow flower of the lily  
 order.  
 Dagger, dag'er, *n.* a short-sword. [order.  
 Daguerrotype, da-gero-tip, *n.* an old form of  
 photograph.  
 Dahlia, dâ'li-ä, *n.* a flowering garden plant.  
 Dainty, dän'ti, *adj.* delicate; pleasing.  
 Dairy, dê'ri, *n.* a place where milk is kept; a  
 shop for selling milk.  
 Dais, dâ'is, *n.* the raised part of a floor.  
 Dale, däl, *n.* a valley.  
 Dalesman, dälz-man, *n.* a dale dweller.  
 Dalliance, däl'i-ans, *n.* trifling.  
 Dally, dal'i, *v.* to lose time.  
 Dam, n. confined water; mother [of animals].  
 Damage, dam'aj, *n.* injury.  
 Damask, dam'ask, *n.* a figured fabric.  
 Damaskene, dam'as-kên, *v.* to decorate metal.  
 Dame, däm, *n.* matron; lady.  
 Damn, dam, *v.* to condemn.  
 Damper, dam'per, *n.* an apparatus for regulating  
 currents; a check.  
 Damsel, dam'sel, *n.* a young woman.  
 Damsion, dam'son, *n.* species of small plum.  
 Dandelion, dan'de-li-on, *n.* a common yellow  
 Composite flower.  
 Dandle, dan'dl, *v.* to fondle, or toss up.  
 Dandruff, dan'druf, *n.* scurf on the hair.  
 Dandy, dan'di, *n.* a fop.  
 Dangerous, dän'jer-us, *adj.* unsafe.  
 Dangle, dang'l, *v.* to suspend slackly; to hang  
 around.  
 Dangler, dang'ler, *n.* one who follows.  
 Dank, dangk, *adj.* damp.  
 Dapper, dap'er, *adj.* quick, handy, neat.  
 Dapple, dap'l, *adj.* spotted.  
 Darling, dâr'ling, *n.* a loved one.  
 Dart, dârt, *n.* a short lance; *v.* to thrust; to rush.  
 Darwinism, dâr'win-izm, *n.* the Darwinian theory  
 of evolution.  
 Dash, v. to throw hastily; *n.* a blow; a flourish;  
 a slight infusion; a punctuation mark [—].  
 Dastard, das'terd, *n.* a coward.  
 Data, dâ'ta, *n.* a collection of facts.  
 Daub, dawb, *v.* to smear.  
 Dauby, dawb'i, *adj.* sticky, smeary.  
 Daughter, daw'ter, *n.* a female child.  
 Daunt, dawnt, *v.* to frighten.  
 Dauntless, dawnt'less, *adj.* fearless.  
 Davenport, däv'en-port, a standing writing-desk.  
 Davit, dâ'vit, *n.* the projecting bar of a ship.  
 Davy Jones, dâ'vi-jôn's, *n.* the spirit of the deep.  
 Dawdle, daw'dl, *v.* to trifle; to waste time.  
 Dawk, dawk, *n.* an Indian post.  
 Dawn, n. the light of daybreak; *v.* to loom in view.  
 Daze, dâz, *v.* to astound.  
 Dazzle, dâz'l, *v.* to confuse by light or brilliance.  
 Deacon, dê'kon, *n.* a church or chapel officer.  
 Deaden, ded'en, *v.* to impair. [space in a ship.  
 Dead-freight, ded-frät, *n.* payment for unoccupied  
 space in a ship.  
 Dead-lift, ded'lift, *n.* a lift made without aid.  
 Deadliness, ded'lî-ness, *n.* condition of being  
 dead.

Dead-lock, ded'lök, *n.* a complete standstill.  
 Deadly, ded'li, *adj.* fatal.  
 Dead-reckoning, ded'rek'on-ing, *n.* a reckoning made with a compass and logbook.  
 Deaf, def, *adj.* deprived of hearing.  
 Deafen, def'n, *v.* to render deaf.  
 Deaf-mute, def'müt, *n.* one deaf and dumb.  
 Deal, děl, *n.* a great quantity; a bargain; a kind of wood; *v.* to distribute.  
 Dealer, děl'er, *n.* a trader.  
 Dean, dēn, *n.* a church or college dignitary.  
 Deanery, dēn'er-i, *n.* the office or house of a dean.  
 Dearth, derth, *n.* scarcity.  
 Death, deth, *n.* the end of life.  
 Death-warrant, deth'wor-ant, *n.* an order for execution.  
 Debar, de-bār, *v.* to exclude. [cution].  
 Debark, de-bārk', *v.* to land from a ship.  
 Debase, de-bās', *v.* to degrade.  
 Debasing, de-bās'ing, *n.* degradation.  
 Debate, de-bāt', *v.* to argue; *n.* a discussion.  
 Debauch, de-bawch', *v.* to pervert.  
 Debauchery, de-bawch'er-i, *n.* lewdness.  
 Debutant, de-bent'ūr, *n.* an acknowledgment of debt.  
 Debut, de-büt, *n.* something due.  
 Debonair, deb-o-nār, *adj.* gay; elegant.  
 Debouch, de-boosh', *v.* to march out from.  
 Debris, de-brē', *n.* rubbish; ruins.  
 Debtor, dēt'or, *n.* one who owes.  
 Debut, dā-boō', *n.* a first appearance.  
 Decade, dek'ād, *n.* ten years.  
 Decadence, de-kā'dens, *n.* decay. [sides].  
 Decahedron, dek-ā-hē'dron, *n.* a solid figure of ten faces.  
 Decalogue, dek-ā-log, *n.* the ten commandments.  
 Decameron, de-kam'er-on, *n.* Boccaccio's hundred tales.  
 Decamp, dek-āmp', *v.* to steal away. [tales].  
 Decanal, dek-an'al, *adj.* relating to a dean or deanery.  
 Decant, de-kānt', *v.* to pour off, as into a decanter.  
 Decanter, de-kan'ter, *n.* a vessel for holding liquor.  
 Decapitate, de-kap'it-āt, *v.* to behead.  
 Decay, de-kā', *v.* to fall off; to wither; *n.* corruption.  
 Decease, de-sēs', *n.* death. [tion].  
 Deceit, de-sēt', *n.* fraud; artifice.  
 Deceive, de-ōēv', *v.* to mislead.  
 Decency, dēs'en-si, *n.* modesty; propriety.  
 Decennial, de-sen'i-al, *adj.* happening every ten years.  
 Decent, dēs'ent, *adj.* decorous; proper; good.  
 Decentralisation, de-sen-tral-i-zā'shun, *n.* the act of withdrawing from central government.  
 Deception, de-sep'shun, *n.* the act of deceiving.  
 Deceptive, de-sep'tiv, *adj.* tending to deceive.  
 Decide, de-sid', *v.* to determine; to resolve.  
 Deciduous, de-sid'ū-ūs, *adj.* dropping its leaves annually.  
 Decimal, des'i-mal, *n.* a tenth; *adj.* by tens.  
 Decimate, des'i-māt, *v.* to kill every tenth man; to take a tenth part.  
 Decipher, de-si'fer, *v.* to make out.  
 Decision, de-sizh'un, *n.* a determination; a conclusion.  
 Declaim, de-klām', *v.* to harangue.  
 Declamation, dek-lam-ā'shun, *n.* rhetorical speaking.  
 Declamatory, de-klam-ā-to-ri, *adj.* noisily rhetorical.  
 Declare, de-klār', *v.* to avow; to publish. [cal].  
 Declension, de-klens'shun, *n.* a falling off.  
 Declinable, de-klī'nā-bl, *adj.* capable of declination.  
 Decline, de-klīn', *v.* to refuse; *n.* a falling off.  
 Declivity, de-kliv'it-i, *n.* a downward slope.  
 Decoot, de-kōkt', *v.* to boil.  
 Decoction, de-kōk'shun, *n.* an extract obtained by boiling.  
 Decollate, de-kol'āt, *v.* to behead. [boiling].  
 Decoloration, de-kul'er-ā'shun, *n.* removal or absence of colour.  
 Decompose, de-kom-pōs', *v.* to separate into original components; to decay.  
 Decompose, de-kom-pōwd', *v.* to compound again.  
 Decorative, dek'o-ra-tiv, *adj.* ornamental.  
 Decorous, dek'o-rus, *adj.* proper; becoming.  
 Decorum, de-kō'rum, *n.* becoming behaviour.  
 Decoy, de-koi', *v.* to allure; *n.* the thing used to lure.  
 Decree, de-krē', *n.* a judicial order or judgment.  
 Decrepid, de-krep'it, *adj.* broken down.  
 Decrepitate, de-krep'it-āt, *v.* to crackle with heat.  
 Decry, de-kri', *v.* to discredit.  
 Decumbent, de-kūm'bent, *adj.* lying down.  
 Decuple, dek'ū-pl, *adj.* tenfold.

Decussate, de-kus'āt, *v.* to cross.  
 Dedalous, ded-ā-lus, *adj.* cleverly intricate.  
 Dedicate, ded-i-kāt, *v.* to devote to.  
 Dedication, ded-i-kā'shun, *n.* consecration; a dedicatory inscription in a book.  
 Deduce, de-dūs', *v.* to infer.  
 Deduction, de-duk'shun, *n.* what is deducted.  
 Deed, dēd, *n.* exploit; document.  
 Deem, dēm, *v.* to suppose; to infer.  
 Deepen, dē'pen, *v.* to increase in depth.  
 Deer-stalking, dēr'stawk-ing, *n.* deer-hunting.  
 Deface, de-fās', *v.* to disfigure.  
 Defacement, de-fās'ment, *n.* the act of disfiguring.  
 Defalcation, de-fal-kā'shun, *n.* embezzlement.  
 Defamation, de-fā-mā'shun, *n.* slander.  
 Defamatory, de-fam-ā-to-ri, *adj.* slanderous.  
 Defame, de-fām', *v.* to slander.  
 Default, de-fawt', *n.* failure.  
 Defeatance, de-fēz'ans, *n.* defeat.  
 Defecation, def-ē-kā'shun, *n.* purification.  
 Defect, de-fekt', *n.* fault; omission.  
 Defection, de-fek'shun, *n.* falling away; revolt.  
 Defective, de-fek'tiv, *adj.* faulty.  
 Defence, de-fens', *n.* protection.  
 Defend, de-fend', *v.* to protect.  
 Defendant, de-fend'ant, *n.* a defender.  
 Defer, de-fer', *v.* to postpone; to submit to.  
 Deference, defer-ens, *n.* respect.  
 Differential, defer-en'shal, *adj.* showing respect.  
 Defiance, de-fi'ans, *n.* bold opposition.  
 Defiant, de-fi'ant, *adj.* bold; showing defiance.  
 Deficiency, de-fish'en-si, *n.* imperfection; shortcoming; loss.  
 Deficit, def-is-it, *n.* that which is wanting.  
 Defile, de-fil', *n.* a narrow pass; *v.* to file off.  
 Define, de-fin', *v.* to particularise; to explain.  
 Definite, def-in-it, *adj.* defined.  
 Definitely, def-in-it-ly, *adv.* fixedly; finally.  
 Definition, def-in-ish'un, *n.* a precise explanation.  
 Definitive, def-in-it-iv, *adj.* limiting.  
 Deflect, de-flekt', *v.* to turn aside.  
 Deflection, de-flek'shun, *n.* deviation.  
 Defoliation, de-fō-l-i-ā'shun, *n.* the shedding of leaves.  
 Deform, de-fōrm', *v.* to resist. [leaves].  
 Deform, de-fōrm', *v.* to disfigure.  
 Deformity, de-fōrm'it-i, *n.* the condition of being deformed.  
 Deform, de-fōrm', *v.* to pay. [deformed].  
 Deft, *n.* neat; dexterous.  
 Defunct, de-fungkt', *adj.* dead.  
 Defy, def-i', *v.* to challenge; to oppose.  
 Degeneracy, de-jen'er-ā-si, *n.* deterioration.  
 Degenerate, de-jen'er-āt, *v.* to become inferior.  
 Deglutition, de-gloo-tish'un, *n.* swallowing.  
 Degrade, de-grād', *v.* to reduce in status.  
 Degree, de-grē', *n.* rank, quality; unit of angular measurement.  
 Deify, de-i'f-i, *v.* to make a god of.  
 Deign, dān, *v.* to condescend.  
 Deism, dē'izm, *n.* belief in God, but not religion.  
 Deist, dē'ist, *n.* a freethinker.  
 Deity, de-i't-i, *n.* the Supreme Being.  
 Deject, de-jekt', *v.* to afflict; to cast down.  
 Delectable, de-lekt'ā-bl, *adj.* pleasing, delightful.  
 Delectation, de-lek-tā'shun, *n.* delight.  
 Delegate, del-ē-gāt, *v.* to depute; *n.* a deputy.  
 Delegation, del-ē-gā'shun, *n.* persons deputed.  
 Delete, de-lēt', *v.* to take out; erase.  
 Deliberious, del-ē-tē-ri-us, *adj.* hurtful.  
 Deliberate, de-lib'er-at, *adj.* well thought out.  
 Deliberate, de-lib'er-āt, *v.* to weigh carefully.  
 Delicacy, del-i-kā-si, *n.* refinement; daintiness.  
 Delicate, del-i-kāt, *adj.* dainty; tender; nice.  
 Delicious, de-lish-us, *adj.* highly pleasing.  
 Delight, de-lit', *n.* joy; pleasure; *v.* to please.  
 Delineate, de-lin-ē-āt, *v.* to portray.  
 Delineation, de-lin-ē-ā'shun, *n.* something depicted.  
 Delinquency, de-ling'kwen-si, *n.* failure in duty.  
 Delinquent, de-ling'kwent, *n.* one who fails in duty or disobeys the law.  
 Deliquesce, del-i-kwes', *v.* to render liquid.  
 Deliquescence, del-i-kwes'ens, *n.* liquefaction.  
 Delirious, de-lir-i-us, *adj.* light-headed. [the air].  
 Delirium, de-lir-i-um, *n.* insanity; excessive excitement.  
 Deliver, de-liv'er, *v.* to free; to hand over.  
 Deliverance, de-liv'er-ans, *n.* liberation.  
 Delivery, de-liv'er-i, *n.* the act of delivering.  
 Delphic, del'fik, *adj.* oracular.  
 Delta, del'ta, *n.* the fourth letter of the Greek alphabet [Δ]; a river's mouth which branches into several streams.  
 Deltoid, del'toid, *n.* a triangular shoulder muscle.



- Delude, de-lūd', *v.* to mislead.  
 Deluge, del'ūj, *n.* a flood.  
 Delusion, del-ū'zhun, *n.* a false belief.  
 Delusory, del-ū'siv, *adj.* tending to deceive.  
 Delusory, de-lū'so-ri, *adj.* fallacious.  
 Delve, delv, *v.* to dig.  
 Demagnetise, de-mag'net-iz, *v.* to deprive of magnetism.  
 Demagogue, dem-ā-gog, *n.* a popular leader.  
 Demand, de-mānd', *v.* to require; to ask for.  
 Demandant, de-mānd'ant, *n.* one who demands.  
 Demarcation, de-mārk-ā'shun, *n.* the act of mark-  
 Demean, de-mē'n, *v.* to lower. [ing out.  
 Demeanour, de-mēn'ur, *n.* conduct; appearance.  
 Dementia, de-men'shia, *n.* a form of lunacy.  
 Demerit, de-mer'it, *n.* fault.  
 Demesne, de-mēn', *n.* a manorial estate.  
 Demigod, dem-i-god, *n.* half a god.  
 Demijohn, dem-i-jon, *n.* a large wine bottle.  
 Demi-monde, dem-i-mongd', *n.* a woman of doubtful reputation.  
 Demise, de-miz', *n.* death.  
 Demission, de-mish'un, *n.* lowering.  
 Democracy, de-mok'rā-si, *n.* government by the people.  
 Democrat, dem-o-krat, *n.* one who supports demo-  
 Demolish, de-mol'ish, *v.* to destroy. [cracy.  
 Demolition, dem-o-lish'un, *n.* destruction.  
 Demon, dē'mon, *n.* a devil. [value.  
 Demonetise, de-mon-ē-tiz, *v.* to deprive of money  
 Demoniac, de-mō'ni-ak, *adj.* relating to evil spirits.  
 Demonism, dē'mon-izm, *n.* belief in demons.  
 Demonolatry, de-mon-o-l-ā-tri, *n.* demon-worship.  
 Demonology, dē-mon-o-lō-jī, *n.* the study of demons and the black art.  
 Demonstrable, de-mon'stra-bl, *adj.* capable of proof.  
 Demonstrate, de-mon'strāt, *v.* to make clear; to  
 Demotic, de-mot'ik, *adj.* popular. [prove.  
 Demulcent, de-mul'sent, *adj.* soothing.  
 Demur, de-mūr', *v.* to object; to hesitate.  
 Demure, de-mūr', *adj.* modest.  
 Demurrage, de-mūr'ij, *n.* an allowance for delay.  
 Demurmer, de-mūr'er, *n.* one who demurs; a law  
 Demy, de-mī', *n.* a size of paper. [ples.  
 Denaturalise, de-na-tur-al-iz, *v.* to deprive of natural rights.  
 Denial, de-ni'al, *n.* refusal; rejection.  
 Denigrate, den-i-grāt, *v.* to blacken.  
 Denizen, den-i-zen, *n.* an inhabitant.  
 Denominate, de-nom'in-āt, *v.* to designate.  
 Denomination, de-nom-in-ā'shun, *n.* the act of naming; a title; a sect.  
 Denominator, de-nom-in-ā'tor, *n.* one who names; a term in fractions.  
 Denote, de-nōt', *v.* to indicate.  
 Denouement, den-oo'mong, *n.* the ending.  
 Denounce, de-nouns', *v.* to accuse; to expose.  
 Dense, dens, *adj.* close; heavy.  
 Density, dens-it-i, *n.* the quality of being dense.  
 Dental, dent'al, *adj.* pertaining to the teeth.  
 Dentate, dent'āt, *adj.* toothed.  
 Denticulate, dent-tik'ū-lāt, *adj.* toothed.  
 Dentiform, dent'i-form, *adj.* in tooth shape.  
 Dentrifrice, dent'i-fris, *n.* a tooth preparation.  
 Dentist, den'tist, *n.* a specialist in the care of the teeth.  
 Dentistry, dent'is-tri, *n.* the business of a dentist.  
 Dentition, dent-ish'un, *n.* the cutting of teeth.  
 Denude, de-nūd', *v.* to lay bare; to unclothe.  
 Denunciation, de-nun-si-ā'shun, *n.* a denouncing.  
 Denunciatory, de-nun-si-ā-to-ri, *adj.* threatening.  
 Deodorise, dē-ō'der-iz, *v.* to deprive of smell.  
 Depart, de-part', *v.* to leave.  
 Department, de-part'ment, *n.* a section or branch.  
 Departure, de-part'ūr, *n.* the act of leaving.  
 Dependence, de-pend'ens, *n.* reliance, trust.  
 Dependent, de-pend'ent, *n.* a subordinate; *adj.*  
 Depict, de-pikt', *v.* to portray. [relying upon.  
 Depilatory, de-pil-ā-to-ri, *n.* a preparation for removing superfluous hair.  
 Deplete, de-plēt', *v.* to reduce; to lessen.  
 Depletion, de-plē'shun, *n.* the act of emptying.  
 Deplore, dē-plōr', *v.* to regret; to lament.  
 Deploy, de-plōi', *v.* to open out.  
 Depolarise, de-pō'ler-iz, *v.* to take away polarity.  
 Deponent, de-pō'nent, *n.* one who testifies on oath.  
 Depopulate, de-pop'ū-lāt, *v.* to dispeople.  
 Depopulation, de-pop-ū-lā'shun, *n.* act of depopulation.  
 Deport, de-pōrt', *v.* to carry; to exile; to behave.  
 Deportation, de-port-ā'shun, *n.* transportation.
- Deportment, de-port'ment, *n.* behaviour; demeanour.  
 Depose, de-pōz', *v.* to remove from; to testify.  
 Deposit, depoz'it, *v.* to place; to set down.  
 Depositary, de-poz'it-ār-i, *n.* a person entrusted with the safe keeping of anything; the place of deposit.  
 Deposition, dep-o-zish'un, *n.* act of testifying.  
 Depositor, de-poz'it-or, *n.* one who deposits.  
 Depository, de-poz'it-or-i (same as *Depository*).  
 Depot, dep-ō', *n.* a station; storehouse.  
 Deprave, de-prāv', *v.* to make morally bad.  
 Depravity, de-prāv'it-i, *n.* wickedness.  
 Deprecate, dep're-kāt, *v.* to argue against.  
 Depreciate, de-prē'shi-āt, *v.* to disparage.  
 Depredation, dep're-dā-tion, *n.* act of plundering.  
 Depress, de-pres', *v.* to make sad; to press down.  
 Depression, de-presh'un, *n.* grief; sadness.  
 Deprive, de-priv', *v.* to take from.  
 Deputation, dep-ū-tā'shun, *n.* persons acting for others.  
 Depute, de-pūt', *v.* to appoint a deputy.  
 Deputy, dep-ūt', *n.* one deputed to act for another.  
 Derange, de-rānj', *v.* to confuse; to disorder.  
 Derangement, de-rānj'ment, *n.* disorder; insanity.  
 Derelict, der'e-lik't, *n.* a thing abandoned.  
 Dereliction, de-re-lik'shun, *n.* the act of forsaking.  
 Deride, de-rid', *v.* to laugh at; to scorn.  
 Derision, de-rizh'un, *n.* mockery.  
 Derisive, de-ri'siv, *adj.* mocking.  
 Derivation, de-ri-vā'shun, *n.* act of deriving.  
 Derivative, de-ri-vā-tiv, *adj.* derived from something else.  
 Derive, de-riv', *v.* to deduce; to trace; to obtain.  
 Dermal, der'mal, *adj.* relating to the skin.  
 Dermatology, der-māt-o-lō-jī, *n.* science of skin treatment.  
 Derogate, der'o-gāt, *v.* to depreciate.  
 Derogatory, de-rōg'ā-to-ri, *adj.* detracting.  
 Derrick, der'ik, *n.* a kind of crane.  
 Dervish, der'vish, *n.* a Mahomedan monk.  
 Descant, des-kānt', *v.* to discourse.  
 Descend, de-send', *v.* to move down; to alight.  
 Descendant, de-send'ant, *n.* offspring.  
 Descendent, de-send'ent, *adj.* going down.  
 Descent, de-sent', *n.* a downward slope; lineage.  
 Describe, de-skrib', *v.* to explain; to represent.  
 Description, de-skrip'shun, *n.* act of describing.  
 Descriptive, de-skrip'tiv, *adj.* containing description.  
 Descry, de-skrī', *v.* to discover; to see. [tion.  
 Desecrate, des'ēkrāt, *v.* to profane.  
 Desert, dez'ert, *n.* a wilderness.  
 Desert, de-zert', *n.* merit; reward; *v.* to leave.  
 Deserve, de-zerv', *v.* to merit.  
 Deshabille, see *Dishabille*.  
 Desiccate, de-sik'āt, *v.* to dry up.  
 Desideratum, de-sid-er-ā'tum, *n.* a thing desired.  
 Design, de-zin', *v.* to draw; *n.* a drawing or  
 Designate, des'ig-nāt, *v.* to name. [scheme.  
 Designation, des-ig-nā'shun, *n.* act of pointing out; name.  
 Designing, de-zin'ing, *adj.* artful; scheming.  
 Desirable, de-zī'ra-bl, *adj.* worthy of desire.  
 Desire, de-zir', *v.* to long for.  
 Desist, de-zist', *v.* to forbear.  
 Desolate, des'o-lāt, *v.* to lay waste; *adj.* uninhabited.  
 Desolation, des-o-lā'shun, *n.* waste place; ruin.  
 Despair, des-pār', *v.* to despond; *n.* hopelessness.  
 Despatch, des-pach', *v.* to send away.  
 Desperado, des-per-ā'do, *n.* a violent fellow.  
 Desperate, des-per-āt', *adj.* hopeless; rash.  
 Despicable, des-plik-abl, *adj.* contemptible.  
 Despise, des-piz', *v.* to scorn.  
 Despite, de-spit', *v.* to scorn; *prep.* in spite of.  
 Despoil, de-spoil', *v.* to spoil; to rob.  
 Dependancy, des-pōnd'en-si, *n.* dejection.  
 Despondent, des-pōnd'ent, *adj.* dejected.  
 Despot, des-pot', *n.* a tyrant; an absolute ruler.  
 Despotism, des-pot'izm, *n.* tyranny.  
 Dessert, de-zert', *n.* an after-course of fruits, etc.  
 Destination, des-tin-ā'shun, *n.* the appointed end; purpose.  
 Destine, des'tin, *v.* to set apart for a special purpose.  
 Destiny, des'tin-i, *n.* the appointed purpose; fate.  
 Destitute, des'tit-ūt, *adj.* needy; in want; lacking.  
 Destitution, des-tit-ū'shun, *n.* extreme poverty.  
 Destroy, de-stroi', *v.* to pull down; to ruin.  
 Destructible, des-tract'ibl, *adj.* liable to destruction.

**Destruction**, de-struk'shun, *n.* demolition; ruin.  
**Destructive**, des-truk'tiv, *adj.* causing destruction;  
**Desuetude**, des-wet-üd, *n.* disuse. [ruinous.  
**Desultory**, des-ü-l-tor-i, *adj.* rambling.  
**Detach**, de-tach', *v.* to separate.  
**Detachment**, de-tach'ment, *n.* condition of separation;  
 a body of troops.  
**Detain**, de-tän', *v.* to hold back.  
**Detect**, de-tek't', *v.* to discover; to expose.  
**Detective**, de-tek'tiv, *n.* one who detects criminals.  
**Detent**, de-tent', *n.* a check; a catch in a clock.  
**Detention**, de-ten'shun, *n.* confinement; act of  
 Deter, de-ter', *v.* to hinder. [detaining.  
**Detergent**, de-ter'jent, *adj.* cleansing; purging.  
**Deteriorate**, de-të-ri-o-rät, *v.* to make worse.  
**Determent**, de-ter'ment, *n.* that which hinders.  
**Determinable**, de-ter'min-äbl, *adj.* in condition to  
 be decided.  
**Determinate**, de-ter'min-ät, *adj.* fixed; limited.  
**Determination**, de-ter-min-ä'shun, *n.* fixed resolve.  
**Determine**, de-ter'min, *v.* to limit; to decide.  
**Determinism**, de-ter'min-izm, *n.* the theory that  
 motives determine.  
**Deferent**, de-ter'ent, *adj.* helping to deter; *n.* a  
 Deftest, de-test', *v.* to hate. [preventive.  
**Detestable**, de-test'äbl, *adj.* odious.  
**Dethrone**, de-thron', *v.* to depose.  
**Detonate**, det'o-nät, *v.* to explode.  
**Detonation**, de-to-nä'shun, *n.* an explosion.  
**Detour**, de-toor', *n.* a winding; a turning.  
**Detract**, de-trakt', *v.* to take from; to defame.  
**Detraction**, de-trak'shun, *n.* depreciation.  
**Detractive**, de-trakt'iv, *adj.* tending to depreciate.  
**Detrain**, de-trän', *v.* to quit a railway train.  
**Detriment**, det'ri-ment, *n.* damage; injury.  
**Detritus**, de-tri'tus, *n.* a substance worn away  
 from solid bodies.  
**Deuce**, düs', *n.* an exclamation.  
**Deuteronomy**, dü-ter-on'o-mi, *n.* the fifth book  
 of the Pentateuch.  
**Devastate**, dev-as-tät, *v.* to lay waste; to destroy.  
**Devastation**, de-vast-ä'shun, *n.* the act of laying  
 waste. [improve.  
**Develop**, de-vel'op, *v.* to extend; to expand;  
 to Development, de-vel-op'ment, *n.* a gradual ex-  
 Deviate, dev'i-ät, *v.* to swerve. [pandering.  
**Deviation**, dö-vi-ä'shun, *n.* a turning aside.  
**Device**, de-viz', *n.* a design; a contrivance.  
**Devilry**, dev'il-ri, *n.* a fiendish conduct. [devils.  
**Devil-worship**, dev'il-wer'ship, *n.* worship of  
 Devious, dö-vi-us, *adj.* roundabout; erring.  
**Devise**, de-viz', *v.* to plan or plot; to bequeath.  
**Devisee**, dev-iz-ë', *n.* one to whom property is left.  
**Deviser**, de-viz'er, *n.* one who contrives.  
**Devisor**, de-viz'or, *n.* one who bequeaths.  
**Devoid**, de-void', *adj.* free from.  
**Devolution**, dev-ö-lü'shun, *n.* a passing down.  
**Devolve**, de-volv', *v.* to roll down; to fall by suc-  
 cession.  
**Devote**, de-vöt', *v.* to set apart.  
**Devotee**, dö-vö-të', *n.* one religiously devoted.  
**Devotion**, de-vö'shun, *n.* consecration; religious  
 feeling; attachment.  
**Devout**, de-vow't, *adj.* pious. [animals  
**Dewlap**, dü'lap, *n.* flesh beneath the throat of  
**Dewpoint**, dü'point, *n.* the temperature at which  
 dew occurs.  
**Dexter**, deks'ter, *adj.* on the right-hand side.  
**Dexterity**, deks-ter-iti, *n.* cleverness; quickness.  
**Dextorious**, deks-ter-us, *adj.* skilful; expert.  
**Dey**, dä, *n.* a pasha.  
**Dhow**, dow, *n.* a small Asiatic vessel.  
**Diabetes**, di-ä-bë-tëz, *n.* a disease of the urinary  
 Diabolical, di-ä-böl'ik-äl, *adj.* devilish. [organs.  
**Diagonal**, di-ak'o-näl, *adj.* relating to a deacon.  
**Diaconate**, di-ak'o-nät, *n.* the office of deacon.  
**Diadem**, di-ä-tem, *n.* a crown.  
**Diaeresis**, di-ër-ë-sis, *n.* the mark ['] over one of  
 two vowels to indicate separate pronunciation.  
**Diagnosis**, di-ag-nö'sis, *n.* tracing a disease by its  
 symptoms.  
**Diagonal**, di-ag'onäl, *adj.* from angle to angle.  
**Diagram**, di-ä-gram, *n.* a figure or plan.  
**Diagraph**, di-ä-graf, *n.* an instrument for drawing  
 enlargements.  
**Dial**, di'al, *n.* the face of a watch or clock.  
**Dialect**, di-ä-lekt, *n.* local language; patois.  
**Dialectical**, di-ä-lek'tik-äl, *adj.* relating to dis-  
 course.  
**Dialectics**, di-ä-lek'tiks, *n.* the art of discussion.  
**Dialogue**, di-ä-log, *n.* conversation.  
**Diameter**, di-am-ët-er, *n.* the measure through the  
 centre of a circle.

**Diametrical**, di-ä-met'rik-äl, *adj.* relating to  
 diameter.  
**Diapason**, di-ä-pä-zon, *n.* an octave; correct pitch.  
**Diaper**, di-a-per, *n.* linen with geometric design.  
**Diaphanous**, di-ä-f-an-us, *adj.* transparent.  
**Diaphragm**, di-a-fram, *n.* a muscular partition  
 in the body separating the chest from the  
 abdomen.  
**Diarist**, di-ar-ist, *n.* a diary writer.  
**Diarrhoea**, di-a-rë-a, *n.* looseness of the bowels.  
**Diary**, di-ar-i, *n.* a daily record.  
**Diathermal**, di-ä-ther'mäl, *adj.* permeation of heat.  
**Diatonic**, di-ä-ton'ik, *adj.* by tones.  
**Diatribes**, di-ä-trib, *n.* a persistent discourse.  
**Dibbling**, dib'bling, *v.* making holes in earth.  
**Dichotomy**, di-kot'o-mi, *n.* division into two.  
**Dicker**, dik'er, *v.* to barter.  
**Dickey**, dik'i, *n.* a driver's seat; seat at the back  
 for servants; artificial shirt front.  
**Dictate**, dik-tät', *v.* to order; to speak words for  
 another to write down. [live command.  
**Dictation**, dik-tä'shun, *n.* act of dictating; assert-  
**Dictatorial**, dik-tä-tö-ri-äl, *adj.* authoritative.  
**Diction**, dik'shun, *n.* manner of speaking; style.  
**Dictionary**, dik'shun-ä-ri, *n.* a work setting forth  
 words in alphabetical order, with meanings.  
**Dictum**, dik'tum, *n.* a saying.  
**Didactic**, di-dak'tik, *adj.* instructive.  
**Die**, di, *v.* to cease to live; to wither; *n.* a stamp  
 for engraving from.  
**Diet**, di'et, *n.* food.  
**Dietary**, di'et-er-i, *n.* rules of diet; *adj.* relating to  
 Dietics, di-et-et'iks, *n.* the science of diet. [diet.  
**Differ**, dif'er, *v.* to vary; to disagree.  
**Difference**, dif'er-ens, *n.* dissimilarity.  
**Different**, dif'er-ent, *adj.* unlike; separate.  
**Differential**, di-fër-en'shäl, *adj.* pertaining to small  
 variations. [describing differences.  
**Differentiation**, dif'er-en-shi-ä'shun, *n.* the act of  
 Difficult, dif'i-kult, *adj.* arduous.  
**Difficulty**, dif'i-kult-i, *n.* obstacle; objection.  
**Diffidence**, dif'id-ens, *n.* modesty; hesitation.  
**Diffuse**, dif-üz', *v.* to spread.  
**Diffuse**, dif-üz', *adj.* wordy; scattered.  
**Digest**, di-jest', *v.* to dissolve in the stomach; to  
 consider.  
**Digestive**, di-jest'iv, *adj.* promoting digestion.  
**Dight**, dit, *adj.* disposed; called.  
**Digit**, dij'it, *n.* a finger or finger's-breadth.  
**Dignify**, dig'ni-fi, *v.* to honour; to exalt.  
**Dignitary**, dig'ni-tä-ri, *n.* a person of rank.  
**Digraph**, di'graf, *n.* two letters with but one sound.  
**Digress**, di-gres', *v.* to deviate.  
**Dilapidate**, di-lap'i-dät, *v.* to pull to pieces; to  
 Dilate, di-lät', *v.* to expand. [allow to decay.  
**Dilatory**, di-lä-to-ri, *adj.* slow.  
**Dilemma**, dil-em-ä, *n.* a position of difficulty.  
**Diligence**, dil'i-jens, *n.* industry; attention.  
**Diligent**, dil'i-jent, *adj.* assiduous.  
**Diluent**, dil'ü-ent, *adj.* diluting.  
**Dilute**, di-lüt', *v.* to weaken.  
**Diluvial**, di-lü-vi-äl, *adj.* relating to a flood.  
**Diluvium**, dil-ü-vi-um, *n.* a flood; deposit from  
 water-current.  
**Dimension**, dim-en'shun, *n.* measure; size.  
**Diminish**, dim-in'ish, *v.* to decrease.  
**Diminution**, dim-in-ü'shun, *n.* a lessening.  
**Diminutive**, dim-in-ü-tiv, *adj.* small.  
**Dimissory**, dim'is-o-ri, *adj.* sending away.  
**Dimity**, dim'it-i, *n.* a kind of figured cotton.  
**Dimorphous**, di-mor'fus, *adj.* pertaining to two  
 forms of flower, etc., on the same plant.  
**Dimple**, dimpl', *n.* a small hollow, usually in the  
 face; a dent.  
**Dinghy**, din'gë, *n.* a small boat.  
**Dingle**, ding'gl, *n.* a small narrow valley.  
**Dingy**, din'ji, *adj.* dim; dull.  
**Diocese**, di-os-ë-san, *n.* relating to a diocese.  
**Diocese**, di-os-ës, *n.* a bishop's territory. [light.  
**Dioptric**, di-op'trik, *adj.* pertaining to refracted  
**Diorama**, di-or-am-ä, *n.* an exhibition of moving-  
 pictures.  
**Dipetalous**, di-pet'al-us, *adj.* with two petals.  
**Diphtheria**, dif-thë-ri-a, *n.* a throat disease.  
**Diphthong**, dif'thong, *n.* two vowels, combined in  
 one sound.  
**Diploma**, dip-lö'mä, *n.* a certificate of honour.  
**Diplomacy**, dip-lö'mä-si, *n.* international negotia-  
 tion; skill in political intercourse between  
 states.  
**Diplomatic**, dip-lö-mat'ik, *adj.* skilled in negotia-  
 tion. [macy.  
**Diplomatise**, dip-lö'mä-tiz, *v.* to practise diplo-



**Diplomatist**, dip-lō'mā-tist, *n.* one skilled in diplomacy.

**Dipsomaniac**, dip'so-mān-i-ac, *n.* one who craves for intoxicants.

**Dptych**, dip'tik, *n.* folding tablets or pictures.

**Dire**, dir, *adj.* dreadful.

**Direct**, di-rekt', *v.* to guide; *adj.* straight.

**Direction**, di-rek'shun, *n.* act of direction; management; course; address.

**Director**, di-rek'tor, *n.* one who directs.

**Directory**, di-rek'tō-rī, *n.* book of names and addresses; a body of directors.

**Direful**, dir'ful, *adj.* terrible.

**Dirge**, dirj, *n.* funeral hymn.

**Dirk**, dirk, *n.* a dagger.

**Disability**, dis-ā-bil'it-i, *n.* lack of power.

**Disable**, dis-ā-bl', *v.* to put out of action.

**Disabuse**, dis-ā-buz, *v.* to undeceive.

**Disadvantageous**, dis-ad-van-tā'jus, *adj.* without advantage.

**Disaffected**, dis-af-ek'ted, *adj.* disloyal.

**Disagree**, dis-ā-grē', *v.* to differ.

**Disagreeable**, dis-ā-grē'abl, *adj.* unpleasant.

**Disallowance**, dis-al-ow'ans, *n.* something disannul, dis-an-ul', *v.* to nullify. [allowed.]

**Disappear**, dis-ap-pēr', *v.* to vanish. [view.]

**Disappearance**, dis-ap-pēr'ans, *n.* vanishing from

**Disappoint**, dis-ap-point', *v.* to thwart of expectation.

**Disappointment**, dis-ap-point'ment, *n.* grief at failure, or non-realisation of hopes.

**Disapprobation**, dis-ap-pro-bā'shun, *n.* censure; Disapprove, dis-ap-proof', *v.* to condemn. [blame.]

**Disarm**, dis-ārm', *v.* to deprive of arms; to quell.

**Disarrangement**, dis-ar-rān'ment, *n.* disorder.

**Disarray**, dis-ar-rā', *v.* to throw into disorder; *n.* undress.

**Disaster**, diz-as'ter, *n.* calamity, misfortune.

**Disastrous**, diz-as'trus, *adj.* unfortunate.

**Disavowal**, dis-ā-vow'al, *n.* a disclaimer.

**Disband**, dis-band', *v.* to disperse.

**Disbelieve**, dis-be-lēv', *v.* to deny the truth of.

**Disburden**, dis-berd'n, *v.* to unburden.

**Disburse**, dis-bers', *v.* to pay out.

**Disbursement**, dis-bers'ment, *n.* a paying out.

**Disc**, *n.* a round flat object.

**Discard**, dis-kārd', *v.* to throw away; to cast off.

**Discern**, diz-ern', *v.* to perceive.

**Discerning**, diz-ern'ing, *adj.* discriminating.

**Discernment**, diz-ern'ment, *n.* alertness of judgment.

**Discharge**, dis-chārij', *v.* to dismiss; to perform; Disciple, dis-ī'ple, *n.* a follower. [to unload.]

**Disciplinarian**, dis-ip-lin-ā-ri-an, *n.* an upholder of discipline. [discipline.]

**Disciplinary**, dis'ip-lin-ar-i, *adj.* in the nature of

**Discipline**, dis'ip-lin, *n.* control; severe training.

**Disclaim**, dis-klām', *v.* to disown; to disavow.

**Disclaimer**, dis-klā'mer, *n.* a renouncing.

**Disclose**, dis-klōz', *v.* to reveal.

**Disclosure**, dis-klōz'ūr, *n.* a bringing to light.

**Discolour**, dis-kul'er, *v.* to stain; to change the colour of.

**Discomfiture**, dis-kum'fit-ūr, *n.* a defeating.

**Discomfort**, dis-kum'fert, *n.* lack of comfort.

**Discommode**, dis-kum-ōd', *v.* to put to inconvenience.

**Discompose**, dis-kum-pōz', *v.* to disturb. [ence.]

**Discomposure**, dis-kum-pōz'ūr, *n.* disorder.

**Disconcert**, dis-kon-sert', *v.* to disturb.

**Disconnect**, dis-kon-ekt', *v.* to disunite.

**Disconsolate**, dis-kon-sō-lāt, *adj.* sad, comfortless.

**Discontent**, dis-kon-tent', *n.* dissatisfaction.

**Discontinue**, dis-kon-tin'ū, *v.* to cease.

**Discord**, dis'kord, *n.* strife; lack of harmony.

**Discordant**, dis-kord'ant, *adj.* harsh; out of harmony. [interest.]

**Discount**, dis'kownt, *n.* a deduction made for

**Discount**, dis'kownt', *v.* to make an allowance.

**Discountenance**, dis-kownt'en-ans, *v.* to discourage. [favour.]

**Discouragement**, dis-kur'ij-ment, *n.* that which

**Discourse**, dis'kōrs, *v.* to talk or write at length; *n.* a formal or serious talk.

**Discourtesy**, dis-kur'tis-i, *n.* incivility.

**Discover**, dis-kuv'er, *v.* to find out.

**Discovery**, dis-kuv'er-i, *n.* the act of finding out.

**Discredit**, dis-kred'it, *v.* to disbelieve.

**Discreditable**, dis-kred'it-ā-bl, *adj.* disgraceful.

**Discreet**, dis-krēt', *adj.* prudent.

**Discrepancy**, dis-krep'an-si, *n.* disagreement.

**Discreta**, dis'kret, *adj.* separate.

**Discretion**, dis-kresh'un, *n.* prudence; behaving as one thinks fit.

**Discretionary**, dis-kresh'un-ar-i, *adj.* at one's discretion.

**Discriminate**, dis-krim'in-āt, *v.* to discern between.

**Discursion**, dis-kur'shun, *n.* desultory talk.

**Discursive**, dis-kurs'iv, *adj.* desultory.

**Discus**, disk'us, *n.* a quoit; a disc.

**Discuss**, dis-kus', *v.* to debate.

**Discussion**, dis-kush'n, *n.* debate.

**Disdain**, dis-dān', *n.* scorn.

**Disease**, diz-ēz', *n.* an ailment.

**Disembark**, dis-em-bārk', *v.* to land from a ship.

**Disembarrass**, dis-em-bār'as, *v.* to free from perplexity.

**Disembody**, dis-em-bod'i, *v.* to divest from the body. [mouth.]

**Disembogue**, dis-em-bōg', *v.* to discharge at the

**Disembowel**, dis-embow'el, *v.* to eviscerate.

**Disenable**, dis-en-ā-bl', *v.* to disable.

**Disenchant**, dis-en-chant', *v.* to free from illusion.

**Disencumber**, dis-en-kum'ber, *v.* to disburden.

**Disengage**, dis-en-gāj', *v.* to relieve from engage-

**Disentangle**, dis-en-tang'l, *v.* to unravel. [ment.]

**Disesteem**, dis-es-tēm', *n.* disregard.

**Disfavour**, dis-fā'vōr, *n.* lack of favour.

**Disfigure**, dis-fig'ūr, *v.* to spoil the form of.

**Disfranchise**, dis-fran'chiz, *v.* to deprive of citizenship rights.

**Disgorge**, dis-gorj', *v.* to vomit; to throw out.

**Disgrace**, dis-grās', *n.* loss of favour; dishonour.

**Disguise**, dis-giz', *n.* a false appearance.

**Disgust**, dis-gust', *n.* loathing.

**Dishabile**, dis-ā-bēl', *n.* undress.

**Dishearten**, dis-hārt'en, *v.* to discourage; to depress.

**Dishevel**, dish-ev'el, *v.* to disorder the hair or clothes; in disorder.

**Dishonour**, dis-on'er, *n.* shame.

**Disinclination**, dis-in-klīn-ā'shun, *n.* unwillingness.

**Disinfect**, dis-in-fekt', *v.* to free from infection.

**Disinfectant**, dis-in-fekt'ant, *n.* a disinfecting agent.

**Disingenuous**, dis-in-jen'ū-us, *adj.* insincere.

**Disinherit**, dis-in-her'it, *v.* to deprive of inheritance. [parts.]

**Disintegrate**, dis-in'te-grāt, *v.* to separate into

**Disinter**, dis-in'ter, *v.* to take from the grave.

**Disinterested**, dis-in'ter-est-ed, *adj.* free from self-interest.

**Disjoin**, dis-join', *v.* to separate what is joined.

**Disjointed**, dis-jointed, *adj.* incoherent.

**Disjunct**, dis-jungkt', *adj.* disjointed.

**Disjunctive**, dis-jungkt'iv, *adj.* tending to separate.

**Dislike**, dis-lik', *v.* to feel averse to. [ation.]

**Dislocation**, dis-lō-kā'shun, *n.* displacement of a joint.

**Disloyalty**, dis-loi'al-ti, *n.* faithlessness.

**Dismal**, diz'mal, *adj.* gloomy.

**Dismantle**, dis-mant'l, *v.* to strip; to take to pieces.

**Dismast**, dis-mast', *v.* to deprive of masts.

**Dismay**, dis-mā', *v.* to terrify; *n.* loss of courage through fear.

**Dismemberment**, dis-mem'ber-ment, *n.* the act of separating member from member.

**Dismiss**, dis-mis', *v.* to send away. [off a horse.]

**Dismount**, dis-mownt', *v.* to descend from; to get

**Disobedience**, dis-o-bē-di-ens, *n.* neglect to obey.

**Disobliging**, dis-o-blij'ing, *adj.* unwilling to oblige.

**Disorder**, dis-or-dēr, *n.* disease; confusion.

**Disorderly**, dis-or'der-lī, *adj.* out of order.

**Disorganisation**, dis-or-gan-i-zā'shun, *n.* the act of breaking up.

**Disown**, dis-ōn', *v.* to refuse to acknowledge.

**Disparage**, dis-par'āj, *v.* to speak slightly of.

**Disparate**, dis-par'āt, *adj.* unequal.

**Disparity**, dis-par'it-i, *n.* inequality.

**Dispassionate**, dis-pash'un-āt, *adj.* calm; without

**Dispatch**, dis-patch', *v.* to send away. [passion.]

**Dispel**, dis-pel', *v.* to drive away; to remove.

**Dispensary**, dis-pen'ser-i, *n.* place for dispensing medicines.

**Dispensation**, dis-pen-sā'shun, *n.* an indulgence.

**Dispensatory**, dis-pen'sā-to-rī, *adj.* granting dispensation.

**Dispense**, dis-pens', *v.* to distribute; to make up

**Disperse**, dis-pers', *v.* to scatter. [medicine.]

**Dispirit**, dis-pir'it, *v.* to depress.

**Displace**, dis-plās', *v.* to put out of place.

**Display**, dis-plā', *v.* to exhibit; to parade.

**Displease**, dis-plēz', *v.* to cause displeasure.

**Disport**, dis-port', *v.* to divert; to feel enjoyment.

**Disposal**, dis-pō-zal, *n.* the act of disposing.

**Dispose**, dis-pōz', *v.* to arrange; to give out.

Disposition, dis-pō-zish'un, *n.* arrangement.  
 Dispossess, dis-pō-zes', *v.* to deprive of possession.  
 Disproportional, dis-pro-pōr-shun-al, *adj.* out of proportion.  
 Disprove, dis-proov', *v.* to refute.  
 Disputant, dis-pū-tant, *n.* one who disputes.  
 Disputatious, dis-pū-tā-shus, *adj.* disposed to argue.  
 Dispute, dis-pūt', *v.* to contest; to deny; to discuss.  
 Disqualify, dis-kwōl'-fi, *v.* to disabie.  
 Disquiet, dis-kwē't, *n.* unrest.  
 Disquisition, dis-kwi-zish'un, *n.* an essay; an argumentative inquiry.  
 Disregard, dis-re-gārd', *v.* to neglect.  
 Disrelish, dis-rel-ish, *v.* to dislike.  
 Disrepair, dis-re-pār', *n.* lack of repair.  
 Disreputable, dis-rep'ū-tabl, *adj.* in evil repute.  
 Disrepute, dis-re-pūt', *n.* disgrace.  
 Disrespectful, dis-re-spekt'ful, *adj.* wanting in respect.  
 Disrobe, dis-rōb', *v.* to undress.  
 Disruption, dis-rup'shun, *n.* the act of rending asunder.  
 Dissatisfaction, dis-sat-is-fak'shun, *n.* discontent.  
 Dissect, dis-ekt', *v.* to cut up for examination.  
 Dissemble, dis-sem-bl, *v.* to disguise one's real thoughts.  
 Dissembler, dis-sem-bl'er, *n.* one who dissembles.  
 Dissemination, dis-sem-in-ā'shun, *n.* the act of scattering.  
 Dissension, dis-sen'shun, *n.* discord.  
 Dissent, dis-sent', *n.* disagreement; *v.* to disagree.  
 Dissentient, dis-sen'shent, *adj.* disagreeing; *n.* one who disagrees.  
 Dissertation, dis-ert-ā'shun, *n.* a treatise.  
 Disservice, dis-ser-vis, *n.* injury.  
 Dissever, dis-sev'er, *v.* to part in two.  
 Dissidence, dis'id-ens, *n.* disagreement.  
 Dissimilar, dis-sim'il-ar, *adj.* unlike.  
 Dissimulation, dis-sim-ūl-ā'shun, *n.* the act of disguising facts.  
 Dissipate, dis-i-pāt', *v.* to scatter; to waste.  
 Dissipated, dis-i-pā'ted, *adj.* addicted to drink or loose living.  
 Dissociate, dis-sō'shi-āt, *v.* to part from.  
 Dissoluble, dis-sōl'ū-ble, *adj.* capable of being dissolved.  
 Dissolute, dis'ō-lūt, *adj.* loose morals; lewd.  
 Dissolution, dis-ō-lū'shun, *n.* the breaking up.  
 Dissolve, di-zolv', *v.* to break up; to melt.  
 Dissolvent, di-zolv'ent, *n.* having the power to dissolve.  
 Dissuade, dis-swād', *v.* to persuade against.  
 Dissuasion, dis-swā-zhun, *n.* the act of persuading against.  
 Dissyllable, dis-sil'able, *n.* a word of two syllables.  
 Distaff, dis'taf, *n.* staff used in hand spinning.  
 Distance, dis'tans, *n.* remoteness; reserve.  
 Distasteful, dis-tast'-ful, *adj.* unpleasing.  
 Distemper, dis-temp'er, *n.* a disordered condition; disease in young dogs.  
 Distend, dis-tend', *v.* to stretch.  
 Distich, dis'tik, *n.* a couplet.  
 Distil, dis-til', *v.* to flow gently; to extract spirit from.  
 Distillery, dis-til'er-i, *n.* place where spirits are distilled.  
 Distinct, dis-tingkt', *adj.* different; clear.  
 Distinctive, dis-tingkt'iv, *adj.* showing difference.  
 Distinctness, dis-tingkt'ness, *n.* clearness.  
 Distinguished, dis-ting'gwishd, *adj.* eminent.  
 Distortion, dis-tor'shun, *n.* loss of shape.  
 Distract, dis-trakt', *v.* to confuse.  
 Distraction, dis-trak'shun, *n.* condition of perplexity.  
 Distrain, dis-trān', *v.* to seize goods for rent or distress.  
 Distress, dis-tres', *n.* suffering; act of distraining goods.  
 Distribute, dis-trib'ūt, *v.* to give away among.  
 Distribution, dis-trib-ū'shun, *n.* classification; allotment; the giving or selling of articles.  
 District, dis'trikt, *n.* a defined locality.  
 Distrust, dis-trust', *n.* want of faith.  
 Disturb, dis-turb', *v.* to disquiet; to upset.  
 Disturbance, dis-turb'ans, *n.* tumult.  
 Disunion, dis-ūn'yun, *n.* lack of concord.  
 Disunite, dis-ū-nit', *v.* to detach what is united.  
 Disusage, dis-ūz'ij, *n.* a falling out of use.  
 Disuse, dis-ūs', *v.* to give up a custom.  
 Dithyrambic, dith-ir-am'bi-k, *adj.* wild and boisterous.  
 Ditto, dit'ō, *n.* the same.  
 Ditty, dit'i, *n.* a song.  
 Diurnal, di-ur'nal, *adj.* daily.  
 Divan, div-an', *n.* a sofa; a Turkish council; a

Diverge, di-verj', *v.* to turn apart.  
 Divers, di'verz, *adj.* sundry.  
 Diverse, di'vers', *adj.* different.  
 Diversiform, di-vers-i-form, *adj.* varied in form.  
 Diversity, di-vers'i-fi, *v.* to make different.  
 Diversion, di-ver'shun, *n.* amusing.  
 Diversity, di-vers'it-i, *n.* variety.  
 Divert, di-vert', *v.* to turn aside.  
 Divest, di-vest', *v.* to strip off.  
 Dividend, div'i-dend, *n.* a share; interest divided.  
 Divination, div-in-ā'shun, *n.* the art of prediction.  
 Divine, di-vin', *adj.* holy.  
 Diving-bell, di'ving bell, *n.* an apparatus used by divers.  
 Divinity, div-in'it-i, *n.* the nature of God.  
 Divisible, div-iz'ibl, *adj.* capable of being divided.  
 Division, div-izh'un, *n.* act of dividing.  
 Divisor, di-viz'or, *n.* the number which divides.  
 Divorce, di-vōrs', *n.* the dissolution of a marriage; *v.* to separate.  
 Divorcé, di-vōrs-ā', *n.* one who has been divorced.  
 Divulge, di-vulj', *v.* to reveal.  
 Dizen, diz'en, *v.* to dress or array.  
 Dizziness, diz-i-ness, *n.* giddiness.  
 Doch-an-doris, dok-an-dō'ris, *n.* a stirrup cup.  
 Docile, dok-sil', *adj.* teachable.  
 Dockage, dok'ij, *n.* dock accommodation.  
 Docket, dok'et, *n.* a summary; a ticket.  
 Dockyard, dok'yārd, *n.* dock for naval ships.  
 Doctor, dok'ter, *n.* a medical practitioner.  
 Doctorate, dok'ter-āt, *n.* the degree of doctor.  
 Doctrinaire, dok'trin-ār, *n.* a theorist.  
 Doctrine, dok'trin, *n.* theory or principle taught.  
 Document, dok'ū-ment, *n.* an official or legal writing.  
 Documentary, dok'ū-ment-ar-i, *adj.* relating to Dodge, doj, *v.* to evade.  
 Dodo, dō'dō, *n.* an extinct bird of the turkey genus.  
 Doe, dō, *n.* female deer.  
 Dog-days, dog'dāz, *n.* the period of the dog-star's prominence (July 3 to Aug. 11).  
 Doge, dōj, *n.* the chief magistrate of ancient Venice.  
 Dogged, dog'ed, *adj.* sullen; obstinate; per- doggerel, dog'er-el, *n.* commonplace verse.  
 Dogma, dog'ma, *n.* a settled doctrine.  
 Dogmatics, dog-mat'iks, *n.* systematic theology.  
 Dogmatism, dog'mā-tizm, *n.* positive assertion.  
 Dog-tooth, dog'tooth, *n.* a kind of ornamental mould.  
 Doily, doi'li, *n.* a kind of woollen fabric; a napkin.  
 Doings, doi'ngs, *n.* happenings; events.  
 Doit, doit, *n.* a small Dutch coin; a valueless thing.  
 Dole, dōl, *v.* to deal out; *n.* a charitable donation.  
 Doleful, dōl'ful, *adj.* sad.  
 Dollar, dol'er, *n.* a monetary unit.  
 Dolmen, dol'men, *n.* a stone table.  
 Dolomite, dō'lom-it, *n.* magnesium limestone.  
 Dolour, dol'er, *n.* grief; sadness.  
 Dolphin, dol'fin, *n.* a large sea animal.  
 Dolt, dōlt, *n.* a stupid fellow.  
 Doltish, dōlt'ish, *adj.* foolish.  
 Domain, do-mān', *n.* an estate.  
 Dome, dōm, *n.* a large cupola.  
 Domestic, do-mes'tik, *adj.* pertaining to the home.  
 Domesticate, do-mes'tik-āt, *v.* to make domestic.  
 Domicile, dom'is-il, *n.* a dwelling.  
 Domiciliary, dom-i-sil'i-ar-i, *adj.* pertaining to the domicile.  
 Dominant, dom'in-ant, *adj.* prevailing.  
 Domination, dom-in-ā'shun, *n.* government; authority.  
 Domineer, dom-in-ēr', *v.* to command haughtily.  
 Domineal, dom-in'ikl, relating to Our Lord or to Sunday.  
 Dominicans, dom-in'ik-ans, *n.* a religious order.  
 Dominion, do-min'yun, *n.* control; rule.  
 Domino, dom'i-no, *n.* a hood.  
 Dominoes, dom'i-nōz, *n.* a game.  
 Don, v. to put on; to assume.  
 Donation, do-nā'shun, *n.* a gift.  
 Donjon, dun-jun, *n.* a strong tower of a castle.  
 Donor, dō'nor, *n.* one who gives.  
 Doomsday, dooms'dā, *n.* the day of doom.  
 Dor, *n.* a droning beetle.  
 Dormant, dor'mant, *adj.* sleeping.  
 Dormer, dor'mer, *n.* a roof window.  
 Dormitory, dor'mit-er-i, *n.* a sleeping chamber.  
 Dormouse, dor'mows, *n.* a small rodent.  
 Dorsal, dor'sal, *adj.* relating to the back.  
 Dose, dōs, *n.* a portion.  
 Dossier, dōs'ē-ā, *n.* a collection of papers or notes on a subject.



- Dotage, dō'tij, *n.* dotting; childish.  
 Dotard, dō'tard, *n.* one who is dotting.  
 Dotation, dō-tā'shun, *n.* an endowment.  
 Dote, dōt, *v.* to show excessive love.  
 Double, doub'l, *adj.* two-fold: *v.* to make two-fold; to veer round a headland.  
 Double-dealing, dub'l-dēl-ing, *n.* duplicity.  
 Double-entendre, doob'l-ong-tongd'r, *n.* a word of double meaning.  
 Doublet, dub'let, *n.* a garment; a pair: (printing) a word or words duplicated by mistake. [fold]  
 Doubling, dub'ling, *n.* act of making double; a  
 Doubloon, dub-loon', *n.* an old Spanish coin.  
 Doubt, dōwt, *n.* distrust: *v.* to distrust: to hesitate.  
 Doubtful, dōwt'ful, *adj.* not clear; uncertain.  
 Douceur, dōo-seer', *n.* a present; a tip.  
 Douche, doosh, *n.* water-jet thrown on the body.  
 Dough, dō, *n.* bread in its unbaked form.  
 Doughy, dōw'ti, *adj.* strong; hardy.  
 Doughy, dō'l, *adj.* soft; dough-like. [water.  
 Douse, dows, *v.* to extinguish; to plunge into  
 Dove-cot, dūv'kot, *n.* a pigeon-house.  
 Dovetail, dūv'tāl, *n.* jointed boards; *v.* to fit one thing into another.  
 Dowager, dōw-a-jer, *n.* a dowered widow.  
 Dowdy, dōwd'i, *n.* an unfashionable woman; *adj.* untidy.  
 Dowel, dōwel, *n.* a fastening pin of wood or iron.  
 Dower, dōwer, *n.* a jointure to a widow.  
 Dowlas, dōw-las, *n.* a coarse linen fabric.  
 Down, dōwn, *n.* soft hair or feathers; a hill; *adv.* below; dejected; *prep.* along a descent.  
 Downcast, dōwn'kast, *adj.* dejected.  
 Downy, dōwn'i, *adj.* soft.  
 Dowry, dōw'ri, *n.* dower.  
 Doxology, dōks-ol'o-jī, *n.* a hymn of praise.  
 Doze, dōz, *n.* a light sleep.  
 Drab, drab, *n.* a low woman; a dull brown colour.  
 Drachm, dram, *n.* dram.  
 Draconic, drā-kō'nik, *adj.* severe. [money.  
 Draft, draft, *n.* anything drawn; an order for  
 Dragbar, drag'bār, *n.* an iron bar for coupling railway carriages together.  
 Draggie, drag'l, *v.* to drag through wet.  
 Dragnet, drag'net, *n.* a net for bottom fishing.  
 Dragoman, drag'o-man, *n.* an Eastern guide.  
 Dragon, dra-goon', *n.* a soldier of the heavy cavalry. [to drink deep  
 Drain, drān, *n.* water channel; *v.* to draw off;  
 Drainage, drā'nik, *n.* a system of drains.  
 Drake, drāk, *n.* the male of the duck.  
 Dram, *n.* a spirit measure.  
 Drama, drām'ā, *n.* a stage representation; a dramatic work.  
 Dramatise, dram'ā-tiz, *v.* to put in play form.  
 Dramatis personæ, dram'a-tis per-sō'nē, *n.* the characters in a play.  
 Drape, drāp, *v.* to cover; to clothe.  
 Drastic, dras'tik, *adj.* active; thorough.  
 Draught, draft, *n.* air current; act of drawing; outline; depth to which a ship sinks into the water.  
 Draught-horse, draft'hors, *n.* horse used for drawing heavy loads.  
 Draughtsman, drafts'man, *n.* one who draws plans.  
 Drawback, draw'bak, *n.* a disadvantage.  
 Drawbridge, draw'bridj, *n.* a bridge that can be let down or drawn up as needed.  
 Drawee, draw-ē', *n.* the person on whom a bill of exchange is drawn.  
 Drawer, drawer, *n.* a section in a cabinet or chest that slides in and out: one who draws.  
 Drawing, draw'ing, *n.* a sketch or picture.  
 Drawing-room, draw'ing-room, *n.* a room in which to entertain company.  
 Drawl, drawl, *v.* to speak slowly.  
 Drawn, drawn, *adj.* undecided; said of battles and games.  
 Dray, drā, *n.* a cart for heavy burdens.  
 Dread, dred, *n.* fear; awe.  
 Dreadnought, dred'nawt, *n.* a thick protective garment; a modern type of battleship.  
 Dream, drēm, *n.* a fancy in sleep; a reverie.  
 Dreamy, drēm'i, *adj.* full of visions.  
 Dreary, drēr'i, *adj.* dismal; dull; gloomy.  
 Dredge, dredj, *v.* to sprinkle; *n.* an oyster net.  
 Dredger, dredj'er, *n.* a dredging boat; one who fishes with a dredge; a sprinkler.  
 Dregs, *n.* sediment; grounds; impurities.  
 Drench, drensh, *v.* to make completely wet.  
 Dresser, dres'er, *n.* one who dresses; a kitchen  
 Dressy, dres'i, *adj.* fond of dress. [sideboard.
- Drizzle, drib'l, *v.* to fall in drops.  
 Dribble, drib'let, *n.* a small drop. [tion of aim.  
 Drift, drift, *n.* a mass of driven matter; the direc-  
 Driftwood, drift'wood, *n.* wood loosely floating.  
 Dripping, drip'ing, *n.* fat dropped from roasting meat.  
 Drive, driv'el, *n.* nonsense.  
 Driveller, driv'el-er, *n.* a foolish talker.  
 Drizzle, driz'l, *n.* small rain.  
 Droll, drōl, *adj.* comical; odd.  
 Drollery, drōl'er-i, *n.* mirth; fun.  
 Dromedary, drum'ē-dar-i, *n.* a one-humped camel.  
 Drone, drōn, *n.* the male bee; an idle fellow.  
 Droop, droop, *v.* to languish; to sink.  
 Dropsical, drop'sik-al, *adj.* afflicted with dropsy.  
 Dropsy, drop'si, *n.* water in the body.  
 Drosky, dros'ki, *n.* Russian cab.  
 Dross, dros, *n.* metal refuse.  
 Drought, drowt, *n.* dryness; absence of rain.  
 Drove, drōv, *n.* a number of animals being driven.  
 Drover, drōver, *n.* a cattle driver.  
 Drowsiness, drow'zi-ness, *n.* sleepiness.  
 Drubbing, drub'ing, *n.* a beating.  
 Drudge, druj, *v.* to toil hard; *n.* one who works hard and long.  
 Drudgery, druđer-i, *n.* hard toil.  
 Drug, drug, *n.* a substance used in medicines; *v.* to secretly administer a drug.  
 Druggert, drug'et, *n.* a coarse carpet.  
 Druggist, drug'ist, *n.* one who sells drugs.  
 Druid, droo'id, *n.* an ancient Celtic priest.  
 Drum, drum, *n.* a musical instrument; part of the ear. [mer  
 Drum-major, drum'mā-jor, *n.* the sergeant drum-  
 Drunkard, drungk'erd, *n.* one who drinks too much alcoholic liquor.  
 Drunkenness, drungk'en-nes, *n.* alcoholic intoxication.  
 Dryad, dri'ad, *n.* a wood-nymph.  
 Dry-goods, dri-goods, *n.* drapery.  
 Dry-rot, dri'rot, *n.* decay of timber by fungoid growths.  
 Dual, dū'al, *adj.* double.  
 Dualism, dū'al-izm, *n.* belief in two gods.  
 Dualisty, dū-bi'et-i, *n.* doubtfulness.  
 Dubious, dū-bi-us, *adj.* doubtful.  
 Ducal, dū'kal, *adj.* relating to a duke.  
 Ducat, duk'at, *n.* a foreign coin.  
 Duchess, duch'es, *n.* the wife or widow of a duke.  
 Duchy, duch'i, *n.* a dukedom.  
 Duct, dukt, *n.* a tube, or channel.  
 Ductile, duk'til, *adj.* yielding; flexible.  
 Dudgeon, dud'jun, *n.* grudge; resentment; a haft.  
 Duel, dū'el, *n.* an arranged fight between two persons.  
 Duellist, dū'el-ist, *n.* one who fights a duel.  
 Duenna, dū'en-ā, *n.* an elderly woman guardian.  
 Duet, dū-ē't, *n.* composition for two instruments  
 Duffel, duf'l, *n.* a coarse woollen cloth. [or voices.  
 Duffer, dufer, *n.* a useless person.  
 Dug, dug, *n.* nipple; *pa.p.* of dig.  
 Dugong, dū-gong', *n.* an herbivorous whale.  
 Duke, duk, *n.* the next noble title below prince.  
 Dukedom, duk'dom, *n.* rank or territory of a duke  
 Dulcet, dul'set, *adj.* sweet; soft; melodious.  
 Dulcify, dul'si-fi, *v.* to sweeten.  
 Dulcimer, dul'si-mer, *n.* a musical instrument with wire strings.  
 Dullard, dul'erd, *n.* dunce.  
 Duly, dū'li, *adv.* fitly.  
 Dumb-bells, dum'belz, *n.* weighted instrument for athletic exercise.  
 Dumbfounded, dum'fownd-ed, *adj.* stricken dumb with amazement.  
 Dummy, dum'i, *n.* a sham article; an effigy.  
 Dumpling, dump'ling, *n.* a kind of boiled pudding.  
 Dumps, dumps, *n.* mopingness.  
 Dumpy, dump'i, *adj.* short and fat.  
 Dun, *n.* one who solicits payment.  
 Dune, dūn, *n.* a sandhill.  
 Dungeon, dun'jun, *n.* a dark prison cell.  
 Duodecimo, dū-o-des'i-mō, *n.* a sheet of 12 leaves.  
 Duodenum, dū-o-dē-num, *n.* the first part of the small intestines.  
 Dupe, dūp, *n.* one who is cheated; *v.* to deceive.  
 Duplex, dū'pleks, *adj.* double. [v. to double.  
 Duplicate, dū-plik-āt, *n.* another of the same kind;  
 Duplicity, dū-plis'i-ti, *n.* deceit; double-dealing.  
 Durable, dū'rā-bl, *adj.* lasting.  
 Durance, dū'rans, *n.* constraint; imprisonment.  
 Duration, dū-ra'shun, *n.* length of time.  
 Durbar, dur'bar, *n.* a reception of Indian princes.

Duress, dū'res, *n.* imprisonment; constraint.  
 Dusk, *n.* twilight; *adj.* dark-coloured.  
 Dusky, dus'ki, *adj.* obscure. [dust.  
 Dust, dust, *n.* dry powdery earth; *v.* to brush off  
 Dutable, dū'ti-ābl, *adj.* liable to customs duty.  
 Duty, dū'ti, *n.* what is due; regard; obedience;  
     tax on goods.  
 Dwarf, dwawrf, *n.* a diminutive animal or plant.  
 Dwell, dwel, *v.* to inhabit.  
 Dwelling, dwel'ing, *n.* an abode.  
 Dwindle, dwind'l, *v.* to grow less; to decline.  
 Dye, di, *v.* to colour; *n.* colour.  
 Dyeing, di'ing, *n.* the art of dyeing.  
 Dying, di'ing, *adj.* declining; expiring.  
 Dyke, *n.* a ditch. [motion.  
 Dynamics, di-nam'iks, *n.* the science of matter and  
 Dynamite, di'nam-it, *n.* a powerful explosive.  
 Dynamo, di'nā-mo, *n.* a machine which transforms  
     mechanical into electrical energy.  
 Dynasty, din'as-ti, *n.* a succession of rulers of the  
     same family.  
 Dysentery, dis'en-ter-i, *n.* a disease of the intes-  
     tines.  
 Dyspepsia, dis-pep'si-a, *n.* indigestion. [gestion.  
 Dyspeptic, dis-pep'tik, *n.* one afflicted with indi-

## E

Eager, ē'ger, *adj.* earnest.  
 Eaglet, ē'glet, *n.* a young eagle.  
 Eagre, ē'ger, *n.* a rising river tide.  
 Eardrop, *n.* ēr'drop, earring.  
 Earn, ern, *v.* to gain by labour.  
 Earnest, ern'est, *adj.* determined; eager; *n.* a  
 Earnings, ern'ings, *n.* wages earned. [pledge.  
 Earshot, ēr'shot, *n.* within hearing range.  
 Earthen, erth'en, *adj.* composed of earth.  
 Earthenware, erth'en-wār, *n.* crockery.  
 Earthly, erth'li, *adj.* worldly.  
 Earwig, ēr'wig, *n.* an insect with pincers at its  
     tail; a whisperer.  
 Easel, ēzel, *n.* framework for supporting pictures  
     or a blackboard.  
 Easement, ēz'ment, *n.* relief; support.  
 East, ēst, *n.* one of the four cardinal points.  
 Easter, ēst'er, *n.* the festival of the Resurrection.  
 Easterling, ēst'er-ling, *n.* an Eastern native.  
 Easterly, ēst'er-li, *adj.* relating to the East.  
 Eatable, ēt'abl, *adj.* fit for eating.  
 Eaves, ēvz, *n.* the edges of a roof.  
 Eaves-dropper, ēvz drop-er, *n.* a listener.  
 Ebb, eb, *n.* the receding of the tide; *v.* to recede.  
 Ebb-tide, eb'tid, *n.* the receding tide.  
 Ebony, eb'on-iz, *v.* to darken like ebony.  
 Ebony, eb'on't, *n.* a hard, dark wood.  
 Ebullition, eb-ū-lish'un, *n.* the act of boiling;  
     effervescence.  
 Eccentric, ek-sen'trik, *adj.* odd.  
 Ecclesiastic, ek-klē-zi-as'tik, *n.* consecrated to  
     the Church.  
 Echnated, ek'in-āted, *adj.* prickly.  
 Echo, ek'o, *n.* a sound repeated by reflexion.  
 Eclaircissement, ek-lār-sis'mong, *n.* the act of  
 Eclat, ā-klā', *n.* with striking effect. [explaining.  
 Eclecticism, ek-lek'ti-sim, *n.* the practice of  
     selecting the best. [body by another.  
 Eclipse, e-klips', *n.* an obscuration of one heavenly  
 Ecliptic, ek-lip'tik, *n.* the sun's path.  
 Eclogue, ek'log, *n.* a short pastoral poem.  
 Economical, ek-o-nom'ik-al, *adj.* frugal, careful.  
 Economics, ek-o-nom'iks, *n.* the science of in-  
     dustrial or national economy.  
 Economy, e-kon'o-mi, *n.* careful management.  
 Ecstatic, ek-stat'ik, *adj.* rapturous.  
 Ecumenical, ek-ū-men'ik-al, *adj.* pertaining to the  
     Christian Church.  
 Eczema, ek-zē'mā, *n.* a skin disease.  
 Eddy, ēd'i, *n.* a contrary current.  
 Edentate, e-den'tāt, *adj.* toothless.  
 Edge-tool, ej'tool, *n.* a sharp-edged tool.  
 Edging, ej'ing, *n.* bordering.  
 Edible, ed'ibl, *adj.* fit for eating.  
 Elicit, ē'dikt, *n.* a proclamation.  
 Edification, ed-if-ik-ā'shun, *n.* instruction.  
 Edifice, ed'if-is, *n.* a large house or building.  
 Edify, ed'if-i, *v.* to instruct.  
 Edit, ed'it, *v.* to prepare for publication.  
 Edition, e-dish'un, *n.* the number of copies of a  
     book published at one time.  
 Education, ed-ū-kā'shun, *n.* instruction.  
 Educator, ed-ū-kā-tor, *n.* an instructor.  
 Educe, ē-dūs', *v.* to extract.  
 Eel, ēl, *n.* a snake-like fish.

Eerie, ē'ri, *adj.* wild; weird.  
 Efface, ef-fās', *v.* to erase; to wipe out.  
 Effect, ef-fekt', *n.* result; *v.* to accomplish.  
 Effective, ef-fek'tiv, *adj.* powerful.  
 Effects, ef-fek'ts, *n.* goods.  
 Effectuate, ef-fekt'ū-āt, *v.* to achieve.  
 Effeminate, e-fem'in-āt, *adj.* unmanly.  
 Effendi, ef-fen'di, *n.* a high Turkish official.  
 Effervescence, ef-fer-ves'ens, *n.* a boiling up.  
 Effete, ef-fet', *adj.* exhausted.  
 Efficacious, ef-ik-ā'shus, *adj.* effectual.  
 Efficacy, ef-ik-ā-si, *n.* virtue; energy.  
 Efficiency, ef-ish'en-si, *n.* power; strength;  
     adequacy. [tation.  
 Effigy, ef'i-ji, *n.* a likeness; a dummy represen-  
 Efflorescence, ef-flō-res'ens, *n.* season of blossom-  
 Effluence, ef'floo-ens, *n.* an outflow. [ing.  
 Effluent, ef'floo-ent, *n.* an outflow stream.  
 Effluvium, ef'floo'vi-um, *n.* noxious vapour.  
 Effort, ef'ort, *n.* endeavour.  
 Effrontery, ef-frunt'er-i, *n.* impudence.  
 Effulgence, ef-ful'jens, *n.* lustre; brightness.  
 Effusion, ef-fū'zhun, *n.* that which is poured forth.  
 Eglantine, eg'lan-tin, *n.* sweet-brier.  
 Egoism, e'go-izm, *n.* the theory of self-interest.  
 Egotism, ē'got-izm, *n.* self-importance.  
 Egotistic, ē-go-tist'ik, *adj.* conceited.  
 Egregious, ē-grē'ji-us, *adj.* foolishly prominent.  
 Egress, ē'gres, *n.* the act of passing out.  
 Egret, ē'gret, *n.* a small white heron.  
 Egrette, e-gret', *n.* feather ornament.  
 Egyptology, ē-jipt-ol'o-ji, *n.* the science of Egypt-  
     ian antiquities.  
 Eider-down, i'der-down, *n.* the down of the eider  
     duck; a down-filled bed cover.  
 Either, i'ther, or ē'ther, *adj.* or *pron.* one of two.  
 Ejaculation, e-jak-ū-lā'shun, *n.* a short exclaima-  
 Eject, e-jekt', *v.* to throw out. [tion.  
 Ejection, e-jek'shun, *n.* discharge.  
 Ejectment, e-jekt'ment, *n.* expulsion; disposes-  
 Eke, ēk, *v.* to add to; to extend. [sion.  
 Elaborate, e-lab'o-rāt, *v.* to labour on; to finish  
     with great pains.  
 Elan, ā-long', *n.* vivacity.  
 Eland, ē'land, *n.* an African antelope.  
 Elapse, e-laps', *v.* to glide away; to pass away.  
 Elastic, ē-las'tik, *adj.* rebounding.  
 Elasticity, ē-lās-tis'i-ti, *n.* the quality of flexibility.  
 Elate, e-lāt', *v.* to exalt.  
 Elated, e-lāt'ed, *adj.* puffed up.  
 Elbow, el'bō, *n.* the joint of the upper and lower  
     parts of the arm; *v.* to push one's way.  
 Elbow-room, el'bō-room, *n.* room to stir in;  
     freedom.  
 El Dorado, el-do-rā'dō, *n.* fabled place of great  
     wealth; any wealthy place.  
 Elect, e-lekt', *v.* to choose.  
 Election, e-lek'shun, *n.* choice; decision by vote.  
 Electioneering, el-ek-shun-ēr'ing, *n.* the canvassing  
     for votes for an election.  
 Elective, el-ek'tiv, *adj.* relating to the power of  
     choice.  
 Elector, el-ek'tor, *n.* one who has a vote.  
 Electric, e-lek'tric, *adj.* pertaining to electricity.  
 Electricity, e-lek-tris'i-ti, *n.* a form of energy  
     producing electric phenomena, light, heat,  
     magnetism, etc.  
 Electrify, e-lek-tri-fi, *v.* to charge with electricity;  
     to startle. [battery.  
 Electrode, e-lek'trōd, *n.* the pole of a galvanic  
 Electro-dynamics, e-lek'tro-di-nam'iks, *n.* the  
     science of the action of electricity.  
 Electro-kinetics, e-lek'tro-ki-net'iks, *n.* science of  
     electricity in motion.  
 Electrometer, e-lek-trom-ē-ter, *n.* an instrument  
     for measuring electricity.  
 Electroplate, e-lek'tro-plāt, *v.* to cover with silver  
     by the use of an electric current.  
 Electro-statics, e-lek'tro-stat'iks, *n.* science of  
     electricity at rest.  
 Electrotyping, e-lek'tro-tip, *n.* the art of engraving  
     on a metal deposited by electricity.  
 Electuary, e-lek'tū-er-i, *n.* a medicinal powder with  
     sweetening.  
 Eleemosynary, el-ē-mos'in-ar-i, *adj.* pertaining to  
 Elegance, el'e-gans, *n.* grace. [charity.  
 Elegiac, elegiacal, el-ē'ji-ak, el-ē'ji-ak-al, *adj.*  
 Elegy, el'ē-ji, *n.* a song of mourning. [mournful.  
 Element, el'e-ment, *n.* part; chemical substance  
     which cannot be broken down into other  
     substances.  
 Elementary, el-e-ment'ar-i, *adj.* primary; simple.  
 Elephant, el'e-fant, *n.* our largest quadruped.



**Elephantiasis**, el-e-fan-ti'a-sis, *n.* a parasitic disease which causes the legs to swell.  
**Elephantine**, el-e-fant'in, *adj.* huge.  
**Elevate**, el'e-vāt, *v.* to raise.  
**Elevator**, el'e-vā-tor, *n.* lift; machine for raising objects.  
**Elf**, elf, *n.* a fairy.  
**Elicit**, el-is'it, *v.* to deduce; to bring out.  
**Elide**, e-lid, *v.* to cut off; slur over.  
**Eligible**, el'i-ibl, *adj.* duly qualified.  
**Eliminate**, e-lim'in-āt, *v.* to remove; to cancel.  
**Elision**, e-lizh'un, *n.* a suppressed vowel or syllable.  
**Elite**, ā-lēt', *n.* the select portion.  
**Elixir**, e-lik's'er, *n.* a tincture.  
**Elk**, elk, *n.* a kind of stag.  
**Ell**, el, *n.* a measure; a yard and a quarter.  
**Ellipse**, el-lips', *n.* an oval. [words left out.  
**Ellipsis**, el-lip'sis, *n.* a figure implying a word or  
**Ellipsoid**, el-lip'soid, *n.* a surface, each plane  
 section of which is an ellipsis.  
**Elliptical**, el-lip'tik-al, *adj.* oval. [masts.  
**Elmo's fire**, el'mōz-fir, *n.* electric appearance on  
**Elocution**, el-o-kū'shun, *n.* the art of good speak-  
 ing. [elocution.  
**Elocutionist**, el-o-kū'shun-ist, *n.* one who practises  
 Elocution, *v.* to extend.  
**Elopement**, e-lōp-ment, *n.* a clandestine running  
 away.  
**Eloquence**, el'o-kwens, *adj.* forceful speaking.  
**Elsewhere**, els'whā, *adv.* in some other place.  
**Elucidate**, e-lū'si-dāt, *v.* to make clear.  
**Elude**, e-lūd', *v.* to escape.  
**Elusion**, e-lū'shun, *n.* skilful avoidance.  
**Elusive**, e-lū'siv, *adj.* eluding; evasive.  
**Elysian**, el-liz'yan, *adj.* delightful.  
**Elysium**, e-lizh'yum, *n.* the abode of the blessed.  
**Emaciate**, e-mash'i-āt, *v.* to waste, to make lean.  
**Emaciation**, e-mash'i-ā'shun, *n.* thinness of flesh.  
**Emanate**, em'an-āt, *v.* to proceed from.  
**Emanation**, em-an-ā'shun, *n.* that which issues  
 or flows out from.  
**Emancipate**, e-man'si-pāt, *v.* to set free.  
**Emasculate**, e-mas'kū-lāt, *v.* to castrate; to de-  
 prive of vigour.  
**Embalm**, em-bām, *v.* to preserve from decay.  
**Embark**, em-bangk', *v.* to bank up.  
**Embankment**, em-bangk'ment, *n.* a bank or  
 mound; a banked-up roadway.  
**Embargo**, em-bār'go, *n.* order to stop.  
**Embark**, em-bār'k, *v.* to put or go on board.  
**Embarrass**, em'bar'as, *v.* to shame; to hinder.  
**Embassy**, em'bas-i, *n.* an ambassador and his  
 retinue; an ambassador's residence.  
**Embattle**, em-bat'l, *v.* to make battlements; to  
 place in order of battle.  
**Embellish**, em-bel'lish, *v.* to adorn.  
**Embers**, em'berz, *n.* smouldering wood or coal.  
**Embezzle**, em-bez'l, *v.* to make fraudulent use of.  
**Embitter**, em-bit'ter, *v.* to make bitter.  
**Emblazon**, em-blāz'on, *v.* to adorn in colours.  
**Emblazonry**, em-blāz'on-ri, *n.* the art of emblazon-  
 Emblem, em'blem, *n.* a symbol. [ing.  
**Embody**, em-bōd'i, *v.* to contain; to state in a  
 concrete form.  
**Embolden**, em-boid'en, *v.* to make bold.  
**Embolism**, em'bo-lizm, *n.* the filling in of dates in  
 a time record; a blood clot.  
**Embonpoint**, āng-bong-pwang, *adj.* stoutness.  
**Embosom**, em-booz'um, *v.* to enfold; to cherish.  
**Emboss**, em-bos', *v.* to work raised patterns.  
**Embouchure**, āng-boo-shoor', *n.* the mouth of a  
 river.  
**Embower**, em-bow'er, *v.* to place in a bower.  
**Embrace**, em-brās, *v.* to clasp; to fold lovingly.  
**Embrasure**, em-brā'zhūr, *n.* a slanting opening in  
 a wall. [fluid.  
**Embrocate**, em'bro-kāt, *v.* to moisten with curative  
 Embroider, em-brof'der, *v.* to adorn with needle-  
 work. [work.  
**Embroidery**, em-broi'der-i, *n.* ornamental needle-  
 Embroid, em-broil', *v.* to entangle.  
**Embryo**, em'bri-ō, *n.* the first stage of animal or  
 plant development. [embryos.  
**Embryology**, em-bri'ol'o-jī, *n.* the science of  
 Emendation, em-en-dā'shun, *n.* correction.  
**Emerald**, em'er-ald, *n.* a green precious stone.  
**Emerge**, e-mer'j, *v.* to come out of.  
**Emergency**, e-mer'jen-si, *n.* a pressing necessity.  
**Emeritus**, e-mer'i-tus, *adj.* honourably discharged  
 from office; *n.* one so discharged.  
**Emery**, em'er-i, *n.* a kind of corundum used for  
 polishing.  
**Emetic**, e-met'ik, *n.* a potion to cause vomiting.

**Emigrant**, em'i-grant, *n.* one who emigrates.  
**Emigrate**, em-i-grāt', *v.* to proceed to another  
 country.  
**Eminence**, em'i-nens, *n.* height; distinction.  
**Eminent**, em'i-nent, *adj.* distinguished.  
**Emissary**, em'is-ar-i, *n.* a person sent out; a spy.  
**Emission**, ē-mish'un, *n.* the act of sending forth.  
**Emollient**, e-mol'vent, *adj.* softening.  
**Emolument**, e-mol'ū-ment, *n.* the profit of office  
 or employment; advantage.  
**Emotion**, e-mō'shun, *n.* agitation of feelings.  
**Empanel**, em-pan'el, *v.* to enter names on a panel.  
**Emperor**, em-per-ōr', *n.* a king who rules an  
 empire.  
**Emphasis**, em'fas-is, *n.* stress on a word.  
**Emphasise**, em'fa-siz, *v.* to give emphasis to.  
**Empire**, em'pir, *n.* dominions of an empire;  
 supreme authority.  
**Empiric**, em-pir'ik, *adj.* proved by experience.  
**Empiricism**, em-pir'i-sism, *n.* a system relying on  
 experience. [gun.  
**Emplacement**, em-plāc'ment, *n.* platform for a  
**Employé**, em-ploy'ē, *n.* a person employed.  
**Employment**, em-ploi'ment, *n.* occupation.  
**Emporium**, em-pō'ri-um, *n.* a mart; a large shop.  
**Empower**, empow'er, *v.* to sanction.  
**Empress**, em'pres, *n.* consort of an emperor.  
**Empyrean**, em-pir'e-al, *adj.* the purest heaven;  
**Emu**, ē'mū, *n.* a large bird. [sublimity.  
**Emulate**, em'ū-lāt, *v.* to strive to equal; to imitate.  
**Emulation**, em-ū-lā'shun, *n.* imitation in a spirit  
 of rivalry.  
**Emulsion**, e-mul'shun, *n.* an oily preparation.  
**Enable**, en-ā'bl, *v.* to render able; to empower.  
**Enact**, en-akt', *v.* to pass a law.  
**Enactment**, en-akt'ment, *n.* a law.  
**Enamel**, en-am'el, *n.* hard surface coating; *v.* to  
 apply enamel. [enamel.  
**Enamelling**, en-am'el-ing, *n.* the art of making  
**Enamour**, en-am'ur, *v.* to inspire with love.  
**Encamp**, en-kamp', *v.* to form a camp.  
**Encampment**, en-kamp'ment, *n.* the place where  
 bodies of troops or others are camped.  
**Encaustic**, en-kaws'tik, *adj.* (of pottery), with  
 colours burned in. [pregnant.  
**Enclose**, āng-sāng't', *n.* an enclosure; *adj.*  
**Enchain**, en-chān', *v.* to put in chains. [enchants.  
**Enchantment**, en-chant'ment, *n.* that which  
**Encircle**, en-ser'k'l, *v.* to enclose; to surround.  
**Enclitic**, en-klit'ik, *adj.* leaning upon.  
**Encomi**, en-ko'mi-um, *n.* high praise, eulogy.  
**Encompass**, en-kom'pas, *v.* to surround.  
**Encore**, āng-kōr', *adv.* repeat.  
**Encounter**, en-kown'ter, *v.* to meet; to oppose.  
**Encourage**, en-kur'āj, *v.* to urge; to animate.  
**Eneroach**, en-krōch', *v.* to intrude.  
**Encumber**, en-kum'ber, *v.* to burden; to impede.  
**Encumbrance**, en-kum'brans, *n.* that which en-  
 cumbers. [public questions.  
**Encyclical**, en-si'kli-kal, *n.* a papal letter on  
**Encyclopædia**, en-si'klō-pē'di-a, *n.* a comprehen-  
 sive work dealing with some or every branch  
 of knowledge.  
**Encyst**, en-sist', *v.* to enclose in a cyst.  
**Endanger**, en-dān'jer, *v.* to imperil.  
**Endeavour**, en-dev'er, *v.* to strive; to attempt.  
**Endemic**, en-dem'ik, *adj.* special to a district or  
 people.  
**Endorse**, en-dōrs', *v.* to approve.  
**Endow**, en-dow', *v.* to furnish with funds or dowry.  
**Endowment**, en-dow'ment, *n.* that which is  
 endowed. [enduring.  
**Endurance**, en-dū'rans, *n.* the condition of  
**Endure**, en-dūr', *v.* to last.  
**Enema**, en-ē'ma, *n.* an injection.  
**Enemy**, en-e-mī, *n.* one who is hostile.  
**Energy**, en'er-jī, *n.* force; vigour.  
**Enervate**, en-er'vāt, *v.* to weaken.  
**Enfeeble**, en-fe'bl, *v.* to make feeble.  
**Enfeoffment**, en-fe'fment, *n.* a deed transferring  
 the fee of an estate.  
**Enfilade**, en-fi-lād', *n.* rooms opening upon a com-  
 mon corridor; *v.* to rake with shot.  
**Enfold**, en-fōld', *v.* to embrace; to wrap around.  
**Enforce**, en-fors', *v.* to compel.  
**Enfranchise**, en-fran'chiz, *v.* to set free; to grant  
 civic privileges.  
**Engage**, en-gāj', *v.* to take on; to pledge; to  
 interest oneself in.  
**Engagement**, en-gāj'ment, *n.* an appointment;  
 a pledge to marry; the act of being engaged.  
**Engender**, en-jen'der, *v.* to sow; to breed; to  
 beget.

Engine, en-jin, *n.* a machine imparting motive power.  
 Engineer, en-jin-ēr, *n.* a person responsible for the manufacture or maintenance of machines.  
 Engird, en-gīrd', *v.* to encircle.  
 Engrail, en-grāl, *v.* to make a border of indented lines.  
 Engrain, en-grān', *v.* to dye permanently.  
 Engrave, en-grāv', *v.* to cut impressions on wood or steel; to print.  
 Engraver, en-grāv'er, *n.* one who engraves.  
 Engraving, en-grāv'ing, *n.* print of a picture.  
 Engross, en-grōs', *v.* to absorb; to write in legal  
 Engulf, en-gulf', *v.* to swallow up. [hand.  
 Enhance, en-hans', *v.* to increase; to heighten.  
 Enigma, en-ig'ma, *n.* a puzzle.  
 Enigmatical, en-ig-mat'ik-al, *adj.* obscure.  
 Enjoin, en-join', *v.* to order; to urge.  
 Enkindle, en-kind'l, *v.* to inflame.  
 Enlarge, en-lārg', *v.* to expand.  
 Enlighten, en-lit'en, *v.* to illuminate.  
 Enlistment, en-list'ment, *n.* the act of enlisting.  
 Enliven, en-lī'ven, *v.* to make cheerful.  
 Enmity, en-mit-i, *n.* hostility; unfriendliness.  
 Ennoble, en-nō'bl, *v.* to confer noble rank upon.  
 Ennui, āng-nwé', *n.* weariness.  
 Enormity, e-nor-mī-tī, *n.* that which is enormous, wicked, or monstrous.  
 Enormous, e-nor'mus, *adj.* excessively large.  
 Enrage, en-rāj', *v.* to make angry.  
 Enrapture, en-rap'tūr, *v.* to cause extreme delight.  
 Enrich, en-rich', *v.* to make rich.  
 Enrobe, en-rōb', *v.* to attire.  
 Enrol, en-rōl', *v.* to put on a roll; to sign on.  
 Ensanguiue, en-sang'gwin, *v.* to stain with blood.  
 Ensconce, en-skons', *v.* to cover; to hide safely.  
 Enshrine, en-shrin', *v.* to enclose; to keep in re-  
 Enshroud, en-shroud, *v.* to cover up. [gard.  
 Ensiform, en-si-form, *adj.* sword-shaped.  
 Ensign, en'sin, *n.* the flag of a nation or regiment; the officer who carries it.  
 Ensilage, en'sil-āj, *n.* pickled fodder.  
 Ensnare, en-snār', *v.* to entangle.  
 Ensnare, en-sū', *v.* to follow.  
 Entail, en-tāl', *v.* to settle in special descent; *n.* an entailed estate.  
 Entailment, en-tāl'ment, *n.* act of entailing.  
 Entangle, en-tang'gl, *v.* to contort into a tangle; to ensnare.  
 Enteric, en-ter'ik, *adj.* relating to the intestines; *n.* typhoid fever.  
 Enterprising, en-ter-priz-ing, *adj.* adventurous.  
 Entertain, en-ter-tān', *v.* to amuse; to show hos-  
 Enthrall, en-thrawl', *v.* to enslave. [pitality.  
 Enthroned, en-thrōn', *v.* to place on a throne.  
 Enthusiasm, en-thū'zi-asm, *n.* extreme ardour.  
 Enthusiast, en-thū'zi-ast, *n.* one who feels en-  
 Entice, en-tis', *v.* to allure. [thusiasm.  
 Entire, en-tīr', *adj.* complete; male horse.  
 Entitle, en-tī'tl, *v.* to give claim or title to.  
 Entity, en-tī'tī, *n.* existence.  
 Entomb, en-toom', *v.* to bury. [insects.  
 Entomologist, en-to-mol'o-jist, *n.* one who studies  
 Entozoa, en-to-zō'ā, *n.* animal life within other animals.  
 Entrails, en-trāils, *n.* the bowels. [of troops.  
 Entrain, en-trān', *v.* to take train, as of bodies  
 Entreat, en-trēt', *v.* to beseech.  
 Entrée, āng-trā', *n.* entry; a dish served between main courses.  
 Entrepot, āng-tr-pō, *n.* a storehouse; a bonded warehouse.  
 Entresol, āng-tr-sōl, *n.* a low connecting storey between two main storeys.  
 Entry, en'tri, *n.* entrance.  
 Entwine, en-twin', *v.* to interlace.  
 Entwist, en-twist', *v.* to twist.  
 Enumerate, e-nū'mer-āt, *v.* to compute the number of. [pronounce clearly.  
 Enunciate, e-nun'si-āt, *v.* to declare formally; to  
 Envelop, en-vel'up, *v.* to invest.  
 Envelope, en-vel'ōp, *n.* a covering.  
 Envelopment, en-vel'up-ment, *n.* that which covers.  
 Envenom, en-ven'om, *v.* to poison; to embitter.  
 Envious, en-vi-ābl, *adj.* fit to be envied.  
 Envious, en-vi-us, *adj.* feeling envy.  
 Environ, en-vi'ron, *v.* to surround.  
 Environs, en-vi'rons, *n.* suburbs.  
 Envoy, en-voi', *n.* a diplomatic messenger.  
 Envy, en'vi, jealousy; *v.* to grudge.  
 Eocene, ē'ō-sēn, *adj.* in geology the first of the Tertiary formation.

Q (65th Ed.)

Epaulet, ep'o-o-let, *n.* shoulder-badge. [table.  
 Epergne, ē-pern', *n.* centre dish or ornament for the  
 Ephemeral, ef-em'er-al, *adj.* short-lived; existing for a day only.  
 Ephod, ef'od, *n.* a Jewish surplice.  
 Epic, ep'ik, *n.* an heroic poem.  
 Epicene, ep'i-sēn, *adj.* pertaining to both sexes.  
 Epicure, ep'i-kur, *n.* a lover of good things.  
 Epicurean, ep-i-kū're-an, *adj.* given to luxury.  
 Epicycle, ep'i-si-kl, *n.* a circle whose centre is on a greater circle's circumference. [of people.  
 Epidemic, ep-i-dem'ik, *adj.* affecting large bodies  
 Epidermis, ep-i-der'mis, *n.* the outer covering of the skin.  
 Epidiascope, ep-i-di'as-cōp, *n.* an instrument which reflects pictures on to a large screen.  
 Epigastric, ep-i-gas'trik, *adj.* relating to the stomach or belly.  
 Epiglottis, ep-i-glōt'is, *n.* cartilage at the root of the tongue.  
 Epigram, ep'igram, *n.* a smart, pointed saying.  
 Epigraph, ep'igraf, *n.* an inscription.  
 Epilepsy, ep'i-lep-si, *n.* a disease in which the sufferer loses consciousness.  
 Epileptic, ep-il-ep'tik, *n.* one subjected to epilepsy.  
 Epilogue, ep'il-og, *n.* a supplement part at the end of a play.  
 Epiphany, e-pif'an-i, *n.* a church festival falling on January 6.  
 Epiphyte, ep'if-it, *n.* a plant growing upon another plant without drawing nourishment from it.  
 Episcopacy, ē-pis'ko-pā-si, *n.* Church government.  
 Episcopal, ē-pis'ko-pal, *adj.* pertaining to bishops.  
 Episcopate, ē-pis'ko-pāt, *n.* a bishopric.  
 Episode, ep'i-sōd, *n.* a diverting incident; a short tale apart from a main story.  
 Epistle, ē-pist'l, *n.* a letter.  
 Epistolary, ē-pis'to-la-ri, *adj.* pertaining to letters.  
 Epistyle, ep'i-stīl, *see* Architrave.  
 Epitaph, ep'i-taf, *n.* an inscription on a tomb or monument. [song.  
 Epithalamium, ep-i-thal-ā'mi-um, *n.* a marriage  
 Epithet, ep'i-thet, *n.* a short descriptive expression.  
 Epitome, e-pit'o-mē, *n.* a synopsis.  
 Epitomize, e-pit'o-miz, *v.* to condense.  
 Epoch, ep'ok, *n.* a period of time.  
 Epode, ep'od, *n.* a kind of lyric poem.  
 Equable, ē-kwābl, *adj.* equal; even. [or degree.  
 Equal, ē-kwāl, *adj.* even; like; of the same quality  
 Equanimity, ek-wa-nim'it-i, *n.* evenness of temper.  
 Equation, e-kwā'shun, *n.* the act of making equal.  
 Equator, e-kwā'ter, *n.* the line encircling the middle of the globe. [equator.  
 Equatorial, ek-wa-tō'ri-al, *adj.* pertaining to the  
 Equerry, ek'wer-i, *n.* an official of the royal household. [a horse rider.  
 Equestrian, e-kwes'tri-an, *adj.* relating to horses;  
 Equiangular, ē-kwi-ang'gū-lar, *adj.* with equal angles.  
 Equilateral, ē-kwi-lat'er-al, *adj.* with all sides  
 Equilibrate, ē-kwi-lī-brāt, *v.* to balance. [equal.  
 Equilibrium, ē-kwi-lī-br'i-um, *n.* equal balancing.  
 Equine, ē-kwin, *adj.* relating to horses.  
 Equinoctial, e-kwi-nok'shal, *adj.* relating to the equator. [ing the equator.  
 Equinox, ē-kwi-noks, *n.* the time of the sun's cross-  
 Equip, e-kwip', *v.* to fit out; to supply.  
 Equipage, ek'wi-pāj, *n.* a carriage and attendants; anything equipped. [equipping.  
 Equipment, e-kwip'ment, *n.* outfit; the act of  
 Equipoise, ē-kwi-poiz, *n.* equality of weight; balance.  
 Equitable, ek'wit-ābl, *adj.* showing the quality of equity.  
 Equity, ek'wi-tī, *n.* right; justice; fairness.  
 Equivalent, e-kwiv'ā-lent, *adj.* equal.  
 Equivocal, e-kwiv'o-kal, *adj.* doubtful.  
 Equivocate, e-kwiv'o-kāt, *v.* to prevaricate.  
 Equivocation, e-kwiv'o-kā'shun, *n.* ambiguity.  
 Era, ē'ra, *n.* a period of years counted from a dominating date.  
 Eradicable, e-rad'i-kābl, *adj.* capable of being eradicated. [remove.  
 Eradicate, e-rad'i-kāt, *v.* to destroy; to efface; to  
 Eradication, e-rad-ik-ā'shun, *n.* destruction; ex-  
 Erase, ē-rās', *v.* to expunge. [pungement.  
 Erastianism, e-ras'ti-an-ism, *n.* State control of the Church.  
 Erasure, e-rā'sūr, *n.* the act of erasing; the part where erasing has been done.  
 Erect, e-rekt', *adj.* upright; *v.* to build.  
 Ergot, er'got, *n.* a fungoid disease in plants.



- Ermine**, er'min, *n.* a white fur; the animal from which it is obtained.
- Erode**, e-ród, *v.* to eat away.
- Erosion**, e-ró'shun, *n.* the process of eating away.
- Erotic**, er-ot'ik, *adj.* sexual love.
- Errant**, er'ant, *adj.* roving.
- Erratic**, er-at'ik, *adj.* irregular.
- Erratum**, er-á'tum, *n.* an error in writing or printing.
- Erroneous**, er-ó'né-us, *adj.* wrong; mistaken.
- Erse**, ers, *n.* a branch of the Celtic language.
- Erst**, erst, *adv.* formerly.
- Eruption**, é'ruk'-tá-tion, *n.* belching.
- Erudite**, er'ú-dit, *adj.* learned.
- Erudition**, er-ú-dish'un, *n.* learning.
- Eruginous**, er-ú-jin-us, *adj.* rust-like.
- Eruption**, e-rup'shun, *n.* a bursting forth. [skin.]
- Erysipelas**, er-i-sip'e-las, *n.* an inflammation of the
- Escalade**, es-ka-lád', *n.* the scaling of fortified walls by means of ladders.
- Escalop**, es-ka-lóp, *n.* a shell-fish.
- Escapement**, es-káp'ment, *n.* the act of escaping; part of the works of a clock or watch.
- Eschatology**, es-ka-tol'o-jí, *n.* the theory of finality.
- Escheat**, es-chét, *n.* property forfeited to the
- Eschew**, es-chew', *v.* to shun. [State.]
- Escort**, es'kort, *n.* guide, attendant, or body of armed attendants.
- Escort**, es-kórt', *v.* to accompany for guidance.
- Escrivoire**, es-kri-twor', *n.* a writing-desk.
- Esculapian**, es-kú-lá-pi-an, *adj.* relating to healing.
- Esculent**, es-kú-lent, *adj.* eatable.
- Escorial**, es-kú-ri-al, *n.* the royal palace at Madrid.
- Escutcheon**, es-kut'shun, *n.* a family shield or coat
- Esophagus**, é-sof'á-gas, *n.* the gullet. [of arms.]
- Esothere**, es-o-ter'ik, *adj.* mysterious; secret.
- Espalier**, es-pal'yer, *n.* lattice-work for fruit-trees; fruit-trees having their branches trained at right angles on two sides of the main stem.
- Esparto**, es-pár'to, *n.* a strong grass, common in Spain, which is used for paper-making.
- Especial**, es-pesh'al, *adj.* peculiar; special.
- Espionage**, es'pi-on-áj, *n.* spying.
- Esplanade**, es-pla-nád', *n.* a prominent level promenade.
- Espousal**, es-pow'zal, *n.* the act of betrothing.
- Espouse**, es-powz', *v.* to affiancé; to marry.
- Espirit**, es-pré', *n.* liveliness.
- Espy**, es-pí', *v.* to discern. [courtesy.]
- Esquire**, es-kwir', *n.* a squire; a general title of
- Essay**, es'á, *n.* an experiment; a short written composition.
- Essence**, es'ens, *n.* the nature of a thing; an
- Essential**, es-sen'shal, *adj.* necessary. [extract.]
- Establishment**, es-tab'lish-ment, *n.* settlement; place of business; house.
- Estate**, es-tát, *n.* property; possession; rank.
- Esteem**, es-tém', *v.* to value; *n.* respect.
- Esthetic**, es-thét'ik, *see* Aesthetic.
- Estimate**, es'tim-át, *v.* to value; *n.* a valuation.
- Estop**, es-top', *v.* to bar.
- Estrange**, es-tránj', *v.* to alienate.
- Estray**, es-trá', *n.* a stray beast.
- Estuary**, es'tú-ar-i, *n.* the lower part of a river.
- Esurient**, es-ú-ri-ent, *adj.* penurious.
- Etch**, ech, *v.* to design on metal with acids.
- Eternal**, e-ter'nal, *adj.* everlasting.
- Etesian**, é-té'shan, *adj.* periodical.
- Ether**, é'ther, *n.* the upper air; a very volatile liquid.
- Ethereal**, e-thé'rè-al, *adj.* heavenly.
- Ethical**, eth'ik-al, *adj.* pertaining to duty.
- Ethics**, eth'iks, *n.* science of moral duty.
- Ethnical**, eth'nik-al, *adj.* relating to nations or races.
- Ethnography**, eth-nog'raf-i, *n.* the scientific description of the human races.
- Ethnology**, eth-nol'o-jí, *n.* the science of mankind.
- Etiolate**, é-ti-o-lát', *v.* to grow pale from lack of light. [manners.]
- Etiquette**, et'i-ket, *n.* the laws of courtesy; good
- Etymology**, et-i-mol'o-jí, *n.* the science of words.
- Eucharist**, ú'ka-ríst, *n.* the Sacrament.
- Euchre**, ú'kr, *n.* a card game.
- Eudemonism**, ú-dé-món-izm, *n.* a theory of ethics constituting happiness the test of morality.
- Euhemerism**, ú-hé-mer-izm, *n.* a system that claims for mythology a real origin.
- Eulogise**, ú'ló-jíz, *v.* to praise.
- Eulogium**, ú'ló-jí-um, *n.* something spoken or written in praise.
- Eulogy**, ú'ló-jí, *n.* high praise.
- Eunuch**, ú'nuk, *n.* a castrated man.
- Eupepsy**, ú-pep'sí, *n.* a healthy digestion.
- Euphemism**, ú-fem-izm, *n.* a word or form of words presenting in a pleasant form what is otherwise unpleasant.
- Euphony**, ú-fon-í, *n.* a pleasing sound.
- Euphuism**, ú-fú-izm, *n.* an inflated expression.
- Eurythmy**, ú-ri-th-mí, *n.* symmetry.
- Eustachian**, ú-stá'ki-an, *adj.* relating to the tube connecting the middle ear and the pharynx.
- Euterpe**, ú-ter'pé, *n.* the muse of music.
- Euthanasia**, ú-than-á-zí-a, *n.* easy death.
- Evacuate**, e-vak'ú-át, *v.* to go out; to throw out; to discharge.
- Evanescent**, ev-an-es'ént, *adj.* fleeting.
- Evangelical**, ev-an-jel'ik-al, *adj.* relating to the gospel. [gospel.]
- Evangelist**, e-van'jel-ist, *n.* a preacher of the
- Evaporate**, e-vap'o-rát, *v.* to escape in vapour; to
- Evasion**, e-vázhun, *n.* the act of evading. [vanish.]
- Eventful**, e-vent'ful, *adj.* full of events.
- Eventual**, e-vent'ú-al, *adj.* occurring as a consequence; final.
- Evict**, e-vikt', *v.* to expel; to dispossess.
- Evidence**, ev'i-dens, *n.* testimony.
- Evident**, ev'i-dent, *adj.* obvious.
- Evidential**, ev-i-den'shal, *adj.* tending to prove.
- Evince**, e-vins', *v.* to show; to prove.
- Eviscerate**, e-vis'er-át, *v.* to disembowel; to gut.
- Evoke**, e-vók', *v.* to draw forth.
- Evolution**, ev-o-lú'shun, *n.* gradual development.
- Evolutionist**, ev-o-lú'shun-ist, *n.* one who believes in the theory of evolution.
- Evolve**, e-volv', *v.* to disclose; to develop.
- Ewe**, ú, *n.* a female sheep.
- Ewer**, ú'er, *n.* a large water-jug.
- Exacerbation**, egz-as-er-bá-shun, *n.* the increase of irritation.
- Exaction**, egz-ak'shun, *n.* a harsh demand.
- Exaggerate**, egz-a-jér-át, *v.* to magnify unduly.
- Exalt**, egz-aw't, *v.* to elevate.
- Examine**, egz-am'in, *v.* to inquire into; to investigate.
- Exasperate**, egz-as'per-át, *v.* to irritate; to anger.
- Excalibur**, eks-kál'i-bur, *n.* King Arthur's sword.
- Excandescent**, eks-kan-des'sent, *adj.* in white heat.
- Excavate**, eks-ká-vát, *v.* to dig out.
- Excel**, ek-sel', *v.* to surpass.
- Excellence**, ek-sel-lens, *n.* great merit.
- Excellency**, ek-sel-en-sí, *n.* a title of honour.
- Excelsior**, ek-sel'si-or, *adj.* higher still.
- Except**, ek-sept', *v.* to take out; to object to.
- Exceptionable**, ek-sep'shun-abl, *adj.* open to objection. [mon.]
- Exceptional**, ek-sep'shun-al, *adj.* peculiar; uncommon.
- Excerpt**, ek-sept', *n.* an extract.
- Excess**, ek-ses', *n.* intemperance; going beyond what is right or wise.
- Excessive**, ek-ses'iv, *adj.* in excess; immoderate.
- Exchequer**, eks-cheq'er, *n.* one of the superior courts; the revenue.
- Excisable**, ek-siz'abl, *adj.* liable to excise duty.
- Excise**, ek'siz, *n.* tax on commodities or trades.
- Exciseman**, ek-siz'man, *n.* a collector of excise.
- Excision**, ek'sizhun, *n.* a cutting away.
- Excitable**, ek-sit'abl, *adj.* liable to excitement.
- Excite**, ek-sit', *v.* to inflame.
- Exclaim**, eks-klam', *v.* to call out.
- Exclamation**, eks-klam-á'shun, *n.* a loud outcry; a note of punctuation (!).
- Exclamatory**, eks-klam-á-to-ri, *adj.* expressing exclamation.
- Exclude**, eks-klood', *v.* to shut out.
- Exclusive**, eks-kloo'siv, *adj.* apart; sole.
- Excogitate**, eks-kó'it-át, *v.* to think slowly.
- Excommunicate**, eks-kom-ú-ni-kát, *v.* to expel from the Church.
- Excoriate**, eks-kó-ri-át, *v.* to strip the skin from.
- Excoriense**, eks-kres'ens, *n.* an unnatural outgrowth.
- Excretion**, eks-kré'shun, *n.* matter excreted.
- Excruciating**, eks-kroo'shi-át-ing, *adj.* torturing.
- Exculpate**, eks-kulpát, *v.* to show guiltless; to absolve.
- Excursion**, eks-kur'shun, *n.* a trip; an expedition.
- Excuse**, eks-kúz', *v.* to forgive; to overlook; to free from blame.
- Excuse**, excús, *n.* a plea.
- Execrable**, eks'é-kra-bl, *adj.* detestable.
- Execrate**, eks'é-krát, *v.* to denounce; to curse.
- Execute**, eks'é-kút, *v.* to perform; to finish; to put to death by law.
- Executioner**, eks'é-kú'shun-er, *n.* one appointed to carry out capital punishment.

**Executive**, egz-ek'ŭ-tiv, *n.* persons who administer governmental authority.

**Executor**, egz-ek'ŭ-ter, *n.* one appointed to carry out the directions of a will.

**Exemplar**, egz-em'plar, *n.* something worthy of imitation. [example.]

**Exemplary**, egz-em'plar-i, *adj.* forming a good example.

**Exemplify**, egz-em'pli-fi, *v.* to show by example.

**Exempt**, egz-empt', *v.* to release from.

**Exequies**, eks-ĕ-kwiz, *n.* funeral rites.

**Exercise**, eks-er-siz, *v.* to practise; *n.* task; use.

**Exert**, egz-ert', *v.* to strive; to labour. [practice.]

**Exertion**, egz-er'shun, *n.* endeavour.

**Exfoliate**, eks-fŏ'li-ăt, *v.* to shed scales.

**Exhalation**, egz-ha-lă'shun, *n.* vapour; steam; what is inhaled.

**Exhaust**, egz-hawst', *v.* to weary; to expend; to drain off.

**Exhaustion**, egz-hawst'yun, *n.* great fatigue.

**Exhibit**, egz-hib'it, *v.* to show; *n.* the thing shown.

**Exhibition**, egz-hi-bish'un, *n.* a display; a public exhibition.

**Exhilarate**, egz-hil'er-ăt, *v.* to animate. [show.]

**Exhort**, egz-hort', *v.* to preach; to urge.

**Exhortation**, egz-hort-ă'shun, *n.* a religious harangue.

**Exhumation**, egs-hŭ-mă'shun, *v.* the act of disintering.

**Exhume**, eks-hŭm', *v.* to disinter.

**Exigency**, eks'ij-en-si, *n.* an emergency.

**Exigent**, eks'ij-jent, *adj.* urgent.

**Exiguous**, eks-ig'ŭ-us, *adj.* slender; small.

**Exile**, egz'il, *n.* the condition of being expelled from home or country; *v.* to banish.

**Exist**, egz-ist', *v.* to have life.

**Exit**, eks'it, *n.* departure.

**Exodus**, eks'-o-dus, *n.* a going out.

**Exogamy**, eks-og'am-i, *n.* marrying only outside one's own tribe.

**Exonerate**, egz-on'er-ăt, *v.* to free from blame.

**Exorbitant**, egz-or'bi-tant, *adj.* excessive.

**Exorcise**, eks-or-siz, *v.* to drive away evil spirits.

**Exorcism**, eks-or-sism, *n.* the act of expelling evil spirits.

**Exordium**, egz-or'di-um, *n.* an introductory portion.

**Exoteric**, eks-o-ter'ik, *adj.* external. [tion.]

**Exotic**, egz-ot'ik, *n.* anything of foreign origin.

**Expand**, eks-pand', *v.* to extend.

**Expanse**, eks-pans', *n.* a wide open space.

**Expansive**, eks-pan'siv, *adj.* far-extending.

**Ex parte**, eks-par'te, *adj.* on one side.

**Expatriate**, eks-pă'shi-ăt, *v.* to enlarge upon.

**Expatriate**, eks-pă'tri-ăt, *v.* to banish.

**Expect**, eks-pekt', *v.* to anticipate.

**Expectant**, eks-pekt'ant, *adj.* looking for.

**Expectorant**, eks-pekt'o-rant, *adj.* causing expectoration.

**Expectorate**, eks-pekt'o-răt, *v.* to spit.

**Expediency**, eks-pĕ'di-en-si, *adj.* fitness; convenience.

**Expedient**, eks-pĕ'di-ent, *adj.* advisable.

**Expedite**, eks-pĕ-dit, *v.* to quicken; to help forward.

**Expedition**, eks-pĕ-dish'un, *n.* speed; an undertaking for exploration, war, discovery, etc.

**Expeditions**, eks-pĕ-dish'us, *adj.* quick, prompt.

**Expel**, eks-pel', *v.* to drive out.

**Expend**, eks-pend', *v.* to spend.

**Expenditure**, eks-pen'dit'ŭr, *n.* what is expended.

**Expense**, eks-pens', *n.* cost; outlay.

**Expensive**, eks-pen'siv, *adj.* costly.

**Experience**, eks-per'i-ens, *n.* knowledge gained; *v.* to undergo; to suffer.

**Experiment**, eks-per-i-ment, *n.* trial; essay.

**Experimental**, eks-per-i-ment'al, *adj.* tentative; as an experiment.

**Experimentalist**, eks-per-i-ment'al-ist, *n.* one who experiments. [a specialist.]

**Expert**, eks-pert', *adj.* having special knowledge; *n.* an expert.

**Expiate**, eks'pi-abl, *adj.* that may be atoned for.

**Expiate**, eks'pi-ăt, *v.* to atone for.

**Expiatory**, eks'pi-a-to-ri, *adj.* having power to atone.

**Expiration**, eks-pir-ă'shun, *n.* termination; end; breathing outwardly.

**Expire**, eks-pir', *v.* to die; to end.

**Expiry**, eks-pir-i, *n.* termination.

**Explain**, eks-plan', *v.* to make clear.

**Explanation**, eks-plan-ă'shun, *n.* act of making clear.

**Explanatory**, eks-plan-ă-to-ri, *adj.* with explanation.

**Expletive**, eks'ple-tiv, *adj.* a redundant word; an oath.

**Explicable**, eks'plik-abl, *adj.* capable of being explained.

**Explicit**, eks-pli'sit, *adj.* clear; plain. [plained.]

**Explode**, eks-plŏd', *v.* to burst forth; to reject.

**Exploit**, eks-plŏit', *v.* to work up for selfish ends; *n.* a notable achievement.

**Exploration**, eks-plŏ-ră'shun, *n.* act of exploring.

**Explore**, eks-plŏr', *v.* to search for.

**Explosion**, eks-plŏ'zhun, *n.* act of exploding.

**Explosive**, eks-plŏ'siv, *n.* a substance that will cause an explosion.

**Exponent**, eks-po'nent, *n.* a person who stands as an example.

**Export**, eks-port', *v.* to send abroad.

**Export**, eks-port, *n.* the thing exported.

**Exportable**, eks-port'abl, *adj.* that can be exported.

**Exportation**, eks-port-ă'shun, *n.* act of exporting.

**Expose**, eks-pŏz, *v.* to lay bare; to place in danger.

**Exposition**, eks-po-zish'un, *n.* an explanation; an exhibition; the act of exposing.

**Expositor**, eks-po-z'it-or, *n.* one who expounds.

**Expository**, eks-po-z'it-o-ri, *adj.* explanatory.

**Expostulate**, eks-po'stŭ-lat, *v.* to remonstrate.

**Exposure**, eks-pŏ'zur, *n.* the act of laying bare.

**Ex pound**, eks-pownd', *v.* to explain.

**Expression**, eks-presh'un, *n.* act of expression; feature; look.

**Expressively**, eks-pres'iv-li, *adv.* with expression.

**Expressly**, eks-pres'li, *adv.* specially.

**Expulsion**, eks-pul'shun, *n.* the act of expelling.

**Expunge**, eks-punj', *v.* to wipe out.

**Expurge**, eks'pur-găt, *v.* to cleanse; to cut out.

**Exquisite**, eks'kwiz-it, *adj.* delicate; superior.

**Exsanguious**, eks-sang'wi-us, *adj.* bloodless.

**Extant**, eks'tant, *adj.* in being.

**Extemporaneous**, eks-tem-pŏ-ră'ne-us, *adj.* without preparation.

**Extempore**, eks-tem-po-ră, *adv.* without study.

**Extemporize**, eks-tem-po-riz, *v.* to speak off-hand.

**Extend**, eks-tend', *v.* to lengthen.

**Extension**, eks-ten'shun, *n.* a stretching out.

**Extensive**, eks-ten'siv, *adj.* large; broad; comprehensive.

**Extent**, eks-ten't, *n.* compass; space.

**Extenuate**, eks-ten'ŭ-ăt, *v.* to palliate.

**Exterior**, eks-tĕr'i-or, *adj.* outer.

**Exterminate**, eks-ter-min-ăt, *v.* to destroy.

**External**, eks-tern'al, *adj.* outward. [from.]

**Externals**, eks-tern'alz, *n.* things outside or apart.

**Extinct**, eks-tingkt', *adj.* extinguished; not living.

**Extincteur**, eks-tingkt'er, *n.* an instrument for extinguishing fire.

**Extinction**, eks-tingkt'shun, *n.* an extinguishing.

**Extinguish**, eks-ting'wish, *v.* to quench.

**Extinguisher**, eks-ting'wish-er, *n.* that which extinguishes.

**Extirpate**, eks-ter'păt, *v.* to root out or destroy.

**Extol**, eks-tŏl', *v.* to praise.

**Extort**, eks-tort', *v.* to force from.

**Extortion**, eks-torsh'un, *n.* oppression.

**Extortionate**, eks-tor'shun-ăt, *adj.* oppressive.

**Extortioner**, eks-tor'shun-er, *n.* one who extorts.

**Extra**, eks-tra, *adj.* beyond what is usual.

**Extract**, eks-trakt', *v.* to draw out.

**Extract**, eks'trakt, *n.* a thing extracted; a copy of a portion of a book.

**Extraction**, eks-trak'shun, *n.* the act of extracting.

**Extradition**, eks-tra-dish'un, *n.* the yielding up of fugitives from justice by one country to another.

**Extrajudicial**, eks-tra-jŭ-dish'al, *adj.* out of the customary legal course. [material universe.]

**Extramundane**, eks-tra-mun'dan, *adj.* beyond the extramural.

**Extramural**, eks-tra-mŭ-răl, *adj.* outside the walls.

**Extraneous**, eks-tră'nĕ-us, *adj.* external.

**Extraordinary**, eks-tra-or'din-ar-i, *adj.* unusual; wonderful. [penditure.]

**Extravagance**, eks-trav-a-gans, *n.* excessive extravagance.

**Extravagant**, eks-trav-a-gant, *adj.* lavish, unreasonable.

**Extravaganza**, eks-trav-a-gan'za, *n.* a burlesque.

**Extreme**, eks-trĕm', *adj.* remote, excessive.

**Extremity**, eks-trĕm'it-i, *n.* the utmost limit.

**Extricable**, eks'trik-abl, *adj.* that may be extricated.

**Extricate**, eks'tri-kăt, *v.* to get out of; to set free.

**Extrinsic**, eks-trin'sik, *adj.* external.

**Extrude**, eks-trood', *v.* to force out.

**Extrusion**, eks-troo'zhun, *n.* the act of expelling.

**Exuberance**, eks-ŭ'ber-ans, *n.* an overflowing.

**Exuberant**, eks-ŭ'ber-ant, *adj.* abounding.

**Exudation**, eks-ŭ-dă'shun, *n.* the act of discharging through the pores.

**Exude**, eks-ŭd', *v.* to ooze; to issue forth.



**Exultant**, egz-ult'ant, *adj.* triumphant.  
**Eyesore**, i'sör, *n.* something offensive to the eye.  
**Eye-tooth**, i'tooth, *n.* one of the two canine teeth.  
**Eyrie**, e'ri, *n.* nest of a bird of prey.

## F

**Fabian**, fä'bi-an, *adj.* delaying; relating to the Fabian Society. [*ing*] a fiction.  
**Fable**, fä'bl, *n.* a fictitious narrative of moral teaching.  
**Fabric**, fab'rik, *n.* a textile cloth; a building.  
**Fabricate**, fab'ri-kät, *v.* to put together; to make; to invent.  
**Fabrication**, fab'ri-kä'shun, *n.* the thing fabricated.  
**Fabulist**, fab'ü-list, *n.* a writer of fables.  
**Fabulous**, fab'ü-lus, *adj.* false; wonderful.  
**Facade**, fas-ad', *n.* the front of a building.  
**Facet**, fä'set, *n.* a small surface or face.  
**Facetiae**, fä-sé'shi-é, *n.* humorous writings or sayings.  
**Facetious**, fä-sé'shus, *adj.* funny; witty. [*ings*]  
**Facial**, fä'shal, *adj.* connected with the face.  
**Facile**, fas'il, *adj.* easy; yielding.  
**Facilitate**, fa-sil'it-ät, *v.* to make easy.  
**Facility**, fa-sil'it-i, *n.* pliancy, dexterity.  
**Facsimile**, fak-sim'il-é, *n.* an exact copy.  
**Faction**, fak'shun, *n.* a contending body of persons.  
**Factionous**, fak'shus, *adj.* disloyal; turbulent.  
**Factionist**, fak-tish'us, *adj.* artificial.  
**Factor**, fak'tör, *n.* an agent; a necessary element.  
**Factorage**, fak'tör-aj, *n.* factor's commission.  
**Factory**, fak'tör-i, *n.* workshop; mill.  
**Factotum**, fak-tö'tum, *n.* an agent of all work.  
**Faculum**, fak'ü-la, *n.* bright spot on the sun.  
**Faculty**, fak'ül-ti, *n.* mental power; special aptitude; officers of a university.  
**Fæces**, fé-CEEZ, *n.* waste material discharged by the intestines.  
**Fag-end**, fag'end, *n.* the loose end or refuse of a fagot, fag'ot, *n.* a bundle of sticks. [*thing*]  
**Fahrenheit**, fär'en-hit, *n.* the scale in common use in Britain for measuring temperatures.  
**Falence**, fä'yens, *n.* painted pottery.  
**Failure**, fä'lür, *n.* defeat; decay; insolvency.  
**Fain**, fän, *adj.* joyful; willing. [*stoppage*]  
**Faineant**, fä'nyang, *adj.* inactive; *n.* do-nothing.  
**Faint**, fänt, *v.* to swoon; *adj.* weak; feeble; indistinct.  
**Fairy**, fä'ri, *n.* a small supernatural being who could enchant human beings.  
**Faith**, fäth, *n.* belief; fidelity.  
**Faithful**, fäth'ful, *adj.* true; loyal.  
**Faithless**, fäth'les, *adj.* false; disloyal.  
**Fakir**, fä'ker, *n.* an Indian religious mendicant.  
**Falcate**, fal'kät, *v.* to bend like a sickle.  
**Falchion**, faw'l'shun, *n.* a short bent sword.  
**Falcon**, faw'kn, *n.* a trained hawk.  
**Falconer**, faw'k-ner, *n.* a trainer of falcons.  
**Falconry**, faw'k'n-ri, *n.* the art of hunting with falcons.  
**Faldstool**, fawld'stool, *n.* a folding stool.  
**Fallacious**, fal-ä'shus, *adj.* misleading; delusive.  
**Fallacy**, fal'ä-si, *n.* something deceptive.  
**Fallible**, fal'ibl, *adj.* liable to err.  
**Fall-out**, fawl-owt, *n.* radioactive ash from an atomic bomb explosion.  
**Fallow**, fal'ö, *adj.* untilled.  
**Falsehood**, fawls'hood, *n.* a lie.  
**Falsetto**, fawl-set'ö, *n.* a voice above the natural.  
**Falsify**, fawl'si-fi, *v.* to make false. [*compass*]  
**Falsity**, fawl-sit-i, *n.* a false statement.  
**Falter**, fawl'ter, *v.* to hesitate.  
**Familiar**, fam-il'yer, *adj.* intimate.  
**Familiarity**, fam-il-lar'it-i, *n.* intimate intercourse.  
**Famine**, fam'in, *n.* extreme scarcity.  
**Famish**, fam'ish, *v.* to starve.  
**Famous**, fä'mus, *adj.* renowned.  
**Fanatic**, fan-at'ik, *n.* a zealot.  
**Fanatical**, fan-at'ik-al, *adj.* wild; unreasoning.  
**Fanaticism**, fan-at'i-sism, *n.* wild religious enthusiasm.  
**Fancy**, fan'st, *n.* imagination; taste; *v.* to imagine.  
**Fandango**, fan-dan'go, *n.* a Spanish dance.  
**Fane**, fän, *n.* a temple; a weathercock.  
**Fanfare**, fan fär, *n.* flourish of trumpets.  
**Fanfaronade**, fan-far-on-äd, *n.* bluster.  
**Fang**, fang, *n.* tooth; tusk; claw.  
**Fanlight**, fan'lit, *n.* a fan-shaped window.  
**Fannel**, fan'l, *n.* a banner.  
**Fantasia**, fan-tä'zi-a, *n.* a fanciful musical composition.  
**Fantastical**, fan-tas'tik-al, *adj.* whimsical; imaginative.  
**Fantasy**, fan-tä-si, *n.* a fancy; imagination. [*ary*]

**Farceful**, far'sik-al, *adj.* ludicrous.  
**Fardel**, fär'del, *n.* a pack.  
**Fare**, fär, *v.* to get; to happen; *n.* price of transit.  
**Farewell**, fär-wel', *n.* a parting good wish.  
**Far-fetched**, fär-fecht', *adj.* unnatural; forced.  
**Farina**, fa-ré'na, *n.* ground corn.  
**Farinaceous**, fa-rin-ä'shus, *adj.* mealy; starchy.  
**Farm**, färm, *n.* land occupied for cultivation; *v.* to cultivate land; to let for profit.  
**Faro**, fär'o, *n.* a card game.  
**Farrago**, far-rä'go, *n.* a disorderly mass.  
**Farrier**, fär'i-er, *n.* a horse-shoer; a horse doctor.  
**Farrow**, fär'rö, *n.* a litter of pigs.  
**Farthing**, fär'thing, *n.* small coin, quarter of a penny.  
**Farthingale**, fär'thing-gäl, *n.* a hoop for distending a lady's dress.  
**Fascicle**, fas'ikl, *n.* a small bundle; a cluster.  
**Fascinate**, fas'in-ät, *v.* to charm.  
**Fascination**, fas-in-ä'shun, *n.* power to charm.  
**Fashion**, fas'hun, *n.* the prevailing style; custom; cut or form.  
**Fashionable**, fas'hun-äbl, *adj.* in the first mode.  
**Fast-day**, fast'dä, *n.* a holy day of fasting.  
**Fasten**, fas'n, *v.* to make fast.  
**Fastidious**, fas-tid'i-us, *adj.* hard to please; too exacting.  
**Fastness**, fast'ness, *adj.* speed; rapidity.  
**Fatal**, fä'tal, *adj.* deadly; according to fate; mortal.  
**Fatalism**, fä'tal-izm, *n.* the theory that all things are foreordained.  
**Fatality**, fa-tal'it-i, *n.* a fatal occurrence.  
**Fated**, fä'ted, *adj.* destined; doomed.  
**Father**, fä'ther, *n.* male parent.  
**Fatherland**, fä'ther-land, *n.* the land of one's ancestors.  
**Fatherly**, fä'ther-li, *adj.* paternal. [*cestors*]  
**Fathom**, fäth'om, *n.* a nautical measure (6 feet); *v.* to get to the bottom of.  
**Fathomless**, fäth'om-less, *adj.* bottomless.  
**Fatigue**, fa-täg', *n.* weariness from exertion.  
**Fatling**, fat'ling, *n.* a young fattened animal.  
**Fatten**, fat'n, *v.* to make fat.  
**Fatty**, fat'i, *adj.* greasy.  
**Fatuity**, fa-tü'it-i, *n.* stupidity; mental feebleness.  
**Fatuous**, fat'ü-us, *adj.* foolish.  
**Fauces**, faw'séz, *n.* the top part of the throat.  
**Faucet**, faw'set, *n.* a pipe, peg, or tap for letting liquor out of a barrel.  
**Fault**, fawlt, *n.* error, blemish.  
**Faun**, fawn, *n.* a mythological protector of shepherds who had the legs and tail of a goat.  
**Fauna**, faw'na, *n.* the animals of a country, district, or period.  
**Favour**, fä'ver, *n.* patronage; encouragement; partiality.  
**Favourable**, fä'ver-äbl, *adj.* advantageous.  
**Favourite**, fä'ver-it, *n.* a person or thing in favour.  
**Favouritism**, fä'ver-it-izm, *n.* partiality.  
**Fawn**, fawn, *v.* to cringe; to flatter; *n.* a young fawn.  
**Fay**, fä, *n.* a small fairy. [*deer*]  
**Fealty**, fé'al-ti, *n.* fidelity.  
**Feasibility**, féz-i-bil'it-i, *n.* quality of being practicable.  
**Feat**, fét, *n.* a remarkable achievement.  
**Feather**, feth'er, *n.* one of a large number of growths that cover birds; a plume.  
**Feathery**, feth'er-i, *adj.* covered with, or similar to, feathers. [*alty*] the countenance.  
**Feature**, fét'ür, *n.* prominent external sign; spect-  
**Febrifuge**, feb'ri-füj, *n.* medicine that mitigates fever.  
**Febrile**, fé'bril, *adj.* connected with fever.  
**Fecial**, fé'si-al, *adj.* relating to heralds.  
**Feckless**, fek'less, *adj.* spiritless.  
**Fecula**, fek'ü-la, *n.* starchy sediment.  
**Fecund**, fek'und, *adj.* fruitful.  
**Fecundate**, fek'un-dät, *v.* to make fruitful.  
**Fecundity**, fek-un'di-ti, *n.* fruitfulness.  
**Federal**, fed'er-al, *adj.* relating to a league or federation.  
**Federalist**, fed'er-al-ist, *n.* a supporter of federalism.  
**Federative**, fed'er-ä-tiv, *adj.* leagued together.  
**Fee**, fé, *n.* recompense; reward; freehold inheritance.  
**Feeble**, fé'bl, *adj.* weak. [*ance*]  
**Feel**, fél, *v.* to perceive by touch; to be affected.  
**Feeling**, fé'ling, *n.* the sense of touch; emotion.  
**Feign**, fän, *v.* to pretend.  
**Feint**, fänt, *n.* a pretence.  
**Felicitate**, fe-lis'it-ät, *v.* to congratulate.  
**Felicitous**, fe-lis'it-us, *adj.* happy; pleasant; suitable.

**Feline**, fē'līn, *adj.* relating to cats; cat-like.  
**Fell**, fel, *n.* a hill; a skin; *v.* to cut down; to strike to the ground; *adj.* savage.  
**Fellow**, fel'ō, *n.* an equal; a man of small account; a senior resident member of a University.  
**Fellowship**, fel'ō-ship, *n.* friendly communion; the condition of being a fellow.  
**Felon**, fel'on, *n.* a criminal.  
**Felonious**, fel-ō'nī-us, *adj.* with criminal intent.  
**Felony**, fel'ō-nī, *n.* a serious crime.  
**Feluca**, fe-luk'ā, *n.* a Mediterranean boat with sails and oars.  
**Female**, fē'māl, *n.* the sex that bears young.  
**Feminine**, fem'in-in, *adj.* relating to women; womanly.  
**Femoral**, fem'ō-ral, *adj.* relating to the thigh.  
**Fen**, fen, *n.* low marshy land.  
**Fence**, fens, *n.* hedge or wall round enclosed land.  
**Fencer**, fen'ser, *n.* one who fences.  
**Fencing**, fen'sing, *n.* the art of sword-play; material for fence construction.  
**Fend**, fend, *v.* to ward off.  
**Fender**, fen'der, *n.* a metal fire-guard.  
**Fennel**, fen'el, *n.* an aromatic plant.  
**Ferial**, fē'rī-al, *adj.* relating to holidays.  
**Ferment**, fer'ment, *n.* an internal commotion; tumult.  
**Ferment**, fer'ment', *v.* to cause fermentation; to agitate.  
**Fernery**, fern'er-ī, *n.* a place for keeping ferns.  
**Ferocious**, fer-ō'shus, *adj.* savage; fierce.  
**Ferrandine**, fer'an-dīn, *n.* a fabric of silk and wool.  
**Ferrous**, fer'e-us, *adj.* made of, or relating to, iron.  
**Ferret**, fer'et, *n.* a kind of weasel; *v.* to make close search.  
**Ferruginous**, fer-ū'jīn-us, *adj.* partaking of iron.  
**Ferrule**, fer'ul, *n.* a metal ring on the end of a staff or stick.  
**Ferry**, ferl, *v.* to transport across water; *n.* the place where people are ferried.  
**Fertile**, fer'til-iz, *v.* to make fertile.  
**Ferule**, fer'ul, *n.* a rod or ruler.  
**Fervent**, fer'vent, *adj.* warm; eager.  
**Fervid**, fer'vid, *adj.* ardent.  
**Fervour**, fer'vor, *n.* zeal.  
**Fescue**, fes'kū, *n.* a species of grass; a letter pointer.  
**Festal**, fes'tal, *adj.* connected with a feast.  
**Fester**, fes'ter, *v.* to suppurate; to rankle.  
**Festival**, fes'tiv-al, *n.* a rejoicing; a feast.  
**Festoon**, fes-toon, *n.* a suspended garland.  
**Fetch**, fech, *v.* to go for and get.  
**Fête**, fât, *n.* feast; a summer entertainment.  
**Fetich**, fē'tish, *n.* an object of supposed divine attributes.  
**Fetichism**, fē'tish-izm, *n.* fetich-worship.  
**Fetid**, fē'tid, *adj.* rancid; stinking. [pastern.  
**Fetlock**, fet'lok, *n.* the hair tuft behind a horse's fetter.  
**Fetter**, fet'er, *n.* a chain for the feet; *v.* to restrain.  
**Fettle**, fet'l, *v.* to clean, mend, or improve.  
**Feud**, fūd, *n.* continued strife between families.  
**Feudalism**, fū'dal-izm, *n.* the mediæval system of holding lands in vassalage. [newspaper.  
**Feuilleton**, fē'ye-tong, *n.* the story part of a paper.  
**Fever**, fē'ver, *n.* see Dictionary of Health Section.  
**Fewness**, fū'ness, *adj.* smallness of number.  
**Fey**, fā, *adj.* fated, bewitched.  
**Flancé**, ée, fē-ān'sā, *n.* one who is engaged to be married.  
**Flasco**, fi-as'ko, *n.* failure.  
**Fiat**, fi'at, *n.* a solemn command.  
**Fibre**, fi'br, *n.* workable tissue, animal or vegetable, as wool, flax, silk, etc.  
**Fibril**, fi'bril, *n.* a small fibre.  
**Fibrine**, fi'brin, *n.* a fibrous substance in animals and plants.  
**Fibrous**, fi'brus, *adj.* made up of fibres.  
**Fichu**, fish'u, *n.* a thin piece of material worn by women in the opening at the top of a frock.  
**Fickle**, fik'l, *adj.* changeable.  
**Fictile**, fik'til, *adj.* plastic, pliant.  
**Fiction**, fik'shun, *n.* an imaginary story; romance.  
**Fictitious**, fik-tish'us, *adj.* imaginary; false.  
**Fiddle**, fid'l, *n.* a violin.  
**Fiddling**, fid'ling, *adj.* the act of playing a violin; small, unimportant.  
**Fidelity**, fid-el'it-ī, *n.* faithfulness; duty.  
**Fidget**, fid'jet, *v.* to move restlessly.  
**Fiduciary**, fidū-shi-a'ri, *n.* one who holds in trust.  
**Fie**, fi, *excl.* indicating disapproval.  
**Fief**, fēf, *n.* a feudal grant. [ground.  
**Field**, fēld, *n.* an enclosed piece of land; battle-

**Field-book**, fēld'book, *n.* a book used by land surveyors.  
**Fieldfare**, fēld'fār, *n.* a species of large thrush.  
**Field Marshal**, *n.* highest rank in the British Army.  
**Field-piece**, fēld'pēs, *n.* a piece of artillery.  
**Fiend**, fēnd, *n.* a devil; a wicked person.  
**Fierce**, fērs, *adj.* ferocious.  
**Fiery**, fi'er-ī, *adj.* hot; ardent.  
**Fife**, fif, *n.* a musical pipe.  
**Fifer**, fi'fer, *n.* a fife player.  
**Fight**, fit, *n.* a contest; *v.* to contend.  
**Figure**, fig'ment, *n.* an invention.  
**Figurative**, fig'ū-ra-tiv, *adj.* metaphorical.  
**Figure**, fig'ūr, *n.* form; outline; price.  
**Figured**, fig'urd, *adj.* marked with figures or designs. [prow.  
**Figurehead**, fig'ūr-hed, *n.* the figure on a ship's  
**Filament**, fil'a-ment, *n.* a slender thread.  
**Filamentous**, fil'a-ment'us, *adj.* thread-like.  
**Filatory**, fil'ā-to-ri, *n.* a thread-spinning machine.  
**Filature**, fil'a-tūr, *n.* the reeling of silk.  
**Filbert**, fil'bert, *n.* cultivated hazel nut.  
**Filch**, filch, *v.* to steal.  
**File**, fil, *n.* a rasping instrument; a receptacle for papers; a line of soldiers; *v.* to work with a file.  
**Filibuster**, fil'i-bus-ter, *n.* a lawless adventurer; one who tries to hold up legislation by making an endless speech.  
**Filigree**, fil'i-grē, *n.* ornamental work in gold and silver threads.  
**Fillet**, fil'et, *n.* a band; a slice of meat or fish without bone.  
**Fillibeg**, fil'i-beg, *n.* the kilt.  
**Filip**, fil'ip, *v.* to flip; to drive.  
**Filly**, fil'l, *n.* a young mare.  
**Film**, film, *n.* a thin skin or thread.  
**Filter**, fil'ter, *n.* a liquid purifying apparatus; *v.*  
**Filth**, filth, *n.* foul matter. [to percolate.  
**Filtrate**, fil'trāt, *v.* to filter; *n.* result of filtration.  
**Final**, fi'nal, *adj.* last; conclusive.  
**Finale**, fin-ā'lā, *n.* the last item at a concert.  
**Finality**, fi-nal'it-ī, *n.* the condition of being final.  
**Finalize**, fi-nal'iz, *v.* to give final form to.  
**Finance**, fi-nans', *n.* money affairs; revenue.  
**Financial**, fi-nan'shal, *adj.* relating to finance.  
**Financier**, fi-nan'ser, *n.* one who deals in funds, revenues, etc.  
**Finch**, finsh, *n.* a genus of birds.  
**Fine**, fin, *n.* penalty; *adj.* elegant, beautiful.  
**Finer**, fi'ner, *n.* one who refines metals.  
**Finery**, fi'ner-ī, *n.* fine attire; jewels, etc.  
**Finesse**, fin-es', *n.* artifice; trickery.  
**Final**, fi'nal, *n.* a terminating bunch of foliage (arch.).  
**Finical**, fin'ik-al, *adj.* fastidious; affected.  
**Finis**, fin'is, *n.* the end.  
**Finish**, fin'ish, *v.* to conclude; to perfect.  
**Finite**, fin'it, *adj.* limited; bounded.  
**Fiord**, fyord, *n.* a rock-bound inlet.  
**Fir**, fer, *n.* a cone-bearing tree.  
**Fire-arms**, fir'arms, *n.* weapons discharged by explosives. [extinguishing fires.  
**Fire-brigade**, fir'brig-ād, *n.* a body organised for  
**Fire-damp**, fir'damp, *n.* explosive mixture of methane and air found in coal-mines.  
**Fire-engine**, fir'en-jin, *n.* an engine for pumping water for putting out fires.  
**Fireman**, fir'man, *n.* a member of a fire-brigade.  
**Fireworks**, fir'werks, *n.* preparations of powder, etc., for display.  
**Firkin**, fer'kin, *n.* a quarter barrel.  
**Firm**, ferm, *adj.* decided, strong; *n.* a business partnership.  
**Firmament**, fer'mā-ment, *n.* the sky.  
**Firman**, fer'man, *n.* a Turkish decree.  
**Firstling**, ferst'ling, *n.* the first produce of animals.  
**First-rate**, ferst'rāt, *adj.* of the first excellence.  
**Firth**, ferth, *n.* the mouth of a river.  
**Fiscal**, fis'kal, *adj.* relating to revenue.  
**Fishery**, fish'er-ī, *n.* the fishing business; place where fish are caught.  
**Fishmonger**, fish mung'er, *n.* a dealer in fish.  
**Fission**, fizh'un, *n.* cleavage.  
**Fissure**, fizh'ūr, *n.* a cleft; a chasm.  
**Fist**, fist, *n.* the clenched hand.  
**Fisticuffs**, fist'f-kufs, *n.* blows; boxing.  
**Fistula**, fist'ū-lā, *n.* a deep ulcer.  
**Fitchet**, *n.* a polecat.  
**Fitful**, fit'ful, *adj.* spasmodic.  
**Fitness**, fit'ness, *n.* suitability; condition of being  
**Fixity**, fiks'it-ī, *n.* state of being fixed. [qualified.



**Fixture**, fiks'tūr, *n.* something fixed; an appointed  
**Fizz**, fiz, *v.* to make a hissing sound. [day.  
**Flabbergast**, flab'er-gást, *v.* to surprise greatly.  
**Flabby**, flab'ī, *n.* loose; soft.  
**Flaccid**, flak'sid, *adj.* weak; lax.  
**Flag**, flag, *v.* to grow weak; to cover with flag-  
stones; *n.* a banner; the iris.  
**Flagellants**, flaj'el-ants, *n.* a religious sect who  
scourged themselves.  
**Flagellate**, flag-el-át, *v.* to scourge or whip.  
**Flageolet**, flaj'o-let, *n.* a reed instrument.  
**Flagitious**, fla-jish'us, *adj.* excessively wicked.  
**Flagon**, flag'on, *n.* a drinking vessel.  
**Flair**, flá'grans, *n.* the condition of being  
flagrant.  
**Flagrant**, flá'grant, *adj.* notorious; growing.  
**Flag-ship**, flag'ship, *n.* a ship that carries the  
admiral's flag.  
**Flail**, flál, *n.* a threshing instrument.  
**Flake**, flák, *n.* a small thin layer of anything.  
**Flaky**, flák'ī, *adj.* composed of flakes.  
**Flambeau**, flam'bó, *n.* a torch.  
**Flamboyant**, flam-boi'ant, *adj.* flame-like.  
**Flame**, flám, *n.* blaze; *v.* to blaze.  
**Flammarious**, flam-if'er-us, *adj.* flame-engender-  
ing.  
**Flan**, flán, *n.* an open pastry case containing fruit.  
**Flange**, flanj, *n.* the raised edge of a wheel.  
**Flank**, flank, *n.* the side of anything.  
**Flannel**, flán'el, *n.* a warm woollen texture.  
**Flap-jack**, flap'jak, *n.* a pancake.  
**Flare**, flár, *v.* to flash unsteadily.  
**Flaring**, flá'ring, *adj.* burning fitfully; gaudy.  
**Flash**, *v.* to flame suddenly; *n.* a burst of light.  
**Flashy**, flash'ī, *adj.* showy; dazzling.  
**Flask**, flásk, *n.* a drinking vessel.  
**Flasket**, flásk'et, *n.* a flask in which food is served.  
**Flat**, *n.* apartment; *adj.* even; dull; below true  
**Platter**, flát'er, *v.* to praise unduly. [pitch.  
**Flaunt**, fláwnt, *v.* to display showily; to wave in  
the wind.  
**Flautist**, fláw'tíst, *n.* a flute-player.  
**Flavour**, flá'v'er, *n.* relish; taste; *v.* to give  
flavour to.  
**Flaw**, flaw, *n.* a defect; a fault.  
**Flax**, fláks, *n.* plant yielding a fibre from which flax  
**Flaxen**, fláks'en, *adj.* fair; like flax. [is made.  
**Flay**, flá, *v.* to tear off the skin.  
**Flea**, flé, *n.* a small blood-sucking insect.  
**Fleck**, flek, *n.* a spot; *v.* to spot.  
**Flection**, flek'shun, *n.* act of bending.  
**Fledge**, flej, *v.* to furnish with feathers.  
**Fledgling**, flej'ling, *n.* a young bird.  
**Fleece**, flés, *n.* a sheep's coating of wool.  
**Fleecy**, flés'ī, *adj.* woolly.  
**Fleer**, flér, *v.* to mock.  
**Fleet**, flét, *adj.* swift; *n.* a navy.  
**Floating**, flét'ing, *adj.* passing.  
**Flesh**, flésh, *n.* the substance which covers the  
bones of animals.  
**Fleshly**, flésh'li, *adj.* carnal.  
**Flexible**, fleks'ī-bl, *adj.* pliant.  
**Flexile**, fleks'īl, *adj.* pliable.  
**Flexion**, flek'shun, *n.* a bend.  
**Flexuose**, fleks'ū-us, *adj.* winding; tortuous.  
**Flexure**, fleks'ūr, *n.* a bending.  
**Flicker**, flick'er, *v.* to flutter; to waver.  
**Flight**, flit, *n.* act of flying.  
**Flighty**, flit'ī, *adj.* giddy; fanciful.  
**Flimsy**, flim'sī, *adj.* weak; spiritless; thin.  
**Flinch**, flinsh, *v.* to shrink.  
**Fling**, fling, *v.* to throw; *n.* a dance.  
**Flint**, *n.* a stone of extreme hardness.  
**Flip**, flip, *n.* spiced hot drink; *v.* to fillip.  
**Flippant**, flip'ant, *adj.* pert; saucily fluent.  
**Flit**, flit, *v.* to fly; to remove.  
**Flitch**, flich, *n.* the side of a pig, cured.  
**Float**, flót, *v.* to swim; *n.* a raft.  
**Floatage**, flót'ij, *n.* that which floats.  
**Flocculent**, flok'kū-lent, *adj.* woolly; tufty.  
**Flock**, flok, *n.* a collection of animals; a com-  
pany; *v.* to congregate.  
**Flockmaster**, flok'más-ter, *n.* a sheep-owner.  
**Floe**, fló, *n.* floating ice.  
**Flood**, flud, *n.* an inundation; *v.* to overflow.  
**Floor**, flór, *n.* the part of a room on which people  
stand; a level area.  
**Flop**, flop, *v.* to collapse; to fall limply.  
**Floral**, fló'ral, *adj.* pertaining to flowers.  
**Florescence**, flor-é-sens, *n.* a bursting into floral  
bloom.  
**Floriculture**, flor-i-kult'ūr, *n.* the art of flower  
**Florida**, flor'id, *adj.* bright-coloured. [culture.

**Floriform**, fló'ri-form, *adj.* flower-shaped.  
**Florin**, flor'in, *n.* a two-shilling piece.  
**Florist**, flor'ist, *n.* one who grows or sells flowers.  
**Floss**, flos, *n.* loose silk.  
**Flotation**, fló-tá'shun, *n.* the act of floating.  
**Flotilla**, fló-til'á, *n.* a small fleet.  
**Flotsam**, flót'sam, *n.* goods cast or swept from a  
vessel into the sea and found floating.  
**Flounce**, flowns, *n.* a plaited strip round a skirt;  
*v.* to move impatiently.  
**Flounder**, flown'd'er, *v.* to struggle helplessly.  
**Flour**, flour, *n.* finely ground wheat; any soft  
powder.  
**Flourish**, flur'ish, *v.* to thrive; to display showily;  
to blow a trumpet; to make ornamental  
**Flout**, flout, *v.* to mock. [strokes.  
**Flower**, flower, *n.* the bloom of a plant.  
**Fluctuate**, fluk'tū-át, *v.* to rise and fall.  
**Flue**, flú, *n.* a connecting passage with a chimney.  
**Fluency**, floo'en-sī, *n.* readiness of speech.  
**Fluff**, fluf, *n.* fibrous dust.  
**Fluid**, floo'id, *n.* a liquid. [a lucky chance stroke.  
**Fluke**, flook, *n.* a fish; the hook part of an anchor.  
**Flume**, floom, *n.* an artificial water channel.  
**Flummery**, flum'er-ī, *n.* nonsense; a sour jelly  
made from oat husks.  
**Flunkey**, flunk'ī, *n.* a liveried servant; a fawning  
**Flunkeyism**, flunk'ī-izm, *n.* servility. [person.  
**Flurry**, fler'ī, *n.* a confused agitation.  
**Flush**, flush, *n.* a rush of blood to the cheeks;  
freshness; *v.* to startle; *adj.* level with what  
adjoins.  
**Fluster**, flus'ter, *n.* confusion; hurry; clatter.  
**Flute**, flout, *n.* a musical pipe.  
**Fluting**, flout'ing, *n.* fluted articles.  
**Flutter**, flut'er, *v.* to move quickly; to excite.  
**Fluvial**, flou'vi-al, *adj.* pertaining to a river.  
**Flux**, fluks, *n.* the act of flowing.  
**Fluxible**, fluks'ībl, *adj.* capable of being melted.  
**Fluxion**, fluk'shun, *n.* a discharge.  
**Fly**, flī, *v.* to move with wings; to depart sud-  
denly; *n.* a winged insect.  
**Fly-blow**, flī'bló, *n.* a fly's egg.  
**Fly-boat**, flī'bót, *n.* a narrow swift boat.  
**Fly-wheel**, flī'wheel, *n.* a large wheel for equalising  
the motion of machinery.  
**Foal**, fól, *n.* the young of a mare or ass.  
**Foam**, fóm, *n.* spray, lather, froth.  
**Fob**, fob, *n.* watch-pocket.  
**Focal**, fók'al, *adj.* relating to a focus.  
**Focus**, fók'us, *n.* point to which rays converge.  
**Fodder**, fod'er, *n.* cattle food.  
**Fog**, fog, *n.* thick mist; a second crop of grass.  
**Fogbank**, fog'bangk, *n.* a mass of sea fog.  
**Fogey**, fóg'ī, *n.* an old-fashioned dull fellow.  
**Foggy**, fog'ī, *adj.* misty.  
**Foible**, fof'bl, *n.* a moral weakness.  
**Foil**, foil, *v.* to defeat; *n.* metal leaf.  
**Foist**, foist, *v.* to pass off.  
**Fold**, fold, *v.* to enfold; to lay one part on an-  
other; *n.* an enclosed space.  
**Folder**, fold'er, *n.* a folding instrument.  
**Foliaceous**, fol-i-á'shus, *adj.* pertaining to leaves.  
**Foliage**, fól'i-áj, *n.* leaves.  
**Foliate**, fól-i-át, *n.* to make into leaf form.  
**Foliation**, fól-i-á'shun, *n.* the leafing process.  
**Folio**, fól-i-o, *n.* a book comprising two leaves to  
the sheet.  
**Folklore**, fók'lór, *n.* the study of ancient customs.  
**Folknote**, fók'mót, *n.* an Anglo-Saxon popular  
assembly.  
**Follicle**, fol'ī'kl, *n.* a gland; a seed-vessel.  
**Follow**, fol'ó, *v.* to go after; to practise; to  
imitate.  
**Foment**, fó-ment', *v.* apply warm lotions; to incite.  
**Fomentation**, fó-ment-á'shun, *n.* a compress of  
either hot or cold water to relieve inflamma-  
tion.  
**Fondle**, fond'l, *v.* to caress.  
**Font**, font, *n.* vessel used for baptisms; an  
equipment of one sort of printing type.  
**Fool**, fool, *n.* a weak-minded person; a jester.  
**Foolery**, fool'er-ī, *n.* folly.  
**Foolhardy**, fool-hard-ī, *adj.* rash.  
**Foolscape**, fools'kap, *n.* paper cut 13 inches in  
length.  
**Foot**, foot, *n.* the extremity of the leg; the part on  
which a thing stands; 12 inches.  
**Footpad**, foot'pad, *n.* a robber on foot.  
**Footrule**, foot'rool, *n.* a foot measure.  
**Footstep**, foot'step, *n.* a footmark.  
**Pop**, *n.* a dandy.  
**Foppery**, fop'er-ī, *n.* vanity in dress.

**Forage**, for'āj, *n.* cattle food; *v.* to go in quest of such food.  
**Foramen**, fō-rā'men, *n.* a small opening.  
**Foray**, for'ā, *n.* a plunder raid.  
**Forbear**, for-bār', *v.* to resist; to abstain.  
**Forbearance**, for-bār'ans, *n.* clemency; patience.  
**Forbid**, for-bid', *v.* to prohibit.  
**Forbidding**, for-bid'ing, *adj.* repulsive.  
**Force**, fōrs, *n.* strength; power; *v.* to compel.  
**Foremeat**, fōrs'mēt, *n.* meat chopped fine for stuffing.  
**Forceps**, for'seps, *n.* a surgical pincers for grasping.  
**Forcible**, fōrs'ibl, *adj.* with vigour; by force.  
**Ford**, n. place where water can be crossed by wading.  
**Fore**, fōr, *adj.* in front; *adv.* at the front; previously.  
**Forearm**, for'arm, *v.* to prepare; to arm in advance. [evil.]  
**Forebode**, fōr-bōd', *v.* to feel a presentiment of.  
**Forecast**, fōr-kast', *v.* to foresee; to predict.  
**Forecast**, fōr-kast, *n.* a prediction.  
**Forecastle**, fōk'sl, *n.* the raised deck at the front of a ship.  
**Forefather**, fōr-fa-ther, *n.* a male ancestor.  
**Forefend**, fōr-fend', *v.* to avert.  
**Forego**, fōr-gō', *v.* to give up; to forebear.  
**Foregone**, fōr-gon', *adj.* concluded beforehand.  
**Foreground**, fōr-grownd, *n.* the front portion of a picture.  
**Forehanded**, fōr-hand'ed, *adj.* in advance.  
**Forehead**, fōr-hed, *n.* the brow.  
**Foreign**, for'in, *adj.* pertaining to another country.  
**Foreland**, fōr'land, *n.* a headland. [the brow.]  
**Forelock**, fōr'lock, *n.* a lock of hair overhanging forehead.  
**Foreman**, for'man, *n.* the leading man; an overseer. [bunals.]  
**Forensic**, fō-ren'sik, *adj.* pertaining to legal trial.  
**Forerunner**, fōr-run'ner, *n.* a harbinger.  
**Foresee**, fōr-sē', *v.* to anticipate; to know beforehand. [low water marks.]  
**Foreshore**, fōr-shōr, *n.* the part between high and foreshortening.  
**Foreshortening**, fōr-short-en-ing, *n.* the representation of figures in projection.  
**Forest**, for'est, *n.* a large tract of wooded land.  
**Foretell**, fōr-tell', *v.* to anticipate.  
**Forester**, for'est'er, *n.* a forest keeper.  
**Foretaste**, fōr-täst, *n.* anticipation.  
**Foretell**, fōr-tel', *v.* to predict.  
**Forethought**, fōr-thawt, *n.* thought for the future.  
**Foretop**, fōr-top, *n.* platform at head of foremast.  
**Forewarn**, fōr-wawrn', *v.* to warn beforehand.  
**Fortell**, for'tel, *v.* to lose a right by an offence.  
**Forge**, fōrj, *n.* a furnace; blacksmith's shop; *v.* to form; to counterfeit.  
**Forger**, fōrjer, *n.* one guilty of forgery.  
**Forgery**, fōrjer-i, *n.* the crime of counterfeiting.  
**Forget**, for-get', *v.* to lose memory of; to neglect.  
**Forgive**, for-giv', *v.* to overlook; to pardon.  
**Forgiveness**, for-giv'nes, *n.* pardon.  
**Forlorn**, for-lorn', *adj.* wretched; forsaken.  
**Formal**, for'mal, *adj.* according to form or ceremony.  
**Formative**, form'ā-tiv, *adj.* giving form.  
**Former**, form'er, *adj.* before in time or order.  
**Formic**, form'ik, *adj.* relating to ants.  
**Formidable**, for'mid-abl, *adj.* strong; fearful.  
**Formula**, for'mū-la, *n.* a prescribed form.  
**Formulary**, for'mū-lar-i, *n.* book of forms.  
**Formulate**, form'ū-lāt, *v.* to express in precise terms.  
**Fornicate**, fōrnī-kāt, *v.* to act immorally.  
**Forsake**, for-sāk', *v.* to abandon.  
**Forsooth**, for-sooth', *adv.* certainly; truly.  
**Forswear**, for-swar', *v.* to deny on oath; to swear.  
**Fort**, fōrt, *n.* a small fortress. [falsely.]  
**Forté**, fōrtā, *n.* that for which one has a special aptitude.  
**Forté**, for'tā, *adj.* and *adv.* loud. [aptitude.]  
**Forthcoming**, forth-kum'ing, *adj.* on the point of appearing.  
**Forthwith**, forth-with', *adv.* at once.  
**Fortification**, for-tif-ik-ā'shun, *n.* defensive works.  
**Fortitude**, for'ti-tūd, *n.* strength to endure.  
**Fortress**, fort'res, *n.* a fortified position.  
**Fortuitous**, for-tū-it-us, *adj.* occurring by chance.  
**Fortunate**, for'tū-nāt, *adj.* lucky; successful.  
**Fortune**, for'tūn, *n.* one's lot; wealth; success.  
**Forum**, fō'rum, *n.* a market place; a court.  
**Forward**, for'werd, *adj.* in front; ready; presumptuous. [ness.]  
**Forwardness**, for'werd-ness, *n.* pertness; readiness.  
**Foss**, fos, *n.* a moat.  
**Fossil**, fos'il, *n.* petrified remains.

**Fossorial**, fos-ō'ri-al, *adj.* burrowing.  
**Foster**, fos'ter, *v.* to encourage; to bring up.  
**Fosterage**, fos'ter-aj, *n.* the act of fostering.  
**Foster-child**, fos'ter-child, *n.* a child brought up by someone other than its parents.  
**Foster-son**, fos'ter-son, *n.* boy brought up by parents not his own.  
**Foul**, foul, *adj.* impure, unfair, stormy.  
**Fountain**, fōu'mart, *n.* the polecat. [metal.]  
**Found**, fownd, *v.* to originate; to endow; to cast.  
**Foundation**, fownd-ā'shun, *n.* base; groundwork.  
**Founder**, fownd'er, *v.* to sink; *n.* one who establishes.  
**Foundling**, fownd'ling, *n.* a deserted child.  
**Foundry**, fownd'rif, *n.* place where metal castings are made.  
**Fountain**, fowntān, *n.* a natural or artificial spring of water; the source of a thing.  
**Fowl**, fowl, *n.* a domesticated bird.  
**Fowler**, fow'ler, *n.* a hunter or shooter of wild fowl.  
**Fowling-piece**, fow'ling-pēs, *n.* gun for small shot.  
**Fox**, foks, *n.* a doglike animal that is hunted for sport.  
**Foxglove**, foks'gluv, *n.* a plant with glove-like flowers.  
**Foxy**, foks'i, *adj.* cunning. [flowers.]  
**Foyer**, Fōi-ā', *n.* vestibule of a hotel, hall, or place of entertainment.  
**Fracas**, fra-kā', *n.* a disturbance.  
**Fraction**, frak'shun, *n.* a small piece; any part of a fraction.  
**Fractious**, frak'shus, *adj.* quarrelsome. [unit.]  
**Fracture**, frakt'ūr, *n.* a breakage of bone; *v.* to break.  
**Fragile**, frāj'il, *n.* frail; brittle.  
**Fragment**, frag'ment, *n.* a piece.  
**Fragrance**, frā'grans, *n.* pleasant to the smell.  
**Fragrant**, frā'grant, *adj.* of pleasing odour.  
**Frail**, frāl, *adj.* weak.  
**Frailty**, frāl'ti, *n.* weakness.  
**Frame**, frām, *n.* a border; *v.* to shape.  
**Framework**, frām'werk, *n.* an outline; a frame.  
**Frane**, frangk, *n.* a French and Belgian coin.  
**Franchise**, fran'chiz, *n.* privilege; right of voting.  
**Franciscan**, fran-sis'kan, *n.* a Franciscan friar.  
**Frank**, frā'k, *adj.* open; generous; candid.  
**Frankincense**, frangk'in-sens, *n.* a sweet-smelling Arabian resin.  
**Frantic**, fran'tik, *adj.* mad; raving.  
**Frap**, frap, *v.* to strike.  
**Fraternai**, fra-ter'nal, *adj.* brotherly.  
**Fraternise**, fra-ter'niz, *v.* to associate like brothers.  
**Fraternity**, fra-ter'nit-i, *n.* state of brotherhood.  
**Patricide**, frā'tri-sid, *n.* the murder of a brother; a brother's murderer.  
**Fraud**, fraud, *n.* imposture; trickery.  
**Fraudulent**, fraud'u-lent, *adj.* dishonest.  
**Fraught**, frawt, *n.* charged with; loaded; full.  
**Freak**, frēk, *n.* caprice; a monstrosity.  
**Frakish**, frēk'ish, *adj.* capricious.  
**Freckle**, frēk'l, *n.* a brown skin-spot; *v.* to spot.  
**Freebooter**, frē'boo-ter, *n.* one who robs and pillages.  
**Freeborn**, frē'born, *adj.* born of free parents.  
**Freebman**, frē'bman, *n.* liberated slave.  
**Freedom**, frē'dom, *n.* liberty; licence; undue familiarity. [free from guidance.]  
**Freehand**, frē'hand, *adj.* drawing with the hand.  
**Freehold**, frē'hold, *n.* property in absolute ownership.  
**Freeholder**, frē'holder, *n.* the owner of a freehold.  
**Freeman**, frē'man, *n.* a man enjoying liberty; the holder of a civic privilege.  
**Freestone**, frē'ston, *n.* stone that admits of free cutting; lime, sand, or grit stone.  
**Freethinker**, frē'think'er, *n.* a sceptic.  
**Freewill**, frē-wil', *n.* freedom to exercise the will.  
**Freeze**, frēz, *v.* to harden into ice.  
**Freight**, frāt, *n.* cargo; goods in transport.  
**Freightage**, frāt'ij, *n.* fee chargeable for freight.  
**Frenzy**, fren'zi, *adj.* violent mental agitation.  
**Frequency**, frē-kwen-si, *n.* oft repetition.  
**Frequent**, frē'kwent, *adj.* often occurring.  
**Fresco**, fres'ko, *n.* painting upon plaster.  
**Fresco-blown**, frēz-blown, *adj.* just budded.  
**Freshet**, fresh'et, *n.* a pool, or stream of fresh water.  
**Freshman**, fresh'man, *n.* a first-year university student. [sea-water.]  
**Freshwater**, fresh-waw-ter, *n.* inland water, not fret, fret, *v.* to wear away; to irritate; to sorrow.  
**Fretful**, fret'fool, *adj.* peevish.  
**Fretwork**, fret'werk, *n.* ornamental perforated work.  
**Friable**, frī'abl, *adj.* crumbly.



**Friar**, frī'ēr, *n.* a mendicant monk.  
**Friary**, frī'ar-i, *n.* a monastery.  
**Fribble**, frīb'l, *v.* to trifle; *n.* one who trifles.  
**Fricassee**, frik-as-sē', *n.* a stew of fowl, etc.  
**Friction**, frik'shun, *n.* the act of rubbing; unpleasant relations.  
**Friend**, frend, *n.* an intimate associate; a Quaker.  
**Friendship**, frend'ship, *n.* mutual regard.  
**Frieze**, frēz, *n.* a coarse cloth; an ornamented space below the cornice.  
**Frigate**, frig'āt, *n.* a two-battered warship.  
**Fright**, frit, *n.* sudden terror; an absurd figure.  
**Frighten**, frit'en, *v.* to make afraid.  
**Frigid**, frij'id, *adj.* stiff; cold.  
**Frill**, fril, *n.* a ruffle.  
**Fringe**, frinj, *n.* ornamental bordering; the edge.  
**Frippery**, frip'er-i, *n.* tawdry finery.  
**Frisk**, frisk, *v.* to play about; to gambol.  
**Frisket**, frisk'et, *n.* frame for holding paper while being printed.  
**Frisky**, fris'ki, *adj.* lively; frolicsome.  
**Frith**, frith, *n.* a narrow inlet; a forest.  
**Fritter**, frit'er, *n.* a small pancake; *v.* to waste time.  
**Frivolity**, friv-ol'i-ti, *n.* heedless gaiety.  
**Frivolous**, friv'ul-us, *adj.* trifling.  
**Frizzle**, friz'l, *v.* to put in curls.  
**Frock**, frok, *n.* a loose outer garment.  
**Frog**, frog, *n.* amphibian reptile; ornamental braiding; part of hoof.  
**Frolic**, fro'lik, *adj.* merry; *n.* gaiety.  
**Frolicsome**, fro'lik-sum, *adj.* sportive; gay.  
**Frond**, frond, *n.* the leafy expansion of palms and ferns. [*v.* to face.]  
**Front**, frunt, *n.* the forepart of a thing; boldness;  
**Frontage**, frunt'āj, *n.* the front of a building.  
**Frontal**, frunt'al, *adj.* relating to the front.  
**Frontier**, front'ēr, *n.* verge; border.  
**Frontispiece**, front'is-pēs, *n.* an illustration at the beginning of a book.  
**Frontlet**, front'let, *n.* a band worn on the forehead.  
**Froth**, froth, *n.* foam, head, bubbles.  
**Frothy**, froth'i, *adj.* abounding in foam; empty.  
**Frounce**, frouns, *v.* to plait.  
**Frouzy**, frow'zi, *adj.* tangled; rough.  
**Forward**, frō'wērd, *adj.* perverse, self-willed.  
**Frown**, frown, *v.* to look angry; to knit the brows. [*n.* knit.]  
**Fructescence**, frukt-es'ens, *n.* ripening time for  
**Fructiferous**, frukt-if'er-us, *adj.* fruit-bearing.  
**Fructify**, fruk'ti-fi, *v.* to fertilise.  
**Frugal**, froo'gal, *adj.* economical.  
**Frugality**, froo-gal'i-ti, *n.* thrift; economy.  
**Frugiferous**, froo-jif'er-us, *adj.* fruit-yielding.  
**Fruit**, fruit, *n.* edible part of a plant that contains the seed; produce.  
**Fruiterer**, froo'ter-er, *n.* a fruit seller.  
**Fruition**, froo-ish'un, *n.* enjoyment; possession; finality.  
**Fruitless**, froot'les, *adj.* useless; barren.  
**Frumenty**, froo'men-ti, *n.* food made of wheat and milk boiled together.  
**Frump**, frump, *n.* a dowdy.  
**Frustrate**, frus-trāt', *v.* to foil; to defeat.  
**Fry**, fri, *v.* to cook in a pan over a fire; *n.* swarm of young fish.  
**Fuchsia**, fū'shi-ā, *n.* a plant bearing red flowers.  
**Fuddle**, fūd'l, *v.* to make drunk.  
**Fudge**, fudj, *n.* nonsense.  
**Fuel**, fu'el, *n.* material for fire.  
**Fugacious**, fū-gā'shus, *adj.* fleeting.  
**Fuzzy**, fug-i, *adj.* close; stuffy.  
**Fugle-warrant**, fū'gi-wor'ant, *n.* writ to arrest an absconder.  
**Fugitive**, fū'jitiv, *n.* one who has escaped; one who flies from justice; *adj.* uncertain; fragmentary.  
**Fugleman**, fū'gl-man, *n.* a soldier who acts as leader for others on drill; a ringleader.  
**Fugue**, fūg, *n.* a musical composition in which one part follows or answers another.  
**Fulcrum**, ful'krun, *n.* a support for a lever.  
**Fulfil**, fool'fil', *v.* to achieve; to complete.  
**Fulfillment**, fool'fil'ment, *n.* completion.  
**Fulgency**, ful'jen-si, *n.* lustre; brightness.  
**Fuller**, fool'er, *n.* one who bleaches cloth.  
**Fullness**, fool'nes, *n.* the state of being full.  
**Fulmar**, ful'mar, *n.* a species of petrel.  
**Fulminate**, ful'min-āt, *v.* to thunder; to explode.  
**Fulsome**, ful'som, *adj.* nauseous.  
**Fulvous**, ful'vus, *adj.* tawny.  
**Fumble**, fū'mbl, *v.* to grope about; to handle clumsily.

**Fume**, fūm, *n.* smoke; heat; *v.* to get into a rage.  
**Fumigate**, fū'mi-gāt, *v.* to cleanse with smoke.  
**Funambulate**, fūn-am'bū-lāt, *v.* to walk on a rope.  
**Funambulist**, fūn-am'bū-list, *n.* a rope-walker.  
**Function**, fungk'shun, *n.* an office; a ceremony.  
**Functional**, fungk'shun-al, *adj.* pertaining to function.  
**Functionary**, fungk'shun-ar-i, *n.* one who discharges certain functions. [enterprise.]  
**Fund**, fund, *n.* capital; money supply for any  
**Fundament**, fund'a-ment, *n.* the seat of the body.  
**Fundamental**, fund'a-ment'al, *adj.* essential; primary.  
**Fundus**, fun'dus, *n.* the bottom of a thing.  
**Funeral**, fū'ner-al, *n.* burial.  
**Funereal**, fū-nē-re-al, *adj.* dismal; mournful.  
**Fungibles**, fun'ji-blz, *n.* perishable movables.  
**Fungoid**, fung'oid, *adj.* like a fungus.  
**Fungus**, fung'us, *n.* a spongy parasitic growth, as mushrooms.  
**Funicle**, fū'niki, *n.* a fibre or cord.  
**Funicular**, fū-nik'ū-lar, *adj.* fibrous; *n.* a cable railway.  
**Funk**, fungk, *n.* fright; *v.* to shrink from; to fear.  
**Funnel**, fun'l, *n.* an instrument through which liquids are passed into closed vessels; a stack or tube for carrying off smoke.  
**Funny**, fun'i, *adj.* droll; amusing.  
**Furacious**, fūr-ā'shus, *adj.* thievish.  
**Furbelow**, fur'bē-lō, *n.* a flounce.  
**Furbish**, fur'bish, *v.* to renovate; to polish.  
**Furcate**, fur'kāt, *adj.* forked.  
**Furious**, fū'ri-us, *adj.* raging; violent.  
**Furl**, furl, *v.* to draw up.  
**Furlong**, fur'long, *n.* 40 poles.  
**Furlough**, fur'lō, *n.* leave of absence.  
**Furnace**, fur'nās, *n.* an enclosed fire for melting substances.  
**Furnish**, fur'nish, *v.* to supply; to equip.  
**Furniture**, fur'nit-ūr, *n.* movable household furnishings.  
**Furrier**, fur'ēr, *n.* a dealer in furs.  
**Furriery**, fur'yer-i, *n.* fur-trading.  
**Furrow**, fur'o, *n.* trench cut by a plough.  
**Further**, fur'ther, *adv.* more distant; additional.  
**Furtherance**, fur'ther-ans, *adj.* helping forward.  
**Furthestmost**, fur'ther-most, *adj.* the most distant.  
**Furtive**, fur'tiv, *adj.* stolen; stealthy.  
**Fury**, fur'i, *n.* uncontrollable rage.  
**Furze**, furz, *n.* prickly gorse.  
**Fuse**, fūz, *v.* to melt; *n.* combustible substance for firing mines, shells, etc.  
**Fusee**, fū-zē', *n.* a match.  
**Fusible**, fū'zibl, *adj.* capable of being melted.  
**Fusil**, fū'zil, *n.* a light musket.  
**Fusileer**, fū'zil-ēr, *n.* formerly a soldier armed with a fusil; now a regimental title only.  
**Fusillade**, fū'zil-ād, *n.* simultaneous discharge of  
**Fusion**, fū'zhun, *n.* act of melting. [fire-arms.]  
**Fustian**, fus'ti-an, *n.* a kind of cotton cloth.  
**Fustigation**, fus-ti-gā'shun, *n.* a thrashing with a stick.  
**Fusty**, fus'ti, *adj.* mouldy; bad-smelling.  
**Futile**, fū'til, *adj.* useless.  
**Future**, fū'tūr, *n.* time to come; *adj.* that will be.  
**Futurity**, fū'tū-r-i-ti, *n.* the time to come.  
**Fuzz**, fuz, *v.* to break off in small fragments with a hissing sound.  
**Fuzzy**, fuz'i, *adj.* covered with fuzz.

## G

**Gabardine**, gab-er-dēn', *n.* a loose outer garment of a closely woven material.  
**Gabble**, gab'l, *n.* idle talk; *v.* to jabber.  
**Gabion**, gā'bi-on, *n.* a wicker basket filled with earth for military defence.  
**Gable**, gā'bl, *n.* the triangular part of the end of a  
**Gad**, gad, *n.* a pointed bar; to roam. [house.]  
**Gadabout**, *n.* someone who is restless, and is always moving from place to place.  
**Gadfly**, gad'fl, *n.* a fly that stings cattle.  
**Gaelic**, gā'lik, *adj.* relating to the Gauls.  
**Gaff**, gaf, *n.* hook for landing fish.  
**Gaffer**, gaf'er, *n.* foreman.  
**Gage**, gāj, *n.* a pledge.  
**Gaiety**, gā'e-ti, *n.* mirth.  
**Gainsay**, gān'sā, *v.* to deny.  
**Gait**, gāt, *n.* manner of walking.  
**Gaifer**, gā'ter, *n.* ankle covering.  
**Gala**, gā'la, *n.* outdoor festivity.  
**Galantine**, gāl'en-tin, *n.* meat boiled and pressed and served cold. [brilliant assembly.]  
**Galaxy**, gal'aks-i, *n.* enormous star cluster; any

Galena, gal-ē'nā, *n.* lead ore.  
 Gall, gawl, *n.* bile; bitterness.  
 Gallant, gal'ant, *adj.* brave.  
 Gallantry, gal'an-tri, *n.* amorous attention; bravery.  
 Galleon, gal'e-on, *n.* an old-time Spanish vessel.  
 Gallery, gal'er-i, *n.* part of hall supported by pillars; an upper floor; a balcony.  
 Galley, gal'i, *n.* a low, flat vessel.  
 Galliard, gal'yerd, *n.* a Spanish dance.  
 Gallic, gal'ik, *adj.* connected with France (Gaul).  
 Gallicism, gal'is-izm, *n.* a French expression.  
 Gallinaceous, gal-in-ā'shus, *adj.* pertaining to domesticated birds.  
 Gallipot, gal'i-pot, *n.* a small medicine-pot.  
 Gallivant, gal-i-vant', *v.* to go about in order to  
 Gallon, gal'un, *n.* 4 quarts. [be seen.  
 Gallow, ga-loon', *n.* a kind of ribbon or lace.  
 Gallop, gal-up, *v.* to advance by leaps.  
 Galloway, gal'ō-wā, *n.* a strong pony, originally from Galloway; a breed of cattle.  
 Gallows, gal'ōz, *n.* scaffold on which criminals are  
 Galop, gal'op, *n.* a dance. [executed.  
 Galore, gal-ōr', *adv.* plentifully.  
 Galosh, gā-losh', *n.* an overshoe.  
 Galvanise, gal'van-iz, *v.* to affect with electricity; to startle into action; to coat with zinc.  
 Galvanism, gal'van-izm, *n.* a branch of electrical science.  
 Gamble, gam'bl, *v.* to play games for money; to  
 Gambler, gam'bler, *n.* one who gambles. [bet.  
 Gamboge, gam-bōj', *n.* a yellow pigment.  
 Gambol, gam'bol, *v.* to frisk about.  
 Gambrel, gam'brel, *n.* a horse's hock.  
 Game, gām, *n.* a sport; animals and birds shot for sport and subsequently eaten.  
 Gamesome, gām'sum, *adj.* playful.  
 Gamester, gām'ster, *n.* a gambler.  
 Gamin, gam'in, *n.* a street arab.  
 Gammer, gam'er, *n.* an old woman.  
 Gammon, gam'on, *n.* nonsense; thigh joint of  
 Gamut, gam'ut, *n.* the musical scale. [bacon.  
 Gander, gan'der, *n.* a male goose.  
 Ganger, gang'er, *n.* foreman of labourers.  
 Ganglion, gang'gli-on, *n.* a tumour; a centre of nerve action.  
 Gangrene, gang'grēn, *n.* mortification.  
 Gangway, gang'wā, *n.* passage-way between a ship and the shore.  
 Gannet, gan'et, *n.* a web-footed sea-bird.  
 Gantry, gan'tri, *n.* stand for barrels; crane plat-  
 Gaol, jāl, *n.* a prison. [form.  
 Gape, gāp, *v.* to yawn.  
 Garage, gār'ārj, *n.* a storehouse for motor vehicles.  
 Garbage, gār'bāj, *n.* refuse; rubbish.  
 Garble, gārbl', *v.* to corrupt; to alter for selfish ends.  
 Gargantuan, gār-gan'tū-an, *adj.* enormous.  
 Gargle, gār'gl, *v.* to rinse the throat without swallowing. [in stone.  
 Gargoyle, gār'goil, *n.* grotesque projecting figure  
 Garish, gār'ish, *adj.* showy.  
 Garland, gār'land, *n.* a wreath.  
 Garlic, gār'lik, *n.* a pungent, bulbous plant.  
 Garment, gār'ment, *n.* an article of clothing.  
 Garner, gār'ner, *v.* to store up.  
 Garnet, gār'net, *n.* a red precious stone.  
 Garnish, gār'nish, *v.* to adorn.  
 Garniture, gār'nit-ūr, *n.* that which ornaments.  
 Garret, gar'et, *n.* a top room.  
 Garrison, gar'i-son, *n.* band of soldiers occupying  
 Garrotte, gar'rot', *v.* to strangle. [a fortress.  
 Garrulity, gar-ūl'it-i, *n.* loquacity.  
 Garrulous, gar'ū-lus, *adj.* talkative.  
 Garter, gār'ter, *n.* a band for holding the stocking up; badge of the Order of the Garter.  
 Gas, gas, *n.* a vaporous substance, such as that obtained from coal for lighting purposes.  
 Gaseonade, gas'kon-ād, *n.* boastfulness.  
 Gaseous, gas'e-us, *adj.* of the nature of gas.  
 Gash, gash, *v.* to cut; *n.* a cut.  
 Gasoline, gas'o-lēn, a petroleum product; petrol.  
 Gasp, gasp, *v.* to labour for breath.  
 Gastric, gas'trik, *adj.* connected with the stomach.  
 Gastronomic, gas-tro-nom'ik, *adj.* relating to good eating.  
 Gastronomy, gas-tron'o-mi, *n.* the art of good eat-  
 Gather, gath'er, *v.* to assemble; to collect. [ing.  
 Gaudy, gaw'di, *adj.* showy.  
 Gauge, gāj, *n.* a measure; *v.* to measure.  
 Gauger, gāj'er, *n.* an official who measures excisable liquors.

Gaunt, gawnt, *adj.* emaciated.  
 Gauntlet, gawnt'let, *n.* a glove of mail; a long glove. [material.  
 Gauze, gawz, *n.* transparent cloth or other open  
 Gavel, gav'el, *n.* a mallet.  
 Gavotte, gā-vōt', *n.* a lively dance. [left-handed.  
 Gawk, gawk, *n.* a stupid person; *adj.* left, as in  
 Gawky, gawk'i, *adj.* ungainly.  
 Gaze, gāz, *v.* to stare; to look.  
 Gazelle, ga-zel', *n.* a small Arabian antelope.  
 Gazette, ga-zet', *n.* a newspaper; an official record.  
 Gazetteer, gaz-ēt-ēr', *n.* a geographical dictionary.  
 Geese, gēs, *n.* pl. of goose. [fice; hell.  
 Gehenna, ge-hen'ā, *n.* the Hinnom valley of sacri-  
 Gelatine, jel'ā-tēn, *n.* a substance that dissolves under heat and forms a jelly.  
 Geld, *v.* to castrate; *n.* tribute in olden times.  
 Geld, jel'id, *adj.* icky. [with jewels.  
 Gem, jem, *n.* a precious stone; a jewel; *v.* to deck.  
 Gemination, jem-in-ā'shun, *n.* repetition.  
 Gemini, jem'i-ni, *n.* the Twins, the stars Castor and Pollux.  
 Gemmate, jem'āt, *v.* bearing buds.  
 Gen, American service slang for information, being an abbreviation for *general* in the official phrase "for the general information of all ranks."  
 Gender, jen'der, *n.* sex. [lineage.  
 Genealogical, jen-ē-al-oj'ik-al, *adj.* relating to  
 Genealogy, jen-ē-al-o-jī, *n.* study of descents.  
 General, jen'er-al, *n.* an officer whose command is larger than a regiment; *adj.* universal.  
 Generalise, jen'er-al-iz, *v.* to infer from collected instances. [general.  
 Generalissimo, jen-er-al-is'i-mō, *n.* a leading  
 Generality, jen'er-al'it-i, *n.* the chief part.  
 Generalship, jen'er-al-ship, *n.* position of military command; military ability.  
 Generate, jen'er-āt, *v.* to procreate; to originate.  
 Generation, jen'er-ā'shun, *n.* the act of originat-  
 ing; offspring; people of the same period.  
 Generative, jen'er-ā-tiv, *adj.* possessing productive  
 Generic, jen'er-ik, *adj.* relating to a genus. [power.  
 Generosity, jen'er-os'it-i, *n.* kindness; liberality.  
 Generous, jen'er-us, *adj.* liberal; kind; bounteous.  
 Genesis, jen'e-sis, *n.* generation; the first book of the Bible.  
 Genet, jen'et, *n.* an animal of the civet type.  
 Genetic, jen-et'ik, *adj.* pertaining to production.  
 Geneva, jen-ē'va, *n.* a spirit flavoured with juniper; gin.  
 Genial, jē-ni-al, *adj.* cheerful; sprightly.  
 Geniculate, jen-ik'ū-lāt, *adj.* knotted.  
 Genital, jen'it-al, *adj.* pertaining to generation.  
 Genius, jē-ni-us, *n.* superior intellectual power.  
 Genre, jhangr, *n.* kind; style; pictures of rural  
 Gens, jenz, *n.* a clan; a tribe. [life.  
 Genteel, jen-tēl', *adj.* well-bred; graceful.  
 Gentian, jen'shan, *n.* a plant with a root used in medicine.  
 Gentle, jen'til, *n.* one other than a Jew.  
 Gentility, jen-til'it-i, *n.* good-breeding; politeness.  
 Gentleman, jent'l-man, *n.* one of good birth; a person of position or refinement.  
 Gently, jent'li, *adj.* softly  
 Gentry, jen'tri, *n.* people of good position.  
 Genuect, jen-ū-flekt', *v.* to bend the knee in reverence. [for curtsying.  
 Genuflexion, jen-ū-flek'shun, *n.* the act of kneeling  
 Genuine, jen-ū-in, *adj.* unadulterated; true.  
 Genus, jē-nus, *n.* a group; a family.  
 Geode, jē'ōd, *n.* a hollow nodule of stone.  
 Geodesy, jē-ōd'is-i, *n.* the science of measuring the earth. [of the earth.  
 Geogony, jē-og'o-ni, *n.* the science of the formation  
 Geography, jē-og'raf-i, *n.* the science of the earth's surface and inhabitants. [structure.  
 Geology, jē-ō'ō-jī, *n.* the science of the earth's  
 Geometry, jē-om'ē-tri, *n.* the science of mensura-  
 tion.  
 Geonomy, jē-on'o-mi, *n.* the science of the earth's physical laws. [terior.  
 Georama, jē-o-ram'ā, *n.* a view of the earth's in-  
 Georgian, jorj'i-an, *adj.* relating to the period of the Georges.  
 Geranium, jer-ā-ni-um, *n.* a family of plants with pointed seed pods; perlargoniums.  
 Geriatri or Geriatrics, jer'i-a-tri, jer'i-a-triks, *n.* the medical treatment of old age.  
 Germ, jerm, *n.* a seed-bud; any rudimentary form.  
 Germane, jer-mān', *adj.* relevant; akin.  
 Germinal, jer'min-al, *n.* the seventh month of the calendar of the first French Revolution.



- Germinate**, *jer'min-ät*, *v.* to grow from a germ.  
**Gerund**, *jer'und*, *n.* the part of a Latin verb representing a verbal noun.  
**Gestant**, *jest'ant*, *adj.* laden.  
**Gestation**, *jes-tä'shun*, *n.* pregnancy.  
**Gesticulate**, *jes-tik'ü-lät*, *v.* to make gestures.  
**Gesture**, *jest'ür*, *n.* expressive movement of the hand or body.  
**Gewgaw**, *gü'gaw*, *n.* a showy trifle.  
**Geyser**, *gë'ser*, *n.* a hot spring.  
**Ghastliness**, *gast'li-ness*, *n.* pallor.  
**Ghaut**, *gaw't*, *n.* an Indian mountain pass or chain.  
**Gherkin**, *ger'kin*, *n.* a small pickled cucumber.  
**Ghetto**, *get'ö*, *n.* Jews' quarter.  
**Ghost**, *göst*, *n.* a spirit; the soul.  
**Ghoul**, *gool*, *n.* a demon that devours the dead.  
**Giant**, *jä'nt*, *n.* a man of great bulk; one of great Giantess, *jä'nt-es*, *n.* a female giant. [powers.  
**Glaour**, *jow'r*, *n.* a term applied by the Turks to a person not of their own religion.  
**Gib**, *jib*, *n.* arm of a crane.  
**Gibberish**, *gib'er-ish*, *n.* unmeaning gabble.  
**Gibbet**, *jib'et*, *n.* a gallows.  
**Gibbous**, *gib'us*, *adj.* convex; pouched.  
**Gibe**, *jib*, *n.* a sneer; *v.* to sneer.  
**Giblets**, *jib'lets*, *n.* eatable internal parts of fowls and pigs.  
**Giddy**, *gid'i*, *adj.* unsteady; dizzy.  
**Gifted**, *gift'ed*, *adj.* talented.  
**Gigantic**, *ji-gan'tik*, *adj.* immense; enormous.  
**Giggle**, *gig'l*, *v.* to titter.  
**Gigolo**, *jig'ä-lö*, *n.* a paid male dancing partner.  
**Gigot**, *jig'ot*, *n.* leg of mutton.  
**Gild**, *gild*, *v.* to coat with gold or gold-like substance.  
**Gliding**, *gild'ing*, *n.* that which is gilded; the trade of gliding.  
**Gillie**, *gil'i*, *n.* a Scottish gamekeeper.  
**Gills**, *gills*, *n.* a fish's breathing organs.  
**Gilt**, *adj.* gilded.  
**Gimlet**, *gim'let*, *n.* a boring tool.  
**Gimp**, *gimp*, *n.* a kind of trimming.  
**Gin**, *jin*, *n.* a distilled alcoholic spirit; a machine for cleaning cotton.  
**Ginger**, *jin'jer*, *n.* a pungent Indian root.  
**Gingerbread**, *jin'jer-bred*, *n.* sweet bread flavoured  
**Gingerly**, *jin'jer-li*, *adj.* cautiously. [with ginger.  
**Gingham**, *ging'ham*, *n.* a kind of cloth.  
**Gipsy**, *jip'si*, *n.* a member of a nomadic tribe.  
**Grandole**, *jir'an-döl*, *n.* a large-branched candlestick.  
**Gird**, *gerd*, *v.* to bind; to encompass; to gibe.  
**Grider**, *ger'der*, *n.* a supporting piece of timber or  
**Girdle**, *gerd'l*, *n.* a belt for the waist. [iron.  
**Girth**, *gerth*, *n.* the belly-band of a saddle; measure round the waist.  
**Gist**, *jist*, *n.* the chief point; the main tendency.  
**Gizzard**, *glz'erd*, *n.* a fowl's muscular stomach.  
**Glabrous**, *glä'brus*, *adj.* smooth; hairless; shiny.  
**Glacial**, *glä'si-al*, *adj.* icy; frozen.  
**Glacier**, *glä'si-er*, *n.* a field of snow or ice.  
**Glacis**, *glä'sis*, *n.* the sloping bank of a fortification.  
**Glade**, *gläd*, *n.* an opening cleared in a wood or forest.  
**Gladiator**, *gläd-i-ä'tor*, *n.* anciently a professional  
**Glamour**, *gläm'ör*, *n.* fascination. [athlete.  
**Glance**, *glans*, *n.* a sudden look.  
**Gland**, *gländ*, *n.* a secreting organ of the body.  
**Glanders**, *gländ'ers*, *n.* a contagious disease in a horse's nose.  
**Glandular**, *gländ'ü-lar*, *adj.* connected with glands.  
**Glandule**, *gländ'ül*, *n.* a small gland.  
**Glare**, *glär*, *v.* to shine with lustre; *n.* a lustrous light; a penetrating look.  
**Glaring**, *glär'ing*, *adj.* bright; notorious.  
**Glass**, *gläs*, *n.* a combination of silica and an alkali.  
**Glauberite**, *glaw'ber-it*, *n.* a mineral found in rock  
**Glaucous**, *glaw'kus*, *adj.* sea-green colour. [salt.  
**Glave**, *gläv*, *n.* a sword.  
**Glaze**, *gläz*, *v.* to cover with glass.  
**Glazier**, *gläz'i-er*, *n.* one who inserts glass in frames.  
**Glazing**, *gläz'ing*, *n.* the act of covering with glass; a vitreous substance used for covering.  
**Gleam**, *glém*, *n.* a beam of light; *v.* to glow.  
**Glean**, *glén*, *v.* to gather after reapers.  
**Glebe**, *glëb*, *n.* church land.  
**Gledge**, *glej*, *v.* to squint.  
**Glee**, *glë*, *n.* mirth; a part song.  
**Glen**, *glén*, *n.* a narrow valley.  
**Glimmer**, *glim'er*, *v.* to shine faintly.  
**Glimmering**, *glim'er-ing*, *n.* a faint shining; an  
**inkling**. [view.  
**Glimpse**, *glimps*, *n.* a weak fitful light; a passing  
**Glint**, *glint*, *v.* to shine; *n.* a quick gleam.  
**Glitten**, *glis'n*, *v.* to shine or sparkle.  
**Glitter**, *glit'er*, *v.* to glisten; *n.* brilliance.  
**Gloaming**, *glö'ming*, *n.* twilight.  
**Gloat**, *glöt*, *v.* to look greedily or wickedly.  
**Globe**, *glöb*, *n.* a sphere; the world.  
**Globous**, *glö'bus*, *adj.* like a globe.  
**Globule**, *glöb'ül*, *n.* a small globe.  
**Glorify**, *glör'i-fi*, *v.* to exalt; to cover with glory.  
**Glory**, *glör'i*, *n.* fame; renown; honour.  
**Gloss**, *glos*, *n.* lustre.  
**Glossary**, *glos'er-i*, *n.* a vocabulary of meanings.  
**Glossitis**, *glos-i'tis*, *n.* inflammation of the tongue.  
**Glossy**, *glös'i*, *adj.* smooth and shining.  
**Glottal**, *glöt'al*, *adj.* relating to the tongue.  
**Glottis**, *glöt'is*, *n.* the opening to the windpipe.  
**Gloze**, *glöz*, *v.* to wheedle; to flatter.  
**Glucinum**, *glöö-si-num*, *n.* a metal made from beryl.  
**Glucose**, *glöö'kös*, *n.* sugar obtained from fruits.  
**Glue**, *gloo*, *n.* an adhesive substance obtained from boiled skins, hoofs, etc.  
**Glum**, *glum*, *adj.* gloomy; sullen.  
**Glume**, *gloom*, *n.* calyx of certain grasses.  
**Gluten**, *glöö'ten*, *n.* the protein of grain.  
**Glutton**, *glüt'on*, *n.* a greedy eater.  
**Glutinous**, *glüt'on-us*, *adj.* addicted to gluttony.  
**Glycerine**, *glis'er-én*, *n.* a neutral sticky liquid.  
**Glycogen**, *glit-kö'jen*, *n.* animal starch.  
**Glyph**, *glif*, *n.* a fluted architectural channel.  
**Glyptics**, *glip'tiks*, *n.* engraving on precious stones.  
**Gnarl**, *när'l*, *n.* a knot in wood.  
**Gnarled**, *när'ld*, *adj.* knotty.  
**Gnash**, *nash*, *v.* to grind the teeth together.  
**Gnat**, *nat*, *n.* a small biting insect.  
**Gnaw**, *naw*, *v.* to nibble into pieces, to bite.  
**Gneiss**, *näs*, *n.* a close-grained metamorphic rock.  
**Gnome**, *nöm*, *n.* a goblin.  
**Gnomic**, *nö'mik*, *adj.* pertaining to the gnomic poets; sententious.  
**Gnomon**, *nö'mon*, *n.* the pin of a dial.  
**Gnostics**, *nos'tiks*, *n.* a sect combining the Christian with other philosophies.  
**Gnu**, *nü*, *n.* a kind of antelope.  
**Goad**, *göd*, *v.* to stimulate; to urge; *n.* a sharp-pointed stick.  
**Goal**, *göl*, *n.* an objective; a set of posts at the end of a games pitch.  
**Goat**, *göt*, *n.* a ruminating animal.  
**Goatee**, *göt-ä*, *n.* pointed beard at end of chin.  
**Gobbet**, *gob'et*, *n.* a lump; a mouthful.  
**Gobelin**, *gob'e-lin*, *n.* a rich tapestry.  
**Go-between**, *gö'bë-twën*, *n.* a mediator.  
**Goblet**, *gob'let*, *n.* a drinking cup.  
**Goblin**, *gob'lin*, *n.* an evil spirit.  
**Goddess**, *god'es*, *n.* a female god.  
**Godhead**, *god'hed*, *n.* divinity.  
**Godly**, *god'l*, *adj.* pious.  
**Godparents**, *god-pä'rents*, *n.* sponsors at baptism.  
**Godsend**, *god'send*, *n.* an unexpected timely gift.  
**God-speed**, *god'spëd*, *n.* a wish for a successful journey or undertaking.  
**Godwit**, *god'wit*, *n.* a kind of snipe.  
**Goffer**, *gofer*, *n.* to plait.  
**Goggles**, *gog'iz*, *n.* eye-shields.  
**Goglet**, *gog'let*, *n.* a water cooler.  
**Goitre**, *goi'ter*, *n.* a swelling on the neck caused by a deficiency of iodine.  
**Gold**, *göld*, *n.* a precious mineral; money.  
**Goliath**, *go-li'ath*, *n.* a giant.  
**Gondola**, *gon'do-la*, *n.* a Venetian boat.  
**Gondoller**, *gon-do-lër*, *n.* one who punts a gondola.  
**Gonfalon**, *gon'fa-lon*, *n.* a standard with streamers.  
**Gong**, *gong*, *n.* a kind of drum.  
**Good-breeding**, *good-brëd'ing*, *n.* polished manners.  
**Goodliness**, *good'li-ness*, *n.* kindness.  
**Goorkha**, *goor'ka*, *n.* a native of Nepal. [bird.  
**Goosander**, *goos-an'der*, *n.* goose; web-footed  
**Gopher**, *gö'fer*, *n.* an American burrowing squirrel; a kind of wood.  
**Gordian knot**, *gör'di-an not'*, *n.* an inextricable difficulty; a knot that cannot be cut.  
**Gore**, *gör*, *n.* blood; a triangular piece of cloth.  
**Gorge**, *gorj*, *n.* a narrow passage; the throat.  
**Gorgeous**, *gor'e-us*, *adj.* splendid.  
**orget**, *gor'et*, *n.* a throat protection.  
**Gorgon**, *gor'gon*, *n.* a fabled monster.  
**Gorilla**, *go-ri'l-ä*, *n.* a large anthropoid ape.  
**Goring**, *gör'ing*, *n.* a diagonal cut of cloth or land.  
**Gormandize**, *gor'mand-iz*, *v.* to eat greedily.  
**Gorse**, *gors*, *n.* a prickly shrub; furze.  
**Goshawk**, *gos'hawk*, *n.* a small hawk.  
**Gosling**, *goz'ling*, *n.* a young goose.

Gospel, gos'pel, *n.* the Christian revelation; good Gossamer, gos'am-er, *n.* filmy cobweb. [tidings.  
Gossip, gos'ip, *n.* idle talk; a tattler.  
Gothic, goth'ik, *adj.* in architecture, the style of high-pointed arches; romantic.  
Gothicism, goth'i-sizm, *n.* Gothic style.  
Gouge, gowj, *n.* a scooping chisel; *v.* to force out.  
Gourd, goord, *n.* a large round fruit used as a vegetable.  
Gourmand (goor'mand), *n.* greedy person who craves for quantity. [cares for quality.  
Gourmet (goor'mā), *n.* connoisseur of food who Gout, gowt, *n.* inflammation of the joints.  
Govern, guv'ern, *v.* to rule; to direct.  
Governance, guv'er-nans, *n.* government; control.  
Governess, guv'er-nes, *n.* a female instructor.  
Government, guv'ern-ment, *n.* the executive power; control; management.  
Grab, grab, *v.* to seize.  
Grabbie, grab'l, *v.* to grope. [prayers at meals.  
Grace, grās, *n.* elegance; neatness; mercy; favour: Graceful, grās'ful, *adj.* becoming; elegant.  
Graces, grās'ēs, *n.* the three Greek goddesses, Euphrosyne, Aglaia, and Thalia; refinements.  
Gracile, grās'il, *adj.* slight; slender.  
Gracious, grās'hus, *adj.* merciful; benevolent.  
Grade, grād, *n.* degree of rank; class; the slope of Gradient, grād'i-ent, *n.* an incline. [a road.  
Gradual, grad'ū-al, *adj.* by degrees.  
Graduate, grad'ū-āt, *v.* to mark by degrees; one who has graduated at a university. [prosody.  
Gradius, grād'us, *n.* a dictionary of Latin or Greek  
Graft, graft, *v.* to incorporate one plant with another; *n.* a young scion.  
Grail, grāl, *n.* the legendary holy vessel used by Christ at the Last Supper.  
Grain, grān, *n.* a head of cereal plant; corn.  
Grained, grānd, *adj.* coated with grains, or imitation graining. [grain in wood.  
Graining, grān'ing, *n.* painting in imitation of the Graminivorous, gram-i-niv'er-us, *adj.* feeding on grass.  
Grammar, gram'er, *n.* the science of correct speaking or writing. [and emitting instrument.  
Gramophone, gram'o-fōn, *n.* a sound-recording  
Grampus, gram'pus, *n.* a fish of the dolphin species.  
Granary, gran'er-l, *n.* storehouse for grain.  
Grandam, gran'dam, *n.* an old woman; a grand-Grantee, gran-dē', *n.* a Spanish noble. [mother.  
Grandeur, grand'y'er, *n.* splendour; vastness.  
Grandiloquent, grand'il'o-kwent, *adj.* bombastic.  
Grandiose, grand'ī-ōs, *adj.* bombastic.  
Grand-jury, grand-jū'ri, *n.* a first jury that decides whether a case calls for trial or not.  
Grange, grānj, *n.* a farm-house.  
Granite, gran'it, *n.* an igneous rock of great hardness.  
Granitic, gran-it'ik, *adj.* pertaining to granite.  
Granivorous, gran-iv'er-us, *adj.* grain-eating.  
Grant, grant, *v.* to give; to bestow; *n.* the thing granted; deed of grant. [made.  
Granular, gran'ū-ler, *adj.* consisting of granules.  
Granulate, gran'ū-lāt, *v.* to break into grains.  
Granule, gran'ūl, *n.* a grain particle.  
Granulose, gran'ū-lus, *adj.* grain-like.  
Grape-shot, grāp'shot, *n.* small shot that scatters when fired.  
Graph, graf, *n.* lines drawn to show the relationship between two or more factors.  
Graphic, graf'ik, *adj.* well-drawn; vivid.  
Graphite, graf'it, *n.* black lead.  
Grapholite, graf'o-lit, *n.* a kind of slate.  
Grapnel, grap'nel, *n.* a small anchor.  
Grapple, grap'l, *v.* to seize.  
Grasp, grasp, *v.* to seize with the hand.  
Grasping, grasp'ing, *adj.* greedy.  
Grass, gras, *n.* green herbage.  
Grass-widow, gras'wid-ō, *n.* a wife temporarily parted from her husband.  
Grate, grāt, *n.* bars forming place for fire; *v.* to rub against; to make a harsh sound.  
Grateful, grāt'ful, *adj.* giving pleasure; thankful.  
Grater, grāt'er, *n.* an instrument for grating.  
Grating, grāt'ing, *n.* the bars of a grate; *adj.* harsh.  
Gratis, grā'tis, *adj.* for nothing.  
Gratitude, grat'it-ūd, *n.* thankfulness.  
Gratuitous, gra-tū'it-us, *adj.* free.  
Gratuity, gra-tū'it-l, *n.* a present.  
Gravamen, grav-ā-men, *n.* grievance; ground of complaint.  
Grave, grāv, *adj.* sober; serious; *n.* spot of burial.

Gravel, grav'el, *n.* small stones; a disease of the kidneys.  
Gravely, grāv'l, *adj.* seriously.  
Graveolent, grav-ē-o-lent, *adj.* emitting a noxious  
Graver, grāv'er, *n.* engraving tool. [small.  
Gravid, grav'id, *adj.* pregnant.  
Gravitate, grav'i-tāt, *v.* to tend towards a centre of attraction. [seriousness.  
Gravity, grav'it-l, *n.* natural force which attracts objects to the centre of the earth.  
Grayling, grā'ling, *n.* a small fish of the salmon order.  
Graz, grāz, *v.* to feed on grass; to pass lightly over.  
Grazier, grāz'ī-er, *n.* one who pastures cattle.  
Grazing, grāz'ing, *n.* the act of feeding on grass.  
Grease, grēs, *n.* animal fat.  
Grebe, grēb, *n.* a water bird.  
Greenback, grēn'bak, *n.* name given to paper money generally in the United States.  
Greenery, grēn'er-l, *n.* verdure.  
Greengage, grēn'gāj, *n.* varieties of dessert plum.  
Greenhorn, grēn'horn, *n.* a raw youth.  
Greenhouse, grēn'hows, *n.* a glasshouse used for sheltering plants.  
Greet, grēt, *v.* to salute.  
Greeting, grēt'ing, *n.* a welcome.  
Gregarious, grē-gā'ri-us, *adj.* moving in flocks.  
Gregorian, grē-gō'ri-an, *adj.* in the manner of the chants introduced by Pope Gregory.  
Grenade, grē-nād', *n.* a small explosive shell.  
Grenadier, grēn-ā-dēr', *n.* a soldier of the foot-guards; formerly a soldier who threw grenades.  
Grenadine, grēn-a-dēn', *n.* a kind of silky dress fabric.  
Grey, grā, *n.* white mixed with black.  
Greyhound, grā'bērd, *n.* a greybearded old man.  
Greybeard, grā'hownd, *n.* a dog used for hunting hares.  
Griddle, grid'l, *n.* a pan for baking cakes.  
Gridiron, grid'ī-ern, *n.* a hand-grate for broiling  
Grief, grēf, *n.* sorrow; regret. [meats upon.  
Grievance, grēv'ans, *n.* a burden; cause for grief;  
Grievous, grē'vus, *adj.* painful. [hardship.  
Griffin, grif'in, *n.* a fabulous creature.  
Grill, gril, *n.* a large fixed gridiron; *v.* to broil.  
Grilse, grils, *n.* a young salmon.  
Grim, grim, *adj.* forbidding; stern.  
Grimace, grim-ās', *n.* contortion of the face.  
Grimalkin, grim-āl'kin, *n.* a cat.  
Grime, grim, *n.* dirt deep-seated.  
Grimy, grīm'l, *adj.* dirty; sooty.  
Grind, grind, *v.* to crush to powder; to rub together.  
Grindstone, grinds'tōn, *n.* a stone on which tools are ground.  
Grip, grip, *v.* to hold firmly; *n.* a small trench.  
Gripe, grip, *v.* to seize; *n.* a pain in the bowels.  
Grisette, griz'et', *n.* a gay young French work-Grizzly, griz'il, *adj.* frightful. [woman.  
Grist, *n.* corn for grinding.  
Gristle, grisl', *n.* cartilage.  
Gristly, grisl'l, *adj.* consisting of, or like, gristle.  
Gritty, grit'ī, *adj.* determined; having hard  
Grizzly, griz'il, *adj.* grey. [particles.  
Groan, grōn, *v.* to moan.  
Groat, grōt, *n.* an old coin worth 4d.  
Groats, grōts, *n.* grain of oats.  
Grocer, grō'ser, *n.* a dealer in various food provisions.  
Grogam, grog'am, *n.* a coarse cloth.  
Groin, grōin, *n.* the part of the body between the belly and the thigh.  
Groined, groined, *adj.* having arched intersections.  
Groom, groom, *n.* one who tends horses.  
Groomsman, grooms'man, *n.* one who attends a bridegroom at his wedding.  
Groove, groov, *n.* a furrow.  
Grove, grōp, *v.* to feel for in the dark.  
Gross, grōs, *adj.* coarse; rough; *n.* in bulk; 12 dozen.  
Grotesque, grō-tesk', *adj.* fantastic.  
Grotto, grō'to, *n.* a cool cavern.  
Ground-plot, grownd'plot, *n.* a site.  
Ground-rent, grownd'rent, *n.* rent received for ground.  
Grounds, grownds, *n.* dregs; sediment.  
Groundsel, grownd'sel, *n.* a weed bearing small yellow flowers. [basis.  
Ground-work, grownd'werk, *n.* foundation;  
Group, groop, *n.* persons or things collected together.  
Grouse, grows, *v.* to grumble; *n.* moor-fowl.



Grout, growt, *n.* coarse meal; lees; plaster.  
 Grove, grōv, *n.* a small wood.  
 Grovelling, grov'el-ing, *adj.* mean; abject.  
 Growl, growl, *v.* to murmur angrily.  
 Growth, grōth, *n.* development; a growing.  
 Grub, grub, *n.* larvae of insects; *v.* to dig.  
 Grubber, grub'er, *n.* one who grubs; an agricultural implement. [*envy*]; to murmur at.  
 Grudge, gruj, *n.* secret hatred; *v.* to regard with  
 Gruel, groo'el, *n.* meal boiled in water.  
 Guesome, groo'sum, *adj.* ghastly; grim.  
 Gruff, gruf, *adj.* abrupt; stern.  
 Grumble, grum'bl, *v.* to express dissatisfaction.  
 Grume, groom, *n.* a clot.  
 Grumpy, grump'y, *adj.* mean; surly.  
 Grunt, grunt, *v.* to make a guttural sound; such a sound.  
 Guano, goo-ā'no, *n.* dung of sea-birds used as manure.  
 Guarante, gar-an-tē', *n.* a warrant of surety; *v.* to undertake for another.  
 Guard, gārd, *v.* to watch or protect; *n.* man, men, or other guarding power.  
 Guardage, gārd-āj, *n.* wardship.  
 Guardant, gārd'ant, *adj.* with face to the onlooker.  
 Guardian, gārd'i-an, *n.* one who guards or protects.  
 Gubernatorial, gū-ber-nā-tō'ri-al, *adj.* pertaining  
 Gudgeon, gud'jun, *n.* a small river fish. [*to rule*].  
 Guerdon, ger'don, *n.* a reward.  
 Guerilla, ger-il'ā, *n.* irregular warfare.  
 Guess, ges, *v.* to conjecture.  
 Guesswork, ges'werk, *n.* anything done by guess.  
 Guest, gest, *n.* an invited visitor.  
 Guffaw, guf-aw', *n.* a coarse laugh.  
 Guidance, gid'ans, *n.* direction; advice.  
 Guide, gid, *v.* to lead; to direct.  
 Guidepost, gid'pōst, *n.* a roadside erection containing guiding hints.  
 Guild, gild, *n.* an association for mutual aid.  
 Guildhall, gild'hawl, *n.* the hall of a guild.  
 Guile, gil, *n.* deceit; cunning.  
 Guileful, gil'ful, *adj.* crafty.  
 Guileless, gil'es, *adj.* free from deceit.  
 Guilt, gilt, *n.* crime; wickedness. [*for a crime*].  
 Guilty, gilt-y, *adj.* wicked; criminal; responsible  
 Guinea, gin'i, *n.* an old gold coin worth 21s.  
 Guise, giz, *n.* appearance; dress.  
 Guitar, gi-tār', *n.* a stringed musical instrument.  
 Gulch, gulsh, *n.* a ravine.  
 Gulf, gulf, *n.* an arm of sea breaking away from the coast line; an abyss.  
 Gull, gul, *n.* a sea fowl; *v.* to deceive.  
 Gullet, gul'et, *n.* the throat passage.  
 Gullibility, gul-i-bil'i-ti, *n.* trickery.  
 Gully, gul'y, *n.* a ravine.  
 Gulp, gulp, *v.* to swallow quickly without masticating. [*part enclosing the teeth*].  
 Gum, gum, *n.* an adhesive substance; the fleshy  
 Gumption, gump'shun, *n.* sagacity.  
 Gunnery, gun'er-y, *n.* the science of artillery.  
 Gunny, gun'y, *n.* a kind of sacking.  
 Gunwale, gun'el, *n.* the upper edge of a ship's side.  
 Gurgle, gur'gl, *v.* a noisy flow or current.  
 Gurnard, gur'nard, *n.* a sea-fish with spiny fins.  
 Gush, gush, *v.* to flow copiously; *n.* effusive sentiment. [*garment*].  
 Gusset, gus'et, *n.* an angular piece let into a  
 Gust, gust, *n.* a sudden rush of wind; relish.  
 Gustatory, gust'a-to-ri, *adj.* pertaining to the taste.  
 Gusto, gust'ō, *n.* enthusiasm; relish.  
 Gusty, gust'y, *adj.* fitful; stormy.  
 Gut, gut, *n.* the alimentary canal.  
 Gutta-percha, gut'a-perch'a, *n.* the solidified juice of certain trees; a kind of rubber.  
 Gutter, gut'er, *n.* channel for carrying off water.  
 Guttural, gut'er-al, *adj.* formed in the throat.  
 Guy, gi, *n.* a steady rope; an outlandish figure.  
 Guzzle, guz'l, *v.* to drink greedily.  
 Gymnasium, jim-nā'zi-um, *n.* place for athletic exercise. [*nastics*].  
 Gymnast, jim'nast, *n.* one who practises gym-  
 Gymnastics, jim-nas'tiks, *n.* athletics.  
 Gynæcology, gi'nē-col-o-jī, *n.* the study of the physiology and diseases of women.  
 Gyp, jip, *n.* a Cambridge college servant.  
 Gypseous, jip'sē-us, *adj.* consisting of or like gypsum.  
 Gypsum, jip'sum, *n.* sulphate of lime.  
 Gyration, ji-rā'shun, *n.* whirling round.  
 Gyroscope, ji'ro-skōp, *n.* an instrument for testing  
 Gyves, jivs, *n.* fetters. [*rotary movements*].

## H

Habeas Corpus, hā'be-as cor'pus, *n.* writ to produce a prisoner and specify reasons for his detention.  
 Haberdasher, hab'er-dash'er, *n.* a seller of drapery smallwares.  
 Habitment, hab-i'l-ment, *n.* a garment; attire.  
 Habit, hab'it, *n.* custom; appearance; dress.  
 Habitable, hab'it-ābl, *adj.* that may be lived in.  
 Habitat, hab'i-tat, *n.* natural abode.  
 Habitation, hab-it-ā'shun, *n.* a dwelling; act of inhabiting.  
 Habitual, ha-bit'ū-al, *adj.* customary.  
 Habituate, ha-bit'ū-āt, *v.* to accustom.  
 Habitué, hā-bit'ū-ā, *n.* a frequenter.  
 Hack, hak, *v.* to cut; *n.* a horse kept for hire; a literary drudge. [*cough*].  
 Hacking, hak'ing, *adj.* short and broken as, a  
 Hackle, hak'l, *v.* to separate.  
 Hackler, hak'ler, *n.* a flax-dresser.  
 Hackney, hak'ni, *n.* a hack; *v.* to make common.  
 Hackneyed, hak'nid, *adj.* much-used; let for hire.  
 Haddock, had'ok, *n.* a sea-fish.  
 Hades, hā'dēz, *n.* hell.  
 Haft, haft, *n.* a handle.  
 Haggard, hag'erd, *adj.* lean; wild-looking.  
 Haggis, hag'is, *n.* a Scotch dish made with oatmeal and sheep's offal.  
 Haggie, hag'i, *v.* to cavil; to mangle.  
 Hagiography, hag'i-og-ra-fi, *n.* the last of the three Jewish divisions of the Old Testament.  
 Hagiology, hag-i-ol'o-jī, *n.* lives of saints.  
 Hail, hāl, *v.* to greet; frozen rain.  
 Hake, hāk, *n.* a gadoid fish.  
 Halcyon, hal'si-on, *adj.* happy; calm; *n.* the kingfisher.  
 Hale, hāl, *adj.* hearty; robust; *v.* to drag.  
 Half-bred, hāf'bred, *adj.* underbred; of mixed breeds.  
 Half-caste, hāf-kast, *n.* one having one parent a Hindu and the other a European; any half-breed.  
 Half-pay, hāf'pā, *n.* an officer's reduced pay.  
 Halibut, hāl-i-but, *n.* a large flat sea-fish.  
 Halicore, hāl'i-kōr, *n.* a dugong.  
 Halldom, hāl'i-dom, *n.* holiness; an Old English oath. [*public room*].  
 Hall, hawl, *n.* a large entrance passage; large  
 Halleluia, hāl-ē-loo'ya, *n.* praise to God.  
 Halloo, hal-loo', *n.* a cry to draw attention; a hunting call.  
 Hallow, hāl'lo, *v.* to make holy.  
 Hallucinate, hāl-ū'sin-āt, *v.* to suffer illusion.  
 Hallucination, hāl-ū-sin-ā'shun, *n.* a delusion.  
 Halo, hāl'o, *n.* a luminous circle.  
 Halt, hawit, *n.* to stop; *n.* the lame.  
 Halter, hawl'ter, *n.* head-rope for horse; hangman's rope.  
 Halting, hawit'ing, *adj.* holding back.  
 Halve, hāv, *v.* to divide into two equal parts.  
 Halyard, hāl'yard, *n.* rope for hoisting sails.  
 Hames, hāmz, *n.* curved rods on either side of a horse's collar to which the traces are fastened.  
 Hamlet, ham'let, *n.* a small village.  
 Hammer, ham'er, *n.* a tool for driving or sticking.  
 Hammock, ham'ok, *n.* a swinging canvas or net supported at each end.  
 Hampered, ham'perd, *pa. p.* impeded.  
 Hamstring, ham'string, *n.* the tendon of the ham.  
 Hanaper, han'ā-per, *n.* old word for receptacle for papers, treasure, etc.  
 Hand, hand, *n.* the extremity of the arm below the wrist; a worker; *v.* to give to.  
 Handcuff, hand'kuf, *n.* shackles for the wrist.  
 Handfast, hand'fast, *n.* handle; grip; a betrothal.  
 Handicap, hand'i-kap, *v.* to place at a disadvantage; to equalise by burdening what is superior.  
 Handicraft, hand'i-kraft, *n.* labour by hand.  
 Handiwork, hand'i-werk, *n.* work done by the hands. [*twiping the nose*].  
 Handkerchief, hand'ker-chif, *n.* cloth used for  
 Handle, hand'l, *v.* to lay hold of; to discuss.  
 Handmaid, hand'mād, *n.* a female servant.  
 Handsel, hand'sel, *n.* a first use.  
 Handsome, han'sum, *adj.* attractive; good-looking.  
 Handspike, hand-spik, *n.* a wooden lever.  
 Handstaves, hand'stāvs, *n.* javelins.  
 Handy, hand'y, *adj.* ready; dexterous; near.  
 Hangar, hang'ar, *n.* covered shed for aeroplane.  
 Hanger-on, hang'er-on, *n.* a dependent.  
 Hangings, hang'ings, *n.* hanging draperies.

Hangman, hang'man, *n.* public executioner.  
 Hank, hangk, *n.* two or more skeins of thread tied together.  
 Hanker, hangk'er, *v.* to desire eagerly.  
 Hanky-panky, hangk'-'pank' *n.* jugglery.  
 Hansom, han'som, *n.* a two-wheeled cab.  
 Hap, hap, *n.* chance; hazard.  
 Haphazard, hap-haz'erd, *n.* mere chance.  
 Hapless, hap'les, *adj.* unlucky.  
 Haply, hap'li, *adv.* by chance.  
 Harangue, ha-rang', *n.* a pompous speech.  
 Harass, har'as, *v.* to torment; to hamper.  
 Harbinger, hár-bin-ger, *n.* a forerunner.  
 Harbour, hár-bur, *n.* shelter for ships.  
 Harboured, hár-bur-er, *n.* one who harbours.  
 Bouncer, hárd'en, *v.* to make hard.  
 Hardihood, hárd'i-hood, *n.* strength; power of endurance.  
 Hardiness, hárd'i-ness, *n.* boldness; assurance; capability of resistance to severity.  
 Hardly, hárd'li, *adv.* scarcely; harshly.  
 Hardship, hárd'ship, *n.* severe toil; want.  
 Hard-visaged, hárd'viz'áj'd, *adj.* of severe countenance.  
 Hardware, hárd wár, *n.* iron wares. [ance.  
 Hardy, hárd'i, *adj.* strong; resolute.  
 Hare, hár, *n.* a large rabbit-like animal having a divided upper lip.  
 Harebrained, hár-bránd, *adj.* reckless.  
 Harelip, hár'lip, *n.* a divided upper lip.  
 Harem, hár'em, *n.* part of house allotted to women in Eastern countries.  
 Haricot, har'i-kô, *n.* a stew of mutton and vegetables; a kidney bean.  
 Harlequin, hár'le-kwin, *n.* a character in a pantomime.  
 Harlot, hár'lot, *n.* a prostitute. [mime.  
 Harmonicon, hár-mon'ik-on, *n.* a mouth organ.  
 Harmonics, hár-mon'iks, *n.* the science of harmony.  
 Harmonious, hár-mô'ni-us, *adj.* in concord.  
 Harmonise, hár-mon-iz, *v.* to make harmonious.  
 Harmonium, hár-mô'ni-um, *n.* a boxed-keyed and treadled reed instrument of music.  
 Harmony, hár-mon-i, *n.* accord of sounds; fitness; agreement.  
 Harp, hárp, *n.* a verticle stringed musical instrument; *v.* to dwell insistently on anything.  
 Harper, hárp'er, *n.* a harp player.  
 Harpoon, hár-poon, *n.* a dart to use against whales. [instrument.  
 Harpsichord, hárp'si-kôrd, *n.* an ancient keyed harp.  
 Harpy, hár'pi, *n.* one who preys on others; a sharp-tongued woman.  
 Harridan, har'i-dan, *n.* a hag.  
 Harrier, har'i-er, *n.* a hound used for hare hunting.  
 Harrow, har'ô, *n.* a toothed instrument for breaking up land.  
 Harrowing, har'ô-ing, *adj.* distressing.  
 Harry, har'i, *v.* to harass; to plunder.  
 Harsh, hársh, *adj.* cruel; severe.  
 Hart, hárt, *n.* a full-grown stag.  
 Hartebeest, hár-ti-bé-st, *see* Gnu.  
 Hartshorn, hárt'shorn, *n.* a solution of ammonia.  
 Harum-skarum, hár-um-ská'rum, *adj.* flighty; rash.  
 Harvest, hár'vest, *n.* the time for gathering crops; the crops gathered.  
 Hash, hash, *v.* to mince; to hack.  
 Haslet, haz'let, *n.* a galantine of pig offal, spices, etc.  
 Hasp, hasp, *n.* a clasp.  
 Hassock, has'sok, *n.* a foot cushion; a kneeling.  
 Hastate, hast'át, *adj.* spear-shaped. [mat.  
 Haste, hást, *v.* to hurry.  
 Hatch, hach, *v.* to produce from eggs; to shade.  
 Hatchery, hach'er-i, *n.* place for hatching.  
 Hatchet, hach'et, *n.* a small axe.  
 Hatchway, hach'wá, *n.* an opening in a ship's deck.  
 Hatful, hât'ful, *adj.* odious; detestable.  
 Hatred, hât'red, *n.* extreme dislike.  
 Hatter, hat'er, *n.* a hat maker.  
 Haughty, haw'ti, *adj.* proud; arrogant.  
 Haul, hawl, *v.* to drag; to pull in.  
 Hauler, hawl'er, *n.* one who hauls.  
 Haulm, hawn, *n.* stubble; straw.  
 Haunch, hawnsh, *n.* the thigh.  
 Haunt, hawnt, *v.* to frequent; to visit.  
 Haunted, hawnt'ed, *adj.* frequented by a ghostly visitant.  
 Hautboy, hó'boi, *n.* a reed instrument.  
 Hauteur, hó'ter, *n.* pride; an arrogant manner.  
 Havana, hav-an'á, *n.* a cigar of an Havana brand.  
 Haven, háv'en, *n.* a shelter for ships.  
 Haversack, hav'er-sak, *n.* a soldier's knapsack.

Havoc, hav'ok, *n.* general waste; slaughter.  
 Haw, haw, *n.* the seed-vessel of the thorn; hesitant speech. [with goods for sale.  
 Hawk, hawk, *n.* a bird of prey; *v.* to go about.  
 Hawker, hawk'er, *n.* one who hawks goods.  
 Hawk-eyed, hawk'id, *adj.* with hawk-like eyes.  
 Hawser, hawz'er, *n.* a large rope.  
 Hawthorn, haw'thorn, *n.* a common hedgerow shrub.  
 Hazard, haz'erd, *n.* chance; danger.  
 Hazardous, haz'er-dus, *adj.* dangerous.  
 Haze, ház, *n.* light mist; obscurity.  
 Hazel, házel, *n.* a shrub bearing nuts.  
 Hazy, há'zi, *adj.* foggy; misty; vague.  
 Headache, hed'ák, *n.* pain in the head.  
 Headland, hed'land, *n.* a point of land jutting into the sea.  
 Headlight, hed'lit, *n.* light carried in front of a vehicle.  
 Headlong, hed'long, *adv.* rashly; madly.  
 Headquarters, hed-kwawt'ers, *n.* the quarters of a commanding officer; the chief offices of any organisation.  
 Headstall, hed'stawl, *n.* part of a bridle.  
 Headstrong, hed'strong, *adj.* self-willed; impetuous.  
 Headway, hed'wá, *n.* a ship's progress.  
 Heady, hed'i, *adj.* rash; headstrong.  
 Heal, hél, *v.* to cure; to repair; to subue.  
 Healer, hél'er, *n.* one who heals; a doctor.  
 Health, helth, *n.* freedom from disease.  
 Healthful, helth'ful, *adj.* in a healthy condition.  
 Heap, hêp, *n.* a pile; a mass; *v.* to amass; to make into a heap.  
 Hearken, hár'ken, *v.* to listen.  
 Hearsay, hér'sá, *adj.* common rumour.  
 Hears, hers, *n.* conveyance for carrying coffins at funerals.  
 Heart, hárt, *n.* the organ that circulates the blood; courage; affection.  
 Heartburn, hárt'bern, *n.* an acid rising at the heart.  
 Hearten, hárt'en, *v.* to stimulate. [stomach.  
 Hearth, hárt'h, *n.* floor for a fire.  
 Hearthstone, hárt'h'stôn, *n.* the stone or space fronting the fireplace.  
 Heartless, hárt'less, *adj.* devoid of feeling.  
 Hearty, hárt'i, *adj.* warm; generous; healthy.  
 Heat, hét, *n.* that which gives warmth.  
 Heath, héth, *n.* barren land; moor.  
 Heathen, héth'en, *n.* a pagan.  
 Heathendom, héth'en-dom, *n.* countries where heathenism prevails.  
 Heather, heth'er, *n.* ling; heath.  
 Heave, hév, *v.* to raise; to pant; to swell.  
 Heaven, hev'n, *n.* the abode of the blessed; the Heaven-born, hev'n-bawn, *adj.* inspired. [sky  
 Heaviness, hev'nes, *adj.* dullness; oppressiveness; melancholy.  
 Hebdomad, heb'do-mad, *n.* the number seven.  
 Hebdomadad, heb-dom'a-dal, *adj.* weekly.  
 Hebetate, heb'e-tát, *v.* to render blunt or dull.  
 Hebetude, heb'e-túd, *n.* the act of making blunt.  
 Hebraic, hê-brá'ik, *adj.* pertaining to the Hebrews.  
 Hebraise, hê-brá'iz, *v.* to change to Hebrew.  
 Hebraist, hê-brá-ist, *n.* one learned in Hebrew.  
 Hecatomb, hek'á toom, *n.* sacrifice of 100 victims; any great sacrifice.  
 Heckle, hek'l, *v.* to comb; to badger with questions.  
 Hectic, hek'tik, *adj.* a fevered condition.  
 Hectogramme, hek'to-gram, *n.* a weight of 100 grammes.  
 Hector, hek'tor, *v.* to bully.  
 Hedonism, hé'don-izm, *n.* the theory that happiness is the chief good.  
 Heed, hêd, *v.* to notice; *n.* caution; attention.  
 Heft, heft, *n.* handle; heaving.  
 Hegemony, hê'jem-o-ni, *n.* leadership.  
 Heifer, hef'er, *n.* a young cow.  
 Height, hit, *n.* a hill.  
 Heighten, hí'ten, *v.* to raise higher; to improve.  
 Heinous, há'nus, *adj.* wicked; atrocious.  
 Heir, ár, *n.* one who inherits, or is entitled to inherit. [ledged heir.  
 Heir-apparent, ár-ap-pá rent, *n.* a legally acknowledged heir.  
 Heirless, ár'les, *adj.* without heir.  
 Heirloom, ár'loom, *n.* any personal property which descends to the heir-at-law and cannot be sold.  
 Heir-presumptive, ár-pre-zumpt'iv, *n.* one who is heir if no nearer relative be born.  
 Heliacal, hê-li'ak-al, *adj.* emerging from or passing into the sun's light.  
 Helical, hel'ik-al, *adj.* spiral.



- Heliograph**, hē'li-o-graf, *v.* to communicate by heliostat or other sun reflector.
- Heliolatri**, hē-li-o'ā-tri, *n.* sun worship.
- Heliostat**, hē-li-o-stat, *n.* a reflecting instrument.
- Helix**, hē'liks, *n.* a spiral.
- Hell**, *n.* abode of evil spirits; place of torment.
- Hellebore**, hē'lē-bōr, *n.* a plant whose root is a purgative. [a Jew practising Greek.]
- Hellenist**, hē'lēn-ist, *n.* one learned in Greek.
- Helm**, helm, *n.* steering apparatus of a ship.
- Helmet**, hē'lēt, *n.* armour covering for the head.
- Helmithology**, hēl-min-thol'o-jī, *n.* the study of Helot, hē'lot, *n.* a Spartan slave. [worms.]
- Helpmeet**, hēlp'mēt, *n.* a consort or companion.
- Helve**, hēlv, *n.* the handle of an axe.
- Helvetic**, hēl-vet'ik, *adj.* pertaining to Switzerland.
- Hematology**, hē-mat-ol'o-jī, *n.* science of the blood.
- Hemiptera**, hēm-ip'tēr-ā, *n.* four-winged insects.
- Hemisphere**, hēm-is-fēr, *n.* a half globe.
- Hemistich**, hēm-is-tīk, *n.* an incomplete line of verse.
- Hemlock**, hēm'lok, *n.* a poisonous plant.
- Hemorrhage**, hēm-or-āj, *n.* loss of blood.
- Hemorrhoids**, hēm-or-oids, *n.* piles.
- Hemp**, hemp, *n.* a plant used for cordage making.
- Henbane**, hēn'bān, *n.* a poisonous plant.
- Hencoop**, hēn'koop, *n.* a large cage for poultry.
- Henna**, hēn'ā, *n.* an Oriental dye pigment.
- Henpecked**, hēn'pekt, *adj.* ruled by one's wife.
- Henwife**, hēn'wif, *n.* a woman who tends poultry.
- Hepatic**, hē-pat'ik, *adj.* pertaining to the liver.
- Heptade**, hēp'tād, *n.* number or total of seven.
- Heptagon**, hēp'tā-gon, *n.* a figure of seven equal sides.
- Herald**, hēr'al'd, *n.* a forerunner; *v.* to proclaim.
- Heraldic**, hēr-al'dik, *adj.* pertaining to heraldry.
- Heraldry**, hēr-al'd-ri, *n.* the science of heraldic matters.
- Herb**, herb, *n.* a plant which dies down to the roots annually.
- Herbaceous**, herb-ā'shūs, *adj.* pertaining to herbs.
- Herbage**, herb'ēj, *n.* grass and other plants grazed by animals.
- Herbal**, herb'al, *n.* a book on plants.
- Herbarium**, herb-ā'ri-um, *n.* a collection of plants.
- Herbiferous**, herb-if'er-us, *adj.* bearing herbs.
- Herbivorous**, herb-iv'er-us, *adj.* herb-eating.
- Herculean**, her-kū'li-an, *adj.* difficult; very strong; gigantic.
- Herd**, *n.* a collection of animals running together; a flock; *v.* to run in company.
- Herdsmān**, herds'mān, *n.* one who tends cattle.
- Hereditable**, her-e-dit-ā-ment, *n.* inheritable property. [heritance.]
- Hereditary**, her-ed'it-ā-ri, *adj.* descending by inheritance.
- Heredity**, her-ed'it-i, *n.* transmission of ancestral qualities.
- Heresy**, her'es-i, *n.* unsound doctrine.
- Heretic**, her'e-tik, *n.* an unbeliever.
- Heretical**, her-et'ik-al, *adj.* relating to heresy.
- Heritable**, her-it-ābl, *adj.* capable of being inherited.
- Heritage**, her-it-āj, *n.* an inheritance. [herited.]
- Hermaphrodite**, her-maf'ro-dit, *n.* an animal or plant combining the male and female sexual characteristics.
- Hermetic**, her-met'ik, *adj.* perfectly close.
- Hermit**, her'mit, *n.* one who lives in solitude.
- Hermitage**, her'mit-āj, *n.* a hermit's abode.
- Hernia**, her'nī-a, *n.* rupture.
- Hero**, hē'ro, *n.* one who does notable deeds.
- Heroic**, hēr-ō'ik, *adj.* valorous; daring.
- Heroine**, her-ō-in, *n.* a female hero.
- Heroism**, her-ō-izm, *n.* bravery.
- Heron**, her'on, *n.* a large water-fowl.
- Hepes**, her'pēs, *n.* certain skin diseases.
- Herpetology**, her-pet-ol'o-jī, *n.* the natural history of reptiles.
- Hesitancy**, hēz'i-tan-si, *n.* wavering.
- Hesitate**, hēz'it-āt, *v.* to waver.
- Hesper**, hēs'per, *n.* Venus, the evening star.
- Hesperian**, hēs-pē-ri-an, *adj.* western.
- Heterodox**, het'e-ro-doks, *adj.* heretical.
- Heterodoxy**, het'e-ro-dok-si, *n.* heresy.
- Heterogeneous**, het'er-ō-jen'ē-us, *adj.* of another kind.
- Heterogenesis**, het'er-ō-jen'ēs-is, *n.* spontaneous.
- Hew**, hū, *v.* to cut vigorously. [generation.]
- Hexagon**, hēks-ā-gon, *n.* a figure of six equal sides.
- Hexahedron**, hēks-ā-hē-dron, *n.* a cube.
- Hexameter**, hēks-am'ē-ter, *n.* a verse of six metrical feet.
- Hexapod**, hēks-ā-pod, *n.* a six-footed animal.
- Hiatus**, hi-ā'tus, *n.* a gap; an opening.
- Hibernial**, hi-ber'nal, *adj.* wintry.
- Hiberniate**, hi'-ber-nāt, *v.* to pass the winter in torpor. [*n.* an Irishman.]
- Hibernian**, hi-ber'nī-an, *adj.* relating to Ireland.
- Hiccough**, hik'up, *n.* a spasmodic cough.
- Hickory**, hik-ō-ri, *n.* an American nut-bearing tree.
- Hidalgo**, hi-dal'go, *n.* a Spanish nobleman.
- Hidden**, hid'n, *adj.* concealed.
- Hide**, hid, *v.* to conceal; *n.* the skin of a beast; an old land measure.
- Hidebound**, hid'bownd, *adj.* having the skin or outer covering too closely attached; concealment.
- Hideous**, hid'e-us, *adj.* frightful. [ventional.]
- Hiding**, hid'ing, *n.* a thrashing; concealment.
- Hie**, hi, *v.* to proceed; to wend.
- Hierarchy**, hi'er-ark, *n.* the chief of a sacred order.
- Hierarchy**, hi'er-ar-ki, *n.* government by ecclesiastics. [pictures and symbols.]
- Hieroglyphic**, hi'er-o-glif'ik, *n.* ancient writing in Hierology, hi'er-ol'o-jī, *n.* the science of sacred
- Hierophant**, hi'er-o-fant, *n.* a priest. [things.]
- Higgle**, hig'l, *v.* to bargain.
- High**, hi, *adj.* lofty; tall; eminent.
- High-altar**, hi'awl'ter, *n.* the chief altar in a church. [vagant person.]
- High-flier**, hi'fl'er, *n.* a high-flying bird; an extravagant person.
- Highland**, hi'land, *n.* a hilly region.
- Highway**, hi-wē, *n.* a public road.
- Highwayman**, hi-way-mān, *n.* a robber who stops people on the highways.
- Hilarious**, hil-ā'ri-us, *adj.* boisterously mirthful.
- Hilarity**, hil-ar'it-i, *n.* gaiety; mirth.
- Hillmen**, hil'mēn, *n.* dwellers in hill-country.
- Hilt**, hilt, *n.* a sword-handle.
- Hind**, hind, *n.* a female deer; a farm servant.
- Kinder**, hind'er, *v.* to obstruct; to prevent.
- Hindrance**, hin'drāns, *n.* that which hinders; an obstacle.
- Hindmost**, hind'most, *adj.* the last.
- Hindu**, hin'do, *n.* a native of Hindostan.
- Hinge**, hinj, *n.* a joint on which a door turns; *v.* to turn.
- Hinny**, hin'i, *v.* to neigh.
- Hint**, hint, *n.* an insinuation; *v.* to suggest indirectly.
- Hippocentaur**, hip'o-sent'awr, *n.* Centaur (horse and man).
- Hippodrome**, hip'o-drōm, *n.* a large hall used for entertainment; a circus.
- Hippopotamus**, hip-o-pot-ā-mus, *n.* African river horse.
- Hip-roof**, hip'roof, *n.* a roof with angle.
- Hire**, hir, *v.* to engage help for pay.
- Hireling**, hir'ling, *n.* a servant.
- Hirer**, hir'er, *n.* one who hires.
- Hirsute**, hir'sūt, *adj.* hairy.
- Hiss**, his, *v.* to utter sibilant sounds.
- Histology**, hist-ol'o-jī, *n.* the science of tissues.
- Historian**, hist-ō-ri-an, *n.* one who writes history.
- History**, his'to-ri, *n.* a record of events.
- Histrionic**, his-tri-on'ik, *adj.* theatrical.
- Histrionics**, his-tri-on'iks, *n.* play-acting.
- Hitch**, hich, *v.* to fasten; *n.* a sudden obstacle.
- Hive**, hiv, *n.* place where bees are kept.
- Hives**, hivz, *n.* a skin disease.
- Hoar**, hōr, *adj.* white. [amass in secret.]
- Hoard**, hōrd, *n.* a store; a secret stock; *v.* to hoard.
- Hoarding**, hōrd'ing, *n.* a temporary screen of boards round a building.
- Hoar-frost**, hōr'frost, *n.* white frost.
- Hoarse**, hōrs, *adj.* harsh; discordant.
- Hoax**, hōks, *n.* a deceptive joke.
- Hob**, hob, *n.* the nave of a wheel; a projection near the fire.
- Hobble**, hob'l, *v.* to limp; to tether.
- Hobbledehoy**, hob'l-de-hoi, *n.* an awkward youth.
- Hobby**, hob'i, *n.* a favourite pursuit.
- Hobgoblin**, hob-gob'lin, *n.* a kind of elf.
- Hobnail**, hob'nāl, *n.* heavy-headed nail.
- Hobnob**, hob-nob', *adv.* familiar association.
- Hock**, hok, *n.* a German wine.
- Hockle**, hok'l, *v.* to hamstring.
- Hocus-pocus**, hō'kus-pō'kus, *n.* a juggler's trick.
- Hod**, hod, *n.* a shoulder-supported receptacle for carrying bricks or mortar.
- Hodden**, hod'en, *n.* cloth ("hodden-gray") manufactured from undyed wool.
- Hodge-podge**, hodj'podj, *n.* a mixed mass.
- Ho diernal**, ho-di-er'nal, *adj.* relating to to-day.
- Hodman**, hod'mān, *n.* a mason's labourer.
- Hoe**, hō, *n.* an implement for breaking up earth.
- Hog**, hog, *n.* a castrated boar pig; a year-old unshorn sheep; a glutton or dirty fellow.

- Hoghead**, hogs'hed, *n.* a large cask.  
**Hoity-toity**, hoi'ti-toi'ti, *interj.* an exclamation of  
**Hoist**, *v.* to raise; to lift. [surprise].  
**Holding**, hold'ing, *n.* grasping, retaining.  
**Hole**, hól, *n.* a hollow place; a pit; a dent.  
**Holiday**, hol'i-dá, *n.* a feast day; rest from work.  
**Holiness**, hól'i-nes, *n.* sacredness.  
**Hollands**, hol-and's, *n.* a Dutch gin.  
**Holloa**, hol-o', *interj.* a hailing cry.  
**Hollow**, hol'ó, *n.* a hole; a depression; a cavity;  
*adj.* empty.  
**Hollow-eyed**, hol'ó-id, *adj.* with sunken eyes.  
**Holly**, hol'í, *n.* a shrub.  
**Hollyhock**, hol'i-hok, *n.* a species of mallow.  
**Holm**, hóm, *n.* land beside a river.  
**Holocaust**, hol'o-kawst, *n.* a burnt sacrifice.  
**Holograph**, hol'o-graf, *n.* a document in the hand-  
 writing of the person from whom it proceeds.  
**Holster**, hol'ster, *n.* a case for holding pistols.  
**Holt**, holt, *n.* a wood; an orchard.  
**Holy**, hól'i, *adj.* morally pure; sacred.  
**Holy-rood**, hól'i-rood, *n.* holy-cross.  
**Holystone**, hól'i-stón, *n.* a stone used for scrubbing  
 boards.  
**Homage**, hom'ij, *n.* reverence; respect; fealty.  
**Homely**, hóm'li, *adj.* familiar; plain.  
**Homeopathic**, ho-mé-o-path'ik, *adj.* relating to  
 homeopathy.  
**Homespun**, hom'spún, *adj.* of domestic manufac-  
 ture.  
**Homestead**, hóm'sted, *n.* the place of the home.  
**Homicide**, hom'i-síd, *n.* murder; a man-killer.  
**Homily**, hom'il-i, *n.* a serious discourse.  
**Hominy**, hom'í-ní, *n.* hulled corn.  
**Hommock**, hom'ók, *n.* a small conical hill.  
**Homodont**, hóm'ó-dont, *adj.* having teeth all alike.  
**Homœopathy**, hóm-i-op'a-thí, *n.* system of  
 treating disease by the use of drugs which  
 produce symptoms in a healthy person,  
 similar to those of the disease.  
**Homogeneous**, ho-mo-jé-ne-us, *adj.* of the same  
 kind.  
**Homograph**, hóm'ó-graf, *n.* a system of military  
 signalling. [the same].  
**Homologate**, ho-mol'o-gát, *v.* to agree; to express  
**Homologous**, ho-mol'o-gus, *adj.* agreeing.  
**Homologue**, hom'ó-log, *n.* that which is similar to  
 something else.  
**Homonym**, hóm'ó-nim, *n.* a word with more than  
 one meaning.  
**Homotype**, hom'ó-tip, *n.* that which is of the same  
**Hone**, hón, *v.* to sharpen. [class].  
**Honest**, on'est, *adj.* just; good; frank.  
**Honesty**, on'est-i, *n.* the state of being honest.  
**Honey**, hun'í, *n.* the sweet substance collected by  
 bees. [bees].  
**Honeycomb**, hun'í-kóm, *n.* wax cells made by  
 Honeydew, hun'í-dú, *n.* a juice exuded by plant  
 lice or the plant they infest; a sweetened  
 tobacco.  
**Honeymoon**, hun'í-moon, *n.* first month of marri-  
 age.  
**Honeysuckle**, hun'í-sukl, *n.* a sweet-smelling  
 climbing flowering shrub. [climbing].  
**Honied**, hun'id, *adj.* abounding in sweetness; flat-  
**Honorarium**, on-or-á-ri-um, *n.* a voluntary fee.  
**Honorary**, on'or-á-í, *adj.* conferring honour;  
 without fee.  
**Honour**, on'or, *n.* esteem due to worth.  
**Hoodwink**, hood'wink, *v.* to deceive.  
**Hookah**, hoo'ká, *n.* a pipe in which the smoke  
 passes through water.  
**Hoop**, hoop, *n.* a ring of wood or metal.  
**Hooper**, hoop'er, *n.* a cooper.  
**Hooping-cough**, hoo'ping-kof, a convulsive cough.  
**Hoopoe**, hoop'ó, *n.* a large-crested bird.  
**Hoot**, hoot, *v.* to cry out.  
**Hop**, hop, *v.* to leap on one leg; to spring; *n.* a  
 plant yielding cones used in brewing.  
**Hope**, hóp, *v.* to anticipate; to cherish desire of  
 good; *n.* confidence.  
**Hopper**, hop'er, *n.* a hop-gatherer; a chute for  
 diverting material into a machine.  
**Horai**, hór'al, *adj.* relating to an hour.  
**Horde**, hórd, *n.* a migratory tribe.  
**Horehound**, hór'hownd, *n.* a herb used as a tonic.  
**Horizon**, ho-rí-zon, *n.* line where earth and sky  
**Horizontal**, hor-i-zon'tal, *adj.* level. [meet].  
**Horn**, hawrn, *n.* a bony or epidermic projection from  
 the head of an animal; prolonged extremity;  
 a musical instrument.  
**Horner**, hawrn'er, *n.* a dealer in horns.  
**Hornpipe**, hawrn'píp, *n.* a step dance.
- Horny**, hawrn, *adj.* horn-like, hard, unfeeling.  
**Horography**, hor-og'raf-i, *n.* art of dial construc-  
 tion.  
**Horologe**, hor'ol-ój, *n.* a time-piece. [machines].  
**Horology**, hor'ol'o-jí, *n.* the science of time-telling  
**Horoscope**, hor'os-kóp, *n.* an astrological pre-  
 diction.  
**Horoscopy**, hor-os'ko-pí, *n.* the art of prediction.  
**Horrent**, hor'ent, *adj.* bristling.  
**Horrible**, hor'íbl, *adj.* dreadful.  
**Horrid**, hor'id, *adj.* frightful.  
**Horror**, hor'er, *n.* violent fear; aversion.  
**Hors d'œuvre**, or-dúv'r, *n.* a preliminary relish.  
**Horse**, hors, *n.* a familiar quadruped.  
**Horse-power**, hors'pow'r, *n.* the power a horse can  
 exert; a measure of power.  
**Horseshoe**, hors'shoo, *n.* shoe for horses, or a thing  
 of that shape. [smite with a horse-whip].  
**Horsewhip**, hors'whíp, *n.* a driving whip; *v.* to  
 Hortative, hor'ta-tív, *adj.* encouraging; advising.  
**Horticulture**, hor-ti-kult'úr, *n.* gardening.  
**Hosanna**, hō-zan'a, *n.* praise to God.  
**Hose**, hōz, *n.* stockings; a portable pipe for  
 conveying water.  
**Hosier**, hōz'ér, *n.* one who sells stockings.  
**Hospice**, hos'pēs, *n.* house of charitable entertain-  
 ment. [strangers].  
**Hospitable**, hos'pit-able, *adj.* charitable; kind to  
**Hospital**, hos'pit-al, *n.* a home for the sick.  
**Hospitality**, hos-pit-al'it-i, *n.* generous entertain-  
 ment.  
**Host**, hōst, *n.* a landlord; a multitude.  
**Hostage**, hōst'áj, *n.* a person left as a pledge.  
**Hostel**, hōst'el, *n.* an inn.  
**Hostess**, hōst'es, *n.* female host.  
**Hostile**, hos'tíl, *adj.* adverse.  
**Hostler**, os'ler, *n.* a groom at an inn.  
**Hotbed**, hot'bed, *n.* a heated bed for forcing  
 plants.  
**Hotchpot**, hoch'pót, *n.* a confused mixture.  
**Hotel**, hō'tel, *n.* a superior inn.  
**Hotheaded**, hot'hed'ed, *adj.* fierce; impetuous.  
**Hothouse**, hot'how's, *n.* a house kept for growing  
 tender plants.  
**Hot-press**, hot'pres, *v.* to press between hot plates.  
**Hottentot**, hot'en-tot, *n.* an aboriginal of South  
 Africa.  
**Hough**, hok, or Hock, *n.* the joint above the  
 fetlock on the hind leg of a quadruped.  
**Hound**, hownd, *n.* a dog kept for hunting.  
**Hour-glass**, our'glas, *n.* glass for measuring time.  
**Houri**, how'ri, *n.* a nymph of paradise.  
**House**, how's, *n.* a dwelling or place of assembly.  
**Housewifery**, how's-wí-er-i, *n.* pertaining to the  
 duties of the mistress of the house.  
**Housing**, how'ing, *n.* shelter.  
**Hovel**, hov'el, *n.* a mean cottage.  
**Hover**, hover, *v.* to hang over.  
**Howbeit**, how-bé'it, *adv.* nevertheless.  
**Howdah**, how'da, *n.* a seat on an elephant.  
**Howitzer**, how'it-zer, *n.* a kind of short cannon.  
**Howl**, howl, *v.* to cry or yell, as a dog.  
**Howlet**, how'let, *n.* a kind of owl.  
**Hoy**, hoy, *n.* a small coasting vessel.  
**Hubbub**, hub'ub, *n.* tumult.  
**Huckaback**, huk'a-bak, *n.* table linen.  
**Huckle**, huk'l, *n.* the hip; a hip-like projection.  
**Huckster**, huk'ster, *n.* a pedlar.  
**Huddle**, hud'l, *v.* to crowd; to bring together  
 hastily and carelessly.  
**Hue**, hú, *n.* a colour; *v.* a shouting.  
**Huff**, *n.* petulant anger.  
**Huge**, húj, *adj.* gigantic; massive; large.  
**Huguenot**, hú'ge-nó, *n.* a French protestant.  
**Hulk**, hulk, *n.* body of a ship.  
**Hull**, hul, *n.* a shell.  
**Human**, hú-man, *adj.* pertaining to mankind.  
**Humane**, hú-mán, *adj.* kind.  
**Humanise**, hú-man-iz, *v.* to civilise.  
**Humanist**, hú-man-ist, *n.* a student of human  
 nature.  
**Humanity**, hú-man-it-i, *n.* mankind; benevolence.  
**Humankind**, hú-man-kind, *n.* the human race.  
**Humble**, hum'bl, *adj.* modest; meek; *v.* to lower;  
 to degrade.  
**Humbly**, hum'bli, *adv.* with humility.  
**Humbug**, hum'bug, *n.* an imposition.  
**Humdrum**, hum'drum, *adj.* dull.  
**Humeral**, hú-mer'al, *adj.* pertaining to the  
 shoulder.  
**Humerus**, hú-mer-us, *n.* the arm above the elbow.  
**Humid**, hú-míd, *adj.* moist; damp.  
**Humidity**, hú-míd'it-i, *n.* moisture.



**Humiliate**, hū-mil'i-āt, *v.* to humble.  
**Humility**, hū-mil'i-ti, *n.* modesty; meekness.  
**Hummel**, hum'el, *adj.* hornless.  
**Hummingbird**, hum'ing-berd, *n.* a small tropical bird.  
**Humoral**, hū'mo-ral, *adj.* connected with humours.  
**Humorist**, ū'mo-ris-t, *n.* one who speaks or writes of humorous things.  
**Humorous**, ū-mer-us, *adj.* exciting mirth.  
**Humorsome**, ū'mer-sum, *adj.* odd.  
**Humour**, ū'mer, *n.* wit; fancy; abnormal animal  
**Hump**, hump, *n.* a hunch on the back. [fluid.  
**Humus**, hū'mus, *n.* mould.  
**Hunch**, hunch, *n.* a hump; an idea. [division:  
**Hundred**, hun'dred, *n.* ten times ten: a territorial  
**Hunger**, hung'er, *n.* craving for food.  
**Hungry**, hung'ri, *adj.* needing food; famishing.  
**Hurdle**, hur'dl, *n.* a frame of twigs; a movable  
 frame for gates.  
**Hurdy-gurdy**, hur'di-gur'di, *n.* a rude musical  
 instrument.  
**Hurl**, hurl, *v.* to cast away; to throw forcibly.  
**Hurly-burly**, hur'li-bur'li, *n.* confusion.  
**Hurrah**, hur-rah, *interj.* an exclamation of ap-  
 plause.  
**Hurricane**, hur'ri-kān, *n.* a violent storm.  
**Hurt**, *v.* to damage, or cause pain to; *n.* a wound.  
**Hurtle**, hurt'l, *v.* to dash or whirl away with noise  
 and rapidity.  
**Husband**, huz'band, *n.* a married man; *v.* to save.  
**Husbandman**, huz'band-man, *n.* a labouring  
 farmer.  
**Husbandry**, huz'band-ri, *n.* land-cultivation;  
**Hush**, hush, *interj.* be silent. [farming.  
**Hush-money**, hush'mun-i, *n.* money paid for  
**Husk**, *n.* covering of certain fruits. [silence.  
**Husky**, husk'i, *adj.* hoarse.  
**Hussar**, hooz-'ār, *n.* a light cavalry soldier.  
**Hussy**, huz'f, *n.* an ill-mannered woman.  
**Hustle**, hus'l, *v.* to push.  
**Hustler**, hus'ler, *n.* one who hustles.  
**Hutch**, hutch, *n.* a box; a coop.  
**Huzza**, huz'ah, *interj.* hurrah; a shout of joy.  
**Hyacinth**, hi'ā-sinθ, *n.* a sweet-smelling bulbous  
 plant.  
**Hyaline**, hi'a-lin, *adj.* glassy.  
**Hybrid**, hi'brid, *adj.* produced from different  
 species.  
**Hybridism**, hi'brid-izm, *n.* the hybrid condition.  
**Hydra**, hi'dra, *n.* a many-headed monster.  
**Hydrangea**, hi-dran'jē-ā, *n.* a flowering shrub.  
**Hydrant**, hi'drant, *n.* a water-plug.  
**Hydraulic**, hi-draw'lik, *adj.* connected with  
 hydraulics. [liquids.  
**Hydraulics**, hi-draw'liks, *n.* the science of flowing  
 fluids.  
**Hydrodynamics**, hi-dro-di-nam'iks, *n.* the science  
 of the force of water. [substance.  
**Hydrogen**, hi'dro-jen, *n.* an elementary gaseous  
 element.  
**Hydrographer**, hi-drog'rā-fer, *n.* a sea-chart maker.  
**Hydrography**, hi-drog'rā-fi, *n.* the art of measuring  
 seas. [zoa, marine polypes or zoophytes.  
**Hydroid**, hi'droid, *n.* one of the sub-class Hydro-  
 zoa.  
**Hydrology**, hi-drol'o-jī, *n.* the science of water.  
**Hydromel**, hi'dro-mel, *n.* a beverage composed of  
 honey and water. [instrument.  
**Hydrometer**, hi-drom'e-ter, *n.* a liquid-measuring  
 instrument.  
**Hydropathic**, hi-dro-path'ik, *adj.* relating to cold-  
 water treatment.  
**Hydropathist**, hi-drop'a-thist, *n.* a practitioner of  
 hydropathy. [ment of disease.  
**Hydropathy**, hi-drop'a-thi, *n.* the cold-water treat-  
 ment of disease.  
**Hydrophobia**, hi-dro-fō'bi-ā, *n.* canine madness.  
**Hydrostatics**, hi-dro-stat'iks, *n.* the science of  
 fluid equilibrium.  
**Hydrous**, hi-drus, *adj.* containing water.  
**Hyemal**, hi-ē-mal, *adj.* relating to winter.  
**Hygiene**, hi'ji-ēn, *n.* health preservation.  
**Hygienics**, hi-ji-en'iks, *n.* the science of health.  
**Hygrometer**, hi-grom'e-ter, *n.* an instrument for  
 calculating atmospheric moisture.  
**Hygrometry**, hi-grom'e-tri, *n.* the science of calcu-  
 lating atmospheric moisture.  
**Hymeneal**, hi-mē-ni-al, *adj.* relating to marriage.  
**Hymn**, him, *n.* a sacred song.  
**Hymnology**, him-nol'o-jī, *n.* a collection of hymns;  
 the science of hymns.  
**Hyperbola**, hi-per'bō-lā, *n.* one of the conic  
 sections.  
**Hyperbole**, hi-per'bō-lē, *n.* exaggeration.  
**Hyperbolical**, hi-per-bol'ik-al, *adj.* in the manner  
 of hyperbole.  
**Hyperborean**, hi-per-bō're-an, *adj.* relating to the  
 far north.

**Hypercriticism**, hi-per-krit'i-sizm, *n.* exaggerated  
 criticism. [syllables.  
**Hyphen**, hi'fen, *n.* a printer's mark (-) joining two  
 words.  
**Hypnotism**, hip'no-tizm, *n.* mesmeric sleep.  
**Hypochondriac**, hi-po-kon'dri-ak, *n.* one suffering  
 from delusions. [choly.  
**Hypochondriacal**, hi-po-kon'dri-ak-al, *adj.* melan-  
 choly.  
**Hypocrisy**, hip-ok'ra-si, *n.* deceit; sham-goodness.  
**Hypocrite**, hip'o-krit, *n.* a practitioner of hypocrisy.  
**Hypogastric**, hip-o-gas'trik, *adj.* relating to the  
 lower part of the abdomen. [sonality.  
**Hypostasis**, hi-pos'tā-sis, *n.* essence; being; per-  
 sonality.  
**Hypostatic**, hi-po-stat'ik, *adj.* real; distinctive;  
 substantial. [right angle.  
**Hypotenuse**, hi-pot'en-us, *n.* the side opposite a  
 right angle.  
**Hypothec**, hi-poth'ek, *n.* a lien on goods for money  
 lent.  
**Hypothecate**, hi-poth'e-kāt, *v.* to pledge as security.  
**Hypothesis**, hi-poth'e-sis, *n.* a supposition.  
**Hypothetical**, hi-poth'et'ik-al, *adj.* conditional.  
**Hypsomety**, hip-som'e-tri, *n.* the art of measuring  
 heights.  
**Hyson**, hi'sun, *n.* a Chinese green tea. [heights.  
**Hyssop**, his'up, *n.* an aromatic herb.  
**Hysterics**, his'ter-iks, *n.* nervous fits of alternate  
 laughing and crying.

## I

**Iambus**, i-am'bus, *n.* a metrical foot of two syll-  
 ables with an accented second syllable.  
**Ibidem**, ib-i'dem, *adv.* in the same place.  
**Icarian**, i-kā'ri-an, *adj.* pertaining to flight.  
**Ice-age**, i-sā'j, *n.* an era when the land was covered  
 by ice.  
**Iceberg**, is'berg, *n.* a floating mountain of ice.  
**Ice-boat**, is'bōt, *n.* boat for forcing through or  
 over ice. [artificially frozen.  
**Ice-cream**, is'krēm, *n.* sweetened synthetic cream  
 of sugar and milk.  
**Ice-float**, is'flōt, *n.* mass of floating ice.  
**Ice-pack**, is'pak, *n.* pack of drifted ice.  
**Ichology**, ik-nol'o-jī, *n.* the science of fossil foot-  
 prints.  
**Ichthyology**, ik-thi-ol'o-jī, *n.* the natural history of  
 fishes.  
**Icele**, is'ik'l, *n.* pendant ice. [fish.  
**Icon**, i'kon, *n.* a figure of Christ or a saint.  
**Iconoclasm**, i-kon'o-klazm, *n.* image-breaking.  
**Iconoclast**, i-kon'o-klast, *n.* an image-breaker.  
**Iconography**, i-kon-og'rā-fi, *n.* the art of illustra-  
 tion.  
**Iconology**, i-kon-ol'o-jī, *n.* image worship.  
**Ideal**, i-dē'al, *n.* intellectual standard of per-  
 fection; imaginary.  
**Idealism**, i-dē'al-izm, *n.* the doctrine that thought  
 is the foundation of knowledge and existence.  
**Ideality**, i-dē'al'i-ti, *n.* fancy.  
**Identify**, i-dent'i-fi, *v.* to recognise.  
**Identity**, i-dent'i-ti, *n.* the condition of being the  
 same.  
**Idiocy**, id-i'o-si, *n.* the state of mental aberration.  
**Idiom**, id-i'um, *n.* mode of expression peculiar to a  
 language or people.  
**Idiopathy**, id-i-op'a-thi, *n.* primary disease.  
**Idiosyncrasy**, id-i-o-sin'kras-i, *n.* peculiarity of  
 temperament.  
**Idiotic**, id-i-ot'ik, *adj.* extremely foolish.  
**Idol**, i'dol, *n.* an image that is worshipped.  
**Idolator**, i-dol'a-tor, *n.* one who worships idols.  
**Idolize**, i'dol-iz, *v.* to worship; to adore.  
**Idyl**, i'dil, *n.* a short pastoral poem.  
**Igneous**, ig-nē-us, *adj.* pertaining to fire.  
**Ignescent**, ig-nes'ent, *adj.* ready to break into fire.  
**Ignis-fatuus**, ig-nis-fat'ūs, *n.* "Will-o'-the-  
 wisp," a light that appears in marshy places.  
**Ignite**, ig-nit, *v.* to kindle; to take fire.  
**Ignoble**, ig-nō'bl, *adj.* low; mean.  
**Ignominious**, ig-no-min'i-us, *adj.* disgraceful.  
**Ignominy**, ig'no-min-i, *n.* shame.  
**Ignoramus**, ig-no-rā'mus, *n.* a dunce.  
**Ignorance**, ig'no-rans, *n.* unlearned state; want of  
 knowledge.  
**Ignore**, ig-nōr, *v.* to disregard. [knowledge.  
**Iliac**, ili-ak, *adj.* pertaining to the lower intestines.  
**Ill-blood**, il'blud, *n.* a feeling of enmity.  
**Ill-bred**, il'bred, *adj.* badly trained.  
**Illegal**, il-lē'gal, *adj.* against the law.  
**Illegible**, il-lē'jibl, *adj.* not readable.  
**Illegitimate**, il-lēj-it'im-āt, *adj.* born out of wed-  
 lock; not legal.  
**Ill-favoured**, il-fā'verd, *adj.* ill-looking.  
**Il-liberal**, il-lib'er-al, *adj.* mean; ungenerous.  
**Illicit**, il-lis'it, *adj.* unlawful.  
**Il-limiteable**, il-lim'it-ē-ā-ā, *adj.* limitless.  
**Illiterate**, il-lit'er-āt, *adj.* ignorant.  
**Illogical**, il-loj'ik-al, *adj.* unreasonable.

Ill-starred, il-stârd', *adj.* unlucky.  
 Illume, il-ûm', *v.* to illuminate.  
 Illumine, il-lû'min, *v.* to throw light upon.  
 Illusion, il-lû'zhun, *n.* a delusion.  
 Illusory, il-lû'ser-i, *adj.* fallacious. [great.  
 Illustrious, il-lû'stri-us, *adj.* distinguished; famous;  
 Image, im'âj, *n.* a likeness; an idol; a representation.  
 Imagery, im'âj-er-i, *n.* work of the fancy.  
 Imagination, im-aj-in-â'shun, *n.* power of imagin-  
 ing. [ceive.  
 Imagine, im-aj'in, *v.* to fancy; to think; to con-  
 imbibe, im-bib', *v.* to drink in.  
 Imbriate, im-'bri-kât, *v.* to lay one over another.  
 Imbricated, im-brik-â'ted, *adj.* overlapping.  
 Imbroglio, im-brôl'yô, *n.* complicated plot.  
 Imbrue, im-broo', *v.* to soak; to steep.  
 Imbue, im-bû', *v.* to tinge deeply.  
 Imitate, im-i'tât, *v.* to copy.  
 Immaculate, im-mak'û-lât, *adj.* spotless; pure.  
 Immanent, im-a-nent, *adj.* inherent.  
 Immaterial, im-â-tê'ri-al, *adj.* unimportant; not  
 composed of matter.  
 Immature, im-a-tûr, *adj.* unripe; imperfect.  
 Immeasurable, im-mezh'ûr-âbl, *adj.* incapable of  
 measurement.  
 Immemorial, im-mem-ô'ri-al, *adj.* beyond memory.  
 Immense, im-mens', *adj.* unlimited; gigantic;  
 vast.  
 Immerse, im-mers', *v.* to dip under water.  
 Immersion, im-mer'shun, *n.* the act of immersing.  
 Immigrant, im-mi-grant, *n.* one who immigrates.  
 Imminent, im'i-nent, *adj.* threatening; impending.  
 Immiscible, im-is'i-ble, *adj.* incapable of being  
 immobility, im-mo-bil'i-ti, *n.* fixedness. [mixed.  
 Immoderate, im-mod'er-ât, *adj.* excessive.  
 Immodest, im-mod'est, *adj.* indecent; bold; im-  
 pudent.  
 Immolate, im'mô-lât, *v.* to sacrifice.  
 Immorality, im-mô-ral'i-ti, *n.* vice.  
 Immortal, im-mor'tal, *adj.* imperishable.  
 Immortality, im-mor-tal'i-ti, *n.* eternal life.  
 immortalize, im-mor'tal-iz, *v.* to make immortal.  
 Immovable, im-moov'abl, *adj.* unalterable; stead-  
 fast. [fection.  
 Immune, im-mûn', *adj.* exempt; not liable to in-  
 immunity, im-mûn'i-ti, *n.* exemption; privilege.  
 Immure, im-mûr', *v.* to confine within walls.  
 Immutability, im-mû'ta-bl, *adj.* unchangeable.  
 Impact, im-pakt', *n.* contact; shock.  
 Impact, im-pakt', *v.* to drive close together.  
 Impaint, im-pânt', *v.* to paint.  
 Impair, im-pâr', *v.* to deteriorate; to weaken.  
 Impale, im-pâl', *v.* to stick through; to pin down.  
 Impalement, im-pâl'ment, *n.* an enclosed space;  
 a term in heraldry; fixing on a stake.  
 Impalpable, im-pal'pa-bl, *adj.* not evident; in-  
 tangible.  
 Impanel, im'pan'el, *v.* to enroll.  
 Impart, im'pârt, *v.* to relate, make known, or give.  
 Impartial, im-pâr'shal, *adj.* just.  
 Impassable, im'pas'abl, *adj.* not to be passed.  
 Impassible, im-pas'ibl, *adj.* incapable of feeling.  
 Impassioned, im'pash-und, *adj.* excited.  
 Impassive, im-pas'iv, *adj.* insensible.  
 Impatience, im-pâ'shens, *n.* lack of patience.  
 Impeachment, im-pêch'ment, *n.* censure; accusa-  
 tion by Crown or other representatives.  
 Impeccable, im-pek'abl, *adj.* exempt from sinning.  
 Imprecious, im-pe-kû'ni-us, *adj.* poor; without  
 impede, im-pêd, *v.* to hinder. [money.  
 Impediment, im-ped'i-ment, *n.* a hindrance.  
 Impel, im-pel', *v.* to urge; to instigate.  
 Impend, im-pend', *v.* to threaten; to hang over;  
 to be near.  
 Impending, im-pend'ing, *adj.* imminent.  
 Impenetrable, im-pen'e-tra-bl, *adj.* hard; incap-  
 able of being pierced.  
 Impenitent, im-pen'it-ent, *adj.* without penitence.  
 Imperative, im-per'a-tiv, *adj.* urgent; peremptory.  
 Imperceptible, im-per-sept'ibl, *adj.* not perceivable.  
 Imperfect, im-per'fekt, *adj.* short of perfection.  
 Imperfection, im-per-fek'shun, *n.* incompleteness.  
 Imperforate, im-per-for'ât, *adj.* not perforated.  
 Imperial, im-pê'ri-al, *adj.* pertaining to an empire;  
 supreme. [manner.  
 Imperially, im-pê'ri-al-i, *adv.* in an imperial  
 Imperil, im-per'il, *v.* to endanger.  
 Imperious, im-pê'ri-us, *adj.* commanding; tyran-  
 nical.  
 Imperishable, im-per'ish-âbl, *adj.* enduring; ever-  
 lasting. [manence.  
 Impermanence, im-per-man-ens, *n.* lack of per-

Impermeable, im-per'me-âbl, *adj.* impervious.  
 Impersonal, im-per'sun-âbl, *adj.* without personal-  
 ity.  
 Impersonate, im-per'sun-ât, *v.* to personate.  
 Impertinent, im-per'tin-ent, *adj.* rude; saucy.  
 Imperturbable, im-per-tur'ba-bl, *adj.* incapable of  
 being agitated. [penetrable.  
 Impervious, im-per'vi-us, *adj.* not pervious; im-  
 penetrability, im-pet-û-os'i'ti, *n.* violence; passion.  
 Impetus, im'pe-tus, *n.* momentum; force of  
 motion.  
 Impiety, im-pi'et-i, *n.* ungodliness.  
 Impinge, im-pinj', *v.* to strike upon; to touch.  
 Impious, im'pi-us, *adj.* profane; irreverent.  
 Implacable, im-plâk'abl, *adj.* inappeasable; in-  
 exorable.  
 Implant, im-plant', *v.* to fix, as to plant in the  
 ground.  
 Implead, im-plêd', *v.* to prosecute at law.  
 Implement, im'ple-ment, *n.* a tool.  
 Implication, im-pli-kâ'shun, *n.* entanglement; that  
 which is implied.  
 Implicit, im-plis'it, *adj.* unreserved; implied; un-  
 implore, im-plôr', *v.* to entreat. [questioning.  
 Imply, im-pli', *v.* to involve; to include.  
 Impolicy, im-pol'i-si, *n.* imprudence.  
 Impolitic, im-pol'it-ik, *adj.* imprudent; unwise.  
 Imponderable, im-pon'd'er-âbl, *adj.* incapable of  
 being weighed.  
 Imporous, im-pô'rus, *adj.* poreless.  
 Import, im'port, *n.* a thing imported; meaning.  
 Import, im-port', *v.* to bring in; to signify.  
 Important, im-port'ant, *adj.* valuable; of note.  
 Importer, im-port'er, *n.* one who brings in goods  
 from other countries.  
 Importune, im-por-tûn', *v.* to urge persistently.  
 Importunity, im-por-tû'n-i-ti, *n.* the act of impor-  
 tuning. [deceive.  
 Impose, im-pôz', *v.* to lay on; to intrude; to  
 imposing, im-pô'zing, *adj.* impressive.  
 Imposition, im-po-zish'un, *n.* deception; a school  
 punishment.  
 Impossible, im-pos'ibl, *adj.* that cannot be done.  
 Impost, im'post, *n.* tribute; a tax; a duty.  
 Impostor, im-pos'tor, *n.* a deceiver.  
 Imposture, im-pos'tûr, *n.* fraud.  
 Impotent, im'po-tent, *adj.* weak; incompetent;  
 powerless.  
 Impound, im-pownd', *v.* to confine in a pound.  
 Impoverish, im-pov'er-ish, *v.* to make poor.  
 Impracticable, im-prak'tik-âbl, *adj.* unmanageable.  
 Impractical, im-prak'tik-al, *adj.* not practical.  
 Imprecate, im-pre-kât, *v.* to call down good or bad  
 upon; to curse.  
 Imprecation, im-pre-kâ'shun, *n.* a curse.  
 Impregnable, im-preg-na-bl, *adj.* that cannot be  
 taken; invincible. [pregnant.  
 Impregnate, im-preg'nât, *v.* to imbue; to make  
 Impresario, im-pre-sâ-ri-ô, *n.* one who arranges  
 entertainments, particularly operas.  
 Imprescriptible, im-pre-skript'ibl, *adj.* without ex-  
 ternal authority.  
 Impress, im'pres, *n.* that which is impressed.  
 Impressible, im-pres'ibl, *adj.* susceptible.  
 Impressionist, im-presh'en-ist, *n.* an artist whose  
 work seeks to create a general impression  
 rather than a photographic record.  
 Impressment, im-pres'ment, *n.* the act of forcible  
 seizure of men for war service.  
 Imprimatur, im-pri-mâ'tur, *n.* authority to print.  
 Imprimis, im-prî'mis, *adv.* in the first place.  
 Imprint, im-print', *v.* to stamp; to fix on the  
 mind.  
 Imprison, im-priz'on, *v.* to incarcerate.  
 Improbable, im-prob'abl, *adj.* unlikely.  
 Impromptu, im-prom'tû, *n.* without study; off-  
 hand.  
 Impropriety, im-pro-pri'et-i, *n.* an improper act.  
 Improve, im-proov', *v.* to make better; to amend.  
 Improvement, im-prov'ment, *n.* the act of im-  
 proving; advancement. [thoughtlessness.  
 Improvidence, im-prov'i-dens, *n.* lack of foresight;  
 Improvident, im-prov'i-dent, *adj.* inconsiderate;  
 unthrifty. [posing without preparation.  
 Improvisation, im-pro-vis-â'shun, *n.* the act of com-  
 imprudence, im-proo'dens, *n.* incautionness;  
 recklessness.  
 Impudence, im-pû-dens, *n.* rudeness; insolence;  
 shamelessness. [question.  
 Impugn, im-pûn', *v.* to gainsay; to oppose; to  
 impugnability, im-pug'nâ-bl, *adj.* an action that can  
 be assailed; something that is open to  
 question.



- Impulse**, *im'puls*, *n.* an incentive; the act of im-  
pelling.  
**Impunity**, *im-pū'nī-tī*, *n.* exemption from penalty  
**Imputation**, *im-pū-tā'shun*, *n.* charge; accusation;  
censure.  
**Impute**, *im-pūt'*, *v.* to charge; to accuse.  
**Inability**, *in-a-bil'ī-tī*, *n.* incapacity.  
**Inaccessible**, *in-ak-ses'ibl*, *adj.* not to be ap-  
proached.  
**Inaccuracy**, *in-ak'ū-ra-sī*, *n.* want of correctness;  
**Inaction**, *in-ak'shun*, *n.* rest; idleness. [error.  
**Inactive**, *in-ak'tiv*, *adj.* idle; without power to  
move.  
**Inadequacy**, *in-ad'ē-kwa-sī*, *n.* insufficiency.  
**Inadmissible**, *in-ad-mis'ibl*, *adj.* not allowable.  
**Inadvertence**, *in-ad-vert'ens*, *n.* oversight; negli-  
gence.  
**Inadvertent**, *in-ad-vert'ent*, *adj.* inattentive.  
**Inalienable**, *in-āl'yen-abl*, *adj.* permanent; in-  
capable of being transferred.  
**Inamorata**, *in-am-o-rā-tā*, *n.* a woman whom a man  
**Inane**, *in-ān'*, *adj.* empty; void. [loves.  
**Inanition**, *in-an-ish'ū*, *n.* emptiness; exhaustion.  
**Inanity**, *in-an'it-ī*, *n.* senselessness.  
**Inapplicable**, *in-ap'lik-abl*, *adj.* unsuitable.  
**Inapposite**, *in-ap'o-zit*, *adj.* unfit; not suitable.  
**Inappreciable**, *in-ap-prē'shi-abl*, *adj.* imperceptible.  
**Inappropriate**, *in-ap-prō'pri-āt*, *adj.* unsuitable.  
**Inaptitude**, *in-apt'ī-tūd*, *adj.* unfitness; awkward-  
ness.  
**Inarching**, *in-arch'ing*, *n.* a system of grafting.  
**Inarticulate**, *in-ar-tik'ū-lāt*, *adj.* indistinctly  
uttered.  
**Inartificial**, *in-ar-ti-fish'al*, *adj.* simple; without  
art.  
**Inattention**, *in-at-ten'shun*, *n.* carelessness.  
**Inattentive**, *in-at-ten'tiv*, *adj.* heedless.  
**Inaudible**, *in-awd'ibl*, *adj.* unheard.  
**Inaugural**, *in-aw'gūr-al*, *adj.* pertaining to an in-  
auguration.  
**Inaugurate**, *in-aw'gūr-āt*, *v.* to initiate; to make  
public show in commencing an undertaking.  
**Inauspicious**, *in-aw-spish'us*, *adj.* unfavourable;  
ill-omened.  
**Inborn**, *in-bawrn*, *adj.* implanted; born with.  
**Incalculable**, *in-kal'kū-lā-bl*, *adj.* countless.  
**Incalescence**, *in-kal-es'ens*, *n.* the act of growing  
warm.  
**Incandescence**, *in-kan-des'ens*, *n.* white heat.  
**Incantation**, *in-kan-tā'shun*, *n.* a charm; an en-  
chantment.  
**Incapable**, *in-kā'pa-bl*, *adj.* not capable.  
**Incapacitate**, *in-ka-pas'it-āt*, *v.* to disqualify.  
**Incapacity**, *in-ka-pas'it-ī*, *n.* inability; lack of  
power.  
**Incarcerate**, *in-kār'ser-āt*, *v.* to imprison.  
**Incarnadine**, *in-kār'na-din*, *v.* to dye red; *n.*  
carnation colour.  
**Incarnate**, *in-kār'nāt*, *v.* to embody in flesh; *adj.*  
clothed with flesh. [fully setting on fire.  
**Incendiarism**, *in-sen'di-ar-izm*, *n.* the act of wil-  
lincendiarist, *in-sen'di-ar-ī*, *n.* one who maliciously  
sets fire to.  
**Incense**, *in'sens*, *n.* fragrant odour; perfume  
burned in religious observances.  
**Incense**, *in'sens'*, *v.* to excite to anger.  
**Incentive**, *in-sen'tiv*, *n.* a motive; a prompting.  
**Inception**, *in-sep'shun*, *n.* a beginning.  
**Incertitude**, *in-ser'ti-tūd*, *n.* doubtfulness.  
**Incessant**, *in-ses'ant*, *adj.* unceasing; continual.  
**Incest**, *in'sest*, *n.* sexual relations between kindred.  
**Inch**, *inoh*, *n.* the twelfth part of a foot measure.  
**Inchoate**, *in-kō-āt*, *adj.* incipient; unfinished.  
**Incidence**, *in-si-dens*, *n.* an impingement; the  
manner of falling. [adj. liable to happen.  
**Incident**, *in-si-dent*, *n.* a circumstance; an event;  
**Incidental**, *in-si-dent'al*, *adj.* accidental; casual.  
**Incipient**, *in-sip'ēt*, *adj.* beginning.  
**Incision**, *in-sizh'un*, *n.* a cut; a gash.  
**Incisive**, *in-si'siv*, *adj.* sharp; cutting.  
**Incisor**, *in-si'zor*, *n.* a front tooth.  
**Incite**, *in-sit*, *v.* to stimulate; to goad.  
**Incivility**, *in-si-vil'it-ī*, *n.* rudeness; impoliteness.  
**Inclement**, *in-klem'ent*, *adj.* without mercy;  
stormy.  
**Inclose**, *in-klož'*, *v.* to shut in or surround.  
**Inclosure**, *in-klož'zhūr*, *n.* an enclosed space.  
**Inclusive**, *in-kloo'ziv*, *adj.* enclosing within ex-  
pressed limits.  
**Inclusively**, *in-kloo'ziv-ly*, *adv.* so as to be included.  
**Incognito**, *in-kog'ni-to*, *adj.* unknown; in disguise.  
**Incoherent**, *in-ko-hē'rent*, *adj.* disconnected;  
loose.
- Incombustible**, *in-kom-bust'ibl*, *adj.* that will not  
burn.  
**Income**, *in'kum*, *n.* gain; earnings; revenue.  
**Incoming**, *in'kum-ing*, *adj.* coming in.  
**Incommensurate**, *in-kom-mens'ū-rāt*, *adj.* inad-  
quate. [to.  
**Incommode**, *in-ko-mōd'*, *v.* to cause inconvenience  
**Incommunicative**, *in-kom-mūn'ik-ā-tiv*, *adj.* un-  
social.  
**Incomparable**, *in-kom'par-abl*, *adj.* matchless.  
**Incompatible**, *in-kom-pat'ibl*, *adj.* inconsistent.  
**Incompetency**, *in-kom'pe-ten-sī*, *n.* the state of  
being incompetent.  
**Incompetent**, *in-kom'pe-tent*, *adj.* incapable; lack-  
ing power.  
**Incomplete**, *in-kom-plēt'*, *adj.* not complete.  
**Incomprehensible**, *in-kom-prē-hen'sibl*, *adj.* not  
understandable.  
**Incompressible**, *in-kom-pres'ibl*, *adj.* not reducible  
to smaller bulk.  
**Inconceivable**, *in-kon-sēv'abl*, *adj.* unimaginable.  
**Inconclusive**, *in-kon-klo'siv*, *adj.* indecisive.  
**Incongruent**, *in-kong'groo-ent*, *adj.* unsuitable.  
**Incongruity**, *in-kong'groo'it-ī*, *n.* that which is  
unsuitable.  
**Incongruous**, *in-kong'groo-us*, *adj.* not fitting.  
**Inconsequent**, *in-kon'se-kwent*, *adj.* illogical.  
**Inconsiderable**, *in-kon-sid'er-abl*, *adj.* unimportant.  
**Inconsiderate**, *in-kon-sid'er-āt*, *adj.* thoughtless.  
**Inconsistency**, *in-kon-sist'en-sī*, *n.* the quality of  
being inconsistent.  
**Inconsistent**, *in-kon-sist'ent*, *adj.* incompatible;  
varying.  
**Inconspicuous**, *in-kon-spik'ū-us*, *adj.* not promi-  
nent.  
**Inconstant**, *in-kon'stant*, *adj.* fickle.  
**Incontestable**, *in-kon-tes't'abl*, *adj.* indisputable.  
**Incontinence**, *in-kon'tin-ens*, *n.* unchastity.  
**Incontrovertible**, *in-kon-tro-vert'ibl*, *adj.* indisput-  
able.  
**Inconvenience**, *in-kon-vē'nī-ens*, *v.* to incommode.  
**Incorporate**, *in-kor'po-rāt*, *v.* to form into a cor-  
porate body. [porating.  
**Incorporation**, *in-kor-pō-rā'shun*, *n.* act of incor-  
**Incorporeal**, *in-kor-pō-re-āl*, *adj.* not material;  
**Incorrect**, *in-kor-ekt'*, *adj.* not correct. [spiritual.  
**Incorrigible**, *in-kor'ij-ibl*, *adj.* bad beyond correc-  
tion.  
**Incorrupt**, *in-kor-rupt'*, *adj.* pure; sound.  
**Incorruptible**, *in-kor-rupt'ibl*, *adj.* pure; not to be  
bribed.  
**Increase**, *in-kre's*, *v.* to expand; to grow.  
**Increase**, *in'kre's*, *n.* growth.  
**Increate**, *in'kre-āt*, *adj.* uncreated.  
**Incredible**, *in-kred'ibl*, *adj.* surpassing belief.  
**Incredulous**, *in-kred'ū-lus*, *adj.* sceptical; unbe-  
lieving.  
**Increment**, *in'kre-ment*, *n.* increase.  
**Incriminate**, *in-krim'in-āt*, *v.* to charge with; to  
criminate.  
**Incrustation**, *in-krust-ā'shun*, *n.* the act of incrust-  
ing.  
**Incubate**, *in'kū-bāt*, *v.* to sit upon eggs; to hatch.  
**Incubation**, *in'kū-bā'shun*, *n.* the act of incubating.  
**Incubator**, *in'kū-bā'tor*, *n.* an apparatus for  
hatching eggs artificially.  
**Incubus**, *in'kū-bus*, *n.* a burden; the nightmare.  
**Inculcate**, *in-kul'kāt*, *v.* to impress; to teach.  
**Incultation**, *in-kul-kā'shun*, *n.* act of impressing  
**Inculpate**, *in-kul'pāt*, *v.* to bring into blame.  
**Incumbency**, *in-kum'ben-sī*, *n.* an obligation; the  
possession of an office.  
**Incumbent**, *in-kum'ben't*, *n.* the holder of a bene-  
fice; *adj.* bounden.  
**Incunabula**, *in'kū-nab'ū-lā*, *n.* early printed books.  
**Incur**, *in-kur'*, *v.* to encounter; to become liable to.  
**Incurable**, *in-kūr'abl*, *adj.* beyond cure.  
**Incurious**, *in-kūr'ūs*, *adj.* without curiosity.  
**Incursion**, *in-kur'shun*, *n.* a hostile invasion; an  
inroad.  
**Incurvate**, *in-kur'vāt*, *n.* to make crooked.  
**Incurve**, *in-kurv'*, *v.* to curve inward.  
**Indebtedness**, *in-det'ed-ness*, *n.* the condition of  
being in debt.  
**Indecent**, *in-dē'sent*, *adj.* immodest.  
**Indecipherable**, *in-de-sif'er-abl*, *adj.* that cannot  
be read.  
**Indecision**, *in-de-sizh'un*, *n.* lack of firmness.  
**Indecisive**, *in-de-si'siv*, *adj.* inconclusive.  
**Indeclinable**, *in-dē-clī'nā-bl*, *adj.* that which  
cannot be declined.  
**Indecorous**, *in-dek'ur-us*, *adj.* unbecoming.  
**Indecorum**, *in-de-kō'rum*, *n.* impropriety.

**Indefatigable**, in-de-fat'ig-*abl*, *adj.* unremitting; not giving way to fatigue.  
**Indefensible**, in-de-fen's'ibl, *adj.* unalterable.  
**Indefensible**, in-de-fens'ibl, *adj.* defenceless; that cannot be defended. [being defined].  
**Indefinable**, in-de-fin'abl, *adj.* not capable of definition.  
**Indefinite**, in-def'in-it, *adj.* vague; unlimited.  
**Indelible**, in-del'ibl, *adj.* that cannot be effaced.  
**Indelicate**, in-del'ik-*at*, *adj.* rude; indecent.  
**Indemnify**, in-dem'ni-fi, *v.* to secure against loss.  
**Indemnity**, in-dem'ni-ti, *n.* security against loss.  
**Indent**, in-dent', *v.* to notch; to apply for supplies.  
**Indenture**, in-dent'ur, *n.* written contract.  
**Independent**, in-depen'dent, *adj.* free from control.  
**Indescribable**, in-de-skr'i-ba-bl, *adj.* inexplicable.  
**Indestructible**, in-de-struk'ti-bl, *adj.* incapable of destruction. [terminated].  
**Indeterminable**, in-de-ter'min-*abl*, *adj.* not to be indeterminate.  
**Indeterminate**, in-de-ter'min-*at*, *adj.* uncertain.  
**Index**, in'deks, *n.* a table of contents; a guide.  
**Indexerity**, in-deks-ter'it-i, *adj.* want of dexterity.  
**India-rubber**, in-di-*a*-rub'er, *n.* an eraser; rubber.  
**Indicative**, in-dik-*a*-tiv, *adj.* pointing out.  
**Indicator**, in-dik-*a*-tor, *n.* one who or that which points out.  
**Indict**, in-dit', *v.* to charge with; to accuse.  
**Indictment**, in-dit'ment, *n.* formal legal accusation.  
**Indifference**, in-dif'er-ens, *n.* unconcern.  
**Indifferent**, in-dif'er-ent, *adj.* unimportant; uninteresting.  
**Indigence**, in-di-jens, *n.* poverty.  
**Indigenous**, in-dij'en-us, *adj.* native.  
**Indigent**, in-di-jent, *adj.* poor; needy.  
**Indigestible**, in-dé-gest'i-bl, *adj.* that which cannot be digested.  
**Indigestion**, in-di-jest'yun, *n.* dyspepsia; weak digestion.  
**Indign**, in-din', *adj.* unworthy. [digestion].  
**Indignant**, in-dig'nant, *n.* angry.  
**Indignation**, in-dig-ná'shun, *n.* anger; resentment.  
**Indignity**, in-dig-ni-ti, *n.* insult; slight.  
**Indigo**, in-di-gó, *n.* a blue dye.  
**Indirect**, in-di-rékt', *adj.* crooked; not direct.  
**Indiscernible**, in-diz-ern'ibl, *adj.* unseen; not visible.  
**Indiscreet**, in-dis-krét', *adj.* injudicious.  
**Indiscretion**, in-dis-kresh'un, *n.* rashness.  
**Indiscriminate**, in-dis-krim'in-*at*, *adj.* confused; promiscuous. [out care].  
**Indiscriminating**, in-dis-krim'in-*at*-ing, *adj.* without discrimination.  
**Indispensable**, in-dis-pens'abl, *adj.* necessary.  
**Indisposed**, in-dis-pózd, *adj.* disinclined; ailing.  
**Indisposition**, in-dis-po-zish'un, *n.* disinclination; illness.  
**Indisputable**, in-dis-pút'abl, *adj.* beyond dispute.  
**Indissociable**, in-dis-ó'shi-*abl*, *adj.* inseparable.  
**Indissoluble**, in-dis-sol'ú-bl, *adj.* not soluble; binding.  
**Indistinct**, in-dis-tingkt', *adj.* obscure; faint.  
**Indite**, in-dit', *v.* to utter; to write; to dictate.  
**Inditement**, in-dit'ment, *n.* that which is indited.  
**Indium**, in-di-um, *n.* a white metallic element.  
**Individual**, in-div-id'ú-*al*, *adj.* single. [dividually].  
**Individualise**, in-div-id'ú-*al*-iz, *v.* to distinguish in individualism.  
**Individualism**, in-div-id'ú-*al*-izm, *n.* independence of action. [separate existence].  
**Individuality**, in-div-id'ú-*al*'i-ti, *n.* personality.  
**Indoctrinate**, in-dok'trin-*at*, *v.* to teach; to imbue with special views.  
**Indo-European**, in'dó-ú-ro-pé'an, *adj.* a term applied to a certain family of languages.  
**Indolence**, in'dó-lens, *n.* idleness.  
**Indolent**, in'dó-lent, *adj.* lazy.  
**Indomitable**, in-dom'it-*abl*, *adj.* not to be subdued.  
**Indorse**, in-dors', *v.* to sign or write on the back of.  
**Indrawn**, in-drawn, *adj.* drawn in.  
**Indubious**, in-dú-bi-us, *adj.* certain.  
**Indubitable**, in-dú-bit-*abl*, *adj.* without doubt.  
**Induce**, in-dús', *v.* to prevail upon.  
**Inducement**, in-dús'ment, *n.* that which induces.  
**Induct**, in-dukt', *v.* to instal.  
**Inductile**, in-dukt'il, *adj.* that cannot be drawn out.  
**Induction**, in-dukt'shun, *n.* introduction of a clergyman to a new benefice; a process of reasoning in which the theory is evolved from an accumulation of facts.  
**Induction-coil**, in-dukt'shun-kóil, *n.* an electrical apparatus of two coils of wire inducing a current.  
**Inductive**, in-dukt'iv, *adj.* leading to inference.  
**Indue**, indú', *v.* to invest.  
**Indurate**, in-dú-rát, *v.* to harden.

**Industrial**, in-dus'tri-*al*, *adj.* pertaining to industry.  
**Industrialism**, in-dus'tri-*al*-izm, *n.* the study of industrial pursuits.  
**Industrious**, in-dus'tri-us, *adj.* diligent.  
**Industry**, in-dus-tri, *n.* toll; labour; assiduity.  
**Inebriate**, in-é-bri-*át*, *n.* a drunkard; *v.* to make drunk.  
**Inebriation**, in-é-bri-*á*'shun, *n.* drunkenness.  
**Inedible**, in-ed'ibl, *adj.* unfit for eating.  
**Ineffable**, in-ef'abl, *adj.* unspeakable.  
**Ineffaceable**, in-ef-fás-*abl*, *adj.* that cannot be effaced.  
**Ineffective**, in-ef-fek'tiv, *adj.* useless. [effaced].  
**Inefficacy**, in-ef'ik-*a*-si, *n.* ineffectualness.  
**Inefficient**, in-ef'ish-*ent*, *adj.* unavailing.  
**Inelegant**, in-el'e-gant, *adj.* coarse; rude; unpolished.  
**Ineligible**, in-el'ij-*ibl*, *adj.* not worthy; unsuitable.  
**Inept**, in-épt', *adj.* unfit; foolish.  
**Inequality**, in-e-kwól'it-i, *n.* unevenness; lack of equality.  
**Inequitable**, in-ek'wit-*abl*, *adj.* unjust.  
**Ineradicable**, in-é-rad'ik-*abl*, *adj.* incapable of being rooted out.  
**Inert**, in-er't, *adj.* sluggish; motionless.  
**Inertia**, in-er-shi-*a*, *n.* sluggishness.  
**Inessential**, in-es-en'shal, *adj.* not essential.  
**Inestimable**, in-es'tim-*abl*, *adj.* above praise.  
**Inevitable**, in-ev'it-*abl*, *adj.* unavoidable.  
**Inexact**, in-egz-akt', *adj.* incorrect.  
**Inexcusable**, in-eks-kúz'abl, *adj.* without excuse.  
**Inexhaustible**, in-egz-hawst'ibl, *adj.* that cannot be exhausted.  
**Inexorable**, in-egz'or-*abl*, *adj.* inflexible; not to be moved.  
**Inexpedient**, in-eks-pé'di-ent, *adj.* inconvenient.  
**Inexperience**, in-eks-pér'i-ens, *n.* lack of experience.  
**Inexplicable**, in-eks'plik-*abl*, *adj.* incapable of explanation.  
**Inexplorable**, in-eks-plór'abl, *adj.* that cannot be explored.  
**Inexpressible**, in-eks'pres'ibl, *adj.* unutterable.  
**Inexpressive**, in-eks-pres'iv, *adj.* not expressive.  
**Inexpugnable**, in-éx-pug'ná-bl, *adj.* that which cannot be assailed; undefeatable.  
**Inextricable**, in-eks'trik-*abl*, *adj.* incapable of being extricated.  
**Infallible**, in-fal'ibl, *adj.* unerring; certain.  
**Infamous**, in-fa-mus, *adj.* notorious; wicked; shameless.  
**Infamy**, in-fa-mi, *n.* public disgrace.  
**Infancy**, in-fán-ci, *n.* first years of life.  
**Infant**, in-fant, *n.* a young child; a person under legal age of responsibility.  
**Infanticide**, in-fan'ti-sid, *n.* murder of an infant.  
**Infantile**, in-fant-il, *adj.* pertaining to infancy.  
**Infantry**, in-fan-tri, *n.* foot soldiers. [passion].  
**Infatuate**, in-fat'ú-*at*, *v.* to inspire with headstrong infatuation.  
**Infatuation**, in-fat'ú-*á*'shun, *n.* unreasoning passion.  
**Infect**, in-fékt', *v.* to taint.  
**Infection**, in-fek'shun, *n.* the act of infecting.  
**Infectious**, in-fek'shus, *adj.* having the quality of infection.  
**Infecundity**, in-fe-kun'di-ti, *n.* want of fertility.  
**Infelicitous**, in-fel-is'it-us, *adj.* unhappy.  
**Infer**, in-fer', *v.* to deduce; to imply.  
**Inference**, in-fer-ens, *n.* that which is inferred.  
**Inferential**, in-fer-en'shal, *adj.* deducible.  
**Inferior**, in-fer-i-or, *adj.* lesser; lower in rank or social class.  
**Inferiority**, in-fér-i-or'it-i, *n.* the state of being inferior.  
**Infernal**, in-fer'nal, *adj.* outrageous; damnable.  
**Infertile**, in-fer'til, *adj.* not fruitful; barren.  
**Infest**, in-fest', *v.* to disturb; to occupy; to invade.  
**Infidel**, in-fi-del, *n.* a disbeliever in Christianity.  
**Infidelity**, in-fi-del'it-i, *n.* lack of faith; unfaithfulness.  
**Infiltrate**, in-flí-trát, *v.* to enter through gaps or the pores.  
**Infinite**, in-fin-it, *adj.* unlimited. [pores].  
**Infinitesimal**, in-fin-it-es'i-mal, *adj.* excessively small. [limit].  
**Infinitude**, in-fin'it-ú-d, *n.* state without bound or infinity.  
**Infinity**, in-fin'it-i, *n.* unlimited extent or number.  
**Infirm**, in-ferm', *adj.* feeble; irresolute.  
**Infirmity**, in-ferm'it-i, *n.* defect; weakness.  
**Inflame**, in-flám', *v.* to cause to burn; to excite.  
**Inflammable**, in-flám'abl, *adj.* combustible.  
**Inflammation**, in-flám'á-shun, *n.* violent heat in any part; state of being in flame.  
**Inflammatory**, in-flám-at-or-i, *adj.* showing inflammation; excitable.



- Inflate**, *in-flāt', v.* to swell; to blow out.  
**Inflater**, *in-flāt'er, n.* something which inflates.  
**Inflation**, *in-flā'shun, n.* the act or state of being inflated.  
**Infect**, *in-fekt', v.* to bend; to conjugate.  
**Infection**, *in-flek'shun, n.* the act of bending; voice modulation.  
**Inflexible**, *in-fleks'ible, adj.* unyielding.  
**Indict**, *in-dikt', v.* to impose.  
**Indiction**, *in-flik'shun, n.* punishment; act of inflicting.  
**Inflorescence**, *in-flor-es'ens, n.* method of flower-influence.  
**Influence**, *in-floo-ens, n.* authority; power.  
**Infuential**, *infloo-en'shal, adj.* having influence or power.  
**Influenza**, *in-floo-en'za, n.* an infectious disease.  
**Influx**, *in-fluks, n.* a flowing in.  
**Infusion**, *in-fluk'shun, n.* infusion.  
**Inform**, *in-form', v.* to impart; to animate; to tell.  
**Informal**, *in-form'al, adj.* without form; irregular.  
**Informality**, *in-form-al'it-i, n.* a dispensing with form.  
**Informant**, *in-form'ant, n.* one who informs.  
**Information**, *in-form-a'shun, n.* knowledge.  
**Infracostal**, *in-fra-kost'al, adj.* beneath the ribs.  
**Infracture**, *in-frak'shun, n.* a breach.  
**Infrangible**, *in-fran'ji-bl, adj.* unbreakable.  
**Inrequent**, *in-frē'quent, adj.* rare; uncommon.  
**Infringe**, *in-frinj', v.* to violate; to break.  
**Infuriate**, *in-fū-rī-āt, v.* to enrage.  
**Infuse**, *in-fūz', v.* to brew; to steep; to pour into.  
**Infusible**, *in-fūz'ibl, adj.* capable of being infused.  
**Infusion**, *in-fū'zhun, n.* the act of infusing.  
**Infusoria**, *in-fū-sō-rī-a, n.* certain classes of Proto-Ingathering.  
**Ingather**, *in-gath'er-ing, n.* harvest.  
**Ingenious**, *in-jē-ni-us, adj.* skilful; inventive.  
**Ingenium**, *in-jē-ni-um, n.* tendency of mind.  
**Ingenuity**, *in-jen-ū'it-i, n.* inventiveness.  
**Ingenuous**, *in-jen-ū-us, adj.* frank; open; candid.  
**Ingenuousness**, *in-jen-ū-us-ness, n.* frankness.  
**Ingle**, *ing'gl, n.* fireside.  
**Inglorious**, *in-glō-rī-us, adj.* disgraceful.  
**Ingoing**, *in-gō-ing, n.* an entering.  
**Ingot**, *in-got, n.* a bar of metal.  
**Ingrain**, *in-grān', v.* to fix deeply; to dye in the raw.  
**Ingrate**, *in-grāt, n.* one who is ungrateful.  
**Ingratiate**, *in-grā'shi-āt, v.* to put oneself in favour.  
**Ingratitude**, *in-grat'it-ūd, n.* unthankfulness for favours.  
**Ingrédient**, *in-grē'di-ent, n.* a compound part.  
**Ingres**, *in-gres, n.* entrance.  
**Ingrowing**, *in-grō-ing, adj.* growing inward.  
**Ingurgitate**, *in-gur'jit-āt, v.* to swallow greedily.  
**Inhabit**, *in-hab'it, v.* to dwell in.  
**Inhabitant**, *in-hab'it-ant, n.* a dweller.  
**Inhalation**, *in-hāl-ā'shun, n.* the drawing in of air.  
**Inhale**, *in-hāl', v.* to draw into the lungs.  
**Inharmonious**, *in-hār-mō-ni-us, adj.* discordant.  
**Inherent**, *in-hēr-ent, adj.* innate; existing in.  
**Inherit**, *in-hēr'it, v.* to possess by descent.  
**Inheritance**, *in-hēr'it-ans, n.* an inherited property.  
**Inhibit**, *in-hib'it, v.* to prohibit.  
**Inhibition**, *in-hib'ish-un, n.* that which prohibits.  
**Inhospitable**, *in-hos'pit-abl, adj.* not disposed to entertain strangers.  
**Inhuman**, *in-hū-man, adj.* cruel; unfeeling.  
**Inhumanity**, *in-hū-man'it-i, n.* want of feeling.  
**Inhumation**, *in-hū-mā'shun, n.* the act of burial.  
**Inhume**, *in-hūm', v.* to bury.  
**Inimical**, *in-im'ik-al, adj.* unfriendly; repugnant.  
**Inimitable**, *in-im'it-abl, adj.* beyond imitation.  
**Iniquitous**, *in-ik-wit-us, adj.* unjust; wicked.  
**Iniquity**, *in-ik-wi-ti, n.* injustice; wickedness.  
**Initial**, *in-ish'al, adj.* first; beginning; *n.* the first letter of a word.  
**Initiate**, *in-ish'ī-āt, v.* to introduce; to make ac-Initiation.  
**Initiation**, *in-ish'ī-ā'shun, n.* the act of initiating.  
**Initiative**, *in-ish'ī-ā-tiv, adj.* serving to initiate; *n.* the first step.  
**Inject**, *in-jekt', v.* to force in.  
**Injection**, *in-jek'shun, n.* the act of injecting; a clyster.  
**Indjudicial**, *in-joo-dish'al, adj.* contrary to legal.  
**Indjudicious**, *in-joo-dish'us, adj.* unwise; imprudent.  
**Injunction**, *in-jungk'shun, n.* an order of court; a  
**Injure**, *in-joor, v.* to damage; to harm.  
**Injurious**, *in-joo-rī-us, adj.* harmful.  
**Injustice**, *in-jus'tis, n.* a violation of right.  
**Inking**, *ingk'ling, n.* a hint.  
**Inkstand**, *ingk'stand, n.* a vessel for holding ink.  
**Inlaid**, *in-lād', v. pa. part.* of Inlay.  
**Inlay**, *in-lā', v.* to ornament by inserting other sub-  
**stances.**  
**Inlet**, *in-let, n.* a small bay; an entrance.  
**Inly**, *in'lī, adv.* internally; *adj.* inward.  
**Inmate**, *in-māt, n.* one who resides in the same  
**Innate**, *in-āt', adj.* inborn.  
**Innavigable**, *in-nav'ig-abl, adj.* not navigable.  
**Innervation**, *in-er-vā'shun, n.* nervous activity.  
**Innings**, *in-ings, n.* the turn of a side in a game;  
**a turn.**  
**Innocence**, *in'o-sens, n.* purity; free from guilt.  
**Innocent**, *in'o-sent, adj.* pure; guileless.  
**Innocuous**, *in-ok'ū-us, adj.* harmless.  
**Innovate**, *in'ō-vāt, v.* to introduce a novel idea.  
**Innoxious**, *in-nox'shus, adj.* harmless.  
**Innuendo**, *in-ū-en'dō, n.* a side hint.  
**Innumerable**, *in-nū-mer-abl, adj.* incapable of  
**being numbered.**  
**Inoculate**, *in-ok'ū-lāt, v.* to engraft; to communi-  
**cate disease by the insertion of matter into the**  
**Inodorous**, *in-ō-dor-us, adj.* scentless.  
**Inoffensive**, *in-o-fen'siv, adj.* without offence.  
**Inoperative**, *in-op'er-a-tiv, adj.* inactive; without  
**Inopportune**, *in-op'or-tūn, adj.* untimely.  
**Inordinate**, *in-op'din-āt, adj.* excessive.  
**Inorganic**, *in-or-gan'ik, adj.* without living organi-  
**sation.**  
**In-patient**, *in-pā-shent, n.* patient living in hospi-  
**tal.**  
**Input**, *in-poot, n.* contribution.  
**Inquest**, *in-kwest, n.* a judicial inquiry concerning  
**Inquietude**, *in-kwi'et-ūd, n.* uneasiness; restless-  
**ness.**  
**Inquire**, *in-kwir', v.* to ask; to examine.  
**Inquiry**, *in-kwī-rī, n.* examination; act of inquir-  
**ing.**  
**Inquisition**, *in-kwiz-ish'un, n.* a judicial inquiry; a  
**tribunal for dealing with heretics.**  
**Inquisitive**, *in-kwiz'it-iv, adj.* prying; curious.  
**Inroad**, *in-rōd, n.* a sudden incursion.  
**Inrush**, *in-rush, n.* a rushing in.  
**Insalubrious**, *in-sal-ū-bri-us, adj.* unhealthy.  
**Insane**, *in-sān', adj.* of unsound mind.  
**Insanity**, *in-sān'it-i, n.* derangement of mind.  
**Insatiable**, *in-sā'shi-abl, adj.* incapable of being  
**satisfied.**  
**Inscribe**, *in-skrib', v.* to write upon.  
**Inscription**, *in-skip'shun, n.* a writing upon; a  
**title.**  
**Inscrutable**, *in-skroot'abl, adj.* beyond finding out.  
**Insect**, *in-sekt, n.* a small flying or crawling animal  
**having six legs.**  
**Insectivorous**, *in-sekt-iv'er-us, adj.* feeding on  
**Insecure**, *in-sē-kūr, adj.* unsafe.  
**Insensate**, *in-sen-sāt, adj.* thoughtless; senseless.  
**Insensible**, *in-sen'sibl, adj.* wanting in feeling.  
**Insentient**, *in-sen'shi-ent, adj.* without perception.  
**Inseparable**, *in-sep'ar-abl, adj.* that cannot be  
**Insert**, *in-sert', v.* to put in.  
**Insertion**, *in-ser'shun, n.* the act of inserting; the  
**thing inserted.**  
**Inset**, *in-set, n.* something inserted; *v.* to set in.  
**Inside**, *in-sid', n.* within.  
**Insidious**, *in-sid'ī-us, adj.* deceitful; designing.  
**Insight**, *in'sit, n.* penetration; knowledge.  
**Insignia**, *in-sig'nī-a, n.* badges of office.  
**Insignificant**, *in-sig-nifi-kant, adj.* unimportant;  
**Insincere**, *in-sin-sēr, adj.* deceitful.  
**Insincerity**, *in-sin-ser'it-i, n.* deceitfulness.  
**Insinuate**, *in-sin-ū-āt, v.* to hint; to instil; to intro-  
**Insipid**, *in-sip'id, adj.* tasteless.  
**Insipidity**, *in-sip'id'it-i, n.* lacking in life and  
**spirit.**  
**Insipience**, *in-sip'i-ens, n.* foolishness.  
**Insistence**, *in-sist'ens, n.* pertinacity.  
**Insobriety**, *in-so-brī-et-i, n.* intemperance; drunk-  
**enness.**  
**Insociable**, *in-so'she-abl, adj.* not sociable.  
**Isolate**, *in-so-lāt, v.* to expose to the sun.  
**Isolence**, *in-solens, n.* rudeness.  
**Insolent**, *in-so-lent, adj.* insulting.  
**Insoluble**, *in-sol'ū-bl, adj.* not capable of being dis-  
**solved or explained.**  
**Insolvable**, *in-solv'abl, adj.* inexplicable.  
**Insolvency**, *in-sol'ven-si, n.* inability to settle one's  
**Insomnia**, *in-som-nī-a, n.* sleeplessness.  
**Insouciance**, *in-soo'si-ans, n.* indifference.  
**Inspect**, *in-spekt', v.* to examine.  
**Inspector**, *in-spek'tor, n.* a police officer next  
**below a superintendent; an examiner.**  
**Inspire**, *in-spir, v.* to draw in breath; to prompt;  
**Inspirit**, *in-spir'it, v.* to animate.  
**Inspissate**, *in-spis'āt, v.* to thicken.

- Instability**, in-sta-bil'it-i, *n.* Inconstancy; want of firmness.
- Instable**, in-stäbl, *adj.* inconstant.
- Install**, in-stäl, *v.* to invest; to place in office; to establish. [possession of an office.]
- Installation**, in-stäl-ä'shun, *n.* the act of giving instalment.
- Instalment**, in-stawl'ment, *n.* the act of installing; part of a sum payable.
- Instance**, in'stans, *n.* example; occurrence.
- Instant**, in'stant, *n.* a moment; *adj.* present; urgent. [instant.]
- Instantaneous**, in-stant-ä-ne-us, *adj.* done in an instant.
- Instantly**, in-stant'er, *adv.* immediately.
- Installation**, in-stel-ä'shun, *n.* placing among the stars.
- Instep**, in'step, *n.* the upper arch of the foot.
- Instigate**, in'sti-gät, *v.* to urge to do; to incite.
- Instil**, in-stil', *v.* to drop into; to infuse.
- Instinct**, in'stingkt, *n.* natural impulse.
- Instinct**, in'stingkt, *adj.* animated with.
- Institute**, in'sti-tüt, *v.* to set up; begin; *n.* something established; an educational establishment. [means.]
- Instrumental**, in-strü-ment'al, *adj.* acting as a subordinate.
- Insubordinate**, in-sub-or'din-ät, *adj.* disobedient.
- Insufferable**, in-suf'er-äbl, *adj.* intolerable.
- Insufficiency**, in-suf-fläh'en-si, *n.* the state of being unfit.
- Insular**, in'sü-lar, *adj.* pertaining to an island.
- Insulate**, in'sü-lät, *v.* to separate; to prevent loss from.
- Insult**, in-sult', *v.* to abuse; to affront.
- Insult**, in'sult, *n.* abuse; affront.
- Insuperable**, in-sü'per-äbl, *adj.* not to be overcome.
- Insupportable**, in-sup-port'äbl, *adj.* insufferable.
- Insurance**, in-shoor'ans, *n.* the act of insuring.
- Insure**, in-shoor', *v.* to secure; to invest against loss.
- Insurgent**, in-sur'jent, *n.* one who rises against authority. [overcome.]
- Insurmountable**, in-sur-mownt'äbl, *adj.* not to be insurrection.
- Insurrection**, in-sur-ek'shun, *n.* a rising or revolt; rebellion.
- Insusceptible**, in-sus-sep'tibl, *adj.* insensible to feeling.
- Intact**, in-takt', *adj.* entire; uninjured.
- Intaglio**, in-täl'yö, *n.* a figure cut into any substance.
- Intangible**, in-tan'jibl, *adj.* not perceptible to the touch.
- Integer**, in-te-jer, *n.* a whole number. [touch.]
- Integral**, in-te-gräl, *adj.* entire; complete.
- Integrand**, in-te-grant, *n.* constituting part of a whole. [for total; to renew.]
- Integrate**, in-te-grät, *v.* to constitute one whole
- Integrity**, in-teg'rit-i, *n.* uprightness; honesty.
- Integument**, in-teg'u-ment, *n.* the external skin of animal or plant. [reasoning faculties.]
- Intellect**, in-tel-ekt, *n.* the understanding; the intellect.
- Intellectual**, in-tel-ekt'ü-äl, *adj.* pertaining to the intellect. [of pure reason.]
- Intellectualism**, in-tel-ekt'ü-äl-izm, *n.* the doctrine
- Intelligence**, in-tel'i-jens, *n.* mental power.
- Intelligent**, in-tel'i-jent, *adj.* mentally bright.
- Intelligible**, in-tel'i-jibl, *adj.* easy to understand.
- Intemperance**, in-tem'per-ans, *n.* excess; drunkenness.
- Intend**, in-tend', *v.* to purpose; to incline to.
- Intendant**, in-ten'dant, *n.* superintendent; overseer.
- Intense**, in-tense', *adj.* keen; tightly stretched; emotional.
- Intensify**, in-ten'si-fi, *v.* to make more intense.
- Intensely**, in-ten'si-tl, *n.* extreme application, power, or feeling.
- Intensive**, in-ten'siv, *adj.* giving force.
- Intent**, in-tent', *n.* purpose; *adj.* of close application.
- Intention**, in-ter'shun, *n.* having design towards.
- Inter**, in-ter', *v.* to bury.
- Interact**, in-ter-äkt', *n.* a short piece between two chief pieces; the interval between the acts.
- Interbreed**, in-ter-bréd', *v.* to breed by crossing.
- Interpolate**, in-ter-käl-ät, *v.* to insert between.
- Intercede**, in-ter-séd', *v.* to mediate; to plead.
- Intercept**, in-ter-sept', *v.* to stop in passage; to obstruct.
- Intercessor**, in-ter-ses'or, *n.* a mediator.
- Interchange**, in-ter-chanj', *v.* to exchange mutually. [exchange or alternation.]
- Interchangeable**, in-ter-chanj'äbl, *adj.* capable of intercostal.
- Intercostal**, in-ter-kost'al, *adj.* between the ribs.
- Intercourse**, in-ter-körs, *n.* mutual dealings; communion.
- Interdict**, in-ter-dikt', *v.* to prohibit. [munition.]
- Interdictory**, in-ter-dikt'or-i, *adj.* prohibitory.
- Interest**, in-ter-est, *n.* concern; payment for the use of money; *v.* to arouse concern.
- Interesting**, in-ter-est-ing, *adj.* worthy of attention.
- Interfere**, in-ter-fēr', *v.* to meddle with; to interpose.
- Interference**, in-ter-fēr-ens, *n.* act of interfering.
- Interim**, in-ter-im, *n.* intervening time.
- Interject**, in-ter-jekt', *v.* to throw between.
- Interlace**, in-ter-läs', *v.* to lace together.
- Interlard**, in-ter-lärd', *v.* to intermix.
- Interleave**, in-ter-läv', *v.* to insert leaves of paper.
- Interline**, in-ter-lin', *v.* to insert between lines.
- Interlinear**, in-ter-lin'e-ar, *adj.* between lines.
- Interlocution**, in-ter-lö-kü'shun, *n.* conference; intermediate judgment. [between dialogue.]
- Interlocutor**, in-ter-lok'ü-tor, *n.* one who speaks
- Interlocutory**, in-ter-lok'ü-ter-i, *adj.* in dialogue form made in a law action.
- Interloper**, in-ter-lo'per, *n.* an intruder.
- Interlude**, in-ter-lood, *n.* between the acts; something filling the time between two events.
- Interlunar**, in-ter-loo'ner, *adj.* relating to the period of the moon's invisibility.
- Intermediate**, in-ter-mē-di-ät, *adj.* intervening; something between.
- Interment**, in-ter-ment, *n.* burial.
- Intermezzo**, in-ter-met'söo, *n.* a short piece of music between two more important parts of a work.
- Interminable**, in-ter'min-äbl, *adj.* without end.
- Intermission**, in-ter-mish'un, *n.* interval.
- Intermittent**, in-ter-mit'tent, *adj.* ceasing at intervals.
- Intermural**, in-ter-mü-räl, *adj.* between walls.
- Intern**, in-tern', *v.* to confine in neutral territory.
- Internal**, in-ter-näl, *adj.* inward.
- International**, in-ter-nash'un-äl, *adj.* between nations. [tive.]
- Internequie**, in-ter-nē'sin, *adj.* mutually destructive.
- Internode**, in-ter-nöd, *n.* space between two nodes.
- Interpellation**, in-ter-pel-ä'shun, *n.* interposition.
- Interpolate**, in-ter-po-lät, *v.* to insert words unfairly. [polated.]
- Interpolation**, in-ter-po-lä'shun, *n.* what is interpolated.
- Interpose**, in-ter-pös', *v.* to step between; to mediate.
- Interpret**, in-ter'pret, *v.* to explain; to translate.
- Interpretation**, in-ter-pre-tä'shun, *n.* the act of explaining. [for elucidates.]
- Interpreter**, in-ter-pre-ter, *n.* one who translates
- Interregnum**, in-ter-reg'num, *n.* time between the death of a ruler and the accession of a successor.
- Interrogate**, in-ter'o-gät, *v.* to question. [sor.]
- Interrogatory**, in-ter-rog'ä-to-ri, *n.* a question.
- Interrupt**, in-ter-rupt', *v.* to interfere; to hinder; to oppose.
- Interruption**, in-ter-rup'shun, *n.* interference.
- Interscapular**, in-ter-skap'ü-lar, *adj.* between the shoulder-blades.
- Intersect**, in-ter-sekt', *v.* to cut between.
- Intersection**, in-ter-sek'shun, *n.* intersecting point.
- Interperse**, in-ter-spers', *v.* to scatter among.
- Interstellar**, in-ter-stel'ar, *adj.* among the stars.
- Interstice**, in-ter-stis, *n.* a space between things.
- Intertwine**, in-ter-twin', *v.* to twine together.
- Interval**, in-ter-val, *n.* time between.
- Intervention**, in-ter-ven'shun, *n.* an interposing.
- Interview**, in-ter-vü, *n.* a meeting; *v.* to call upon a person and take down his views.
- Interweave**, in-ter-wäv', *v.* to weave together.
- Intestable**, in-test'äbl, *adj.* not qualified to execute a will.
- Intestate**, in-tes'tät, *adj.* dying without a will.
- Intestinal**, in-tes'tin-äl, *adj.* relating to the bowels.
- Intestine**, in-tes'tin, *n.* the last part of the alimentary canal; *adj.* domestic.
- Intimacy**, in-tim-ä-si, *n.* familiarity.
- Intimate**, in-ti-mät, *n.* near; familiar with.
- Intimate**, in-ti-mät', *v.* to hint; to suggest; to make known. [timid.]
- Intimidate**, in-tim'id-ät, *v.* to frighten; to make intolerable.
- Intolerable**, in-to'l'er-äbl, *adj.* insufferable.
- Intolerance**, in-to'l'er-ans, *n.* lack of toleration; bigotry.
- Intone**, in-tön', *v.* to chant.
- Intonation**, in-tön-ä'shun, *n.* inflection of voice.
- Intoxicant**, in-tok'si-kant, *n.* that which intoxicates. [excite.]
- Intoxicate**, in-tok'si-kät, *v.* to make drunk; to intractable.
- Intractable**, in-träkt'äbl, *adj.* unmanageable; unruly.
- Intramural**, in-tra-mü-räl, *adj.* within walls.



Intransigent, in-tran'si-jent, *adj.* uncompromising.  
 Intransitive, in-tran'sit-iv, *adj.* not passing over.  
 Intrench, in-trensh', *v.* to make trenches; to encroach. [defence] encroachment.  
 Intrenchment, in-trench'ment, *n.* a ditch of  
 Intrepid, in-tre'pid, *adj.* fearless.  
 Intrepidity, in-tre-pid'it-i, *n.* daring; fearlessness.  
 Intricacy, in'trik-a-si, *n.* entanglement; perplexity.  
 Intricate, in'trik-ät, *adj.* complicated; obscure.  
 Intrigue, in-tré', *n.* a secret plot; an amour.  
 Intrinsic, in-trin'sik, *adj.* real; inherent.  
 Introduce, in-tro-düs', *v.* to make known to; to bring in. [ducing.]  
 Introduction, in-trö-duk'shun, *n.* the act of introducing.  
 Introductory, intro-duk't'or-i, *n.* serving to introduce.  
 Intromission, in-tro-mish'un, *n.* the act of sending in. [tion.]  
 Introspection, in-tro-spek'shun, *n.* self-examination.  
 Intrude, in-trood', *v.* to force oneself in uninvited.  
 Intrusion, in-troo'zhun, *n.* entrance without authority.  
 Intrusive, in-troo'siv, *adj.* apt to intrude.  
 Intrust, in-trust', *v.* to trust to; to give charge of.  
 Intuition, in-tü-ish'un, *n.* natural perception.  
 Intuitive, in-tü-it'iv, *adj.* perceived by intuition.  
 Intuse, in-tüz', *n.* a bruise.  
 Inundate, in-un'dät, *v.* to overflow.  
 Inundation, in-un-dä'shun, *n.* a flood.  
 Inure, in-ür', *v.* to harden; to accustom.  
 Inutility, in-ü-til'it-i, *n.* uselessness.  
 Invade, in-väd', *v.* to encroach upon; to enter a country as an enemy.  
 Invalid, in-val'id, *adj.* void; worthless.  
 Invalid, in-val-éd, *n.* a sick person.  
 Invalidate, in-val'i-dät, *v.* to make void.  
 Invalidity, in-val'id-it-i, *n.* wanting legality.  
 Invaluable, in-val'ü-äbl, *adj.* priceless.  
 Invariable, in-vär'i-äbl, *adj.* unchangeable.  
 Invasion, in-vä'zhun, *n.* a hostile entrance.  
 Inveigle, in-vek'tiv, *n.* severe censure; sarcasm.  
 Inveigh, in-vä', *v.* to censure; to rail.  
 Inveigle, in-vé'gl, *v.* to entice; to wheedle.  
 Invent, in-vent', *v.* to contrive something new.  
 Invention, in-ven'shun, *n.* a thing invented; a fabrication.  
 Inventive, in-ven'tiv, *adj.* ready in contriving.  
 Inventor, in-ven'tor, *n.* one who invents.  
 Inventory, in-ven-to-rí, *n.* a list of articles.  
 Inverse, in-vers', *adj.* opposite.  
 Inversely, in-vers'li, *adj.* in reverse order.  
 Invert, in-vert', *v.* to reverse; to turn upside down.  
 Invertebrate, in-ver'te-brät, *adj.* without backbone.  
 Invest, in-vest', *v.* to lay out money; to besiege; to clothe.  
 Investigate, in-vest'i-gät, *v.* to inquire into.  
 Investiture, in-vest-it-ür, *n.* a putting in possession. [vested] blockade.  
 Investment, in-vest'ment, *n.* that which is invested.  
 Invertebrate, in-ver'te-brät, *adj.* habitual; hardened.  
 Invidious, in-vid'ius, *adj.* unpleasant; disagreeable; unjust.  
 Invigorate, in-vig'or-ät, *v.* to strengthen.  
 Invincible, in-vin'si-bl, *adj.* not to be overcome.  
 Inviolable, in-vi'o-la-bl, *adj.* not to be broken.  
 Inviolable, in-vi'o-lät, *adj.* uninjured; untampered.  
 Invisible, in-viz'ibl, *adj.* not to be seen. [with.]  
 Invitation, in-vi-tä'shun, *n.* act of inviting.  
 Invite, in-vit', *v.* to request attendance; to allure.  
 Invocation, in-vo-kä'shun, *n.* prayer.  
 Invoice, in'vois, *n.* bill with prices.  
 Invoke, in-vök', *v.* to summon; to implore.  
 Involuntary, in-vo-lun-tar-i, *adj.* unintentional.  
 Involvement, in-vo-lü'shun, *n.* complication.  
 Invulnerable, in-vul'ner-äbl, *adj.* unassailable; impenetrable.  
 Inward, in-ward, *adj.* within. [penetrable.]  
 Inwrought, in-rawt', *adj.* worked together with other things.  
 Iodide, i-o'id, *n.* an iodine and metal compound.  
 Iodine, i-o-din, *n.* a substance made from seaweed and used as an antiseptic.  
 Iolite, i-o-lit, *n.* a violet-blue transparent stone.  
 Ionic, i-on'ik, *adj.* relating to Ionia; *n.* an order of Iota, i-o'ta, *n.* a jot. [architecture.]  
 Ipecacuanha, ip-e-kak-ü-an'a, a South American root used as a medicine.  
 Irascible, i-ras'ibl, *adj.* irritable; easily angered.  
 Ire, ir, *n.* wrath; anger.  
 Irenic, i-ren'ik, *adj.* peaceful.  
 Irenicon, i-ren'i-kon, *n.* a peace proposition.  
 Iricism, i-ris-izm, *n.* an Irishism.  
 Iridescent, ir-id-es'ent, *adj.* prismatic.

Iridium, i-rid'i-um, *n.* a heavy infusible metal.  
 Iris, i-ris, *n.* herbaceous plant; the coloured ring round the pupil of eye; a rainbow.  
 Irksome, erk'sum, *adj.* tedious; troublesome; wearisome.  
 Iron, i-run, *n.* the commonest of the metals.  
 Ironical, i-ron'ik-al, *adj.* sarcastic.  
 Irony, i-ron-i, *n.* ridicule.  
 Irradiate, ir-rä'di-ät, *v.* to illuminate.  
 Irrational, ir-rash'ö-nal, *adj.* absurd; unreasonable.  
 Irreclaimable, ir-ré-kläm'äbl, *adj.* lost. [able.]  
 Irreconcilable, ir-rek-on-sil'äbl, *adj.* incapable of being reconciled.  
 Irrecoverable, ir-re-kuv'er-äbl, *adj.* not to be recovered.  
 Irredeemable, ir-re-dém'äbl, *adj.* not to be redeemed. [reduced.]  
 Irreducible, ir-ré-düs'ibl, *adj.* that cannot be reduced.  
 Irrefragable, ir-ref'ra-ga-bl, *adj.* indisputable.  
 Irrefutable, ir-re-fü'ta-bl, *adj.* incontestable.  
 Irregular, ir-reg'ü-lar, *adj.* variable; not according to rule. [irregular.]  
 Irregularity, ir-reg-ü-lar-it-i, *n.* the state of being irregular.  
 Irrelevant, ir-rel'e-vant, *adj.* not bearing on the question.  
 Irreligious, ir-re-lij-us, *adj.* impious.  
 Irremediable, ir-re-mé'di-äbl, *adj.* without remedy.  
 Irremissible, ir-re-mis'ibl, *adj.* beyond forgiveness.  
 Irreparable, ir-rep'ar-äbl, *adj.* beyond repair.  
 Irrepressible, ir-re-pres'ibl, *adj.* incapable of restraint. [blame.]  
 Irreproachable, ir-re-proch'äbl, *adj.* free from reproach.  
 Irreprovable, ir-ré-pruv'a-bl, *adj.* not to be proved.  
 Irresistible, ir-re-zist'ibl, *adj.* not to be resisted.  
 Irresolute, ir-rez'o-lüt, *adj.* wavering.  
 Irrespective, ir-re-spek'tiv, *adj.* without regard.  
 Irresponsible, ir-re-spon'si-bl, *adj.* not answerable for.  
 Irretrievable, ir-re-trév'äbl, *adj.* not recoverable.  
 Irreverent, ir-re-ver'ent, *adj.* lacking in reverence.  
 Irreversible, ir-re-vers'ibl, *adj.* unchangeable.  
 Irrevocable, ir-rev'o-ka-bl, *adj.* beyond revocation.  
 Irrigate, ir-ri-gät, *v.* to water; to spread water over. [lands.]  
 Irrigation, ir-ri-gä'shun, *n.* watering cultivable lands.  
 Irrigulous, ir-ris'ü-us, *adj.* watery; moist.  
 Irritable, ir-ri-table, *adj.* touchy.  
 Irritant, ir-ri-tant, *n.* that which irritates.  
 Irritate, ir-ri-tät', *v.* to annoy.  
 Irruption, ir-rup'shun, *n.* a bursting in.  
 Ischial, is'ki-al, *adj.* pertaining to the hip.  
 Ishmaelite, ish-mä-lit, *n.* an outcast.  
 Isinglass, i-sing-glas, *n.* basis for jellies made from part of a fish.  
 Islamism, iz-lam-izm, *n.* Mahomedanism.  
 Island, i-land, *n.* land surrounded by water.  
 Islet, i'let, *n.* a small island.  
 Isochronous, i-sok'ro-nus, *adj.* equal in time.  
 Isolate, is-o-lät', *v.* to set apart; to detach.  
 Isolation, is-o-lä'shun, *n.* the act of isolating.  
 Isomeric, is-o-mer'ik, *adj.* of like elements but different properties.  
 Isonomy, i-son'o-mi, *n.* equality.  
 Isosceles, i-sos'e-lés, *adj.* having two sides of equal length.  
 Isothermal, i-so-ther'mal, *adj.* possessing equal heat.  
 Issue, ish'ü, *v.* to flow; to proceed from; *n.* progeny.  
 Isthmus, ist'mus, *n.* a neck of land.  
 Italicize, i-tal'i-siz, *adj.* to print or mark as italics.  
 Italics, i-tal'iks, *n.* inclined letters.  
 Itch, itsh, *v.* to have skin irritation; *n.* a skin disease.  
 Item, i'tem, *n.* a distinct particular.  
 Iterate, it'er-ät, *v.* to repeat.  
 Iteration, it'er-ä'shun, *n.* the act of repetition.  
 Itinerant, i-tin'er-ant, *n.* a wanderer.  
 Itinerary, i-tin'er-ar-i, *n.* an outline of route.  
 Iterate, i-tin'er-ät, *v.* to proceed from place to place.  
 Ived, i'vid, *adj.* covered with ivy. [place.]  
 Ivory, i-ver-i, *n.* elephant's tusk.

## J

Jabber, jab'er, *v.* to chatter.  
 Jacinth, jä'sinth, *n.* a precious stone.  
 Jack, jak, *n.* a pike; a spit turner; a playing card.  
 Jackal, jak'awl, *n.* a wild animal.  
 Jackanapes, jak'ä-näps, *n.* an impudent fellow.  
 Jackass, jak'as, *n.* a male ass.

- Jackboots, jak'boots, *n.* boots reaching above the Jackdaw, jak'daw, *n.* a bird. [knee.]  
 Jacket, jak'et, *n.* a short coat.  
 Jackscrew, jak'skroo, *n.* a screw for moving weighty objects.  
 Jacobean, jak'a-bē-ān, *adj.* relating to the period of James I.  
 Jacobin, jak'a-bin, *n.* a member of a political Club started in France during the French Revolution.  
 Jacobite, jak'o-bit, *n.* an adherent of the Stuarts.  
 Jade, jād, *n.* a tired horse; a mean woman.  
 Jailer, jāl'er, *n.* a jail-keeper.  
 Jainism, jān'izm, *n.* a heterodox Hindu doctrine.  
 Jamb, jam, *n.* door-post.  
 Jangle, jang'gl, *v.* to wrangle; *n.* discordant voices or sounds.  
 Janitor, jan'it-or, *n.* a doorkeeper; a porter.  
 Janizary, jan'i-zar-i, *n.* a Turkish foot-soldier.  
 Janus, jā'nus, *n.* a Roman god.  
 Japan, jā-pan, *v.* to varnish in the Japanese style.  
 Jape, jāp, *v.* to mock; to jest.  
 Jardinière, zhār-dan-i-ār, *n.* a vessel for flowers.  
 Jargon, jār'gon, *n.* confused chatter.  
 Jarl, Yarl, *n.* a Scandinavian chieftain of ancient times.  
 Jasey, jā'si, *n.* a worsted wig.  
 Jasmine, jas'min, *n.* a flowering shrub with a climbing habit.  
 Jasper, jas'per, *n.* a kind of quartz.  
 Jaundice, jawn'dis, *n.* a liver disease.  
 Jaundiced, jawn'dist, *adj.* prejudiced; afflicted with jaundice.  
 Jaunt, jawn't, *v.* to stroll; to ramble.  
 Jaunty, jawn'ti, *adj.* airy.  
 Javelin, jav'el-in, *n.* a spear.  
 Jazz, jaz, *n.* syncopated music.  
 Jealous, jel'us, *adj.* suspicious.  
 Jean, jēn, *n.* twilled cotton cloth.  
 Jeer, jēr, *v.* to sneer.  
 Jehovah, je-hō'va, *n.* the Hebrew name of God.  
 Jekune, zheh-zhūn, *ad.* (*Fr.*), empty.  
 Jellyfish, jēl'i-fish, *n.* a sea animal whose body is composed of a jelly-like substance.  
 Jennet, jēn'et, *n.* a small Spanish horse.  
 Jeopardise, jep'er-diz, *v.* to endanger.  
 Jeopardy, jep'er-di, *n.* danger.  
 Jeremiad, jer-e-mi'ad, *n.* a lamentation.  
 Jerk, *v.* to pull or throw suddenly.  
 Jerkin, jer'kin, *n.* a short coat.  
 Jeroboam, jēr-ē-bō'am, *n.* a large-sized wine bottle.  
 Jerry-builder, jer'i-bild-er, *n.* a builder of cheap and flimsy structures.  
 Jess, *n.* a strap for holding a hawk's legs.  
 Jesse, jes-si, *n.* a large branched candlestick.  
 Jester, jest'er, *n.* a maker or jests.  
 Jestingly, jest'ing-ly, *adv.* jocosely.  
 Jesuitical, jez-ū-it'ikal, *adj.* crafty.  
 Jesus, jē'zus, *n.* the Saviour. [a gas bracket.]  
 Jet, *n.* a black fossil substance; a spout of water; Jetsam, jet'sam, *n.* floating wreckage.  
 Jetton, jet'on, *n.* a stamped metal counter.  
 Jetty, jet'i, *n.* a small pier.  
 Jew, joo, *n.* a Hebrew.  
 Jewel, joo'el, *n.* a precious stone; an ornament of gems.  
 Jeweller, joo'el-er, *n.* a dealer in jewels.  
 Jewellery, joo'el-ri, *n.* jewels in general.  
 Jewry, joo'ri, *n.* a Jewish quarter.  
 Jew's-harp, jooz'harp, *n.* a small musical instrument played between the teeth by striking a  
 Jezebel, jez'e-bel, *n.* a virago. [spring.]  
 Jib, *n.* a short movable triangular sail; *v.* to be restive.  
 Jib'boom, *n.* the beam on which the jib is fixed.  
 Jilt, jilt, *n.* a coquette; to throw over.  
 Jingle, jing'gl, *v.* to tinkle.  
 Jingo, jing'go, *n.* a headstrong politician.  
 Jobber, job'er, *n.* a dealer in stocks.  
 Jobbery, job'er-i, *n.* fraudulent methods.  
 Jockey, jōk'i, *n.* one who rides a horse in a race.  
 Jocosé, jō-kō's, *adj.* merry; full of fun.  
 Jocular, jōk'ū-lar, *adj.* sportive.  
 Jocund, jōk'und, *adj.* gay; cheerful.  
 Jodel, jō'del, *v.* to sing falsetto; a Swiss call.  
 Joggle, jōg'l, *v.* to shake; to jostle.  
 Jog-trot, jōg'trot, *n.* a humdrum pace.  
 Joiner, join'er, *n.* a woodworker.  
 Joinery, join'er-i, *n.* the joiner's art.  
 Joint, joint, *n.* a joining.  
 Jointly, joint'li, *adv.* together.  
 Joint'stock, *n.* stock or capital jointly held.
- Jointure, joint'ūr, *n.* property settled on a woman on her marriage.  
 Joist, joist, *n.* a supporting beam.  
 Joke, jōk, *n.* a jest; *v.* to jest.  
 Jollification, jol-if-ik-ā'shun, *n.* festivity.  
 Jollity, jol'it-i, *n.* boisterous mirth.  
 Jolly, jol'i, *adj.* merry.  
 Jollyboat, jol'i-bōt, *n.* a small boat or yawl.  
 Jolt, jōlt, *v.* to shake jerkily.  
 Jonquil, jon'kwil, *n.* a flowering plant of the narcissus family.  
 Jorum, jōr'um, *n.* a large drinking bowl; the alcoholic contents.  
 Joskin, jos'kin, *n.* a clown.  
 Joss, jos, *n.* a Chinese idol.  
 Jostle, jos'l, *v.* to knock against.  
 Jotting, jot'ing, *n.* a note or memorandum.  
 Joule, jool, *n.* a unit of electrical energy.  
 Jounce, jowns, *v.* to jolt.  
 Journal, jūr'nal, *n.* a record.  
 Journalism, jūr'nal-izm, *n.* the journalistic profession.  
 Journalist, jūr'nal-ist, *n.* a writer on the Press.  
 Journey, jur'ni, *v.* to travel. [man.]  
 Journeyman, jur'ni-man, *n.* a qualified hired work-  
 Joust, jowst, *n.* an encounter by two knights at a Jovial, jō'vi-al, *adj.* mirthful. [tournament.]  
 Jowl, *n.* the cheek.  
 Jubilant, joo'bil-ant, *adj.* joyous.  
 Jubilee, joo'bil-ē, *n.* a time of rejoicing; a fiftieth-year celebration.  
 Judaical, joo-dā'ik-al, *adj.* pertaining to the Jews.  
 Judaism, joo-dā-izm, *n.* Jewish doctrines.  
 Judge, juj, *n.* one who passes judgment in law cases; one who decides in a dispute; *v.* to decide.  
 Judgeship, juj'ship, *n.* the office of judge.  
 Judgment, juj'ment, *n.* taste; a judicial decision.  
 Judicable, joo'dik-abl, *adj.* capable of being tried.  
 Judicatory, joo'dik-ā-to-ri, *adj.* pertaining to a judge.  
 Judicature, joo'dik-ā-tūr, *n.* the power of dispensing justice.  
 Judicial, joo'dish-al, *adj.* relating to the law.  
 Judiciary, joo'dish'ar-i, *n.* the judges as a whole.  
 Judicious, joo'dish-us, *adj.* according to right judgment.  
 Juggernaut, juj'er'nawt, *n.* Indian idol; that which crushes.  
 Juggle, jug'l, *v.* to conjure.  
 Juggler, jug'ler, *n.* one who juggles; a conjurer.  
 Jugglery, jug'ler-i, *n.* trickery.  
 Jugular, jug'ū-ler, *n.* a vein in the neck.  
 Juicy, joo'si, *adj.* full of juice.  
 Jujube, joo'jōb, *n.* a kind of spring shrub; a Julep, joo'lep, *n.* a sweet drink. [sweetmeat.]  
 Jumble, jum'bl, *v.* to mix confusedly.  
 Jumper, jum-per, *n.* a knitted jersey.  
 Junction, jungk'shun, *n.* a joining.  
 Juncture, jungk'tūr, *n.* a critical time.  
 Jungle, jung'gl, *n.* thick forest.  
 Junior, joo'ni-er, *adj.* younger.  
 Juniper, joo'nip-er, *n.* a shrub and its berry.  
 Junk, jungk, *n.* old ropes; hard salt beef; a small Chinese ship.  
 Junker, yōn'ker, *n.* a German squire.  
 Junket, jung'ket, *n.* a sweetmeat; a picnic.  
 Junketing, jun'ket-ing, *n.* a festival; merry making.  
 Junta, yōn'ta, *n.* Spanish Council of State; a political group.  
 Junto, yōn'to, *n.* a confederacy.  
 Jupon, joo'pon, *n.* a sleeveless jacket.  
 Juridical, joo-ri'd'ik-al, *adj.* relating to law admis-  
 Jurisconsult, joo-ris-kon'sult, *n.* a jurist. [sion.]  
 Jurisdiction, joo-ris-dik'shun, *n.* the district within which a court has power.  
 Jurisprudence, joo-ris-proo'dens, *n.* science of the Jurist, joo'r'ist, *n.* one versed in civil law. [law.]  
 Juror, joo'r-or, *n.* one of a jury.  
 Jury, joo'ri, *n.* a body of men to judge a legal case.  
 Jurymen, joor'i-man, *n.* a member of a jury.  
 Jurymast, joor-i-mast, *n.* a temporary mast.  
 Jury-rudder, joo'ri-rud-er, *n.* an extemporised Just, *adj.* right; lawful; upright. [rudder.]  
 Justice, just'is, *n.* impartiality; equity; a magi-  
 strate.  
 Justiceship, jus'tis-ship, *n.* the office of justice.  
 Justiciary, just-ish'i-ār-i, *n.* one who administers justice. [excusable.]  
 Justifiable, just-i-fi'abl, *adj.* that can be justified;  
 Justification, just-if-ik-ā'shun, *n.* defence; vindic-  
 Justify, just'i-fi, *v.* to vindicate. [cation.]



**Jute**, *joot*, *n.* a coarse kind of hemp.  
**Juvenescence**, *joo-ven-es-ens*, *n.* youthfulness.  
**Juvenile**, *joo'ven-il*, *n.* a youth; *adj.* youthful.  
**Juxtaposition**, *juks-tă-po-ziah-un*, *n.* contiguity.

## K

**Kapok**, *kă-pok*, *n.* cotton-like fibre.  
**Kaleidoscope**, *kal-i'do-skôp*, *n.* an optical toy.  
**Kaolin**, *kă'o-lin*, *n.* a very fine clay.  
**Katydid**, *kă'ti-did*, *n.* a kind of grasshopper (American).  
**Kaia**, *kăe-uh*, *n.* destructive New Zealand bird.  
**Kedgerie**, *Ke'er-e*, *n.* a dish in which eggs, fish, etc., are served in rice.  
**Keel**, *kêl*, *n.* the main timber of a ship.  
**Keeler**, *keel'er*, *n.* a shallow tub.  
**Keel-haul**, *kêl'hawl*, *n.* to haul under keel by ropes; a form of naval punishment.  
**Keelson**, *kêl'son*, *n.* an inner keel.  
**Keen**, *kên*, *adj.* eager; alert; pungent; acute.  
**Keeper**, *kêp'er*, *n.* one who guards.  
**Keepsake**, *kêp'sak*, *n.* a gift of regard.  
**Kelp**, *kelp*, *n.* seaweed.  
**Kelpie**, *kelp'i*, *n.* a fancied spirit of the water.  
**Ken**, *ken*, *v.* to know.  
**Kennel**, *ken'el*, *n.* shelter for a dog.  
**Kerasine**, *ker'a-sên*, *adj.* made of horn.  
**Kerbstone**, *see* Curbstone.  
**Kerchief**, *ker'chif*, *n.* a small loose shawl.  
**Kernal**, *ker'nel*, *n.* a grain; a seed within a shell.  
**Kerosine**, *ker'o-sên*, *n.* paraffin.  
**Kersey**, *ker'si*, *n.* a kind of woollen cloth.  
**Kestrel**, *kes'trel*, *n.* a kind of falcon.  
**Ketch**, *n.* a two-masted vessel. [mushrooms.  
**Ketchup**, *ketch'up*, *n.* a flavouring made from  
**Kettle-drum**, *ket'l-drum*, *n.* a kind of drum.  
**Key**, *kê*, *n.* an instrument for opening or closing a lock; centre stone; fundamental note.  
**Keyboard**, *kê'bôrd*, *n.* the keys of a piano or organ. [musical composition.  
**Keynote**, *kê'nôt*, *n.* the fundamental note of a  
**Khaki**, *kă'k'i*, *n.* dust-coloured uniform.  
**Khamsin**, *kăhm'sên*, *n.* hot wind.  
**Khan**, *kan*, *n.* an Asiatic chief.  
**Khanate**, *kân'ât*, *n.* the territory of a khan.  
**Kibe**, *kib*, *n.* a chilblain.  
**Kick**, *kik*, *v.* to give a blow with the foot; *n.* the blow itself.  
**Kickshaw**, *kik-shaw*, *n.* something fanciful.  
**Kid**, *n.* a young goat; kid leather.  
**Kidling**, *kid'ling*, *n.* a young kid.  
**Kidnap**, *kid'nap*, *v.* to carry off a human being.  
**Kidnapper**, *kid'nap-er*, *n.* one who kidnaps.  
**Kidney**, *kid'ni*, *n.* one of two glands that remove impurities from the blood stream.  
**Kilderkin**, *kil'der-kin*, *n.* a small barrel.  
**Kill**, *kil*, *v.* to slay; to nullify.  
**Kiln**, *n.* an oven for making lime, bricks, etc.  
**Kilo**, *k'lo*, *n.* a large oven; a thousand.  
**Kilogramme**, *kill-o-gram*, *n.* French measure of weight.  
**Kilometre**, *kill-o-metr*, *n.* French measure of length.  
**Kilt**, *kilt*, *n.* a heavy pleated skirt worn by Scottish clansmen.  
**Kimbo**, *kim'bô*, *adj.* bent; arched.  
**Kind**, *kind*, *adj.* generous; good; gracious.  
**Kindle**, *kindl*, *v.* to set on fire; to inflame.  
**Kindliness**, *kind'liness*, *n.* gentleness.  
**Kindness**, *kind'ness*, *n.* the act of being kind;  
**Kindred**, *kin'dred*, *n.* relations. [goodness.  
**Kine**, *kin*, *n.* cows.  
**Kinematics**, *kin-ê-mat'iks*, *n.* the science of  
**Kinetic**, *ki-net'ik*, *adj.* moving. [motion.  
**Kinetics**, *kin-et'iks*, *n.* the science of force in connection with motion.  
**Kinetoscope**, *ki-net'o-skop*, *n.* a movable pano-  
**King**, *n.* ruler. [rama.  
**Kingcup**, *king'kup*, *n.* the buttercup.  
**Kingdom**, *king'dum*, *n.* territory ruled over by a  
**Kingly**, *king'l*, *adj.* king-like; noble. [king.  
**King's-evil**, *kingz-ê'vil*, *n.* scrofula.  
**Kink**, *kingk*, *n.* a twist; a knot.  
**Kino**, *ki'no*, *n.* a vegetable exudation.  
**Kinsfolk**, *kins'fôk*, *n.* kindred.  
**Kiosk**, *kê-osk'*, *n.* a pavilion.  
**Kip**, *n.* calf-skin.  
**Kipper**, *kip'er*, *n.* male salmon after spawning; preserved haddock or herring.  
**Kipskin**, *kip-skin*, *n.* calf-skin.  
**Kirk**, *kirk*, *n.* a church (Scotch).  
**Kirtle**, *kir'tl*, a kind of gown; a mantle.

**Kiss**, *kis*, *v.* to salute with the lips; *n.* the act of kissing.  
**Kit-cat**, *kit-kat*, *n.* a size of portrait [36 x 28 inches) so called after the portraits done by Kneller for the Kit-cat Club.  
**Kitchen**, *kit'chen*, *n.* place where food is prepared and cooked.  
**Kitchener**, *kit'chen-er*, *n.* a cooking stove.  
**Kite**, *kit*, *n.* a bird of prey; a flying toy.  
**Kith**, *n.* kindred.  
**Kitten**, *kit-en*, *n.* a young cat.  
**Kitty-wake**, *kiti-wake*, *n.* a species of seagull.  
**Klang**, *n.* a confused tone.  
**Kleptomania**, *klep-to-mă'ni-ă*, *n.* a morbid impulse to steal.  
**Klick**, *klik*, *n.* a sharp catching noise.  
**Kloof**, *n.* a mountain cleft in S. Africa.  
**Knab**, *nab*, *v.* to seize hold of.  
**Knack**, *nak*, *n.* adroitness; special aptitude.  
**Knacker**, *nak'er*, *n.* a buyer of dead horses.  
**Knag**, *nag*, *v.* a knot.  
**Knap**, *nab*, *v.* to break.  
**Knapsack**, *naps'sak*, *n.* a soldier's provision bag.  
**Knapskull**, *naps'skull*, *n.* a helmet.  
**Knarled**, *nâr'ld*, *adj.* knotty.  
**Knave**, *năv*, *n.* a scamp; a playing-card.  
**Knavery**, *nă-ver-i*, *n.* villainy.  
**Knead**, *nêd*, *v.* to work and press.  
**Knee**, *nê*, *n.* the joint between the leg and thigh.  
**Kneel**, *nêl*, *v.* to bend the knee.  
**Kneepan**, *pê-pan*, *n.* a round bone at the knee; the patella.  
**Knell**, *nel*, *n.* the sound of a funeral bell.  
**Knickerbockers**, *nik'er-bok-ers*, *n.* short trousers, gathered in at the knee.  
**Knick-knack**, *nick-nak*, *n.* a trifling object.  
**Knife**, *nif*, *n.* a cutting instrument.  
**Knight**, *nit*, *n.* a champion; the rank next below baronet, entitling the owner to be called "Sir."  
**Knight-errant**, *nit-er'ant*, *n.* one who travelled in quest of adventures in olden times.  
**Knighthood**, *nit'hood*, *n.* the dignity of a knight.  
**Knight-marshal**, *nit-mar'shal*, *n.* a royal official.  
**Knight-service**, *nit-ser'vis*, *n.* a land tenure based on military service.  
**Knit**, *v.* to join; to make into webbing.  
**Knitting**, *nit'ing*, *n.* work produced by knitting.  
**Knob**, *nob*, *n.* a protuberance.  
**Knobby**, *nob'l*, *adj.* covered with knobs.  
**Knock**, *nok*, *v.* a rap. [a door.  
**Knocker**, *nok'er*, *n.* a knocking instrument fixed to  
**Knock-kneed**, *nok'nêd*, *adj.* knees inclined inward.  
**Knoll**, *nôl*, *n.* a small round hill.  
**Knop**, *nop*, *n.* a knob or cluster.  
**Knot**, *not*, *n.* a group; a bunch; a cluster; a tie.  
**Knot-grass**, *not'gras*, *n.* a plant with large nodes.  
**Knotty**, *not't*, *adj.* abounding in knots; difficult.  
**Knotwork**, *not'werk*, *n.* fancy work formed of knots.  
**Knout**, *nowt*, *n.* a Russian whip of punishment.  
**Know**, *nô*, *v.* to understand; to perceive.  
**Knowingly**, *nô'ing-l*, *adj.* intelligently.  
**Knowledge**, *nol'tj*, *n.* learning; information; instruction.  
**Knub**, *nub*, *n.* a knob; a small piece.  
**Knuckle**, *nuk'l*, *n.* joint of a finger.  
**Knurl**, *nurl*, *n.* a hard substance or protuberance; knot; lump.  
**Knurr**, *nur*, *n.* a wooden ball.  
**Kobil**, *ko'bil*, *n.* a small boat. [camera.  
**Kodak**, *kô'dak*, *n.* the trade name of a small  
**Kopek**, *kô'pek*, *n.* a small Russian coin.  
**Koran**, *kô'ran*, *n.* the Mahomedan Bible.  
**Koumiss**, *koo'mis*, *n.* an intoxicating beverage made from mare's milk fermented.  
**Kow-tow**, *kôw-tôw*, *v.* to abase one's self.  
**Kraal**, *krâl*, *n.* a Hottentot village. [U.S.S.R.  
**Kremlin**, *krem'lin*, *n.* seat of Government in the  
**Kudos**, *kû-dôs*, *n.* honour; glory.  
**Kurkee**, *kur'kee*, *n.* a coarse kind of blanket.  
**Kyanise**, *ki'an-iz*, *v.* to protect wood by means of corrosive sublimate.  
**Kyllosis**, *kil-ô'sis*, *n.* club-foot.  
**Kyloe**, *k'lo*, *n.* cattle of the Hebrides.

## L

**Label**, *lă'bel*, *n.* a slip for name or description.  
**Labellum**, *la-bel'um*, *n.* the lower portion of a petal.  
**Labial**, *lă'bi-al*, *n.* a lip consonant; *adj.* relating to the lips. [duced by lips and teeth.  
**Labiodental**, *la-bi-o-dent'al*, *adj.* of sound pro-

- Labium**, lă'bi-um, *n.* a lip.
- Laboratory**, la-bor'ă-to-ri, *n.* a chemist's workshop; place for scientific experiments.
- Laborious**, la-bor'is-um, *adj.* with diligence; toilsome.
- Labor**, lă'bor, *n.* toil; exertion. [some.]
- Laboured**, lă'berd, *adj.* with evident effort.
- Labourer**, lă'bor-er, *n.* one who works with his hands.
- Laburnum**, la-burn'um, *n.* a tree that bears clusters of yellow flowers. [windings.]
- Labyrinth**, lab'i-rinth, *n.* a maze; a place of many Lac, lak, *n.* a resinous substance; 100,000 rupees.
- Lace**, lās, *n.* delicate net-work; a string or fastening. [tear.]
- Lacerate**, las'er-āt, *v.* to rend; to wound; to laches, lash'ez, *n.* negligence; delay.
- Lachrymal**, lak'ri-mal, *adj.* secreting tears.
- Lachrymary**, lak'ri-mă-ri, *adj.* containing tears.
- Lachrymose**, lak'ri-mōs, *adj.* tearful.
- Lacing**, lās'ing, *n.* a laced fastening; a lace.
- Lackadaisical**, lak-ă-dă-zī-kal, *adj.* sentimental; dreamy.
- Lackaday**, lak-ă-dă', *excl.* alas! the day.
- Lackey**, lak'ē, *n.* a servile attendant.
- Laconic**, la-kon'ik, *adj.* short; concise; pithy.
- Lacquer**, lak'er, *n.* a kind of varnish.
- Lactate**, lak'tăt, *n.* the condition of giving milk.
- Lacteal**, lak'te-al, *adj.* milky.
- Lactiferous**, lak-tif'er-us, *adj.* producing milk.
- Lactometer**, lak-tom'e-ter, *n.* an instrument for measuring the density of milk.
- Lactose**, lak'tōs, *n.* milk sugar.
- Lacuna**, la-kū'na, *n.* an hiatus.
- Lacustrine**, la-kus'trin, *adj.* relating to lakes.
- Ladder**, lad'er, *n.* a means of ascent.
- Lade**, lād, *v.* to load; to throw out.
- Laden**, lă'dn, *adj.* loaded.
- Ladle**, lă'dl, *n.* an implement for lifting liquids.
- Lady**, lă'di, *n.* a female of rank or position.
- Lager-beer**, lă'ger-bēr, *n.* light German beer.
- Laggard**, lag'erd, *adj.* slow; loitering.
- Lagoon**, la'goon, *n.* a shallow sea lake.
- Laic**, la'ik, *adj.* pertaining to the laity.
- Lair**, lăr, *n.* resting-place; retreat of wild animals.
- Laird**, lărd, *n.* a Scottish chief, or landed proprietor.
- Laity**, lă'it-i, *n.* the people, as distinguished from the clergy.
- Lake**, lāk, *n.* a body of water surrounded by land.
- Lama**, lă'ma, *n.* a Buddhist head priest in Tibet.
- Lamb**, lam, *n.* a young sheep.
- Lambent**, lam'bent, *adj.* flickering.
- Lambkin**, lam'kin, *n.* a small lamb.
- Lame**, lām, *adj.* halt or crippled.
- Lamella**, la-mel'ă, *n.* a thin plate of scale.
- Lament**, lă'ment, *n.* an expression of sorrow.
- Lamentable**, lam'ent-ăbl, *adj.* sorrowful.
- Lamentation**, lam-ent'ă-shun, *n.* the act of sorrowing.
- Lamina**, lam'in-ă, *n.* a thin plate; a leaf-blade.
- Lammass**, lam'as, *n.* the 1st of August.
- Lamp**, *n.* an illuminating vessel.
- Lampblack**, lamp'blak, *n.* a soot from lamp smoke.
- Lampoon**, lam-poon, *n.* satire; skit.
- Lamprey**, lam'pri, *n.* an eel-like fish.
- Lanate**, lă'năt, *adj.* woolly.
- Lance**, lāns, *n.* a pointed weapon; long-handled.
- Lanceolated**, lan'se-o-lătēd, *adj.* in the shape of lanceol, lan'set, *n.* a surgical knife. [lance-heads.]
- Land-agent**, land'ăj-ent, *n.* a land-owner's deputy.
- Landau**, lăn dō, *n.* a wheeled open carriage.
- Landgrabber**, land-grăb-er, *n.* an unscrupulous appropriator of real estate.
- Landlady**, land'lă-di, *n.* woman innkeeper or land
- Landlock**, land'lok, *v.* to enclose by land. [owner.]
- Landlord**, land'lărd, *n.* landowner; inn-keeper.
- Landmark**, land'mărk, *n.* a boundary mark; an elevated object. [estate.]
- Landowner**, land'owner, *n.* a proprietor of real
- Landscaper**, land'skăp, *n.* a land view.
- Landshark**, land'shărk, *n.* one who essays to cheat sea-farers.
- Landslide**, land'slide, *n.* a slipping down of land.
- Landsman**, lands'man, *n.* one who lives on land.
- Landward**, land'wərd, *adj.* towards the land.
- Lane**, lān, *n.* a narrow road.
- Language**, lang'gwăj, *n.* speech.
- Languid**, lang'gwīd, *adj.* feeble; sluggish.
- Languish**, lang'gwīsh, *v.* to pine.
- Languor**, lang'gwer, *n.* lassitude.
- Laniary**, la-ni-ari, *n.* a shambles.
- Lank**, *adj.* limp; thin; loose; weak.
- Lankness**, lank'ness, *n.* slenderness.
- Lantern**, lan'tern, *n.* a protected hand lamp; a roof-light.
- Lanyards**, lan'yards, *n.* ship's ropes.
- Laudicean**, lă-o-di-sē'an, *adj.* lukewarm in religion.
- Lap**, lap, *n.* upper part of the legs of a seated person; *v.* to overspread.
- Lapel**, lap-el', *n.* fold of a garment; collar of a coat.
- Lapidary**, lap'id-ari, *n.* a cutter of precious stones.
- Lappet**, lap'et, *n.* a little flap.
- Lapsable**, lap'sa-bl, *adj.* liable to lapse.
- Lapse**, laps, *v.* to pass slowly; to slide.
- Lapstone**, lap'stōn, *n.* stone on which shoemakers beat leather.
- Laputan**, la-pū'tan, *n.* an inhabitant of Laputa; small.
- Lapwing**, lap'wing, *n.* the peewit.
- Larboard**, lăr'bōrd, *n.* port side of a ship.
- Larceny**, lăr'sen-i, *n.* theft.
- Lard**, lărd, *n.* fat of swine.
- Larder**, lărd'er, *n.* place where provisions are kept.
- Large**, lărj, *adj.* big; extensive; profuse.
- Largess**, lărj'es, *n.* a present.
- Lark**, lărk, *n.* a singing bird; a frolic.
- Larva**, lăr'va, *n.* a grub; an insect in its caterpillar stage.
- Laryngitis**, lar-in-jī'tis, *n.* inflammation of the
- Larynx**, lar'inks, *n.* the organ of voice. [larynx.]
- Lascar**, las'ker, *n.* an East Indian sailor.
- Lascivious**, las-siv'is-us, *adj.* wanton; lewd.
- Lasher**, lash'er, *n.* water above a weir.
- Lass**, las, *n.* a girl or young woman.
- Lassitude**, las'it-ūd, *n.* languor.
- Lasso**, las'oo, *n.* a slip-noose.
- Last**, *n.* the ultimate; a shoemaker's wooden mould.
- Latch**, lăch, *n.* a fastening; *v.* to fasten.
- Latchet**, lăch'et, *n.* a shoe string.
- Late**, lăt, *adj.* tardy; departed.
- Lateen**, lăt-ēen, *adj.* applied to a form of sail.
- Latent**, lăt'tent, *adj.* hidden.
- Lateral**, lat'er-al, *adj.* indirect; relating to the side.
- Lath**, lăth, *n.* a thin strip of wood.
- Lathe**, lăth, *n.* a turner's machine.
- Lather**, lăth'er, *n.* foam; *v.* to foam.
- Latifoliate**, lat-i-fō'li-ăt, *adj.* broad-leaved.
- Latin**, lat'in, *n.* Roman.
- Latinise**, lat'in-iz, *v.* to put in Latin form.
- Latinity**, lat-in'it-i, *n.* pure Latin style.
- Latish**, lă'tish, *adj.* rather late. [equator.]
- Latitude**, lat'i-tūd, *n.* width; distance from the
- Latitudinal**, lat-i-tū'din-al, *adj.* possessing latitude
- Latitudinarian**, lat-i-tū'din-ă-ri-an, *adj.* free; unrestrained in views.
- Latrine**, lat'rin, *n.* place of convenience for men.
- Latten**, lat'en, *n.* iron plate covered with tin.
- Latter**, lat'er, *ad.* the more recent or last of two.
- Lattice**, lat'is, *n.* open work of cross bars.
- Lattice-work**, lat'is-werk, *n.* same as lattice.
- Laud**, lawd, *v.* to praise.
- Laudable**, lawd'ă-ăbl, *adj.* praiseworthy.
- Laudanum**, lawd'ă-num, *n.* tincture of opium.
- Laudatory**, lawd'ă-to-ri, *adj.* praising.
- Laugh**, lăf, *v.* to make a merry sound; to be
- Laughable**, lăf'ăbl, *adj.* comical. [mirthful.]
- Launch**, lawnch, *v.* to send forth; *n.* a large boat.
- Laundress**, lawn'dres, *n.* a washerwoman.
- Laundry**, lawn'dri, *n.* a wash-house.
- Laureate**, law'rē-ăt, *n.* the court poet; one decked with laurel.
- Laurel**, law'rel, *n.* an evergreen shrub.
- Lava**, lă'va, *n.* molten matter ejected from a volcano.
- Lavatory**, lav'ă-to-ri, *n.* place for washing.
- Lave**, lăv, *v.* to wash or bathe.
- Lavender**, lav'en-der, *n.* a sweet-scented herb.
- Laverock**, lav'er-ok, *n.* the lark.
- Lavish**, lav'ish, *adj.* wasteful.
- Lawful**, law'ful, *adj.* legal.
- Lawn**, lawn, *n.* fine linen; a grass plot.
- Lawn-tennis**, lawn'ten'is, *n.* a game with ball and
- Lawsuit**, law'sūt, *n.* a suit in law. [racket.]
- Lawyer**, law'yer, *n.* one who practises the law.
- Lax**, laks, *adj.* flabby; soft; not firm.
- Laxative**, laks'ă-tiv, *n.* a purgative.
- Laxity**, laks'it-i, *n.* looseness. [narrative song.]
- Lay**, lă, *v.* to place prone; *adj.* unclerical; *n.* a
- Lay-brother**, lă'bruth-er, *n.* an unprofessional clerical assistant.
- Layer**, lă'er, *n.* a stratum.
- Layette**, lă-et', *n.* an infant's outfit.
- Layman**, lă'man, *n.* one of the laity.



- Lazar**, lă'zar, *n.* a person with a pestilential disease.
- Lazaretto**, lă-ză-ret'to, *n.* a hospital; a pest-house.
- Lea**, lē, *n.* a meadow.
- Leach**, lēch, *n.* the edge of a ship's sail.
- Lead**, led, *n.* a soft grey metal.
- Lead**, lēd, *v.* to direct or precede.
- Leader**, lē'der, *n.* one who leads.
- Leaf**, lēf, *n.* one of the external parts of a plant or tree; a division of a flat body, as the leaf of a book, a table, etc.
- Leaflet**, lēf'let, *n.* a small leaf.
- Leafy**, lēf'y, *adj.* full of leaves.
- League**, lēg, *n.* an alliance, three miles.
- Leak**, lēk, *v.* to ooze out; *n.* a crack that lets out leakage, lēk'ij, *n.* loss by leaking. [water.]
- Leaky**, lēk'y, *adj.* having leaks.
- Leal**, lēl, *adj.* loyal; faithful.
- Lean**, lēn, *v.* to incline; *adj.* meagre; not fat; poor.
- Leap**, lēp, *v.* to spring up or away from a base.
- Leap-year**, lēp-yēr, *n.* every fourth year, which has one more day than others.
- Learn**, lērn, *v.* to acquire knowledge.
- Learner**, lērn'er, *n.* one who is learning.
- Learning**, lērn'ing, *n.* scholarship; knowledge.
- Lease**, lēs, *v.* to let for hire; *n.* a tenure of land or other property.
- Leasholder**, lēs'hōld-er, *n.* one who occupies under lease. [a kind.]
- Leash**, lēsh, *n.* a leather thong; three animals of least, lēst, *adj.* smallest in size, value or importance.
- Leather**, lēth'er, *n.* tanned hide. [ance.]
- Leatherette**, lēth-er-et', *n.* a material made to look like leather.
- Leathern**, lēth'ern, *adj.* composed of leather.
- Leave**, lēv, *v.* to discard or depart from; *n.* a term of permissive absence.
- Leaved**, lēvd, *adj.* provided with leaves.
- Leaven**, lēv'en, *n.* yeast.
- Leavings**, lēv'ings, *n.* things left.
- Lecherous**, lēch'er-us, *adj.* lustful.
- Lectern**, lēk'tern, *n.* reading-desk in churches.
- Lectinary**, lēk'shun-er-i, *n.* a book for use in public worship.
- Lector**, lēk'tor, *n.* a scripture reader.
- Lecture**, lēk'tūr, *n.* a discourse; *v.* to inform by
- Ledge**, lēj, *n.* a ridge. [discourse.]
- Ledger**, lēj'er, *n.* an account book.
- Lee**, lē, *n.* the side opposite the wind.
- Leech**, lēch, *n.* a blood-sucking worm.
- Leek**, lēk, *n.* an onion-like vegetable.
- Leer**, lēr, *n.* a sarcastic grin.
- Lees**, lēz, *n.* dregs; sediment.
- Lee-shore**, lē-shōr, *n.* shore toward which the wind
- Leet**, lēt, *n.* a court of record. [blows.]
- Leeward**, lē-wērd, *adj.* towards the lee.
- Leeway**, lē-wā, *n.* a movement towards the lee.
- Legacy**, leg'ā-si, *n.* a bequest.
- Legal**, lēg'l, *adj.* conforming to law.
- Legalise**, lēgal'iz, *v.* to render lawful.
- Legality**, lē-gal'it-i, *n.* lawfulness.
- Legate**, leg'at, *n.* a kind of ambassador.
- Legatee**, leg-ā-tē, *n.* the recipient of a legacy.
- Legation**, le-gā'shun, *n.* a minor embassy.
- Legato**, le-gā'to, *adj.* smooth (mus.).
- Legend**, lē'jend, *n.* a story; a motto.
- Leger**, lēj'er, *adj.* light; small.
- Legerdemain**, lej-er-de-mān', *n.* sleight of hand.
- Legging**, leg'ing, *n.* a leg covering.
- Legible**, lej'ibl, *adj.* readable.
- Legion**, lē'jun, *n.* a great number; a body of soldiers.
- Legionary**, lē'jun-ar-i, *adj.* relating to legions; a soldier in a legion.
- Legislate**, lej'is-lat, *v.* to make laws.
- Legislation**, lej-is-lā'shun, *n.* act of legislating.
- Legislative**, lej-is-lā'tiv, *n.* enacting laws.
- Legislator**, lej-is-lā'tor, *n.* a law-maker.
- Legislature**, lej-is-lā'tūr, *n.* a body of law-makers.
- Legist**, lē'jist, *n.* one learned in laws.
- Legitimacy**, le-jit'i-mā-si, *n.* lawfulness.
- Legitimate**, le-jit'i-māt, *adj.* legal.
- Legitimist**, le-jit'im-ist, *n.* a supporter of legitimate authority.
- Legitimise**, le-jit'üm-iz, *v.* to make legitimate.
- Legume**, leg'üm, *n.* a pod, as of peas.
- Leguminous**, le-gü'min-us, *adj.* legume-bearing.
- Leisure**, lezh'ür, *n.* spare time.
- Leitmotiv**, lēt'mō-tif, *n.* in music, a theme associated with certain people, or situations.
- Lemming**, lem'ing, *n.* a vole-like rat.
- Lemon**, lem'on, *n.* an acid fruit of the orange order.
- Lemonade**, lem'on-ād, *n.* a lemon drink.
- Lemur**, lē'mur, *n.* a species of Madagascar monkey.
- Lemures**, lem'ü-rēz, *n.* spectres.
- Lengthy**, leng'thi, *adj.* of great length; longish.
- Lentient**, lē'ni-ent, *adj.* clement; gentle.
- Lens**, lēnz, *n.* a magnifying glass.
- Lent**, lent, *v.* a fast before Easter.
- Lenten**, lent'en, *adj.* pertaining to Lent; scanty.
- Lenticular**, len-tik'ü-lar, *adj.* like lens or lentil seed.
- Lentil**, lent'il, *n.* a pulse-bearing edible plant.
- Leoline**, lē'o-nin, *adj.* lion-like.
- Leopard**, lep'erd, *n.* a large spotted cat-like animal.
- Lepër**, lep'er, *n.* a person afflicted with leprosy.
- Lepidoptera**, lep-id-op'ter-ä, *n.* insects with four membranous wings (moths and butterflies).
- Leporine**, lep'o-rin, *adj.* like or relating to hares.
- Leprosy**, lep'rō-si, *n.* a virulent skin disease.
- Leprous**, lep'rūs, *adj.* affected with leprosy.
- Lesion**, lē'zhun, *n.* an injury.
- Lessee**, less'e, *n.* one to whom a lease is granted.
- Lessen**, less'en, *v.* to diminish; to make less.
- Lesson**, less'on, *n.* a task; a portion of study.
- Lessor**, les-or', *n.* a lease grantor.
- Lest**, conj. for fear that.
- Letch**, lech, *v.* to wash by water percolation.
- Lethal**, lē'thal, *n.* deadly; mortal.
- Lethargy**, leth'er-ji, *n.* dullness; heaviness.
- Lethe**, lē'thē, *n.* the river of forgetfulness.
- Lethiferous**, leth-if'er-us, *adj.* deadly.
- Letter**, let'ter, *n.* an epistle; a sign of the alphabet.
- Lettered**, let'erd, *adj.* learned.
- Letters**, let'ters, *n.* literature; authorship.
- Lettuce**, let'tis, *n.* a well-known edible salad plant.
- Levant**, lē-vānt, *n.* Mediterranean shore.
- Levant**, le-vant', *v.* to decamp.
- Levanter**, lē-vānt'er, *n.* a raw easterly wind of the Mediterranean.
- Levantine**, le-vant'in, *adj.* pertaining to the Levant.
- Leevee**, le-vē', *n.* an assembly of visitors.
- Level**, lev'el, *n.* a horizontal plane; *v.* to make flat.
- Leveler**, lev-el-er, *n.* one who makes level; an advocate of equality.
- Lever**, lē-ver, *n.* a bar for raising weights.
- Leverage**, lē-ver-āj, *n.* lever power.
- Leveret**, lever-et, *n.* a young hare.
- Leviable**, lev-i-ābl, *adj.* that may be levied.
- Leviathan**, le-vi-ā'than, *n.* a huge sea animal.
- Levigate**, lev-i-gāt, *v.* to make smooth.
- Levitation**, lev-it-ā'shun, *n.* the act of lightening.
- Levity**, lev-it-i, *n.* frivolity; thoughtlessness.
- Levy**, lev'y, *n.* to impose; to distraint; to collect.
- Lewd**, lüd, *adj.* lustful. [ing.]
- Lexicography**, leks-i-kog'ra-fi, *n.* dictionary making.
- Lexicology**, leks-i-kol'o-ji, *n.* the science of word-
- Lexicon**, leks-i-kon, *n.* a dictionary. [signification.]
- Liability**, li-ā-bil'-ti, *n.* responsibility.
- Liable**, li-ābl, *adj.* accountable; subject to.
- Liaison**, li-ā-zong, *n.* link; an illicit friendship between a man and a woman.
- Liar**, li-ar, *n.* a speaker of untruths.
- Lias**, li-as, *n.* a rock formation underlying theoolitic system.
- Libation**, li-bā'shun, *n.* an offering of wine.
- Libel**, li'bel, *n.* to defame.
- Libellous**, li'bel-us, *adj.* defamatory.
- Liberal**, lib'er-āl, *adj.* generous; *n.* a supporter of Liberal politics.
- Liberalise**, lib'er-al-iz, *v.* to expand; to enlighten.
- Liberalism**, lib'er-al-izm, *n.* Liberal principles.
- Liberate**, lib'er-āt, *v.* to set free.
- Liberator**, lib'er-ā-tor, *n.* one who sets free.
- Libertine**, lib'er-tin, *n.* a debauchee.
- Libertinism**, lib'er-tin-izm, *n.* licentiousness.
- Liberty**, lib'er-ti, *n.* freedom.
- Libidinous**, lib-id'in-us, *adj.* lewd.
- Librarian**, li-brā'ri-an, *n.* keeper of a library.
- Library**, li'bra-ri, *n.* a room where books are kept.
- Librate**, li'brāt, *v.* to balance.
- Libration**, li'brā'shun, *n.* act of balancing.
- Libratory**, li'bra-tō-ri, *adj.* moving like a balance.
- Libretto**, lē-bret'tō, *n.* the book of words of an opera or other extended musical composition.
- Licence**, li'sens, *n.* permission.
- Licencee**, li-sen-sē, *n.* a licence holder.
- Licentiate**, li-sen'shi-āt, *n.* one who holds licence for a profession.
- Licentious**, li-sen'shus, *adj.* unrestrained; immoral.
- Lichen**, li'ken, *n.* a plant of the moss order.
- Licit**, lis'it, *adj.* lawful; proper.
- Lick**, lik, *v.* to draw the tongue over the surface of

- Lictor**, lik'tor, *n.* a court official of ancient Rome.  
**Lie**, li, *v.* to utter falsehood; *v.* to remain prostrate.  
**Lief**, lēf, *adv.* willingly; gladly.  
**Liege**, lēj, *n.* a vassal.  
**Lien**, lī'en or lē'en, *n.* a legal claim.  
**Lieu**, li, *n.* place; room; stead.  
**Lieutenant**, lēf'ten'ant, *n.* an officer next below a  
**Life**, lif, *n.* vitality; animate existence. [captain.  
**Life-guards**, lif-gārdz, *n.* a cavalry regiment.  
**Lifeless**, lif'les, *adj.* dead; inert.  
**Lift**, lift, *v.* to raise to a higher position.  
**Ligament**, lig'a-ment, *n.* a cord.  
**Ligation**, li-gā'shun, *n.* act or condition of binding.  
**Ligature**, lig'a-tūr, *n.* a bandage.  
**Light**, lit, *n.* the agent which renders objects  
 visible; knowledge; a point of view; a win-  
**Lighten**, lit'en, *v.* to render lighter. [dow.  
**Lighter**, lī'ter, *n.* a river barge. [guidance at sea.  
**Light-house**, lit'how's, *n.* a house with a light for  
**Light-minded**, lit'mind'ed, *adj.* volatile.  
**Lightning**, lit'ning, *n.* an electric flash in the sky.  
**Lights**, lits, *n.* the lungs.  
**Lightsome**, lit'sum, *adj.* light-hearted.  
**Ligneous**, lig'nē-us, *adj.* woody.  
**Lignine**, lig'nin, *n.* woody fibre.  
**Lignite**, lig'nit, *n.* wood coal. [bark.  
**Lignum**, lig'num, *n.* wood apart from tissues or  
**Like**, lik, *adj.* equal; similar; *n.* resemblance; *v.*  
 to enjoy; *v.* to be pleased with.  
**Likelihood**, lik'lī-hood, *n.* probability.  
**Liken**, lik'en, *v.* to compare.  
**Likeness**, lik'ness, *n.* a portrait.  
**Liking**, lik'ing, *n.* pleasure; inclination.  
**Lilac**, lī'lak, *n.* a shrub.  
**Lilaceous**, lī-lī-ā'shus, *adj.* relating to lilies.  
**Lilliputian**, lī-lī-pū'shan, *adj.* dwarfish.  
**Lilt**, lilt, *v.* to sing cheerfully.  
**Limb**, lim, *n.* an arm, leg, or foot; branch of a  
 tree; *v.* to dismember.  
**Limber**, lim'ber, *adj.* flexible; *n.* a two-wheeled  
 attachment to a gun-carriage.  
**Limberness**, lim'ber-ness, *n.* flexibility.  
**Limbo**, lim'bō, *n.* a place of restraint or part of  
**Limit**, lim'it, *n.* restriction; bounds. [Hades.  
**Limitation**, lim-it-ā'shun, *n.* restriction.  
**Limn**, lim, *v.* to draw or paint.  
**Limner**, lim'ner, *n.* a portrait painter.  
**Limp**, limp, *v.* to walk lame; *adj.* lacking stiffness.  
**Limpet**, lim'pet, *n.* a small shell-fish that sticks to  
**Limpid**, lim'pid, *adj.* clear. [rocks.  
**Limpidity**, lim-pid'it-i, *n.* clearness.  
**Limy**, lī'mī, *adj.* like lime; viscous.  
**Linchpin**, linsh'pin, *n.* a bolt for an axle.  
**Linden**, lin'den, *n.* the lime tree.  
**Line**, lin, *n.* a mark drawn, stretched, or scored  
 from point to point; a cord; a longitudinal  
**Lineage**, lin'e-āj, *n.* race; family. [extension.  
**Lineal**, lin'e-al, *adj.* hereditary.  
**Lineament**, lin'e-ā-ment, *n.* feature; outline.  
**Linear**, lin'e-ar, *adj.* straight; in line; composed  
**Linens**, lin'en, *n.* cloth made from flax. [of lines.  
**Liner**, lī'ner, *n.* a ship making passages by a certain  
 line, *n.* heather. [line or route.  
**Linger**, ling'ger, *v.* to lag behind.  
**Lingerer**, ling'ger-er, *n.* a laggard.  
**Lingual**, ling'gwal, *adj.* pertaining to the tongue.  
**Linguist**, ling'gwist, *n.* one skilled in languages.  
**Linguistic**, ling-gwist'ik, *adj.* pertaining to lan-  
**Liniment**, lin'i-ment, *n.* ointment. [guage.  
**Link**, *n.* a connecting part; a torch; *v.* to connect.  
**Links**, link's, *n.* ground on which golf is played.  
**Linnean**, lin-ē'an, *adj.* pertaining to the Linnean  
 classification.  
**Linnets**, lin'et, *n.* a small singing bird.  
**Linoleum**, lin-ō'le-um, *n.* a kind of floor-covering.  
**Linotype**, lin-ō-tip, *n.* a type-setting machine.  
**Linsed**, lin'sed, *n.* flax-seed.  
**Linsey-woolsey**, lin-zī-wool'zī, *n.* a mixture of  
 linen and wool.  
**Linstock**, lin'stok, *n.* a gunner's match.  
**Lint**, lint, *n.* scraped flax fibre for wound dressing.  
**Lintel**, lin'tel, *n.* a head-piece of a door.  
**Lion**, lī'on, *n.* a well-known carnivorous animal; a  
 prominent person or object.  
**Lionize**, lī'on-iz, *v.* to flatter; *v.* to treat as eminent.  
**Liquation**, lik-wā'shun, *n.* the act of rendering  
 liquid.  
**Liquefaction**, lik-wē-fak'shun, *n.* act of melting.  
**Liquefy**, lik-wē-fi, *v.* to melt.  
**Liquescent**, lik-wes'ent, *adj.* melting.  
**Liqueur**, lik'er-, *n.* a cordial.  
**Liquid**, lik'wid, *n.* fluid.  
**Liquidate**, lik'wid-āt, *v.* to settle, or wind up.  
**Liquidation**, lik-wid-ā'shun, *n.* act of liquidating.  
**Liquidator**, lik-wid-ā'tor, *n.* one who winds up  
 insolvent estates.  
**Liquor**, lik'or, *n.* a liquid; strong drink; spirits.  
**Liquorice**, lik'er-is, *n.* Spanish juice.  
**Lisp**, *v.* to whisper, or pronounce sibilant im-  
**Lissome**, lis'um, *adj.* supple. [perfectly.  
**List**, *n.* a catalogue; the edge of cloth; *v.* to  
 desire; *v.* to listen.  
**Listel**, list'el, *n.* a narrow fillet.  
**Listen**, lis'n, *v.* to hearken; *v.* to give close attention.  
**Listener**, lis'ner, *n.* one who listens.  
**Listlessly**, list'les-li, *adv.* carelessly.  
**Litany**, lit'an-i, *n.* form of a public prayer.  
**Literal**, lit'er-al, *adj.* real; exact.  
**Literary**, lit'er-ar-i, *adj.* versed in or relating to  
**Literate**, lit'er-āt, *adj.* learned. [literature.  
**Literati**, lit'er-ā'tī, *n.* men of letters.  
**Literature**, lit'er-ā-tūr, *n.* books and writings  
 collectively; the science of letters.  
**Lithe**, lith, *adj.* flexible; nimble.  
**Litheness**, lith'ness, *adj.* flexibility; tenderness.  
**Lithograph**, lith'o-graf, *n.* a stone print; *v.* to  
 write on stone and print therefrom.  
**Lithography**, lith-og-raf-i, *n.* art of writing on  
 stone.  
**Litigant**, lit'i-gant, *n.* one engaged in a lawsuit.  
**Litigate**, lit'i-gāt, *v.* to engage in contention at law.  
**Litigation**, lit-i-gā'shun, *n.* contention in law.  
**Litigious**, lit-if'yus, *adj.* inclined to legal conten-  
 tion.  
**Litmus**, lit'mus, *n.* dye, obtained from lichens,  
 which is used as a chemical reagent.  
**Litre**, lē'tr, *n.* a French liquid measure.  
**Litter**, lit'r, *n.* rubbish left lying about; a hand  
 carriage for the dead or injured; the young  
 of an animal produced at one birth.  
**Little**, lit'l, *adj.* small in size, quantity, or degree.  
**Littoral**, lit-to-ral, *n.* pertaining to the shore.  
**Liturgical**, lit-ur'jik-al, *adj.* relating to liturgy.  
**Liturgy**, lit'ur-jī, *n.* the ritual prescribed for public  
 worship.  
**Livelihood**, liv'lī-hood, *n.* subsistence; means of  
**Liveliness**, liv'lī-ness, *n.* gaiety. [living.  
**Livelong**, liv'long, *adj.* tedious; long-lasting.  
**Lively**, liv'li, *adj.* animated; active.  
**Liver**, liv'er, *n.* organ of bile secretion.  
**Livery**, liv'er-i, *n.* a uniform worn by servants.  
**Liveryman**, liv'er-i-man, *n.* one who wears livery;  
 a member of a city guild.  
**Livestock**, liv'stok, *n.* farm animals.  
**Lived**, liv'id, *adj.* discoloured; *n.* a lead colour.  
**Living**, liv'ing, *n.* support; a benefice.  
**Livraison**, liv-rā-zong-, *n.* a member of a book  
 published in serial form.  
**Lixivation**, lik-siv-i-ā'shun, *n.* the process of washing  
 substances in fluid for dissolving purposes.  
**Lizard**, līz'erd, *n.* a saurian reptile.  
**Llama**, lā-ma, *n.* S. American ruminant, load-  
 carrying.  
**Llano**, lā'no, *n.* a prairie.  
**Lloyd's**, loidz, *n.* shipping intelligence centre and  
 insurance market.  
**Loach**, lōch, *n.* a small river-fish.  
**Load**, lōd, *n.* a burden; *v.* to make heavy.  
**Loadstar**, lōd'stār, *n.* the polestar.  
**Loadstone**, lōd'stōn, *n.* magnetic ore.  
**Loaf**, lōf, *n.* a shaped mass of bread or sugar; *v.*  
 to lounge idly.  
**Loafer**, lō'fer, *n.* an idler.  
**Loam**, lōm, *n.* soil; marl.  
**Loan**, lōn, *n.* money or object lent; *v.* the lending  
**Loath**, lōth, *adj.* unwilling. [thereof.  
**Loathe**, lōth, *v.* to detest.  
**Loathsomeness**, lōth'sum-ness, *n.* the quality of  
 being loathsome.  
**Lobate**, lō'bāt, *adj.* composed of lobes.  
**Lobby**, lōb'i, *n.* an anteroom.  
**Lobe**, lōb, *n.* a division of the brain, lungs, etc.  
**Lobelia**, lō-bē-lī-a, *n.* a flowering plant.  
**Lober**, lōb'ster, *n.* a shell-fish.  
**Local**, lōkl, *adj.* pertaining to a place; restricted.  
**Localise**, lō'kal-iz, *v.* to render local.  
**Locality**, lō-kal'i-tī, *n.* place; district; position.  
**Locate**, lō-kāt-, *v.* to place; *v.* to mark the location  
**Location**, lō-kā'shun, *n.* a site. [of.  
**Loch**, loh, *n.* Scottish name for a lake.  
**Lock**, lok, *n.* an appliance for fastening doors,  
 cabinets, etc.; the inclosure of a canal; *v.* to  
 secure; *v.* to confine; *v.* to unite.  
**Lockage**, lok'āj, *n.* the locks of a canal.  
**Locker**, lok'er, *n.* a chest or cupboard.  
**Locket**, lōk'et, *n.* a little case; a pendant.



**Lockram**, lok'ram, *n.* a coarse cloth made at Locrenan in Brittany. [locks.]  
**Locksmith**, lok'smith, *n.* a maker and mender of locomotion, lo-ko-mo'shun, *n.* movement.  
**Locomotive**, lo-ko-mo'tiv, *n.* a railway engine.  
**Locorestive**, lo-ko-rest'iv, *adj.* remaining stationary.  
**Locum-tenens**, lō-cūm tē'nens, *n.* someone who temporarily takes over another's duties, especially those of a doctor or clergyman.  
**Locus**, lo'kus, *n.* place; curve described by a point.  
**Locust**, lō'kust, *n.* a destructive winged insect; a thorny tree.  
**Locution**, lo-kū'shun, *n.* the art of speaking.  
**Lode**, lōd, *n.* a metallic vein; a channel.  
**Lodestone**, lōd'stōn, *n.* a magnetic stone.  
**Lodge**, lōj, *n.* a cottage at the entrance to a park; a friendly society or its place of meeting.  
**Lodger**, lōj'er, *n.* one who lives in the house of another. [lery; an upper room.]  
**Loft**, *n.* the space close under the roof; a gallogarithm, log'ā-rithm, *n.* mathematical term.  
**Log-book**, log'book, *n.* journal of a ship's course.  
**Loggerhead**, log'er-hed, *n.* a dunce.  
**Loggia**, lōj'a, *n.* a covered walk at the side of a logic, lōj'ik, *n.* the art of reasoning. [house.]  
**Logical**, lōj'ik-al, *adj.* reasonable.  
**Logician**, lo-jish'an, *n.* one versed in logic.  
**Log-line**, log'lin, *n.* line for measuring a ship's way. [symbol, or type.]  
**Logogram**, lō'gō-gram, *n.* an abbreviated word.  
**Logomachy**, log-om'ā-ki, *n.* wordy dispute.  
**Logwood**, log'wood, *n.* dark red wood used in loins, loin, *n.* the part above the hip. [dyeing.]  
**Loiter**, loj'ter, *v.* to delay.  
**Loll**, lol, *v.* to lean lazily.  
**Lollard**, lol'erd, *n.* a follower of Wyclif.  
**Lollipop**, lol-li-pōp', *n.* a sweetmeat.  
**Lombard**, lom'berd, *n.* an inhabitant of Lombardy; an old-time banker.  
**Longevity**, lon-jev'it-i, *n.* long life.  
**Longing**, long'ing, *n.* craving; desire.  
**Longitude**, lon-jit'ūd, *n.* length; distance from loo, *n.* a card game. [east to west.]  
**Look**, *n.* to observe; to take sight of.  
**Look-out**, look'out, *n.* a watching for.  
**Loom**, *n.* a weaving machine; *v.* to appear in loon, *n.* a water-fowl; a mean fellow. [sight.]  
**Loop**, *n.* a noose; a bend; a thong.  
**Loophole**, loop'hōl, *n.* hole in a wall; way of escape.  
**Loose**, loos, *adj.* unfastened; not dense; lax.  
**Loosen**, loos'n, *v.* to unfasten; to relax.  
**Look**, *n.* plunder; *v.* to plunder.  
**Lopsided**, lop-sid'ed, *adj.* unequal; heavier or more inclined in one direction.  
**Loquacious**, lō-quā'shūs, *adj.* talkative.  
**Loquacity**, lo-kwas'it-i, *n.* talkativeness.  
**Lord**, lawrd, *n.* a peer; a person of rank and authority.  
**Lordliness**, lawrd'li-ness, *n.* dignity.  
**Lordling**, lawrd'ling, *n.* a little lord; a presummer.  
**Lordship**, lawrd'ship, *n.* dominion; the condition of being a lord.  
**Lore**, lōr, *n.* learning; doctrine.  
**Lorette**, lōr-et', *v.* a system of pruning; an elegant loose woman.  
**Lorgnette**, lōr-nyet', *n.* an opera-glass.  
**Lorry**, lor'i, *n.* a four-wheeled waggon.  
**Lose**, looz, *v.* to misplace; to waste; to suffer damage or defeat.  
**Lothario**, lo-thā'ri-o, *n.* a male flirt.  
**Lotion**, lō'shun, *n.* a medicinal wash.  
**Lottery**, lot'er-i, *n.* chance; prize-giving by lot.  
**Lotus**, lō'tus, *n.* the Egyptian water-lily.  
**Lough**, loh, *n.* a lake (Irish spelling).  
**Lounge**, lownj, *v.* to loiter.  
**Lounge-lizard**, lownj-liz'ard, *n.* a loafer.  
**Lout**, lout, *n.* a stupid fellow.  
**Lovable**, lov'able, *adj.* deserving of love.  
**Love**, luv, *n.* affection; regard; esteem.  
**Love-feast**, luv'fēst, *n.* a religious festival.  
**Lover**, luv'er, *n.* one who loves; a sweetheart.  
**Love-sick**, luv'sik, *adj.* overcome with amorous feeling.  
**Low-bred**, lō'bred, *adj.* of low birth; vulgar.  
**Lower**, lō'er, *v.* to humble.  
**Lower**, low'er, *v.* to threaten; to appear dark.  
**Lowering**, low'er'ing, *adj.* cloudy.  
**Lowing**, lō'ing, *adj.* bellowing; *n.* cry of cattle.  
**Lowliness**, lō'li-ness, *n.* humility.  
**Lowness**, lō'ness, *n.* dejection.

**Low-water**, lō'waw-ter, *n.* the lowest point of ebb-  
**Loxia**, lok'si-a, *n.* wry-neck. [tide.]  
**Loyal**, lo'i'al, *adj.* faithful.  
**Loyalty**, lo'i-al-ti, *n.* fidelity in allegiance.  
**Lozenge**, lō'enz, *n.* a rhomb; a small sweetmeat.  
**Lubber**, lub'er, *n.* a clown; a clumsy fellow.  
**Lubricant**, loo'brik-ant, *n.* a smoothing material.  
**Lubricate**, loo'brik-āt, *v.* to make smooth.  
**Luce**, loos, *n.* a fresh-water fish.  
**Lucent**, loo'sent, *adj.* resplendent.  
**Lucernal**, loo-ser'nal, *adj.* relating to a lamp.  
**Lucerne**, loo-ser'n, *n.* a fodder plant.  
**Lucid**, loo'sid, *adj.* clear; transparent.  
**Lucidity**, loo-sid'it-i, *n.* light.  
**Luck**, luk, *n.* fortune; fate; chance.  
**Luckless**, luk'less, *adj.* unfortunate.  
**Lucky**, luk'i, *adj.* fortunate.  
**Lucrative**, loo'kra-tiv, *adj.* gainful; profitable.  
**Lucubration**, loo-kū-brā'shun, *n.* product of study.  
**Ludicrous**, loo'di-krus, *adj.* laughable.  
**Lues**, lū'ez, *a.* plague.  
**Luff**, luf, *v.* turn ship to windward.  
**Luggage**, lug'ij, *n.* personal travelling baggage.  
**Lugger**, lug'ger, *n.* a small sailing ship.  
**Lugubrious**, loo-gū'bri-us, *n.* doleful.  
**Lukewarm**, look-wawrm, *adj.* tepid.  
**Lull**, lul, *n.* an interval of calm or silence.  
**Lullaby**, lul'ā-bi, *n.* a song to quieten children.  
**Lumbago**, lum-bā'go, *n.* rheumatism in the loins.  
**Lum'bar**, *adj.* pertaining to the loins.  
**Lumber**, lum'ber, *n.* timber; anything cumbersome.  
**Luminary**, loo'min-ar-i, *n.* a body giving light.  
**Luminous**, loo'min-us, *adj.* shining.  
**Lump**, *n.* a mass of unshapen form and uncertain  
**Lumper**, lump'er, *n.* a ship labourer. [size.]  
**Lumpish**, lump-ish, *adj.* bulky; heavy.  
**Lumpy**, lump-i, *adj.* full of lumps.  
**Lnacy**, loo'na-si, *n.* insanity.  
**Lunar**, loo'ner, *adj.* of the moon.  
**Lunary**, loo'ner-i, *adj.* pertaining to the moon.  
**Lunate**, loo'nāt, *adj.* half-moon shape.  
**Lunatic**, loo'na-tik, *n.* a madman; one insane.  
**Lunation**, loo-nā'shun, *n.* the interval between two lunar revolutions.  
**Lunch**, lunsh, *n.* a light repast between breakfast and dinner; *v.* to take same.  
**Lune**, loon, *n.* anything of half-moon form.  
**Lunette**, loo-net', *n.* a small moon; a detached  
**Lung**, *n.* a breathing organ. [bastion.]  
**Lunge**, lunj, *v.* a sudden thrust.  
**Lupine**, loo'pin, *adj.* wolf-like; *n.* a plant.  
**Lupus**, loo'pus, *n.* a corroding skin disease.  
**Lurch**, *v.* to shift; *n.* a sudden roll of a ship.  
**Lurcher**, lurch'er, *n.* a lurker; a kind of sporting  
**Lure**, loor, *v.* to snare. [dog.]  
**Lurid**, loo'rid, *adj.* gloomy; ghastly.  
**Lurk**, *v.* to skulk; to lie in wait.  
**Luscious**, lush'us, *adj.* delicious; cloyingly rich.  
**Lush**, *adj.* fresh; succulent.  
**Lusory**, loo'so-ri, *adj.* playful.  
**Lust**, *n.* carnal desire; *v.* to crave immoderately.  
**Lustful**, lust'ful, *adj.* sensual. [purification.]  
**Lustral**, lus'tral, *adj.* used in the ceremony of  
**Lustration**, lus-trā'shun, *n.* purification by sacri-  
**Lustre**, lus'tr, *n.* brightness; splendour. [fice.]  
**Lustrous**, lus'trūs, *adj.* shining; luminous.  
**Lustrum**, lus'trum, *n.* a period of five years.  
**Lusty**, lus'ti, *adj.* robust; vigorous.  
**Lutarius**, loo-tā'ri-us, *adj.* mud-like.  
**Lute**, loot, *n.* a stringed instrument.  
**Lute-string**, loot-string, *n.* string of a lute.  
**Lutheran**, loo'ther-an, *adj.* relating to the doctrines of Luther.  
**Luxate**, luks'āt, *v.* to put out of joint.  
**Luxuriant**, luk-zū'ri-ant, *adj.* abundant. [excess.]  
**Luxuriate**, luk-zū'ri-āt, *v.* to indulge; to grow to  
**Luxurious**, luk-zū'ri-us, *adj.* pleasurable; given to luxury. [costly things.]  
**Luxury**, luks'ū-ri, *n.* a delicacy; indulgence in  
**Lyceum**, li-se'um, *n.* a literary society; or the place where it meets. [ate.]  
**Lydian**, lid'i-ān, *adj.* soft and slow music; effemin-  
**Lye**, li, *n.* a solution from ashes or alkaline salt.  
**Lying**, li-ing, *n.* falsifying; *adj.* recumbent.  
**Lying-to**, li'ing-too, *v.* checking in sailing; sailing so as to front the waves.  
**Lymph**, limf, *n.* a fluid contained in animal bodies.  
**Lymphatic**, lim-fat'ik, *adj.* relating to lymph.  
**Lynch**, linsh, *v.* to punish without legal trial.  
**Lyre**, lir, *n.* a stringed musical instrument.  
**Lyric**, lir'ik, *n.* a poem to be sung.  
**Lyrist**, lir'ist, *n.* one who plays the lyre.

**M**

**Mab**, *n.* fairy queen.  
**Macabre**, mak-ä-br, *adj.* gruesome.  
**Macadamise**, mak-ad'am-iz, *v.* to line a road with broken stones.  
**Macarise**, mak-ar-iz, *v.* to bless.  
**Macaroni**, mak-a-rö'ni, *n.* long hollow rolls of dried flour paste which are used for food.  
**Macaroon**, mak-a-rün', *n.* a cake made of almond paste, white of egg, and sugar.  
**Macaw**, ma'cör, *n.* a species of parrot.  
**Mace**, mä, *n.* spice; a staff of authority.  
**Macedoine**, mas-a-dwoin', *n.* a mixture of chopped fruit or vegetables.  
**Macerate**, mas'er-ät, *v.* to steep; to attenuate.  
**Machiavellian**, mak-i-ä-vél'yan, *adj.* cunning in politics.  
**Machination**, mak-in-ä'shun, *n.* an artful plot.  
**Machine**, ma-shén', *n.* a mechanical contrivance producing action and force. [of machines.  
**Machinist**, ma-shén'ist, *n.* a constructor or worker  
**Mackerel**, mak'er-el, *n.* a scavenging salt-water fish.  
**Macrobote**, ma-krö'bi-öt, *n.* one of long life.  
**Macrocosm**, mak-ro-kozm, *n.* the universe.  
**Macula**, mak'ü-la, *n.* a surface spot.  
**Madden**, mad'n, *v.* to enrage.  
**Madeira**, ma-dé-ra, *n.* a wine produced in Madeira.  
**Madonna**, ma-don'ä, *n.* the Virgin.  
**Madrepore**, mad're-pör, *n.* coral.  
**Madrigal**, mad'ri-gal, *n.* a part song; short poem.  
**Maelstrom**, mä'l'strom, *n.* a whirlpool.  
**Magazine**, mag-a-zén', *n.* a periodical; military storehouse.  
**Magdalen**, mag'da-len, *n.* a repentant prostitute.  
**Magenta**, maj'en-tä, *n.* a colour which is a blend of purple and red.  
**Maggot**, mag'ot, *n.* a worm; a grub.  
**Magi**, mä'ji, *n.* ancient Persian priests; wise men.  
**Magian**, mä'ji-an, *adj.* relating to the Magi.  
**Maglip**, ma-gilp', *n.* painter's mixture of linseed oil and mastic varnish.  
**Magic**, maj'ik, *n.* enchantment; sorcery.  
**Magical**, maj'ik-al, *adj.* produced by magic.  
**Magician**, ma-jish'an, *n.* an enchanter.  
**Magisterial**, maj-is'te-ri-al, *adj.* masterful.  
**Magistracy**, maj'is-tra-si, *n.* the body of magistrates.  
**Magistrate**, maj'is-trät, *n.* a public civil officer.  
**Magnanimity**, mag-na-nim'it-i, *n.* high-mindedness.  
**Magnate**, mag'nät, *n.* a man of rank or influence.  
**Magnesia**, mag-né'shi-a, *n.* a light white powder.  
**Magnet**, mag'net, *n.* loadstone.  
**Magnetism**, mag-net-izm, *n.* power of attraction.  
**Magnetize**, mag-net-iz, *v.* to influence; to attract.  
**Magnificence**, magn-if-i-sens, *n.* pomp; grandeur.  
**Magniloquence**, mag-nil'o-kwens, *n.* high-sounding phrases.  
**Magnolia**, mag-nö'li-ä, *n.* a flowering tree or shrub bearing large flowers.  
**Magpie**, mag'pi, *n.* a bird of the crow species.  
**Mahogany**, ma-hog'an-i, *n.* a fine hard-wood.  
**Maim**, mäim, *v.* to injure; to make lame.  
**Mainland**, män'land, *n.* the land as distinct from sea.  
**Maintain**, män-tän', *v.* to support; to uphold.  
**Maintenance**, män'ten-ans, *n.* sustenance.  
**Majesty**, maj'es-ti, *n.* dignity; royal state.  
**Major**, maj'jer, *adj.* greater; elder; *n.* a military officer.  
**Major-domo**, maj'jer-dö'mo, *n.* a general steward.  
**Majority**, ma-jör'it-i, *n.* the larger number; full age; a major's rank.  
**Malachite**, mal'ak-it, *n.* a green mineral.  
**Maladministration**, mal-ad-min-is-tra'shun, *n.* bad government.  
**Malady**, mal'ä-di, *n.* sickness; ailment.  
**Malaise**, ma-läz', *n.* uneasiness.  
**Malapert**, mal'a-pert, *adj.* forward; bold.  
**Malapropism**, mal-a-prop-izm, *n.* misapplication of Malar, mal'ar, *adj.* relating to the cheek. [words.  
**Malaria**, ma-lä'ri-a, *n.* a febrile malady.  
**Malcontent**, mal'kon-tent, *n.* a discontented person.  
**Malediction**, mal-e-dik'shun, *n.* a curse. [son.  
**Malefactor**, mal-e-fak'tor, *n.* a criminal.  
**Malevolence**, mal-ev'o-lens, *n.* enmity.  
**Malefeasance**, mal-féz'ans, *n.* bad conduct.  
**Malformation**, mal-form-ä'shun, *n.* deformity.  
**Malice**, mal'is, *n.* spite; ill-will.  
**Malicious**, mal-ish-us, *adj.* wicked; spiteful.  
**Malign**, ma-lin, *v.* malicious; badly disposed.

**Malignant**, ma-lig'nant, *adj.* spiteful.  
**Malingering**, ma-ling'ger-er, *n.* one who feigns sickness.  
**Mallison**, mal'l-i-zun, *n.* a curse. [ness.  
**Malleable**, mal'e-äbl, *adj.* ductile.  
**Malmsey**, mäim'zi, *n.* a wine.  
**Malpractice**, mal-prak'tis, *n.* evil practice.  
**Maltster**, mawlt'ster, *n.* one who makes malt.  
**Maltreatment**, mal-trét'ment, *n.* improper treatment.  
**Malversation**, mal-ver-sä'shun, *n.* evil practices.  
**Mammer**, mam'mer, *v.* to hesitate.  
**Mammillary**, mam'il-er-i, *adj.* pertaining to the breasts.  
**Mammon**, mam'on, *n.* the god of wealth; riches.  
**Mammoth**, mam'uth, *n.* a large extinct animal of the elephant kind; *adj.* gigantic.  
**Manacles**, man'a-klz, *n.* handcuffs.  
**Manageable**, man'ä-j-äbl, *adj.* governable.  
**Manciple**, man'se-pl, *n.* a steward.  
**Mandamus**, man-dä'mus, *n.* writ of command from a higher court to a lower.  
**Mandarin**, man'da-rin, *n.* a Chinese official.  
**Mandatory**, man'da-ta-ri, *n.* one to whom a mandate is addressed.  
**Mandate**, man'date, *n.* an order, a charge; a command.  
**Mandible**, män'di-bl, *n.* lower jaw; part of the organs used by insects for seizing food and eating it.  
**Mandibular**, man-dib'ü-lar, *adj.* pertaining to the jaw.  
**Mandolin**, män-dö'lin, *n.* an early stringed instrument. [ing.  
**Manducation**, man-dü-kä'shun, *n.* the act of chewing.  
**Manège**, man-äzh', *n.* the art of horse-training.  
**Manes**, män'ez, *n.* tutelary spirits of the departed.  
**Manganese**, mang'an-iz, *n.* a hard brittle metal.  
**Mangel-wurzel**, mang'el-verz'l, *n.* a root crop grown for cattle food.  
**Manger**, män'jer, *n.* a feed box. [pressing clothes.  
**Mangle**, män-gl', *v.* to smash; *n.* a machine for  
**Mangy**, män'ji, *adj.* scabby.  
**Maniac**, mä'ni-ak, *n.* a madman.  
**Maniacal**, ma-ni'ak-al, *adj.* affected with insanity.  
**Manicate**, man'kä-t, *adj.* covered with matted hair.  
**Manifesto**, man-i-fes'to, *n.* a public declaration.  
**Manikin**, man'i-kin, *n.* a dwarf.  
**Manipulate**, man-ip'ü-lät, *v.* to work with the hands; to handle.  
**Manliness**, man'lli-nes, *n.* bravery; manly qualities.  
**Manna**, män'a, *n.* a food on which the Israelites lived in their journey through the wilderness; anything pleasant that comes unexpectedly.  
**Mannequin**, män-é-kin', *n.* a person who is employed to exhibit clothes, etc.  
**Mannerism**, man'er-izm, *n.* peculiarity of writing, speech, or behaviour.  
**Mancœuvre**, man-oö'ver, *n.* an adroit strategy.  
**Manometer**, man-om'e-ter, *n.* an instrument for measuring gases.  
**Manor**, man'or, *n.* a feudal lordship.  
**Manorial**, man-ö'ri-al, *adj.* pertaining to a manor.  
**Man slaughter**, man'slaw-ter, *n.* wilful slaying.  
**Mantel**, man'tel, *n.* a shelf over a fireplace.  
**Manual**, man'ü-al, *adj.* pertaining to the hand.  
**Manufactory**, man-ü-fak'tor-i, *n.* a factory.  
**Manufacture**, man-ü-fak'tür, *v.* to make from raw materials; *n.* the thing manufactured.  
**Manumission**, man-ü-mish'un, *n.* the act of setting free.  
**Manuscript**, man'ü-skript, *n.* written matter.  
**Manx**, mangs, *adj.* pertaining to the Isle of Man.  
**Maraschino**, mar-as-ke'no, *n.* a liqueur distilled from cherries.  
**Marasmus**, mar-as'mus, *n.* a flesh-wasting.  
**Maraud**, ma-rawd', *n.* to wander in quest of plunder.  
**Marcescent**, mar-ses'ent, *adj.* withering.  
**Marches**, mä'rch'ez, *n.* borders of a country.  
**Marchioness**, mä'rh-o-nes', *n.* a wife or widow of a Marquis.  
**Marcid**, mä'sid, *adj.* withered.  
**Mare**, mër, *n.* a female horse. [butter.  
**Margarine**, mä'r-gar-én', *n.* a fatty imitation of  
**Marginal**, mä'r'jin-al, *adj.* in the margin.  
**Marigold**, mä-r'i-gold, *n.* a yellow-flowering plant.  
**Marine**, ma-rin', *n.* a soldier serving on a ship; the navy; *adj.* relating to the sea.  
**Mariolatry**, mä-r-i-öl'ä-tri, *n.* worship of the Virgin.  
**Marital**, mä'r'it-al, *adj.* relating to a marriage.  
**Maritime**, mä'r'it-im, *adj.* pertaining to the sea.



- Mark**, mårk, *n.* a sign; an impression; a badge; a coin of Germany and Finland; *v.* to make a mark; to note.
- Marl**, mårí, *n.* rich earth or limy clay.
- Marlaceous**, mår-lå-shus, *adj.* marl-like.
- Marline**, mår-lín, *n.* a small protective rope.
- Marmalade**, mår-må-låd, *n.* preserve made from oranges.
- Marmorean**, mår-mõ-re-an, *adj.* like, or pertaining to marble.
- Maroon**, ma-roon', *n.* claret colour; a fugitive negro slave; *v.* to put ashore on an uninhabited island.
- Marque**, mårk, *n.* licence to make reprisals.
- Marquee**, mår-ké', *n.* a large field tent.
- Marquetry**, mår-ke-trí, *n.* inlaid shell-work.
- Marquis**, mårk-wis, *n.* a title of nobility ranking next below a duke.
- Marriageable**, mar-ij-abl, *adj.* in condition to marry. [in bones.]
- Marrow**, mar'õ, *n.* essence; soft matter contained
- Mars**, mårz, *n.* a planet; the god of war.
- Marseillaise**, mår-sål-yås, *n.* French revolutionary hymn.
- Marshal**, mår'shal, *n.* an officer for regulating ceremonies; officer of the highest rank in an army; *v.* to assemble; to arrange.
- Marsupial**, mår-sü-pi-al, *adj.* having pouch for carrying young.
- Martello**, mår-tel'õ, *n.* a small round fort.
- Martial**, mår'shal, *adj.* military; bold.
- Martin**, mår'tin, *n.* a small bird of the swallow kind.
- Martinet**, mår'tin-et, *n.* a severe disciplinary.
- Martingale**, mår'tin-gål, *n.* a horse bridle.
- Martinmas**, mår'tin-mas, *n.* feast of St. Martin, Nov. 11.
- Martyr**, mår'ter, *n.* one who suffers for a principle.
- Martyrdom**, mår'ter-dom, *n.* the suffering of a martyr.
- Marvellous**, mår-vel-us, *adj.* astonishing; wonderful. [masonry.]
- Masonic**, må-son'ik, *adj.* pertaining to free-
- Masonry**, må'son-rí, *n.* stonework.
- Masquerade**, mask'er-åd, *n.* a masked revelry; *v.* to assemble in masks.
- Massacre**, mas'å-ker, *n.* carnage; butchery; murder.
- Master-key**, må'ster-ké, *n.* a key that opens a series of different locks. [skill.]
- Masterly**, må'ster-lí, *adj.* master-like; with supreme
- Masterpiece**, må'ster-pés, *n.* a great work; a chief effort. [victory.]
- Mastery**, må'ster-tí, *n.* command over; dominion;
- Mastic**, mas'tik, *n.* a kind of resin; a cement made therefrom.
- Mastriff**, mas'tiff, *n.* a large kind of watch-dog.
- Mastodon**, mas'tõ-don, *n.* a large extinct animal.
- Mastoid**, mas'toid, *adj.* like a nipple.
- Matadore**, mat'å-dõr, *n.* a bull-fighter.
- Material**, mat-é-ri-al, *adj.* essential; composed of matter.
- Materialist**, mat-é-ri-al-ist, *n.* one who disbelieves in spiritual power.
- Materiality**, mat-é-ri-al'it-tí, *n.* material existence.
- Maternal**, mat'er-nal, *adj.* motherly.
- Maternity**, ma-ter'nit-tí, *n.* condition of being a mother.
- Mathematics**, math-é-mat'iks, *n.* the science of numbers.
- Matinée**, mat-in-é', *n.* an early performance.
- Matins**, mat'ins, *n.* morning worship.
- Matrass**, mat'ras, *n.* a vessel used for chemicals.
- Matricide**, mat-ri-sid, *n.* mother murder; the murderer of a mother. [to college membership.]
- Matriculate**, mat-rik'ü-låt, *v.* to enrol; to admit
- Matrimony**, mat-ri-mun-i, *n.* marriage.
- Matrix**, må'triks, *n.* a mould.
- Matron**, må'tron, *n.* a married woman.
- Mattock**, mat'ok, *n.* a pick-axe.
- Mattress**, mat'res, *n.* a bed made of stuffed
- Maturity**, mat'ü-ri-tí, *n.* ripeness. [material.]
- Matutinal**, mat-tü'tin-al, *adj.* relating to morning.
- Maudlin**, maw'd'lin, *adj.* drunk; silly.
- Maul-stick**, maw'stik, *n.* a hand-rest used by painters.
- Mausoleum**, maw-sõ-lé-um, *n.* a stately tomb.
- Mavis**, må'vis, *n.* the thrush.
- Maw**, maw, *n.* the stomach.
- Mawkish**, mawk'ish, *adj.* nauseous; sickening; silly.
- Maxillary**, maks-il'ar-i, *adj.* relating to the jaw.
- Maximum**, maks'im, *n.* a proverb.
- Maximum**, maks'i-mum, *n.* the greatest number or quantity.
- Mayonnaise**, må-yõn-nåz', *n.* a dressing of olive oil, egg yokes, cream, vinegar, and spices used on salads.
- Mayoralty**, må'or-al-tí, *n.* office of mayor.
- Mazarine**, maz-er-en', *n.* a rich blue colour.
- Maze**, mårz, *n.* a labyrinth; *v.* to bewilder.
- Mead**, mēd, *n.* a drink made from honey; a
- Meagre**, mēgr, *adj.* scanty; poor. [meadow.]
- Mealy-mouthed**, mē'lí-mowth'd, *adj.* soft-tongued.
- Meander**, mē-an'der, *v.* to wind in and out; *n.* a winding course.
- Meaningly**, meen'-ing-lí, *adv.* significantly.
- Measles**, mēz'lz', *n.* an infectious disease causing skin irritation.
- Measurement**, mezh'ür-ment, *n.* dimensions; the act of measuring.
- Mechanic**, me-kan'ik, *n.* an artisan; *adj.* pertaining to machines.
- Mechanical**, me-kan'ik-al, *adj.* machine-like.
- Mechanics**, me-kan'iks, *n.* science of the action of force. [machine.]
- Mechanism**, mek'an-izm, *n.* the structure of a
- Mechanist**, mek'an-ist, *n.* one who constructs or tends machines.
- Medal**, med'l, *n.* coin or token, with device.
- Medallion**, me-dal'yun, *n.* a large medal.
- Medallist**, med-al-ist, *n.* one who has gained a medal.
- Meddler**, med'ler, *n.* one who interferes; a busy-body.
- Media**, mē'dí-a, *n. pl.* of medium; the means.
- Medial**, mē'dí-al, *adj.* average; middle.
- Mediate**, mē'dí-åt, *v.* to intercede.
- Mediation**, mē-dí-å-shun, *n.* the act of mediating.
- Mediatorial**, me-dí-at-õ-ri-al, *adj.* pertaining to a mediator.
- Medical**, med'ik-al, *adj.* pertaining to medicine.
- Medicament**, med'ik-å-ment, *n.* a medicinal substance. [power.]
- Medicinal**, med-is'in-al, *adj.* possessing healing
- Medicine**, med'i-sin, *n.* substances used for curative purposes.
- Medieval**, mē-dí-ē-val, *adj.* relating to the Middle Ages.
- Mediocre**, mē-dí-õ-kr, *adj.* ordinary; moderate.
- Meditative**, med-i-tå'tiv, *adj.* thoughtful; contemplative.
- Medium**, mē'dí-um, *n.* middle; a means; a person who is believed to act as an agent to the spirit world.
- Medley**, med'li, *n.* a jumble; a miscellany.
- Medullary**, me-dul'år-i, *adj.* composed of or like
- Mead**, mēd, *n.* reward. [marrow.]
- Meetly**, mē'tlí, *adv.* duly; suitably.
- Megrim**, mē'grim, *n.* pain in half of the head.
- Melancholy**, mel-an-kol-i, *n.* gloom; dejection.
- Mélée**, må-lå', *n.* a disordered conflict.
- Mellorate**, mēl'yor-åt, *v.* to improve.
- Melliferous**, mel-if'er-us, *adj.* honey-like.
- Mellifluous**, mel-if'loo-us, *adj.* smooth; softly flowing.
- Mellow**, mē'õ, *adj.* soft; ripe; mature.
- Melodious**, mel'õ-díus, *adj.* sweet sounding.
- Melodrama**, mel'õ-dram-å, *n.* sensational play.
- Melody**, mel'õ-dí, *n.* sweet sound; an air; a tune.
- Membrane**, mem-brån, *n.* the tissue lining or covering bodily parts.
- Memento**, me-men'tõ, *n.* a souvenir; a token.
- Memoir**, mem'wår, *n.* a short biography.
- Memorable**, mem'or-abl, *adj.* famous; worthy of remembrance. [note.]
- Memorandum**, mem-õ-ran'dum, *n.* a record; a
- Memorial**, mem-õ-ri-al, *n.* a monument; something which keeps a thing or person in remembrance.
- Memorialise**, me-mõ-ri-al-iz, *v.* to present a memorial to.
- Memorise**, mem-õ-riz, *v.* to learn by heart.
- Menace**, men'ås, *v.* to threaten; *n.* a threat.
- Menage**, men'aj, *n.* household.
- Menagerie**, men-aj-er-i, *n.* a collection of wild animals.
- Mendacity**, men-das'it-tí, *n.* falsehood; lying.
- Mendicant**, men'-de-kant, *adj.* reduced to beggary.
- Menial**, mē'ní-al, *adj.* servile; an inferior servant.
- Meniscus**, mē-nis'kus, *n.* new moon; shaped like a new moon.
- Menstrual**, mens'trü-al, *adj.* monthly.
- Menstruum**, men'strü-um, *n.* a solvent.
- Mensuration**, men-sür-å-shun, *n.* the science of
- Mentor**, men'tor, *n.* an adviser. [measuring.]

**Mephistophelean**, *mef-is-tō-fē'le-an*, *adj.* scoffing; cynical. [exhalations.]  
**Mephitic**, *mef-it'ik*, *adj.* pertaining to poisonous.  
**Mercantile**, *mer-cān-tīl*, *adj.* of trade; commercial.  
**Mercenary**, *mer'sen-ar-i*, *adj.* greedy; *n.* a hireling.  
**Mercery**, *mer'ser-i*, *n.* a mercer's stock.  
**Merchandise**, *mer'chan-diz*, *n.* merchantable goods. [isting of quicksilver.]  
**Mercurial**, *mer-kū'ri-al*, *adj.* active; spirited; con-Mercury, *mer-kūr-i*, *n.* quicksilver.  
**Meretricious**, *mer-i-trish'us*, *adj.* evil; showy.  
**Meridian**, *mer-id'i-an*, *n.* noon. [alluring.]  
**Meringue**, *me-rāng'*, *n.* a mixture of white of egg and sugar beaten together and subsequently cooked.  
**Meritorious**, *mer-i-tō'ri-us*, *adj.* having merit.  
**Merle**, *merl*, *n.* a blackbird.  
**Merlin**, *mer'lin*, *n.* a sort of hawk.  
**Merriment**, *mer'i-ment*, *n.* jollity; gaiety; laugh-ter.  
**Mesenteric**, *mes'en-ter-i*, *n.* an intestinal membrane.  
**Mesh**, *mesh*, *n.* opening between the threads of a net; *v.* to ensnare.  
**Mesmerism**, *mes'mer-izm*, *n.* the act of mesmeris-ing.  
**Mesne**, *mēn*, *adj.* intermediate.  
**Messenger**, *mes'en-jer*, *n.* a conveyor of messages.  
**Message**, *mes'wāj*, *n.* a dwelling and lands.  
**Metal**, *met'l*, *n.* a fusible mineral substance.  
**Metallurgy**, *met-al-ur'jī*, *n.* the science of refining metals. [tton.]  
**Metamorphosis**, *met-ā-mor'fo-sis*, *n.* a transforma-tion.  
**Metaphorical**, *met-ā-for'ik-al*, *adj.* figurative.  
**Metaphysical**, *met-a-fiz'ik-al*, *adj.* pertaining to metaphysics.  
**Metaphysics**, *met-a-fiz'iks*, *n.* science of the mind.  
**Mete**, *mēt*, *v.* to measure; *n.* boundary.  
**Metempsychosis**, *me-tem-si-kō'sis*, *n.* the passing of a soul from one body to another.  
**Meteor**, *mē-te-or*, *n.* a shooting star.  
**Meteorite**, *mē-tē-or'o-lit*, *n.* a meteoric stone.  
**Meteorology**, *mē-tē-or-o-lō-jī*, *n.* the science of the atmosphere.  
**Meter**, *mē'ter*, *n.* a measuring apparatus.  
**Methglin**, *meth-eg'lin*, *n.* a spiced liquor made from honey. [nethod.]  
**Methodical**, *meth-od'ik-al*, *adj.* according to  
**Methodism**, *meth'od-izm*, *n.* the doctrine of the Methodists.  
**Metre**, *mē'tr*, *n.* verse; poetic measure.  
**Metrical**, *met'rik-al*, *adj.* pertaining to verse.  
**Metropolitan**, *met-ro-pol'it-an*, *adj.* relating to a chief city; an archbishop.  
**Mettle**, *met'l*, *n.* spirit; courage.  
**Mettlesome**, *met'l-sūm*, *adj.* spirited.  
**Mew**, *mū*, *n.* a cat's cry; a sea-fowl; *v.* to coop up.  
**Mews**, *mūz*, *n.* a row of stables.  
**Mezzotint**, *met'zo-tint*, *n.* a style of engraving on copper.  
**Miasma**, *mē-az'mā*, *n.* noxious exhalations.  
**Michaelmas**, *mīk'l-mas*, *n.* feast of St. Michael, 29th September.  
**Microcosm**, *mī'kro-kozm*, *n.* a little world.  
**Microscope**, *mī'kro-skōp*, *n.* a magnifying instru-ment.  
**Midriff**, *mid'rif*, *n.* the diaphragm. [ment.]  
**Midshipman**, *mid'ship-man*, *n.* a naval cadet.  
**Midwifery**, *mid'wif-ri*, *n.* childbirth assistance.  
**Mien**, *mēn*, *n.* look; aspect; bearing; expression.  
**Mignonette**, *min-yun-et'*, *n.* a fragrant plant.  
**Migratory**, *mī'gra-to-ri*, *adj.* accustomed to  
**Milch**, *milch*, *adj.* yielding milk. [migrate.]  
**Mildew**, *mīl'dū*, *n.* fungus on leaves, cloth, etc.  
**Mileage**, *mīl'ij*, *n.* fees for miles covered.  
**Milesian**, *mī-lēz'yan*, *adj.* pertaining to Ireland or the Irish.  
**Militant**, *mīl't-ant*, *adj.* warlike; fighting.  
**Militate**, *mīl-it-āt'*, *v.* to contend or oppose.  
**Militia**, *mīl-ish'a*, *n.* a subsidiary military body.  
**Milky-way**, *mīlk'i-wā*, *n.* a myriad of stars that make the sky appear pale blue.  
**Mill-cog**, *mīl'kog*, *n.* the tooth of a wheel.  
**Millenary**, *mīl-en-ar-i*, *n.* comprising a thousand.  
**Millennial**, *mīl-en'yal*, *adj.* pertaining to the Millen-nium. [years of Christ's reign on earth.]  
**Millennium**, *mīl-en'yūm*, *n.* the promised 1,000  
**Millet**, *mīl'et*, *n.* an edible grain.  
**Milliard**, *mīl'i-ard*, *n.* a thousand millions.  
**Milliner**, *mīl'in-er*, *n.* a maker of or dealer in ladies' head-gear.  
**Million**, *mīl-yūn*, *n.* ten hundred thousand.  
**Millionaire**, *mīl-yūn-ār'*, *n.* a man worth a million or more.  
**Milt**, *mīlt*, *n.* the spleen; roe of fishes.

**Mimetic**, *mim-et'ik*, *adj.* imitative.  
**Mimic**, *mim'ic*, *n.* one who imitates; *v.* to imitate.  
**Mimicry**, *mim'ik-ri*, *n.* imitation.  
**Minaret**, *min-ar-et*, *n.* the turret of a mosque.  
**Mingling**, *min'sing-lī*, *adj.* affectedly.  
**Miner**, *mī'ner*, *n.* one who works in a mine.  
**Mineral**, *min'er-al*, *n.* an inorganic substance found in the earth; any substance comprising metal.  
**Mineralogy**, *min'er-al-o-jī*, *n.* science of minerals.  
**Miniature**, *min'i-ā-tūr*, *n.* a small painting; *adj.* on a small scale.  
**Minim**, *min'im*, *n.* half a semi-breve; a dwarf; a drop.  
**Minimum**, *min'im-um*, *n.* the least quantity.  
**Minion**, *min'yūn*, *n.* a kind of type; a mean favourite. [bers of a Government.]  
**Ministry**, *min'is-trī*, *n.* office of minister; the mem-Minor, *mī'nor*, *adj.* less; smaller; *n.* one under age.  
**Minority**, *min-or'i-tī*, *n.* a smaller number; state of being under age.  
**Minster**, *min'ster*, *n.* a monastery church or cathedral. [musician.]  
**Minstrel**, *min'stel*, *n.* a wandering singer; a Minstrelsy, *min'stel-sī*, *n.* minstrel music.  
**Mint**, *min*, *n.* place where money is coined; an aromatic herb. [coining.]  
**Mintage**, *mint'āj*, *n.* a thing coined; duty paid for Minus, *min'us*, *n.* less; sign of subtraction.  
**Minute-book**, *min'it-book*, *n.* book of notes of proceedings. [minute as distress signal.]  
**Minute-gun**, *min'it-gun*, *n.* a gun fired every Minutee, *min'it-shē-e*, *n.* small details.  
**Minx**, *mingks*, *n.* a pert girl.  
**Miracle**, *mīr-a-kl*, *n.* a supernatural occurrence.  
**Miradore**, *mīr'a-dore*, *n.* a gallery commanding a wide view over land or sea.  
**Mirage**, *mī-razh'*, *n.* the appearance of water on a flat expanse.  
**Miry**, *mī'ri*, *adj.* covered with mire.  
**Misadventure**, *mis-ad-vent'ūr*, *n.* misfortune.  
**Misanthropy**, *mis-an'thro-pī*, *n.* hatred of human-kind. [ception.]  
**Misapprehension**, *mis-ap-rē-hen'shun*, *n.* miscon-Misbehaviour, *mis-bē-hāv'yer*, *n.* bad conduct.  
**Misbelief**, *mis-bē-lēf*, *n.* wrong belief. [koning.]  
**Miscalculation**, *mis-kal-kū-lā'shun*, *n.* a wrong rec-Miscall, *mis-kaw'l*, *n.* to call wrongly.  
**Miscarriage**, *mis-kar'ij*, *n.* the act of bringing forth prematurely.  
**Miscegenation**, *mis-sē-jen-ā'shun*, *n.* mixture of races. [various.]  
**Miscellaneous**, *mis-sel-ā-ne-us*, *adj.* mixed; Miscellaneous, *mis-el-an-i*, *n.* a collection of varied compositions or objects.  
**Mischance**, *mis-chans'*, *n.* bad luck; mishap.  
**Mischief**, *mis'chif*, *n.* harm; injury.  
**Miscible**, *mī-si-bl*, *adj.* capable of being mixed.  
**Misconception**, *mis-kon-ep'shun*, *n.* a wrong idea.  
**Misconduct**, *mis-kon'dukt*, *n.* bad behaviour.  
**Miscreant**, *mis'kre-ant*, *n.* a vile person.  
**Misdeed**, *mis-dēd'*, *n.* a wrongful act. [offence.]  
**Misdemeanour**, *mis-de-mē-ner*, *n.* an indictable  
**Misdirect**, *mis-di-rekt'*, *v.* to direct wrongly.  
**Mise**, *miz*, *n.* expenditure; money gift to superior.  
**Misemployment**, *mis-em-ploi'ment*, *n.* unsatis-factory work.  
**Miserable**, *mīz'er-abl*, *adj.* wretched.  
**Miserere**, *mīz'er-ērē*, *n.* a hymn appealing for Divine pity.  
**Miserly**, *mīz'er-lī*, *adj.* avaricious.  
**Misery**, *mīz'er-i*, *n.* distress; poverty.  
**Mistake**, *mis-fe-zans*, *n.* the doing of a lawful act in a negligent manner.  
**Misfortune**, *mis-for'tūn*, *n.* calamity; bad fortune.  
**Misgiving**, *mis-giv'ing*, *n.* doubt; distrust.  
**Misgovernment**, *mis-guv'ern-ment*, *n.* wrongful government.  
**Misguidance**, *mis-gid'ans*, *n.* leading astray.  
**Mishap**, *mis-hap'*, *n.* an accident.  
**Mishna**, *mish'nā*, *n.* a collection of Jewish laws.  
**Misinform**, *mis-in-form'*, *v.* to inform wrongly.  
**Misinterpret**, *mis-in-ter'pret*, *v.* to interpret wrongly.  
**Misjudge**, *mis-juj'*, *v.* to judge erroneously.  
**Mislay**, *mis-lā'*, *v.* to lay in the wrong place; to lose.  
**Mislike**, *mis-lik'*, *v.* to dislike.  
**Mismanagement**, *mis-man'āj-ment*, *n.* bad man-agement.  
**Misnomer**, *mis-nō'mer*, *n.* a wrong name.  
**Misogamist**, *mis-og'am-ist*, *n.* one who dislikes marriage.



Misogynist, mis-og'in-ist, *n.* a woman hater.  
 Misprint, mis-print', *n.* a printer's error.  
 Misprision, mis-priz'h'n, *n.* a criminal oversight.  
 Misquote, mis-kwōt', *v.* to quote wrongly.  
 Misrepresentation, mis-rep-re-sent-ā'shun, *n.* an unfaithful picture or narration.  
 Misrule, mis-rool', *n.* unjust rule.  
 Missal, mis'al, *n.* a Mass book.  
 Mishape, mis-shāp', *v.* to shape wrongly.  
 Missile, mis'il, *n.* a weapon thrown by the hand.  
 Mission, mish'un, *n.* a duty a person or persons may be sent out to perform; persons sent.  
 Missionary, mish'on-ārī, *n.* one who goes on a mission; one who works to convert others to his beliefs.  
 Missive, mis'iv, *n.* a written message.  
 Misstatement, mis-stāt'ment, *n.* a wrongful statement.  
 Mist, mist, *n.* a watery vapour in the atmosphere.  
 Mistime, mis-tim', *v.* to time wrongly.  
 Mistress, mis'tres, *n.* female head of a house; a lover.  
 Mistrustful, mis-trust'ful, *adj.* suspicious.  
 Mistrunderstanding, mis-un-der-stand'ing, *n.* a mistake; disagreement.  
 Misusage, mis-ūz'āj, *n.* ill-treatment.  
 Misuse, mis-ūs', *n.* wrongful use.  
 Mitrailleuse, mē-trā'i-yāz, *n.* a breech-loading machine-gun.  
 Mitre, mī'tr, *n.* head-covering worn by bishops.  
 Mitten, mit'n, *n.* a kind of glove.  
 Mitimus, mit'i-mus, *n.* a warrant of commitment.  
 Mizzennmast, miz'n-mast, *n.* mast that holds the mizzen.  
 Mnemonics, nē-mon'iks, *n.* memory cultivation.  
 Moat, mōt, *n.* water trench round a castle.  
 Mobile, mō-bil', *adj.* capable of being moved.  
 Mobilise, mōb'il-iz, *v.* to prepare for war service.  
 Moccasin, mōk'ā-sin, *n.* shoe worn by Red Indians.  
 Mockery, mok'er-i, *n.* derision; ridicule.  
 Modal, mō'dal, *n.* pertaining to form.  
 Modality, mō-dal'it-i, *n.* mode in its logical significance.  
 Moderation, mod-er-ā'shun, *n.* temperance; avoidance of excess.  
 Moderator, mod'er-ā-ter, *n.* one who restrains; a church or university official.  
 Modernise, mod'ern-iz, *v.* to make modern.  
 Modesty, mod'est-i, *n.* virtue; chastity; humility.  
 Modicum, mod'i-kum, *n.* a small portion.  
 Modification, mod-if-ik-ā'shun, *n.* change.  
 Modillion, mō-dil'yun, *n.* an ornamental bracket.  
 Modish, mō'dish, *adj.* fashionable.  
 Modiste, mō-de'st', *n.* a dressmaker.  
 Modulate, mod'ū-lāt, *v.* to vary sounds; to inflect.  
 Modulator, mod'ū-lā'tor, *n.* one who modulates.  
 Module, mod'ūl, *n.* a small measure; a model.  
 Modulus, mod'ū-lus, *n.* a constant multiplier.  
 Mohair, mō'hār, *n.* the hair of the Angora goat; fabric made therefrom.  
 Mole, mōi-et-i, *n.* half.  
 Moll, *v.* to drudge; to smear with dirt.  
 Moire antique, mōwār-an-tek, *n.* watered silk.  
 Moist, *adj.* damp; humid.  
 Moisture, moist'ūr, *n.* humidity.  
 Molar, mō'lār, *n.* a grinding tooth; *adj.* grinding.  
 Molasses, mō-las'ez, *n.* treacle.  
 Mole, mōl, *n.* a small burrowing animal; a permanent mark on the skin. [of matter.  
 Molecule, mōl'e-kūl, *n.* one of the smaller particles.  
 Mole-skin, mōl'skin, *n.* skin of a mole; a kind of cloth.  
 Molest, mō-lest', *v.* to annoy; to disturb.  
 Molestation, mō-lest-ā'shun, *n.* the act of molesting.  
 Mollent, mōl'i-ent, *adj.* assuaging; softening.  
 Mollify, mōl'if-i, *v.* to appease; to pacify.  
 Molten, mōlt'en, *adj.* melted.  
 Moment, mō'ment, *n.* value; an instant of time.  
 Momentary, mō'ment-ar-i, *adj.* of short duration.  
 Momentous, mō-men'tus, *adj.* important.  
 Momentum, mō-men'tum, *n.* impetus; force.  
 Monachism, mon'ak-izm, *n.* the monastic life.  
 Monad, mon'ad, *n.* the ultimate atom.  
 Monarchical, mon-ark'ik-al, *adj.* pertaining to monarchy.  
 Monastery, mon'as-ter-i, *n.* a house for monks.  
 Monetary, mun'i-ter-i, *adj.* relating to money.  
 Monetize, mun'ēt-iz, *v.* to convert into money.  
 Mongrel, mung'grel, *n.* of mixed breed.  
 Monism, mō'nizm, *n.* doctrine of unity.  
 Monitor, mon'it-or, *n.* an admonisher; an instructor.  
 Monitory, mon'it-or-i, *adj.* giving warning. [tor.

Monochord, mon'ō-kord, *n.* a one-chorded instrument.  
 Monocle, mon'ō-kl, *n.* a single eye-glass.  
 Monody, mon'ō-di, *n.* song of mourning for one [wife.  
 Monogamy, mon-og'am-i, *n.* marriage to one [thing.  
 Monogram, mon'ō-gram, *n.* a design of interwoven initials.  
 Monograph, mon'ō-graf, *n.* a description of a single [thing.  
 Monolith, mon'ō-lith, *n.* a column of a single stone.  
 Monologue, mon'ō-log, *n.* a soliloquy; entertainment given by one person.  
 Monomania, mon-ō-mā-ni-ā, *n.* mental derangement on a particular subject. [in a thing.  
 Monopoly, mon-op'ō-li, *n.* the sole right of dealing.  
 Monosyllable, mon'ō-sil-abl, *n.* a word of one syllable.  
 Monotheism, mon-ō-thē'izm, *n.* belief in one God.  
 Monotony, mon-ōt'ō-ni, *n.* sameness; lack of variety.  
 Monsoon, mon-soon', *n.* a periodical Indian wind.  
 Monster, mon'ster, *n.* something unnatural.  
 Monstrosity, mon-stros'it-i, *n.* an unnatural prodigy.  
 Moody, mōo'di, *adj.* gloomy; peevish. [duct.  
 Moonshine, moon'shin, *n.* the shine of the moon.  
 Moor, moor, *n.* a heath.  
 Moorage, moor'āj, *n.* place for mooring vessels.  
 Moot, *v.* to discuss; to propose for debate.  
 Mope, mōp, *v.* to be dull.  
 Moraine, mō-rān', *n.* rocks on the edge of glaciers. [good.  
 Moral, mor'al, *adj.* relating to right or wrong.  
 Moralise, mor'al-iz, *v.* to apply moral lessons.  
 Morass, mo-ras', *n.* a marsh.  
 Morbid, mor'bid, *adj.* unsound; diseased.  
 Mordant, *adj.* biting; *n.* substance for fixing colours.  
 Moreen, mō-rēn', *n.* a mixed textile fabric.  
 Moresque, mōr-esk', *adj.* in the Moorish manner.  
 Morganatic, mor-gan-at'ik, *adj.* applied to marriage of a man with a woman of inferior rank.  
 Moribund, mor'i-bund, *adj.* dying.  
 Moroseness, mō-rōs'nes, *n.* sulkiness.  
 Morphia, mor'fi-ā, *n.* extract of opium.  
 Morphology, morf-ol'ō-jī, *n.* science of organic [form.  
 Morsel, mor'sel, *n.* a small piece.  
 Mortality, mor-tal'it-i, *n.* liability to death.  
 Mortar, mort'ar, *n.* a cement; a vessel in which substances are pounded; a shell-throwing instrument.  
 Mortgage, mor'gāj, *n.* a deed of pledge.  
 Mortification, mor-tif-ik-ā'shun, *n.* shame; chastity; a dying part.  
 Mortifying, mort'i-fi-ing, *adj.* humiliating; vexatious.  
 Mortise, mor'tis, *n.* an opening for a tenon.  
 Mortmain, mort'mān, *n.* inalienable transfer of property to a body in trust.  
 Mortuary, mort'ū-ar-i, *n.* a burial place; building for temporary reception of the dead.  
 Mosaic, mō-zā'ik, *adj.* inlaid work.  
 Moslem, mos'lem, *n.* a Mohammedan.  
 Mosque, mosk, *n.* a Mohammedan temple.  
 Mote, mōt, *n.* a speck; a particle.  
 Mother, mūth'er, *n.* a female parent.  
 Motherly, mūth'er-lī, *adj.* maternal; mother-like.  
 Motherwit, mūth'er-wit, *n.* native wit.  
 Motion, mō'shun, *n.* the condition of moving.  
 Motive, mō'tiv, *n.* that which prompts to action.  
 Motley, mōt'li, *n.* of various colours. [design.  
 Motor, mō'tor, *n.* a machine producing motion and power.  
 Mottled, mot'ld, *adj.* dappled; speckled.  
 Motto, mot'ō, *n.* a concise sentence; an inscription.  
 Moulder, mōl'd'r, *v.* to decay.  
 Mouldy, mōld'i, *adj.* grown over with fungus.  
 Moul, mōlt, *v.* to shed feathers.  
 Mountain, mōwn'tn, *n.* a lofty hill.  
 Mountainous, mōwn't-an-us, *adj.* abounding in mountains; huge.  
 Mountebank, mōwn't-i-bank, *n.* a quack; a pretender.  
 Mounting, mōwn'ting, *n.* an ascent; a setting.  
 Mournful, mōrn'ful, *adj.* lamentable.  
 Moustache, mous-tash', *n.* hair on the upper lip.  
 Movables, moov'ā-blz, *n.* goods; furniture, etc.  
 Movingly, moov'ing-lī, *adj.* with emotion.  
 Mucilage, mū'sil-āj, *n.* farmyard manure; gum.  
 Muck, muk, *n.* filth.  
 Mucus, mū'cus, *n.* a slimy substance which covers the internal organs of the body.  
 Muddle, mud'l, *n.* confusion; disorder; *v.* to confuse.

Muffin, muf'in, *n.* a light tea cake.  
 Mufti, muf'ti, *n.* a Turkish legal official; an officer's dress while off duty.  
 Muggy, mug'g, *adj.* heavy; damp; close.  
 Mulatto, mû-lat'ô, *n.* offspring of a white and a black.  
 Mulch, mulsh, *n.* a layer of loose material, usually organic, covering the soil.  
 Mulk, mulkt, *v.* to fine; *n.* a fine.  
 Muleteer, mû-lê-têr, *n.* a mule-driver.  
 Mulsh, mû'lish, *adj.* stupid; obstinate.  
 Mull, mul, *v.* to heat and sweeten; to spoil; *n.* a headland.  
 Muller, mul'er, *n.* a pulveriser; pestle.  
 Mullion, mul'yun, *n.* upright division of windows.  
 Mulse, muls, *n.* spiced wine.  
 Multifarious, mul-ti-fâ'ri-us, *adj.* of various kinds.  
 Multiped, mul-ti-ped, *n.* a many-footed insect.  
 Multiple, mul-ti-pl, *n.* an exactly divisible number; *adj.* of many parts.  
 Multiplex, mul-ti-pleks, *adj.* with many folds.  
 Multiplicity, mul-ti-plis-it-i, *n.* the condition of being numerous.  
 Multiply, mul-ti-pli, *v.* to increase in numbers.  
 Multitude, mul-ti-tud, *n.* a crowd; a large number; the people.  
 Mumble, mum'bl, *v.* to mutter.  
 Mummer, mum'er, *n.* an actor; a buffoon.  
 Mummy, mum'i, *n.* an embalmed body.  
 Mumpish, mump'ish, *adj.* sullen; glum.  
 Munch, munsh, *v.* to chew with closed lips.  
 Mundane, mun'dân, *adj.* worldly; pertaining to the world.  
 Municipal, mû-nis'ip-al, *adj.* pertaining to a town or city having local governing power.  
 Munificence, mû-nif'is-ens, *n.* generosity; bounty; liberality.  
 Muniment, mû'nî-ment, *n.* title-deed; a stronghold.  
 Munition, mû-nish'un, *n.* war materials.  
 Munition, mun'yun, *n.* (same as *Mullion*).  
 Mural, mû'ral, *adj.* relating to a wall.  
 Murder, mur'der, *n.* the act of killing; *v.* to slay a human being.  
 Muriatic, mû-ri-at'ik, *adj.* pertaining to sea-salt.  
 Murky, murk'g, *adj.* obscure; gloomy; dark.  
 Murrah, mur'an, *n.* infectious cattle disease.  
 Muscle, mus'l, *n.* fleshy fibres; animal tissue.  
 Muscles, mus'ls, *n.* contractile fibres.  
 Muscoid, musk'oid, *adj.* mouse-like.  
 Muscular, musk'û-lar, *adj.* strong; relating to the muscles. [and treasures are exhibited.]  
 Museum, mû'zê-um, *n.* place where curiosities  
 Music, mû'zik, *n.* the science of sounds; melody.  
 Musk, *n.* a strong scent obtained from the musk-muslin, muz'lin, *n.* fine cotton fabric. [deer.]  
 Mussel, mus'l, *n.* a bivalve mollusc.  
 Mussulman, mus'l-man, *n.* a Mohammedan.  
 Must, must, *n.* new unfermented wine; *v.* to be compelled.  
 Muster, must'er, *v.* to assemble; to collect; *n.* a Musty, must'g, *adj.* mouldy. [review of soldiers.]  
 Mutable, mû'tâ-bl, *adj.* variable; changeful.  
 Mute, mût, *adj.* silent; dumb.  
 Mutilate, mû'til-ât, *v.* to cut; to maim.  
 Mutiny, mû'tin-i, *n.* revolt against authority.  
 Mutton, mut'n, *n.* the flesh of the sheep.  
 Mutual, mû'tû-al, *adj.* reciprocal; in common.  
 Muzzle, muz'l, *n.* a snout; a fastening for the mouth; *v.* to restrain; to gag.  
 Mycology, mî-kol'o-jî, *n.* the science of fungi.  
 Myopic, mî'op'ic, *adj.* short-sighted.  
 Myriad, mîr'î-ad, *n.* a large number.  
 Myrmidon, mer-mid-un, *n.* a member of a ruffianly Myrrh, mer, *n.* an aromatic gum. [band.]  
 Myrtle, mer'tl, *n.* an evergreen shrub.  
 Mystery, mist'er-i, *n.* a deep secret; something unrevealed. [intercourse with God.]  
 Mystic, mis'tik, *adj.* one who professes direct  
 Mystical, mis'tik-al, *adj.* obscure; emblematical.  
 Mystify, mis'ti-fi, *v.* to confuse; to involve in obscurity.  
 Myth, mith, *n.* a fable; a concocted story.  
 Mythology, mi-thol'o-jî, *n.* the study of myths.

## N

Nabob, nâ'bob, *n.* Indian deputy governor; one enriched in the East.  
 Nacarar, nak'a-rat, *n.* a pale red colour with a tint of orange.  
 Nacre, nâ'kr, *n.* mother-of-pearl.  
 Nacreous, nâ'krê-us, *adj.* of a pearly lustre.

Nadir, nâ'dir, *n.* opposite the zenith.  
 Nag, nag, *n.* a pony; *v.* to carp.  
 Nail, nâl, *n.* a pointed piece of metal for fastening substances; horny scale at the backs of the finger ends.  
 Naïveté, nâ'êv'tâ, *n.* natural simplicity.  
 Naked, nâ'ked, *adj.* unclothed; bare.  
 Nabby-pampy, nam'bi-pam'bi, *n.* silly; affected; trifling.  
 Namely, name'-ly, *adv.* to wit; to state more particularly.  
 Namesake, nâm'sâk, *n.* one with like name to another.  
 Nankeen, nan'kên, *n.* a buff-coloured cloth.  
 Nap, nap, *n.* woolly surface; a short sleep.  
 Nape, nâp, *n.* the back of the neck.  
 Napery, nâp'er-i, *n.* table linen.  
 Napiform, nap'i-form, *adj.* turnip-shaped.  
 Narcotic, nâr-kot'ik, *adj.* sleep-producing; *n.* sleep-producing medicine.  
 Narghile, nar'ge-le, *n.* a small pipe for smoking tobacco.  
 Narrative, nar'â-tiv, *n.* a story; an account of events.  
 Narrow, nar'o, *adj.* limited, bigoted.  
 Narrows, nar'ôz, *n.* a contracted passage.  
 Nasal, nâ'zal, *adj.* pertaining to the nose.  
 Nascent, nâ'sent, *adj.* early stages of existence; incipient.  
 Nasty, nâhs-ti, *adj.* dirty, unpleasant.  
 Nasute, nâ-sût, *adj.* long-snouted.  
 Natal, nâ'tal, *adj.* pertaining to birth; native.  
 Natatory, na'ta-tor-i, *adj.* relating to swimming.  
 Nation, nâ'shun, *n.* a distinct people; a people living under one government.  
 Native, nâ-tiv, *n.* original, as of inhabitants.  
 Nativity, nâ-tiv'it-i, *n.* birth.  
 Natural, nat'û-ral, *adj.* inborn; relating to nature; unartificial.  
 Naturalize, nat'û-ral-iz, *v.* to grant to a foreigner the rights of native citizenship.  
 Nature, nâ'tûr, *n.* the system of created things.  
 Naught, naw't, *n.* nothing.  
 Naughty, nawt'-l, *adj.* ill-behaved.  
 Nauseopy, naw'-sko-pi, *n.* the art of seeing ships or land at great distances.  
 Nausea, naw'sê-â, *n.* loathing; producing tendency to vomit.  
 Nauseate, naw'sê-ât, *v.* to sicken; to disgust.  
 Nautical, naw'tik-al, *adj.* naval; relating to navigation.  
 Naval, nâ'val, *adj.* marine; relating to ships.  
 Nave, nâv, *n.* body of a church; the hub of a wheel.  
 Navel, nâ'vel, *n.* the place on the abdomen at which a mammal is joined to its mother before birth.  
 Navigable, nav'ig-abl, *adj.* sailable; permitting of the passage of ships.  
 Navvy, nav'i, *n.* a labourer on excavations, railways, etc.  
 Navy, nâ'vi, *n.* fleet of ships.  
 Neap-tide, nép'tid, *n.* low tide.  
 Neat, nê't, *adj.* pertaining to cattle; tidy; *n.* a Neb, neb, *n.* beak of a bird; nose. [cow.]  
 Nebula, neb'û-lâ, *n.* a gauzy cloud; film; star cluster.  
 Nebulous, nêb'û-lus, *adj.* vague; indistinct; like a nebula.  
 Necessarianism, nes-es-â'ri-an-izm, *n.* a fatalism.  
 Necessary, nes'es-ar-i, *adj.* inevitable; needful; that must be.  
 Necessitate, nes-es'it-ât, *v.* to compel.  
 Necessitous, nes-es'it-us, *adj.* needy; indigent.  
 Neck, nek, *n.* part of the body connecting the head to the chest; narrow strip.  
 Necrology, nê-krol'o-jî, *n.* record of deaths.  
 Necromancy, nê-kro-man-si, *n.* enchantment; conjuring.  
 Necropolis, nê-krop'o-lis, *n.* a cemetery.  
 Necrosis, nê-kro'sis, *n.* mortification.  
 Nectar, nek'tar, *n.* the drink of the gods.  
 Née, nâ, *adj.* born. (Fr.)  
 Needy, nêd-i, *adj.* poor.  
 Nefarious, nê-fâ'ri-us, *adj.* wicked; villainous.  
 Negative, neg-â-tiv, *v.* a proposition that denies.  
 Neglect, neg-lekt', *v.* to disregard.  
 Negligence, neg'li-jens, *n.* habitual carelessness.  
 Negotiate, nê-gô'shi-ât, *v.* to treat with; to traffic.  
 Negro, nê'grô, *n.* a person belonging to one of the black races.  
 Negus, nê'gus, *n.* diluted wine; the title of the  
 Neigh, ney, *v.* to whinny. [Kings of Abyssinia.]



Neighbourhood, nā'ber-hood, *n.* the district near.  
 Nemesis, nem'e-sis, *n.* the goddess of revenge; retribution.  
 Neologism, nē-ol'o-jism, *n.* a new doctrine.  
 Neology, nē-ol'o-jī, *n.* the introduction of new words or doctrines; rationalism.  
 Neophyte, nē-ō-fit, *n.* a novice; a new convert.  
 Neo-platonism, nē-ō-plā-ton-izm, *n.* a philosophical system combining Platonic and Oriental teachings.  
 Nepenthe, nē-pen'thē, *n.* a drug that allays pain.  
 Nephew, nēv'ū, *n.* son of sister or brother.  
 Nephritic, nē-frī'tik, *adj.* relating to the kidneys.  
 Nephroid, nē-froid, *adj.* kidney-shaped.  
 Nepotism, nē-pot-izm, *n.* favouritism to kindred.  
 Neptunian, nē-pū-ni-an, *adj.* relating to the ocean.  
 Nereld, nē-rē-id, *n.* a sea-nymph. [sensation.  
 Nerve, nerv, *n.* self-command; an organ of  
 Nervous, nerv'us, *adj.* strong; easily agitated.  
 Nervure, ner'vure, *n.* veins of leaves.  
 Nescience, nē-shi-ens, *n.* ignorance.  
 Nestorianism, nes-tō-ri-an-izm, *n.* the doctrine of Nestor. [or birds; *adj.* free of deductions.  
 Net, net, *n.* a contrivance of twine for catching fish  
 Nether, neth'er, *adj.* lower.  
 Neuralgic, nū-rāl'jik, *adj.* pertaining to nerve pain.  
 Neurology, nū-rol'o-jī, *n.* science of the nerves.  
 Neutrality, nū-tral'it-i, *n.* condition of not taking sides.  
 Newfangled, nū-fang'gld, *adj.* newly-formed.  
 Newt, nūt, *n.* a small amphibian lizard.  
 Nibble, nib'l, *v.* to bite lightly.  
 Nicety, nis'ē-ti, *n.* minute accuracy; fastidious-  
 Niche, nich', *n.* a small recess. [ness.  
 Nick, nik, *n.* a notch; the exact moment.  
 Nickel, nī'kel, *n.* a silver-like metal that does not rust; a coin of small denomination used in the U.S.A.  
 Nick-nacks, nik'naks, *n.* trifles.  
 Nickname, nik'nām, *n.* an appellation of familiarity or derision.  
 Nicetate, nik-ti-tāt, *v.* to wink.  
 Nidge, nij, *v.* to dress stones with a pick.  
 Nidification, nid-if-ik-ā-shun, *n.* the process of nest-building and bird-rearing.  
 Nidulation, nid-ū-lā-shun, *n.* nest-building.  
 Niece, nēs, *n.* daughter of a brother or sister.  
 Niggardly, nig'ard-lī, *adj.* miserly; mean.  
 Nightmare, nit'mār, *n.* a violent dream.  
 Nigrescent, ni-gres'ent, *adj.* becoming black.  
 Nihility, nī-hil'it-i, *n.* nothingness.  
 Nimble, nim'bl, *adj.* brisk; active.  
 Nimbus, nim'bus, *n.* a cirlet of light round the head; a rain-cloud.  
 Nincompoop, nin'kum-poop, *n.* a foolish fellow.  
 Nippers, nip'ers, *n.* small piners.  
 Nipple, nip'l, *n.* a teat; similar-shaped object of glass, metal, etc.  
 Nisus, nī'sus, *n.* effort; attempt.  
 Nit, nit, *n.* the egg of insects.  
 Nitrate, nitrāt, *n.* salt of nitric acid.  
 Nitre, nī'tr, *n.* nitrate of potash.  
 Nitric, nī'trik, *adj.* containing nitre.  
 Nizy, nī'zi, *n.* a simpleton.  
 Noblesse, nō-bles', *n.* dignity; the body of nobles.  
 Nocturnal, nok-turn'al, *adj.* nightly; relating to night.  
 Nocturne, nok'tern, *n.* a dreamy piece of music; a night scene.  
 Nocuous, nok'ū-us, *adj.* harmful.  
 Noddy, nod'l, *n.* the head.  
 Noddy, nod'l, *n.* a sea-fowl; a simpleton.  
 Node, nōd, *n.* a knob; a knot.  
 Nodose, nō-dōs', *adj.* knotty.  
 Nodular, nod'ū-lar, *adj.* knot-like.  
 Noetic, nō-et'ik, *adj.* intellectual.  
 Noggin, nog'in, *n.* a small liquid measure.  
 Noisome, noi'sum, *adj.* offensive; bad smelling.  
 Noisy, noi'zi, *adj.* turbulent; clamorous; loud.  
 Nokes, nōks, *n.* a silly fellow.  
 Noll, nol, *n.* the head.  
 Nomad, nō'mad, *n.* a wanderer.  
 Nomadic, nō-mad'ik, *adj.* pastoral; roving.  
 Nomancy, nō-man-sī, *n.* divination from letters in a name.  
 Nomenclature, nō'men-klā-tūr, *n.* names.  
 Nominal, nom'in-al, *adj.* in name only; not real.  
 Nominalism, nom'in-al-izm, *n.* the doctrine that general terms are without corresponding reality.  
 Nominee, nom-i-ne', *n.* one nominated.  
 Nomistic, nō-mis'tik, *adj.* pertaining to sacred laws.  
 Nonage, non'āj, *n.* minority.

Nonagenarian, non-ā-jen-ā-rī-an, *n.* one who is ninety years old.  
 Nonce, nons, *n.* the present.  
 Nonchalance, non'shal-ans, *n.* coolness; indifference.  
 Nonconductor, non-kon-duk't'or, *n.* a non-transmitter of heat or electricity.  
 Nondescript, non'de-skript, *n.* odd; indescribable; what is not yet classed.  
 Nonentity, non-en'tit-i, *n.* a nobody.  
 Nonesuch, non'sutch, *n.* a thing without its equal.  
 Nonpareil, non'par-el, *n.* a kind of type; *adj.* unequalled.  
 Nonplus, non'plus, *v.* to puzzle.  
 Nonsense, non'sens, *n.* absurdity; meaningless [meaning.  
 Nonsensical, non-sens'ik-al, *adj.* foolish; without  
 Nonsuit, non'sūt, *n.* stoppage of a suit to secure a fresh trial.  
 Noodle, noo'dl, *n.* a witless fellow.  
 Nook, nook, *n.* a corner; a recess.  
 Noose, nooz, *n.* a running knot.  
 Normal, nor'mal, *adj.* regular; usual.  
 Nosegay, nōz'gā, *n.* a small bouquet.  
 Nosology, noz'ol'o-jī, *n.* classification of diseases.  
 Nostalgia, nos-tal'ji-ā, *n.* home-sickness.  
 Nostril, nos'tril, *n.* nose passage.  
 Nostrum, nos'trum, *n.* a quack medicine.  
 Notable, nōt'abl, *adj.* remarkable; distinguished.  
 Notary, nō-tar-i, *n.* a testifying legal officer.  
 Notation, nō-tā-shun, *n.* the act of noting by figures, signs, etc.  
 Notch, noch, *n.* a cut or indentation.  
 Nothingness, noth'ing-nes, *n.* want of existence; lack of value.  
 Noticeable, nō'tis-abl, *adj.* worthy of note.  
 Notify, nō'ti-fi, *v.* to make known.  
 Notoriety, nō-tō-ri-ē-ti, *n.* of public note.  
 Notorious, no-tō-ri-us, *adj.* infamous; known to discredit.  
 Noun, noun, *n.* a word used for the name of anything, a substantive.  
 Nourishment, nur'ish-ment, *n.* sustaining food.  
 Nous, nowse, *n.* intelligence.  
 Novel, nōv'el, *n.* new; a long story which forms a complete book of one or more volumes.  
 Novelist, nōv'el-ist, *n.* one who writes novels.  
 Novelty, nōv-el-ti, *n.* something new.  
 Novitiate, no-vish'i-āt, *n.* the state of being a novice.  
 Noxious, nok'shus, *adj.* ill-favoured; evil-smelling; bad.  
 Nozzle, noz'l, *n.* the mouth of an aperture.  
 Nuance, nū'ans, *n.* a delicate shade of difference.  
 Nubile, nū'bil, *adj.* marriageable.  
 Nucleus, nū'klē-us, *n.* a central point; the head.  
 Nude, nudj, *v.* to touch gently. [of a comet.  
 Nudity, nū'dit-i, *n.* nakedness.  
 Nugatory, nū-gat-or-i, *adj.* futile.  
 Nugget, nug'et, *n.* a lump of ore.  
 Nuisance, nū'sans, *n.* something offensive.  
 Nullify, nul'l-fi, *v.* to render of no avail.  
 Nullity, nul'it-i, *n.* lack of life or force.  
 Numb, num, *adj.* dead to sensation. [to figures.  
 Numeral, nū'mer-al, *n.* a figure; *adj.* pertaining  
 Numeration, nū-mer-ā-shun, *n.* the act of numbering.  
 Numerator, nū'mer-ā-tor, *n.* one who numbers.  
 Numismatics, nū-mis-mat'iks, *n.* the study of coins.  
 Numskull, num'skul, *n.* a foolish fellow.  
 Nuncio, nun'shi-o, *n.* a papal ambassador.  
 Nuncupative, nun-kū-pā-tiv, *adj.* publicly declared.  
 Nunnery, nun'er-i, *n.* a convent.  
 Nuptial, nup'shal, *adj.* relating to marriage.  
 Nursery, nur-ser-i, *n.* an apartment for children; ground set apart for bringing forward young plants.  
 Nutation, nū-tā'shun, *n.* motion of the earth's axis.  
 Nutgall, nut'gawl, *n.* an excrescence of the oak.  
 Nutmeg, nut'meg, *n.* an aromatic nut.  
 Nutrient, nū'tri-ment, *n.* nourishing food.  
 Nutritious, nū-trish-us, *adj.* possessing nourishing qualities.  
 Nuzzle, nuz'l, *v.* to rub the nose against.  
 Nymph, nīmf, *n.* one of the Greek or Roman nature Goddesses; an insect in the pupa stage.

Oaf, ōf, *n.* a foolish person.  
 Oaken, ō'ken, *adj.* composed of oak.  
 Oakum, ōk'um, *n.* loose hemp.  
 Oasis, ō-ā'sis, *n.* a watering-place in a desert.

Oast, *öst*, *n.* a hop kiln.  
 Oaten, *ö'ten*, *adj.* relating to oats.  
 Oatgrass, *öt'gras*, *n.* an oatlike grass.  
 Oatmeal, *öt'mél*, *n.* flour made from oats.  
 Oath, *öth*, *n.* solemn declaration in God's name.  
 Obligato, *ob-li-gä'to*, *n.* a special accompaniment.  
 Obscurity, *ob'dü-rä-si*, *n.* sternness of heart.  
 Obedience, *o-bé-di-ens*, *n.* dutifulness; willingness to obey. [homage.]  
 Obsecration, *ö-bä'sens*, *n.* an act of reverence or  
 Obelisk, *ö'bé-lisk*, *n.* a pyramidal pillar.  
 Obesity, *ö-bé-sit-i*, *n.* fatness.  
 Obey, *ö-bä'*, *v.* to act as desired; to yield to.  
 Obfuscate, *ob-fus'kät*, *v.* to obscure; to confuse.  
 Obi, *öbē*, *n.* sash of Japanese lady.  
 Obit, *ö'bit*, *n.* death.  
 Obituary, *o-bit'yü-a-ri*, *n.* relating to the death of anyone.  
 Object, *ob'jekt*, *n.* a thing seen or striven after; motive.  
 Object, *ob'jekt'*, *v.* to make opposition to.  
 Objection, *ob-jek'shun*, *n.* opposition; act of objecting.  
 Objective, *ob-jekt'iv*, *adj.* comprised in the object; external to the mind.  
 Objure, *ob-joor'*, *v.* to swear.  
 Objuration, *ob-jur-gä'shun*, *n.* reproof.  
 Oblate, *ob-lät'*, *adj.* flattened at the poles.  
 Oblation, *ob-lä'shun*, *n.* a sacrifice or offering.  
 Obligation, *ob-li-gä'shun*, *n.* duty; debt.  
 Oblique, *ob-lék'*, *adj.* indirect; slanting.  
 Obliterate, *ob-lit'er-ät*, *v.* to efface.  
 Oblivious, *ob-liv'i-us*, *adj.* forgetful; out of cognizance.  
 Oblong, *ob'long*, *adj.* longer than broad. [lance.]  
 Obloquy, *ob'lo-kwi*, *n.* calumny; blame.  
 Obnoxious, *ob-nok'shus*, *adj.* odious; offensive.  
 Oboe, *ö'bō*, *n.* a wind instrument having two reeds.  
 Obovate, *ob-ö'vät*, *adj.* egg-shaped.  
 Obscene, *ob-sen'*, *adj.* impure; indecent; lewd.  
 Obscure, *obs-kür*, *v.* to conceal; *adj.* dark; indistinct.  
 Obsecrate, *ob'se-krät*, *v.* to beseech.  
 Obsecration, *ob-sé-krä'shun*, *n.* supplication.  
 Obsequies, *ob'sé-kwiz*, *n.* funeral rites.  
 Obsequious, *ob-sé'kw'i-s*, *adj.* submissive; humble; servile.  
 Observance, *ob-zerv'ans*, *n.* attention; a religious rite.  
 Observatory, *ob-zer'vä-to-ri*, *n.* a look-out; a place where astronomical observations are taken.  
 Observe, *ob-zerv'*, *n.* to note; to remark.  
 Obsession, *ob-sesh'un*, *n.* persistence of attack.  
 Obsidian, *ob-sid'i-an*, *n.* a natural glass.  
 Obsolete, *ob-sig'nät*, *v.* to confirm; to seal.  
 Obsolescent, *ob-so'les'ent*, *adj.* going out of use.  
 Obsolete, *ob'sö-lét*, *adj.* out of date; disused.  
 Obstacle, *ob'stakl*, *n.* an obstruction.  
 Obstetric, *ob-stet'rik*, *adj.* relating to midwifery.  
 Obstinate, *ob'stin-ä-si*, *n.* stubbornness.  
 Obstreperous, *ob-strep'er-us*, *adj.* uncontrollable; noisy.  
 Obstruct, *obs-trukt'*, *v.* to hinder; to impede.  
 Obstruction, *ob-struk'shun*, *n.* the act of obstructing; obstacle.  
 Obstruent, *ob'stru-ent*, *adj.* obstructing.  
 Obtain, *ob-tän'*, *v.* to gain; to hold.  
 Obtest, *ob-test'*, *v.* to call upon to testify.  
 Obtrude, *ob-trood'*, *v.* to intrude; to force upon.  
 Obtrusive, *ob-troo'siv*, *adj.* presuming; apt to obtrude.  
 Obtruse, *ob-tüs'*, *adj.* blunt; dull. [trude.]  
 Obvelation, *ob-vel-ä'shun*, *n.* concealment.  
 Obverse, *ob-vers*, *n.* the head side of a coin.  
 Obverse, *ob-vers'*, *adj.* turned towards one.  
 Obversion, *ob-ver'shun*, *n.* the act of turning frontwards. [difficulty.]  
 Obviate, *ob'vi-ät*, *v.* to prevent; to free from.  
 Obvious, *ob'vi-us*, *adj.* clear; indisputable; evident.  
 Obvolute, *ob'vo-lüt*, *adj.* turned inward.  
 Ocarina, *ök-a'rëna*, *n.* a kind of mouth-organ.  
 Occasion, *o-kä'zhun*, *n.* a happening; an event; an opportunity. [then.]  
 Occasional, *o-kä'zhun-al*, *adj.* occurring now and  
 Occident, *ök-si-dent*, *n.* the west.  
 Occidental, *ök-si-dent'al*, *adj.* western.  
 Occipital, *ök-sip'it-al*, *adj.* relating to the back of the head.  
 Occiput, *ök'i-put*, *n.* the back part of the skull.  
 Occlude, *ök-klood'*, *v.* to absorb; to block up.  
 Occult, *ök-kult'*, *adj.* hidden; abstruse; secret.  
 Occultism, *ök-kult'izm*, *n.* study of the occult.  
 Occupant, *ök'ü-pant*, *n.* a dweller.

Occupy, *ök'ü-pl*, *v.* to possess; to hold.  
 Occur, *ök-kur'*, *v.* to happen; to appear.  
 Occurrence, *ök-kur'ens*, *n.* an incident.  
 Ocellate, *ö'sel'ät*, *adj.* spotted; eye-like.  
 Ochlocracy, *ök-lok'ra-si*, *n.* mob-rule.  
 Ochre, *ö'kr*, *n.* a kind of coloured clay.  
 Octagon, *ök'ta-gon*, *n.* eight-sided plane.  
 Octandrous, *ök-tan'drus*, *adj.* having eight stamens.  
 Octangular, *ök-tang'gü-lar*, *adj.* with eight angles.  
 Octant, *ök'tant*, *n.* eighth part of a circle.  
 Octave, *ök'täv*, *n.* the musical eighth.  
 Octavo, *ök-tä'vo*, *n.* having eight leaves to a sheet.  
 Octennial, *ök-ten'ni-al*, *adj.* occurring every eighth year. [years old.]  
 Octogenarian, *ök-to-jen-ä'ri-an*, *n.* a person eighty  
 Octroi, *ök'trwaw*, *n.* a city entrance where a tax is collected.  
 Octuple, *ök'tü-pl*, *adj.* eightfold.  
 Ocular, *ök'ü-lar*, *adj.* by actual sight; relating to the eye.  
 Oculist, *ök'ü-list*, *n.* an eye specialist; one who makes glasses for the eyes.  
 Oddity, *öd'it-i*, *n.* something peculiar; a singular  
 Odds, *ödz*, *n.* the difference; inequality. [person.]  
 Ode, *öd*, *n.* a poem for music.  
 Odious, *ö'di-us*, *adj.* hateful.  
 Odium, *ö'di-um*, *n.* hatred.  
 Odontoid, *o-dont-oid*, *adj.* tooth-shaped.  
 Odontology, *o-dont-ö'ö-ji*, *n.* the science of the  
 Odorous, *ö'der-us*, *adj.* fragrant. [teeth.]  
 Odour, *ö'der*, *n.* smell; perfume.  
 Odyssey, *öd'is-i*, *n.* a Greek epic poem; any long voyage.  
 Œsophagus, *ö'söf'ä-gus*, *n.* the gullet.  
 Offal, *öf'al*, *n.* refuse; entrails.  
 Offender, *öf-end'er*, *n.* one who offends.  
 Offertory, *öf'er-to-ri*, *n.* alms given at church.  
 Off-hand, *öf-hand*, *adj.* without demur; readily.  
 Office, *öfis*, *n.* position; place where clerical work is done.  
 Official, *ö-fish'al*, *adj.* a public officer.  
 Officiate, *ö-fish'i-ät*, *v.* to serve; to act.  
 Officious, *ö-fish-us*, *adj.* meddling; forward.  
 Offing, *öf'ing*, *n.* off the shore.  
 Offscouring, *öf'skow-ing*, *n.* refuse.  
 Offset, *öf'set*, *n.* a balance; equivalent.  
 Offspring, *öf'spring*, *n.* children.  
 Often, *öf'n*, *adj.* frequently.  
 Ogive, *ö'jiv*, *n.* a pointed arch.  
 Ogle, *ö'gl*, *v.* to glance at amorously.  
 Ogre, *ö'gr*, *n.* a monster.  
 Ohm, *öm*, *n.* unit of electrical resistance.  
 Oil-cloth, *oil'kloth*, *n.* coloured floor-covering.  
 Ointment, *oint'ment*, *n.* salve.  
 Oleaginous, *ö-lé-ä'j-in-us*, *adj.* oily; unctuous.  
 Oleander, *ö-lé-an'der*, *n.* an evergreen shrub.  
 Oleaster, *ö-lé-as'ter*, *n.* wild olive.  
 Olein, *ö'lé-in*, *n.* natural fat.  
 Olent, *ö'lent*, *adj.* redolent.  
 Oleograph, *ö-lé-o-graf*, *n.* an oil print.  
 Oleomargarine, *ö-lé-mar'gar-en*, *n.* artificial butter.  
 Olfactory, *öl-fak'to-ri*, *n.* the organ of smell.  
 Oligarchy, *öl-i-gär-ki*, *n.* government by a few.  
 Olio, *ö'li-o*, *n.* a medley.  
 Olivaceous, *öl-iv-ä'shus*, *adj.* olive-coloured.  
 Olive, *öliv*, *n.* an oily fruit.  
 Olive-branch, *öl'iv-bransh*, *n.* the emblem of peace.  
 Omega, *ém'é-ga*, *n.* the last letter of the Greek alphabet.  
 Omen, *ö'men*, *n.* a foreboding; a sign.  
 Ominous, *öm'i-nus*, *adj.* full of bad omen; threatening.  
 Omissible, *ö-mis'i-bl*, *adj.* that may be left out.  
 Omission, *ö-mish'un*, *n.* neglect; failure.  
 Omit, *ö-mit'*, *v.* to leave out.  
 Omnibus, *öm'ni-bus*, *n.* a large passenger vehicle; *adj.* covering all.  
 Omnifarious, *öm-ni-fä-ri-us*, *adj.* of every sort.  
 Omniparity, *öm-ni-par'it-i*, *n.* equality.  
 Omnipotence, *öm-nip'ö-tens*, *n.* indefinite power.  
 Omnipresence, *öm-ni-prez'ens*, *n.* presence everywhere.  
 Omniscient, *öm-nish'ent*, *adj.* all-knowing.  
 Omnivorous, *öm-niv'er-us*, *adj.* all-devouring.  
 Onager, *ön-ag'ger*, *n.* the wild ass.  
 Oneirology, *ö-ni-ro'lö-ji*, *n.* divination of dreams.  
 Oneness, *wün'ness*, *n.* singleness.  
 Onerous, *ön'er-us*, *adj.* burdensome.  
 Onlooker, *ön'look'er*, *n.* an observer.  
 Onomatopœia, *ön-a-mät-a-pë'a*, *n.* words having sounds like the noise they represent.  
 Onset, *ön'set*, *n.* a sudden attack.



- Onslaught, on'slawt, *n.* a violent attack.  
 Ontology, ont-ol'-o-jī, *n.* the science of being.  
 Onus, ō'nus, *n.* responsibility.  
 Onward, on'ward, *adj.* advancing.  
 Onyx, on'iks, *n.* a kind of agate.  
 Oöidal, ō-oi'dal, *adj.* egg-shaped.  
 Oolite, ō'-ol'-it, *n.* a kind of limestone.  
 Oology, ō-ol'-oi-l, *n.* the study of eggs.  
 Oolong, oo'long, *n.* a kind of black tea.  
 Ooze, ooze, *v.* to percolate; *n.* soft mud.  
 Opacity, o-pas'it-i, *n.* opaqueness.  
 Opal, ō'pal, *n.* a precious stone.  
 Opaque, ō-pāk', *adj.* untransparent.  
 Opera, op'er-ä, *n.* musical drama.  
 Operate, op'er-ät, *v.* to work; to exert; to perform a surgical operation.  
 Operative, op'er-ä-tiv, *n.* a workman; a labourer; *adj.* having power to operate.  
 Operculum, o-per'kü-lum, *n.* a cover or lid.  
 Operose, op'er-öz, *adj.* laborious.  
 Opicleide, of'i-klid, *n.* a large brass musical instrument.  
 Ophidian, ōf-id'i-an, *adj.* relating to serpents.  
 Ophthalmia, of-thal'mi-a, *n.* eye inflammation.  
 Opiate, ō'pi-ät, *n.* drug containing opium.  
 Opine, o-pin', *v.* to suppose.  
 Opinion, o-pin'yun, *n.* view; belief; judgment.  
 Opium, ō'pi-um, *n.* juice of the white poppy used as a narcotic.  
 Oppilation, op-il-ä'shun, *n.* stoppage.  
 Opponent, op-pō'nent, *n.* one who opposes.  
 Opportune, op-por-tün, *adj.* timely; seasonable.  
 Opportunity, op-por-tü-ni-ti, *n.* a favourable chance.  
 Opposite, op'o-zit, *adj.* facing; adverse. [party.  
 Opposition, op-o-zish'un, *n.* resistance; an opposing  
 Oppress, op-pres', *v.* to burden; to press upon.  
 Opprobrious, o-prō'bri-us, *adj.* disgraceful.  
 Opprobrium, op-prō'bri-um, *n.* reproach; infamy.  
 Oppugn, ōp-pün', *v.* to oppose.  
 Optative, op-tä-tiv, *adj.* expressive of desire.  
 Optic, op'tik, *adj.* relating to sight.  
 Optics, op'tiks, *n.* science of light.  
 Optimism, op'tim-izm, *n.* the belief that everything  
 is for the best.  
 Option, op'shun, *n.* power of choice.  
 Optional, op'shun-al, *adj.* left to choice.  
 Opulence, op'ü-lens, *n.* wealth.  
 Opus, ō'pus, *n.* work.  
 Oracle, or-ä-kl, *n.* a wise opinion.  
 Oracular, ō-rak'ü-lar, *adj.* authoritative.  
 Oral, ō'ral, *adj.* by mouth; spoken, verbal.  
 Orange, or'anj, *n.* a well-known citrus fruit; a  
 colour.  
 Orangeman, or'anj-man, *n.* member of Protestant  
 political organisation originating in Ulster.  
 Orangery, or'anj-er-i, *n.* an orange plantation or  
 garden.  
 Orarian, ō-rä'ri-an, *adj.* relating to the coast.  
 Orator, or-ä-tor, *n.* a public speaker.  
 Oratorio, or-ä-tō'ri-o, *n.* a sacred musical drama.  
 Oratory, or-ä-tor-i, *n.* the art of public speaking.  
 Orb, orb, *n.* a circle; a sphere.  
 Orbicular, orb-ik'ü-lar, *adj.* round.  
 Orbit, orb'it, *n.* course of a planet.  
 Ore, orc', *n.* a kind of whale.  
 Orcadian, ork-ä'di-an, *adj.* relating to the Orkneys.  
 Orchard, orch'ard, *n.* garden of fruit trees.  
 Orchestra, or'kes-tra, *n.* a band of musicians.  
 Orchestration, ōr-kēs-trä'shun, *n.* the arrange-  
 ment of music for orchestras.  
 Ordain, or-dän', *v.* to appoint; to set apart.  
 Ordeal, or'dē-al, *n.* a severe trial.  
 Orderly, or'der-ly, *adj.* methodical; regular.  
 Ordinal, or'din-al, *adj.* a number showing place.  
 Ordinance, or'din-ans, *n.* a statute; a rite.  
 Ordinary, or'din-ar-i, *adj.* usual; common.  
 Ordinate, or'din-ät, *adj.* regular; in order.  
 Ordinance, or'din-ans, *n.* artillery; cannon.  
 Ordinance, or'don-ans, *n.* harmonious combina-  
 tion of parts in a picture or building.  
 Ordure, or'dür, *n.* filth.  
 Ore, ör, crude metal.  
 Oread, ō-rē-ad, *n.* a mountain nymph.  
 Organ, or'gan, *n.* a large wind instrument; a  
 vital part; a newspaper.  
 Organise, or'gan-iz, *v.* to form parts into a whole;  
 to set in operation.  
 Organism, or'gan-izm, *n.* system; organic structure.  
 Organon, or'gan-on, *n.* rules for scientific investi-  
 gation.  
 Orgies, or'jiz, *n.* drunken revels. [gation.  
 Oriel, ō'ri-el, *n.* projecting window.  
 Orient, ō'ri-ent, *n.* the east; *adj.* eastern.
- Orifice, or'if-is, *n.* an opening.  
 Oriflamme, or'i-flam, *n.* the ancient "gold &  
 flame" standard of France.  
 Origin, or'i-jin, *n.* source; cause.  
 Original, or-i'jin-al, *adj.* first in order. [original.  
 Originality, or-i-jin-al-i-ti, *n.* the quality of being  
 Originate, or-i-jin-ät, *v.* to commence; to bring  
 into existence.  
 Orion, o-ri-on, *n.* a constellation containing three  
 bright stars in a straight line.  
 Orison, or-i-son, *n.* a prayer.  
 Ormer, or'mer, *n.* an ear-shell.  
 Ormolu, or'mō-lū, *n.* brass or copper gilt.  
 Ornament, orn-ä-ment, *n.* an embellishment; a  
 decoration.  
 Ornate, or'nät, *adj.* adorned; decorative.  
 Ornithology, or-nith-ol'-o-jī, *n.* science of birds.  
 Orology, or-ol'-o-jī, *n.* the science of mountains.  
 Orphan, or'fan, *n.* child without father or mother.  
 Orphanage, or'fan-äj, *n.* a home for orphans.  
 Orphanian, or-fä'ri-an, *n.* a stringed instrument.  
 Orpin, or'pin, *n.* a deep gold colour.  
 Orra, or'ä, *adj.* odd; discordant.  
 Orrey, or'er-i, *n.* an instrument for illustrating the  
 movements of the planets.  
 Orthodox, or'tho-doks, *adj.* according to general  
 belief.  
 Orthoepey, or'thō-ē-pi, *n.* right pronunciation.  
 Orthographer, orth-og'rä-fer, *n.* a correct speller.  
 Orthography, orth-og'rä-f-i, *n.* spelling.  
 Orthopædic, orth-o-pē'dik, *adj.* relating to bodily  
 Os, os, *n.* a bone. [deformity.  
 Oscillate, os'il-ät, *v.* to sway; to swing.  
 Oscillatory, os'il-ä-to-ri, *adj.* swinging.  
 Oscitancy, os'it-an-si, *n.* drowsiness; denseness.  
 Oscitation, os-it-ä'shun, *n.* gaping.  
 Osculate, os'kü-lät, *v.* to kiss.  
 Osculation, ōs-ku-lä'shun, *n.* the act of kissing.  
 Osier, ō'zher, *n.* a kind of willow.  
 Osmanli, os-man'li, *adj.* belonging to Turkey.  
 Osseous, os-ē-us, *adj.* bony.  
 Ossicle, os'ikl, *n.* a small bone.  
 Ossivorous, os-iv'or-us, *adj.* feeding on bones.  
 Ossuary, os'ü-är-i, *n.* charnel-house.  
 Ostensible, os-ten'si-bl, *adj.* apparent; plausible.  
 Ostensive, os-ten'siv, *adj.* showing; exhibiting.  
 Ostentatious, os-ten-tä'shus, *adj.* pompous;  
 showy.  
 Osteology, os-tē-ol'-o-jī, *n.* science of bones.  
 Ostracise, os'trä'siz, *v.* to banish.  
 Ostracism, os'trä-sizm, *n.* proscription.  
 Otic, ō-tik, *adj.* relating to the ear.  
 Otiose, ō'shi-ös, *adj.* lazy; careless.  
 Otology, ō-tol'-o-jī, *n.* science of the ear.  
 Otter, ot'ar, *n.* a fragrant oil distilled from flowers.  
 Ottoman, ot'ō-man, *n.* a Turk; a cushioned seat.  
 Oubliette, oo-bli-et', *n.* a dungeon with no side  
 opening.  
 Ouch, owth, *n.* a socket for setting a jewel.  
 Oust, owst, *v.* to expel; to force out.  
 Outbid, owt'-bid', *v.* to bid higher than others.  
 Outcry, owt'kri, *n.* a cry of distress.  
 Outface, owt-fäs', *v.* to confront; to brazen out.  
 Outfit, owt-ät, *n.* equipment.  
 Outhouse, owt'hows, *n.* a small building adjacent  
 to the chief one.  
 Outing, owt'ing, *n.* an airing; an excursion.  
 Outlandish, owt-land'ish, *adj.* strange; vulgar;  
 uncouth.  
 Outlast, owt-last', *v.* to last longer than.  
 Outlaw, owt'law, *n.* a proscribed person.  
 Outlay, owt'lä, *v.* to lay out; an expenditure.  
 Outlet, owt'let, *n.* means of egress.  
 Outline, owt'lin, *n.* a sketch; exterior lines of a  
 drawing.  
 Outpace, owt-päs', *v.* to outstrip.  
 Outpost, owt'pöst, *n.* military post away from camp.  
 Output, owt'put, *n.* yield of metal or mineral.  
 Outrage, owt'räj, *n.* insult; violence.  
 Outrageous, owt-rä'jus, *adj.* beyond reason;  
 furious. [bitter end.  
 Outrance, owt'rans, *n.* the utmost extremity; the  
 Outré, oo-trä, *adj.* strained; extravagant; un-  
 usual.  
 Outrider, owt'ri-der, *n.* an advance rider; an  
 attendant on horseback.  
 Outright, owt'rit', *adv.* entirely; at once.  
 Outset, owt'set, *n.* beginning; setting out.  
 Outskirt, owt'skirt, *n.* border; suburb.  
 Outstrip, owt-strip', *v.* to leave behind; to pass.  
 Outwit, owt-wit', *v.* to overreach.  
 Outwork, owt'work, *n.* work outside the chief  
 line of fortification.

**Ova**, òvā, *n.* eggs.  
**Ovarious**, ò-vā'ri-us, *adj.* comprising eggs.  
**Ovary**, ò-vār-i, *n.* the organ in which the egg is formed.  
**Ovate**, ò-vāt, *adj.* egg-shaped.  
**Ovation**, ò-vā'shun, *n.* public homage.  
**Overalls**, ò-ver-awlz, *n.* loose over-trousers.  
**Overbearing**, ò-ver-bāring, *adj.* haughty.  
**Overcast**, ò-ver-kast', *v.* to cloud.  
**Overcharge**, ò-ver-chārg, *n.* excessive charge.  
**Overdraw**, ò-ver-draw', *v.* to exaggerate; to draw excessively.  
**Overgrowth**, ò-ver-growth', *n.* what is overgrown.  
**Overhaul**, ò-ver-hawl', *v.* to investigate.  
**Overhear**, ò-ver-hēr', *v.* to hear what was not intended.  
**Overlook**, ò-ver-look', *v.* to look over; to survey.  
**Overpoise**, ò-ver-pōiz', *v.* to outweigh.  
**Overreach**, ò-ver-rēch', *v.* to get the better of; to go too far.  
**Overrun**, ò-ver-run', *v.* to run or spread over.  
**Overseer**, ò-ver-sē'er, *n.* a superintendent.  
**Overshot**, ò-ver-shot', *adj.* surpassed.  
**Oversight**, ò-ver'sit, *n.* a mistake; something omitted to be noted.  
**Overt**, ò'vert, *adj.* open.  
**Overture**, ò-ver-tūr, *n.* an introductory piece of music; an offer.  
**Overweening**, ò-ver-wēn-ing, *adj.* conceited.  
**Overwhelm**, ò-ver-whelm', *v.* to crush; to overcome; to flow over.  
**Ovicular**, ò-vik'ū-lar, *adj.* pertaining to an egg.  
**Oviform**, ò-vi-form, *adj.* egg-shaped.  
**Ovine**, ò'vin, *adj.* concerning sheep.  
**Oviparous**, ò-vip'ar-us, *adj.* egg-laying.  
**Ovolo**, ò'vo'lo, *n.* an ornamental moulding.  
**Ovule**, òv'ūl, *n.* a little egg; a seed.  
**Owing**, ò'ing, *adj.* due; imputable to.  
**Oxen**, òks'n, *n.* bovines used for food.  
**Oxidation**, òks-id-ā'shun, *n.* act of oxidising.  
**Oxide**, òks'id, *n.* a chemical compound.  
**Oxygen**, òks-i-jen, *n.* the gaseous element which sustains life.  
**Oxygenate**, òks-i-jen-āt, *v.* to unite with oxygen.  
**Oxygenous**, òks-i-jen-us, *adj.* pertaining to oxygen.  
**Oxlip**, òks'lip, *n.* wild flower of primula type.  
**Oxymoron**, òks-i-mō'ron, *n.* ideas of contrary meaning combined.  
**Oyer**, ò'yer, *n.* the hearing of trials.  
**Oyez**, ò'yes, *excl.* the call of a town crier.  
**Oyster**, ò'ster, *n.* edible marine bivalve.  
**Ozone**, ò'zōn, *n.* a modified form of oxygen with 3 atoms to molecule instead of 2.

## P

**Pabulum**, pab'u-lum, *n.* food; nourishment.  
**Pace**, pā'sē, *v. subj.* let it not offend.  
**Pacha**, pā-shā', *n.* a Turkish governor.  
**Pachyderm**, pak'i-derm, *n.* a thick-skinned animal.  
**Pacific**, pā-sif'ik, *adj.* peace-making; calm; peaceful.  
**Pacify**, pas'i-fi, *v.* to appease; to soothe.  
**Pack**, pak, *n.* a bundle; *v.* to arrange close; to start off rapidly. [burdens.]  
**Pack-horse**, pak'hors, *n.* a horse used for carrying.  
**Packman**, pak'man, *n.* a pedlar.  
**Pact**, pakt, *n.* a contract.  
**Padar**, pad'ar, *n.* coarse flour, groats.  
**Paddle**, pad'l, *v.* to play in water with hands or feet; *v.* to move a boat by paddling.  
**Paddock**, pad'ok, *n.* an inclosure.  
**Paddock**, pad'lok, *n.* a hanging lock.  
**Padnag**, pad'nag, *n.* an ambling horse.  
**Pæan**, pé'an, *n.* song of triumph.  
**Pagan**, pā'gan, *n.* a heathen.  
**Page**, pāj, *n.* boy attendant. [spectacle.]  
**Pageant**, paj'ant, *n.* a pompous show; public.  
**Pagoda**, pa-gō'da, *n.* an Eastern idol temple.  
**Pailasse**, Palliase, pal-i-as', *n.* an under mattress of straw.  
**Painim**, pa'-nim, *n.* of a false faith.  
**Painter**, pān'ter, *n.* an artist; one who paints; rope for fastening boat.  
**Pairing-off**, pare'-ing-of, *n.* when two members of opposite political tendency agree to be absent from voting.  
**Palace**, pal'ās, *n.* a royal or noble residence.  
**Paladin**, palā-din, *n.* a knight-errant.  
**Palæography**, pāl-ē-og'raf-i, *n.* study of ancient writings. [early Stone Age.]  
**Palæolithic**, pāl-ē-ol-i-th'ik, *adj.* pertaining to the Palæology, pāl-ē-ol-o-jī, *n.* study of antiquities.

**Palæontology**, pāl-ē-ont-ol-o-jī, *n.* science of fossils.  
**Palatable**, pal'at-abl, *adj.* savoury; agreeable to the taste.  
**Palate**, pal'at, *n.* the roof of the mouth; taste.  
**Palatial**, pal-ā'shal, *adj.* relating to or resembling a palace.  
**Palatinale**, pal-at'in-āl, *n.* province of a palatine.  
**Palatine**, pal'ā-tin, *adj.* enjoying royal privileges.  
**Palaver**, pal-ā-ver, *n.* idle talk; a conference with natives.  
**Paleous**, pā-lē-ūs, *adj.* chaff-like.  
**Palette**, pal'et, *n.* oval board used by painters for colour mixing.  
**Palfrey**, pal'fri, *n.* a saddle-horse.  
**Palilogy**, pa-lil'-o-jī, *n.* word repetition.  
**Palinal**, pal'in-al, *adj.* going backward.  
**Palindrome**, pal'in-drōm, *n.* a word, sentence, or line that reads the same backward as forward.  
**Paling**, pal'ing, *n.* a fence.  
**Palingenesis**, pal-in-jen-ē-sis, *n.* regeneration.  
**Palinode**, pal'in-ōd, *n.* a poem of recantation.  
**Palisade**, pal-is-ād', *n.* fortification of pales.  
**Palisander**, pal-is-an'der, *n.* rosewood.  
**Pall**, pawl, *v.* to render rapid; *n.* coffin covering.  
**Palladium**, pal-ā'di-um, *n.* means of safety.  
**Palliative**, pal'ya-tiv, *n.* that which mitigates.  
**Pallid**, pal'id, *adj.* pale; wan.  
**Pallium**, pal'i-um, *n.* a large Roman mantle.  
**Pallor**, pal'or, *n.* paleness.  
**Palm**, pām, *n.* inner part of hand; a tropical tree with strap-shaped leaves; *v.* to pass off wrongly.  
**Palmated**, pal-mā'ted, *adj.* shaped like the palm of the hand.  
**Palmer**, pām'er, *n.* a pilgrim.  
**Palmiferous**, pām-if'er-us, *adj.* palm-bearing.  
**Palmiped**, pal'-me-ped, *adj.* web-footed; a swimming bird.  
**Palmsbury**, pal'mis-tri, *n.* divining by the hand.  
**Palmitine**, pal'mit-in, *n.* fat obtained from palm oil.  
**Palmy**, pām'i, *adj.* prosperous.  
**Palpable**, palp'a-bl, *adj.* plain; visible.  
**Palpebral**, pal'pē-bral, *adj.* pertaining to the eyelids.  
**Palpitate**, pal'pi-tāt, *v.* to throb; to pulsate.  
**Palter**, pawl'ter, *v.* to shuffle; to trifle.  
**Palterer**, pawl'ter-er, *n.* a trifier.  
**Paltry**, pawl'tri, *adj.* mean; trifling; contemptible.  
**Paludal**, pal-ū'dal, *adj.* relating to marshes.  
**Pamper**, pam-per, *v.* to glut.  
**Pamphlet**, pam'flet, *n.* an unbound book.  
**Pamphleteer**, pam-flet-ēr, *n.* a pamphlet-writer.  
**Pan**, pan, *n.* a shallow vessel; Greek woodland God.  
**Panacea**, pan-a-sē'ā, *n.* a universal cure.  
**Panary**, pan'ā-ri, *adj.* relating to bread.  
**Panax**, pa-naks', *n.* a kind of shrub.  
**Pancake**, pan'kak, *n.* a thin cake made in a frying-pan.  
**Panch**, pansh, *n.* a mat made of rope.  
**Pandect**, pand'ekt, *n.* a treatise dealing with an entire science.  
**Pandemic**, pan-dem'ik, *adj.* more than epidemic.  
**Pandemonium**, pan-dē-mō'n-i-um, *n.* assemblage of demons; a wild noise.  
**Pander**, pan'der, *v.* to minister to; to procure.  
**Pandion**, pan-di-on, *n.* a kind of osprey.  
**Pane**, pān, *n.* a plate of glass.  
**Panegyric**, pan-ē-jir-ik, *n.* a eulogy.  
**Panel**, pan'el, *n.* a rectangular space of wainscot.  
**Pang**, n. a sudden pain. [door or wall.]  
**Panic**, pan'ik, *n.* sudden fright.  
**Pannage**, pan'āj, *n.* food picked up in woods by hogs.  
**Pannier**, pan'i-er, *n.* a basket carried on horse- or mule-back.  
**Pannikin**, pan'i-kin, *n.* a small pan.  
**Panoply**, pan'ō-plī, *n.* full equipment in armour.  
**Panopticon**, pan-op'ti-kon, *n.* a show-room; a prison admitting of all prisoners being seen from one point.  
**Panorama**, pan-ō-ram'ā, *n.* a complete view; a series of picture on a roll.  
**Pansy**, pan'zi, *n.* a cultivated viola.  
**Pant**, v. to breathe rapidly; to throb.  
**Pantaloon**, pan-ta-loon, *n.* a pantomime buffoon.  
**Pantechnicon**, pan-tēk'n-i-kān, *n.* a large van for moving furniture.  
**Pantheism**, pan'thē-izm, *n.* the theory that the universe is God. [Identities.]  
**Pantheon**, pan'thē-on, *n.* temple dedicated to



- Pantile**, pan'-tile, *n.* a curved roof tile.  
**Pantograph**, pan'tō-graf, *n.* a copying instrument.  
**Pantology**, pan-tol'ō-jī, *n.* universal knowledge.  
**Pantomime**, pan'tō-mim, *n.* dumb show; a Christmas entertainment.  
**Papacy**, pā-pā-sī, *n.* the papal office.  
**Paper**, pā-per, *n.* material made from rags or fibres; *v.* to decorate with.  
**Paphian**, pā'fi-an, *adj.* lascivious.  
**Papier-mâché**, pap'yā-mā'shā, *n.* jappaned pulp.  
**Papilionaceous**, pa-pil-yun-ā'shus, *adj.* butterfly-shaped.  
**Papillary**, pap'il-ar-i, *adj.* furnished with or resembling nipples.  
**Papillote**, pap'il-ōt, *n.* a curl-paper.  
**Papoose**, pa-poo's, *n.* a Red Indian infant.  
**Papyrus**, pa-pī-rus, *n.* paper made from an *Par*, pâr, *adj.* equal value. [Egyptian plant.  
**Parable**, par'abl, *n.* an allegorical narrative.  
**Parablepsis**, par-a-blep'sis, *n.* distorted vision.  
**Parabola**, par-ab'ō-la, *n.* a conic section.  
**Parabolic**, par-a-bol'ik, *adj.* shown by parable.  
**Paracentric**, par-a-sen-trik, *adj.* deviating from a circular shape.  
**Parachute**, par-ā-shoot, *n.* an umbrella-like apparatus used in descending from a balloon or aeroplane in mid-air. [Ghost.  
**Paraclete**, par-ā-klēt, *n.* an advocate; the Holy Spirit.  
**Parade**, pā-rād', *v.* to march; to show off; *n.* military display; place for promenading.  
**Paradigm**, par-ā-dim, *n.* an example.  
**Paradise**, par-ā-dis, *n.* Eden; heaven; abode of bliss. [of terms.  
**Paradox**, par-ā-doks, *n.* an apparent contradiction.  
**Paraffin**, par-ā-fin', *n.* an oil distilled from petroleum and used both for illumination and as a source of power.  
**Paragon**, par-ā-gon, *n.* a perfect example.  
**Paragram**, par-ā-gram, *n.* play on words.  
**Paragraph**, par-ā-graf, *n.* a section of an article.  
**Parallax**, par'al-aks, *n.* seeming change of position in a heavenly body as seen from different points.  
**Parallel**, par'al-el, *n.* the same direction; similar.  
**Parallelogram**, par-al-el'ō-gram, *n.* a plane of four sides, the opposite sides being equal.  
**Paralogy**, par-ol'ō-jī, *n.* false reasoning.  
**Paralysis**, par'al-is-is, *n.* loss of power in any part; palsy.  
**Paramount**, par-a-mownt, *adj.* dominant; superior.  
**Paramour**, par-ā-moor, *n.* a lover, in an illicit sense.  
**Parang**, par-ang', *n.* a Malay knife. [sense.  
**Parapet**, par-ā-pet, *n.* a breastwork of defence.  
**Paraphernalia**, par-ā-fer-nā'l-i-ā, *n.* trappings; apparel.  
**Paraphrase**, par-ā-frāz, *n.* a free translation.  
**Parasite**, par-as-it, *n.* one living upon another; a scyophant.  
**Paratonic**, par-ā-ton'ik, *adj.* retarding vegetation.  
**Parboil**, pâr-boil, *v.* partly to boil.  
**Parcel**, pâr-sel, *n.* a bundle.  
**Parcenary**, pâr-sen-ar-i, *n.* joint heirship.  
**Parchment**, pâr-ment, *n.* sheepskin for writing.  
**Pard**, pâr-d, *n.* a leopard. [upon.  
**Pardon**, pâr-d'on, *v.* to forgive; *n.* forgiveness.  
**Paregoric**, par-ē-gor'ik, *n.* compound tincture of camphor.  
**Parent**, pâr-ent, *n.* a father or mother; a begetter.  
**Parenthesis**, par-en-thē-sis, *n.* words inserted within the marks ( ).  
**Parergon**, pa-rer-gon, *n.* subsidiary work.  
**Paresis**, par-ē-sis, *n.* partial paralysis.  
**Parhelion**, pâr-he'lli-un, *n.* a mock sun.  
**Pariah**, pâr-i-ā, *n.* an outcast.  
**Parian**, pâr-i-an, *adj.* relating to Paros; *n.* a fine porcelain.  
**Parietal**, pâr-i-et'al, *adj.* relating to or part of a  
**Paring**, pâr-ing, *n.* a thin strip cut off. [wall.  
**Parish**, pâr-ish, *n.* an ecclesiastical or local government district.  
**Parisian**, par-iz'i-an, *n.* a resident of Paris.  
**Parisyllabic**, par-i-sil-āb'ik, *adj.* having the same number of syllables.  
**Parity**, pâr-it-i, *n.* analogy; equality.  
**Parlance**, pâr-lans, *n.* speech; talk.  
**Parley**, pâr-li, *v.* to discuss.  
**Parlour**, pâr-lor, *n.* a sitting-room.  
**Parlous**, pâr-lus, *adj.* dangerous or exciting apprehension of danger; perilous.  
**Parochial**, par-ō-ki-al, *adj.* relating to a parish.  
**Parody**, par-ō-dī, *n.* a burlesque.  
**Parole**, par-ōl', *n.* word of honour; pass-word.  
**Parotid**, par-to'id, *n.* the largest of the salivary glands.  
**Paroxysm**, par-oks-izm, *n.* sudden fit of pain.  
**Parquet**, pâr-ket', *n.* the pit of a theatre.  
**Parquetry**, pâr-ket-ri, *n.* inlaid woodwork for floors.  
**Parr**, pâr, *n.* a young salmon.  
**Parricide**, par-i-sid, *n.* a murderer.  
**Parry**, par-i, *v.* to prevent; to ward off.  
**Parse**, pâr-s, *v.* to state the grammatical sense of words and sentences.  
**Presee**, pâr-sē, *n.* a follower of Zoroaster.  
**Parsimony**, pâr-si-mun-i, *n.* niggardliness; frugality. [preacher.  
**Parson**, pâr-son, *n.* a clergyman, minister, or  
**Partake**, pâr-tāk, *v.* to have a share in, as of food.  
**Parted**, pâr'ted, *adj.* separated, severed.  
**Parterre**, pâr'târ', *n.* a flower plot.  
**Parthenogenesis**, par-then-o-jen-ē-sis, *n.* reproduction of insects by the female only.  
**Partial**, pâr'shal, *adj.* unfair; one-sided; in part.  
**Partible**, pâr'tibl, *adj.* divisible.  
**Participate**, pâr'tis-ip-āt, *v.* to partake.  
**Participle**, pâr'ti-si-pl, *n.* a word containing the qualities of both verb and adjective.  
**Particle**, pâr'ti-kl, *n.* a jot; a minute part; an atom. [specified thing.  
**Particular**, par-tik'u-lar, *adj.* special; relating to a  
**Partim**, pâr'tim, *adv.* in part.  
**Partisan**, pâr'ti-zan, *n.* an adherent.  
**Partite**, pâr'tit, *adj.* divided into parts.  
**Partition**, pâr'tish-un, *n.* a division.  
**Partner**, pâr'tner, *n.* a business associate.  
**Part-song**, pâr't song, *n.* a song sung in parts.  
**Parturition**, pâr-tû-rish-un, *n.* delivery; act of birth.  
**Party**, pâr'ti, *n.* persons acting or coming together for any special purpose.  
**Parvenu**, pâr'ven-ū, *n.* one who has recently attained wealth or position beyond his birth or worth.  
**Paschal**, pas'kal, *n.* the Passover.  
**Pasquinade**, pas'kwīn-ād, *n.* a lampoon.  
**Passable**, pas'abl, *adj.* tolerable. [voyage.  
**Passage**, pas'āj, *n.* act of passing; hall-way.  
**Passé**, pas-ā', *adj.* faded; out of date.  
**Passenger**, pas'en-jer, *n.* a traveller in a public conveyance.  
**Passer**, pas'er, *n.* one who passes. [vevance.  
**Passerine**, pas'er-en, *adj.* relating to the sparrow.  
**Passible**, pas'ibl, *adj.* impressionable. [tribe.  
**Passim**, pas'im, *adv.* here and there; in several places.  
**Passing**, pas'ing, *adj.* going by; happening.  
**Passion**, pas'h-un, *n.* strong emotion; excessive desire.  
**Passive**, pas'iv, *adj.* inactive; unresisting.  
**Passport**, pas'pōrt, *n.* licence; written permission to travel. [etc.  
**Paste**, pāt, *n.* a soft cement made of flour, water, etc.  
**Pasteboard**, pāt'bōrd, *n.* card-board.  
**Pastel**, pas'tel, *n.* a chalk drawing; soft chalk used to make the drawing.  
**Pastern**, pas'tern, *n.* part of hoof.  
**Pastiche**, pas-tesh', *n.* a mixture, in music, paint, etc.  
**Pastille**, pas-tēl, *n.* a lozenge. [ing, etc.  
**Pastime**, pas'tim, *n.* recreation.  
**Pastor**, pas-tur, *n.* a clergyman; a shepherd.  
**Pasture**, pas'tūr, *n.* grazing grass.  
**Patch**, pach, *n.* a piece sewed on; a plot; *v.* to mend.  
**Pate**, pāt, *n.* the head. [mend.  
**Patella**, pā-tē-lā, *n.* a small dish; the knee-pan.  
**Paten**, pat'en, *n.* plate used in the eucharist.  
**Patent**, pāt'ent, *n.* obvious; grant of right to an invention.  
**Paterfamilias**, pā-ter-fa-mil'i-as, *n.* head of a household.  
**Paternal**, pat'er-nal, *adj.* fatherly.  
**Paternoster**, pāt'er-nos'ter, *n.* Lord's Prayer.  
**Pathetic**, pāth-et'ik, *adj.* touching; affecting.  
**Pathetism**, pāth-et-izm, *n.* animal magnetism.  
**Pathic**, pāth'ik, *adj.* relating to disease.  
**Pathology**, pāth-ol'ō-jī, *n.* science of diseases.  
**Patience**, pā-shens, *n.* endurance; forbearance.  
**Patina**, pat'in-ā, *n.* a pan; the film of age on metal objects.  
**Patois**, pat-waw', *n.* dialect.  
**Patriarch**, pā'tri-ārk, *n.* a head of a church or family.  
**Patrician**, pa-trish'an, *n.* a noble.  
**Patricide**, pā-tri-sid, *n.* the murder or murderer of a father.  
**Patrimony**, pat'ri-mun-i, *n.* property inherited.  
**Patriot**, pā'tri-ot, *n.* one devoted to his country.

- Patristic**, pat-ris'tik, *adj.* relating to the early Christian fathers. [a camp or district.]
- Patrol**, pā-trol', *v.* to guard; to go the rounds of.
- Patron**, pā'tron, *n.* an encourager; a protector.
- Patronymic**, pat-rō-nim'ik, *n.* the family name.
- Patten**, pat'en, *n.* a clog; base of a column.
- Patter**, pat'er, *n.* rapid sound or utterance.
- Pattern**, pat'ern, *n.* a model.
- Pattie**, pat'l, *n.* a paddle.
- Paucity**, paw'sit-i, *n.* meagreness; fewness.
- Pauline**, paw'lin, *adj.* relating to the Apostle Paul.
- Paunch**, paunch, *n.* stomach.
- Pauper**, paw'per, *n.* one who receives parish relief.
- Pause**, pawz, *n.* cessation; *v.* to make a pause.
- Pave**, pāv, *v.* to prepare; to lay stone on a road.
- Pavid**, pav'id, *adj.* timid.
- Pavilion**, pa-vil'yun, *n.* a large tent; a domed building. [a lance.]
- Pavon**, pav'on, *n.* a triangular flag attached to a Favonine, pav'ō-nin, *adj.* relating to or resembling the peacock. [ground with the foot.]
- Paw**, n. the foot of an animal; *v.* to beat the
- Pawn**, n. a thing given as security; *v.* to pledge.
- Pawnbroker**, pawn'brō-ker, *n.* one who lends money on security of things left in his charge.
- Pax**, paks, *n.* the kiss of peace.
- Peace**, pēs, *n.* quiet; calmness; tranquillity.
- Peal**, pēl, *n.* a ringing. [joy.]
- Peanism**, pe-an-izm, *n.* the chanting of a song of
- Fear**, pār, *n.* a juicy fruit narrowing towards the stalk.
- Pearl**, perl, *n.* a whitish gem that is formed in some kinds of oysters; something like a pearl.
- Peasant**, pez'ant, *n.* a subsistence farmer.
- Pease**, pēz, *n.* crushed peas.
- Peat**, pēt, *n.* decayed vegetable matter; turf.
- Pebble**, peb'l, *n.* a small rounded stone.
- Peccable**, pek'abl, *adj.* liable to sin.
- Peccadillo**, pek-a-dil'ō, *n.* a petty fault.
- Peck**, pek, *n.* quarter of a bushel; *v.* to strike
- Pectic**, pek'tik, *adj.* curdling. [with the beak.]
- Pectinal**, pek'tin-al, *adj.* comb-like.
- Pectoral**, pek'tor-al, *adj.* pertaining to the breast.
- Peculate**, pek'ū-lāt, *v.* to embezzle.
- Peculiar**, pe-kū'l-lar, *adj.* singular.
- Pecuniary**, pe-kū'ni-ar-i, *adj.* relating to money.
- Pedagogue**, ped'ā-gog, *n.* a schoolmaster; a teacher.
- Pedal**, ped'al, *adj.* relating to the foot.
- Pedant**, ped'ant, *n.* a scholastic pretender.
- Peddle**, ped'l, *v.* to hawk goods.
- Peddling**, ped'ling, *adj.* trifling; *n.* hawking.
- Pedestal**, ped'es-tal, *n.* the base of a column.
- Pedestrian**, pe-des'tri-an, *n.* one who walks.
- Pedicule**, ped'ī-kūr, *n.* treatment of corns.
- Pedigree**, ped'ī-grē, *n.* particulars of lineage.
- Pediment**, ped'ī-ment, *n.* the part over a portico.
- Pedology**, ped-ol'ō-jī, *n.* the study of soils.
- Pedometer**, ped-om'ē-ter, *n.* an instrument for registering steps.
- Peduncle**, pe-dūng'kl, *n.* stem of flower or fruit.
- Peek**, pēk, *v.* to spy; to peer.
- Peel**, pēl, *n.* rind of fruit.
- Peer**, pēr, *v.* to look; to pry; *n.* one of equal status; a nobleman.
- Peeress**, pēr'es, *n.* the wife of a peer.
- Peerless**, pēr'les, *adj.* unequalled; matchless.
- Peevish**, pē'vish, *adj.* fretful; ill-humoured.
- Pegasus**, peg'as-us, *n.* the winged horse of Greek mythology; a constellation.
- Pelagic**, pe-laj'ik, *adj.* concerning the ocean.
- Pelf**, pēl, *n.* money; booty.
- Pelisse**, pe-lēs', *n.* a sleeved cloak for ladies.
- Pellet**, pel'et, *n.* a small ball.
- Pellicle**, pel'ikl, *n.* film; thin external skin.
- Pell-mell**, pel'mel, *adv.* in a confused haste.
- Pellucid**, pel-ū'sid, *adj.* clear; transparent.
- Pelmet**, pel-mēt', *n.* a covered fillet made to hide a curtain rail.
- Pelt**, n. an uncured skin of an animal; to throw.
- Pelvis**, pel'vis, *n.* bones at the lower part of the abdomen.
- Pemmican**, pem'ik-an, *n.* cakes of dried meat.
- Pen**, n. an instrument to write with; place for confining animals; *v.* to confine.
- Penal**, pē'nal, *adj.* relating to punishment.
- Penalty**, pen'al-tī, *n.* a fine.
- Penance**, pen'ans, *n.* atonement.
- Penates**, pē-nā'tēz, *n.* household gods.
- Penchant**, pāng-shāng', *n.* bias; strong inclination.
- Pencil**, pen'sil, *n.* a pointed brush or instrument for writing or drawing. [a flag.]
- Pendant**, pen'dant, *n.* appendage; an ear-ring;
- Pendicle**, pen'dikl, *n.* an appendage.
- Pending**, pend'ing, *adj.* undetermined.
- Pendulum**, pen-dū-lum, *n.* a swinging weight.
- Penetrate**, pen'ē-trāt, *v.* to pierce into; to enter.
- Penetration**, pen-ē-trā'shun, *n.* discernment; entrance.
- Peninsula**, pen-in'sū-lā, *n.* a neck of land.
- Penitent**, pen'i-tent, *adj.* repentant.
- Penitentiary**, pen-i-ten'shar-i, *n.* a prison.
- Pennant**, pen'ant, *n.* a long, narrow flag.
- Pennate**, pen'āt, *adj.* winged.
- Pennon**, pen'on, *n.* flag; a pinion.
- Penny**, pēn-i, *n.* copper coin worth  $\frac{1}{4}$ th of a shilling.
- Pennyweight**, pen't-weyt, *n.* 24 grains.
- Penny-wise**, pen'i-wiz, *adj.* wise over small sums.
- Penology**, pen-ol'ō-jī, *n.* the study of punishment.
- Pension**, pen'shun, *n.* a retiring allowance.
- Pensive**, pen'siv, *adj.* sad; thoughtful.
- Pentagon**, pen'tā-gon, *n.* a five-sided plane.
- Pentagram**, pen'tā-gram, *n.* a five-pointed star.
- Pentameter**, pen-tam'ē-ter, *n.* verse metre of 5 feet. [angles.]
- Pentangular**, pent-ang'gū-lar, *adj.* having five
- Pentarchy**, pent'ark-i, *n.* government by five people.
- Pentateuch**, pen'tā-tūk, *n.* the five books of Moses.
- Pent-house**, pent-hous, *n.* shed sloping from a main building.
- Pentroof**, pent'roof, *n.* a roof sloping only on one side.
- Penultimate**, pen-ūl'tim-āt, *adj.* last but one.
- Penumbra**, pen-um'bra, *n.* a dim shadow.
- Penurious**, pen-ū-rī-us, *adj.* mean; stingy.
- Penury**, pen'ū-rī, *n.* excessive poverty.
- People**, pē'pl, *n.* mankind generally; inhabitants of a country.
- Pepper**, pē'p'r, *n.* a pungent spice.
- Pepsin**, pep'sin, *n.* a constituent of the gastric juice.
- Peptic**, pep'tik, *adj.* helpful to digestion.
- Perambulate**, per-am'bū-lāt, *v.* to walk.
- Per annum**, per'ā-nūm, *n.* by the year; annually.
- Perceive**, per-sēv', *v.* to discern; to observe.
- Perception**, per-sep'shun, *n.* power or act of perceiving.
- Perch**, pēr'ch, *n.* a land measure; that on which a bird settles.
- Percipient**, per-sip'i-ent, *n.* one who perceives.
- Percolate**, per-kō-lāt, *v.* to filter through; to strain.
- Percussion**, per'cush'n, *n.* a violent collision.
- Perdition**, per-dis'un, *n.* hades; ruin.
- Perdurable**, per-dū-ra-bl, *adj.* lasting.
- Peregal**, per'e-gal, *n.* equal.
- Peregrination**, per-e-grin-ā'shun, *n.* wandering.
- Peremptory**, per-empt-o-rī, *adj.* commandful; decisive.
- Perennial**, per-en'nial, *adj.* occurring each year.
- Perfect**, per'fekt, *adj.* complete; without fault.
- Perfervid**, per-fer'vid, *adj.* very eager.
- Perficient**, pēr-fish'ent, *adj.* effectual.
- Perfidious**, per-fid'i-us, *adj.* treacherous; hateful.
- Perforate**, per'fo-rāt, *v.* to pierce; to penetrate.
- Perforce**, per-fors', *adv.* by force.
- Perform**, per-form', *v.* to do; to achieve; to act;
- Perfume**, per-fūm, *n.* sweet odour. [to play.]
- Perfumery**, per-fūm'er-i, *n.* stock of perfumes.
- Perfunctory**, per-funkt'o-rī, *adj.* indifferent; careless. [heart.]
- Pericardium**, per-i-kārd'i-um, *n.* relating to the
- Pericarp**, per'i-kārp, *n.* shell or skin of fruits.
- Pericranium**, per-i-kra'ni-um, *n.* membrane surrounding the cranium.
- Perigee**, per'i-jē, *n.* the point of the moon's orbit nearest to the earth. [orbit nearest the sun.]
- Perihelion**, per-i-hē'lī-on, *n.* the point of a planet's
- Peril**, per'il, *n.* danger; *v.* to endanger.
- Perimeter**, per-im'ē-ter, *n.* outer boundary of a figure. [another.]
- Perimorph**, per'i-morf, *n.* one mineral enclosing
- Period**, pē'ri-od, *n.* a series of years; an interval of time; conclusion; punctuation mark (.)
- Peripatetic**, per-i-pa-tet'ik, *adj.* walking about.
- Periphery**, per-if'er-i, *n.* a circumference.
- Periphrase**, per-i-frāz, *n.* circumlocutory speech.
- Periphus**, per'i-plus, *n.* a circumnavigation.
- Periscope**, per-ē-scope, *n.* an optical instrument used in guiding submarines.
- Perish**, per'ish, *v.* to die; to decay.
- Perispheric**, per-is-fer'ik, *adj.* globular.
- Peristaltic**, per-i-stal'tik, *adj.* worm-like.
- Peristyle**, per-i-stīl, *n.* columns circling a building.
- Periwig**, per'i-wig, *n.* a small wig.



Periwinkle, per'i-wing'k'l, *n.* a small shell-fish; a trailing plant.  
 Perjury, per'jer-i, *n.* false swearing.  
 Perk, perk, *v.* to peer.  
 Permanence, per'man-ens, *n.* fixedness.  
 Permeable, per'mē-abl, *adj.* penetrable.  
 Permian, per'mi-an, *n.* a geological strata of the Paleozoic series.  
 Permissive, per-mis'iv, *adj.* allowing.  
 Permit, per-mit', *v.* to allow.  
 Permutable, per-müt'abl, *adj.* capable of being substituted for another.  
 Pernicious, per-nish'us, *adj.* hurtful; bad.  
 Peroration, per-o-rā-shun, *n.* the concluding part of a speech.  
 Perpend, per-pend', *v.* to consider.  
 Perpendicular, per-pen-dik'ū-lar, *adj.* upright.  
 Perpetrate, per-pe-trāt', *v.* to commit; to do.  
 Perpetual, per-pet'ū-al, *adj.* everlasting.  
 Perplex, per-pleks', *v.* to confuse.  
 Perquisite, per'kwiz-i, *n.* gift beyond wages.  
 Perry, per'i, *n.* beverage made from pears.  
 Persecute, per-se-küt', *v.* to oppress; to afflict.  
 Persecutor, per-se-kū-tor, *n.* one who persecutes.  
 Persevere, per-sē-vēr', *v.* to persist.  
 Persiflage, per-si-fāzh, *n.* banter.  
 Persist, per-sist', *v.* to continue steadily.  
 Person, per'son, *n.* an individual.  
 Personable, per'son-abl, *adj.* of good appearance.  
 Personage, per'son-āj, *n.* an eminent person.  
 Personality, per'son-al'ti, *n.* personal property.  
 Personation, per'son-ā'shun, *n.* the act of personating.  
 Personnel, per'son-el', *n.* persons comprised.  
 Perspective, per-spekt'iv, *n.* a view; art of drawing so as to express distance.  
 Perspicacious, pers-pik-ā'shus, *adj.* clear-sighted.  
 Persuade, per-spī-kū-us, *adj.* clear; lucid.  
 Persuade, pers-wād', *v.* to influence; to coax.  
 Pert, pert, *n.* saucy; lively.  
 Pertain, per-tān', *v.* to belong.  
 Pertinacity, per-tin-as'ti-i, *n.* obstinate insistence.  
 Pertinent, per-tin-ent, *adj.* suitable; fit; to the point.  
 Perturb, per-turb', *v.* to agitate; to disturb.  
 Peruke, pe'rūk, *n.* a wig.  
 Peruse, per-ūz, *v.* to read.  
 Pervade, per-vād', *v.* to spread over; to penetrate.  
 Perverse, per-vers', *adj.* stubborn; contradictory; froward.  
 Perversion, per-ver'shun, *n.* a wrong use.  
 Pervert, per-vert', *v.* to mislead; to corrupt; to distort.  
 Pervious, per'vi-us, *adj.* penetrable.  
 Pessimism, pes'im-izm, *n.* an attitude of anticipating the worst.  
 Pest, *n.* a plague; an annoying person.  
 Pester, pes'ter, *v.* to annoy.  
 Pestilent, pes'til-ent, *adj.* noxious; infectious; corrupting.  
 Pestle, pes'l, *n.* pounding instrument.  
 Petalous, pet'al-us, *adj.* having petals.  
 Petard, pe-tārd', *n.* a mortar for blowing up fortifications.  
 Petechial, pet-ek'i-al, *adj.* fever-spotted.  
 Petiole, pet'i-ol, *n.* a leaf-stalk.  
 Petition, pē-tish'un, *n.* a request; a prayer; an appeal.  
 Petrel, pet'rel, *n.* a sea-bird. [appeal]  
 Petrify, pet'rifi, *v.* to transform to stone.  
 Petrol, pet'rol, *n.* oil fuel for motors.  
 Petroleum, pe-trō'lē-um, *n.* a crude oil.  
 Petronel, pet'ro-nel, *n.* a horse-pistol.  
 Petticoat, pet'i-kōt, *n.* a woman's under-garment.  
 Pettifogger, pet'i-fog-er, *n.* a petty lawyer.  
 Pettish, pet'ish, *adj.* peevish.  
 Pettie, pet'i, *v.* to indulge.  
 Petty, pet'i, *adj.* trifling; small.  
 Petulance, pet'ū-lans, *n.* irritability; peevishness.  
 Pew, pū, *n.* an enclosed sitting in a place of worship.  
 Pewter, pew'ter, *n.* an alloy of tin and lead.  
 Phalanx, fal'angkx, *n.* a dense body of soldiers.  
 Phantasm, fant'azm, *n.* a hallucination; a vision.  
 Phantasmagoria, fan-taz-mā-gō'ri-a, *n.* illusive [images].  
 Phantom, fan'tom, *n.* a spectre. [ary].  
 Pharisaical, far-is-ā'ik-al, *adj.* hypocritical.  
 Pharmacy, fār-mā-si, *n.* chemist shop or dispensary.  
 Pharynx, fār-inks, *n.* cavity behind the nose.  
 Phase, fāz, *n.* view; aspect.  
 Phenomenon, fē-nom'ē-non, *n.* an unusual appearance.  
 Phial, fi'al, *n.* a small bottle. [ance].  
 Philander, fil-an'der, *v.* to flirt; to make love.

Philanthropy, fil-an'thro-pi, *n.* love of mankind.  
 Philately, fil-at'ē-li, *n.* stamp collecting.  
 Philharmonic, fil-har-mon'ik, *adj.* loving harmony.  
 Philippic, fil-ip'ik, *n.* an acrimonious declamation.  
 Philistine, fil'is-tin, *n.* an uncultured person.  
 Philology, fil-ol'o-jī, *n.* study of language.  
 Philomath, fil'o-math, *n.* one devoted to learning.  
 Philomel, fil'ō-mel, *n.* the nightingale.  
 Philopolemic, fil-ō-pō-lem'ik, *adj.* eager for war or discussion.  
 Philosopher, fil-os'ō-fer, *n.* one who seeks wisdom and knowledge.  
 Philotechnic, fil-ō-tek'nik, *adj.* devoted to the Philiter, fil'ter, *n.* a love charm. [arts].  
 Phlegm, flem, *n.* viscid matter.  
 Phlegmatic, fleg-mat'ik, *adj.* cold; sluggish.  
 Phenix, fē'niks, *n.* an imaginary bird; a wonder.  
 Phnetics, fō-net'iks, *n.* science of articulate sounds. [repeating instrument].  
 Phonograph, fō'nō-graf, *n.* a sound recording and Phonography, fon-og'raf-i, *n.* shorthand.  
 Phonology, fōn-ol'ō-jī, *n.* phonetics.  
 Phonotype, fō'nō-tip, *n.* type indicating sound.  
 Phosphor, fos'for, *n.* the morning star.  
 Phosphorescence, fos-for-es'ens, *n.* luminousness.  
 Phosphorus, fos'for-us, *n.* a combustible element.  
 Phossy-jaw, fos'i-jaw, *n.* phosphorus poisoning.  
 Photogenic, fō-tō-jen'ik, *adj.* pertaining to photography. [the action of light].  
 Photograph, fō'tō-graf, *n.* a picture produced by Photogravure, fō'tō-grāv-ūr, *n.* special method of printing photographs.  
 Photology, fō-tol'ō-jī, *n.* the science of light.  
 Photosphere, fō'tō-sfēr, *n.* a sphere of light.  
 Phrase, frāz, *n.* words expressing an idea.  
 Phraseology, frāz-ē-ol'ō-jī, *n.* diction.  
 Phrenetic, fren-et'ik, *adj.* frantic.  
 Phrenology, fren-ol'ō-jī, *n.* the science of the mind as indicated by the formation of the head.  
 Phrenzy, fren'zi, *n.* madness.  
 Phthisical, tiz'ik-al, *adj.* pertaining to lung disease.  
 Phylactery, fil-ak'ter-i, *n.* a charm.  
 Phylite, fil'it, *n.* clay-state.  
 Phylloid, fil'oid, *adj.* leaf-like. [nature].  
 Physical, fiz'ik-al, *adj.* pertaining to the body, or Physician, fiz-iz'hān, *n.* one skilled in the use of physic.  
 Physicist, fiz'i-sist, *n.* a student of nature.  
 Physics, fiz'iks, *n.* the science of nature.  
 Physiognomy, fiz-i-og'no-mi, *n.* face study.  
 Physiography, fiz-i-og'ra-fi, *n.* physical geography.  
 Physiolatry, fiz-i-ol'a-tri, *n.* nature worship.  
 Physiology, fiz-i-ol'ō-jī, *n.* the science of life.  
 Physique, fiz-ēk', *n.* physical organisation.  
 Phytology, fiz-tol'ō-jī, *n.* botany.  
 Picaroon, pik-ā-roon', *n.* a pirate; a cheat.  
 Picayune, pik-ā-yoon', *n.* a small American coin.  
 Piccolo, pik'ō-lō, *n.* a small flute.  
 Pick, pik, *v.* to pierce; to gather; to choose; *n.* a striking implement.  
 Pickaninny, pik-ā-nin'i, *n.* a Negro baby.  
 Picket, pik'et, *n.* an outpost guard of soldiers.  
 Pickle, pik'l, *n.* articles preserved in salt and vinegar.  
 Pickpocket, pik'pok-et, *n.* someone who steals articles from one's pocket.  
 Picnic, pik'nik, *n.* an alfresco meal.  
 Pictorial, pik-tō'ri-al, *adj.* pertaining to pictures.  
 Picture, pikt'ūr, *n.* a painting; a representation.  
 Piebald, pi-bawld, *adj.* varicoloured.  
 Piece, pēs, *n.* a part of anything; a play.  
 Pied, pid, *adj.* spotted; variegated.  
 Pier, pēr, *n.* a wharf; a projecting roadway extending into the sea.  
 Pierce, pērs, *v.* to penetrate.  
 Pier-glass, pēr-glas, *n.* a mirror between windows.  
 Pierrot, pyre-ō', *n.* a buffoon; a pantomime character; member of a concert party.  
 Pietism, pi-et-izm, *n.* a doctrine of the Pietists.  
 Pietry, pi-et-i, *n.* religious veneration; goodness.  
 Piffle, pif'l, *n.* foolish talk.  
 Pigeon, pūj, *n.* a bird; one who is easily cheated.  
 Pigment, pig'ment, *n.* paint; colouring matter.  
 Pigmy, pig'mi, *n.* a dwarf.  
 Pike, pik, *n.* a weapon with a spear-like head; a Piles, pilz, *n.* hemorrhoids. [fish].  
 Pilfer, pil'fer, *v.* to steal small things.

- Pilgrim**, pil'grim, *n.* one who journeys to a holy place.
- Pillage**, pil'āj, *n.* plunder.
- Pillar**, pil'ar, *n.* a detached column or support.
- Pillion**, pil'yun, *n.* a seat for a woman to ride behind a man.
- Pillory**, pil'or-i, *n.* a frame in which offenders were publicly exposed. [head upon.]
- Pillow**, pil'ō, *n.* a stuffed cushion to rest the head upon.
- Pilot**, pi'lōt, *n.* one who guides ships in and out of harbour.
- Pimp**, *n.* one who procures women for immoral purposes.
- Pimple**, pimp'l, *n.* a pustule.
- Pinafore**, pin'a-fōr, *n.* a child's apron.
- Pince-nez**, pangz'nā, *n.* eye-glasses fastening on the nose.
- Pincers**, pin-sers', *n.* a tool for pulling out nails, etc.
- Pinchbeck**, pinch'bek, *n.* yellow alloy; *adj.* sham.
- Pine**, pin, *n.* a cone-bearing tree; *v.* to grieve; to waste away.
- Pineal**, pin'ē-al, *adj.* relating to the pine.
- Pinfold**, pin'fold, *n.* a pound for cattle.
- Ping**, ping, *n.* a whistling sound, as of a bullet.
- Pinion**, pin'yun, *n.* a wing; *v.* to bind.
- Pink**, *n.* light red colour; *v.* to stab.
- Pink-money**, pin'mun-i, *n.* a wife's pocket-money.
- Pinnace**, pin'ās, *n.* a small vessel.
- Pinnacle**, pin'a-kl, *n.* a turret; highest point.
- Pinnate**, pin'āt, *adj.* feather-shaped.
- Pint**, pint, *n.* a liquid measure.
- Pioneer**, pi-ō-nēr', *n.* one who clears the way for others.
- Pious**, pi'us, *adj.* reverential; gold. [others.]
- Pipkin**, pip'kin, *n.* a small earthen vessel.
- Pippin**, pip'in, *n.* varieties of dessert apple.
- Piquancy**, pēk'an-si, *n.* sharpness; smartness.
- Pique**, pēk, *n.* injured pride.
- Quil**, pē-kā', *n.* a corded cotton fabric.
- Piracy**, pi'ra-si, *n.* sea robbery.
- Pirouette**, pi-roo-et', *n.* a graceful wheeling round in a dance.
- Piscatorial**, pis-kat-ō'ri-al, *adj.* relating to fishing.
- Pisciculture**, pis-si-kul'tūr, *n.* fish-breeding.
- Piscina**, pis'ina, *n.* a stoop for Holy Water.
- Pistachio**, pi'sta'chē-ō, *n.* a nut.
- Pistil**, pis'til, *n.* female organ in plants.
- Pistol**, pis'tol, *n.* a hand gun.
- Piston**, pis'ton, *n.* a rod; a cylinder.
- Pitch**, *n.* boiled tar; *v.* to cast. [who pitches.]
- Pitcher**, pitch'er, *n.* a vessel for holding water; one
- Pitchpipe**, pitch'pip, *n.* instrument for sounding the
- Piteous**, pit'ē-us, *adj.* sorrowful; bad. [keynote.]
- Pitfall**, pit'fawl, *n.* a snare.
- Pithy**, pith'i, *adj.* concise; forcible.
- Pitiable**, pit'i-abl, *adj.* sorrowful.
- Pitiful**, pit'i-ful, *adj.* worthy of pity; despicable.
- Pit-saw**, pit'saw, *n.* a two-handed vertical saw.
- Pittance**, pit'ans, *n.* a meagre allowance.
- Pivot**, piv'ot, *n.* point on which a thing turns.
- Placable**, plāk'abl, *adj.* appeasable.
- Placard**, plāk'ārd, *n.* a printed paper publicly posted.
- Placeman**, plās'man, *n.* an office-holder.
- Placid**, plas'id, *adj.* serene. [another.]
- Plagiarise**, plā'ji-ar-iz, *v.* to adopt the words of
- Plagiarism**, plā'ji-ar-izm, *n.* the act of plagiarising.
- Plague**, plāg, *n.* pestilence; an annoyance.
- Plaice**, plāc, *n.* an edible flat fish.
- Plaid**, plād, *n.* variegated cloth.
- Plain**, plān, *n.* level country.
- Plaint**, plānt, *n.* complaint.
- Plaintiff**, plān-tif, *n.* the person who sues in a law court.
- Plaintive**, plān'tiv, *adj.* sad.
- Plait**, plāt, *n.* fold; braid; *v.* to fold or braid.
- Plan**, *n.* sketch of building or project; *v.* to design.
- Plane**, plān, *n.* a tool for smoothing wood; a level surface.
- Planet**, plan'et, *n.* a celestial body.
- Plangent**, plan'jent, *adj.* noisy.
- Planisphere**, plan'is-fēr, *n.* a sphere projected on a plane.
- Plank**, plānk, *n.* a cut section of timber stouter than a board.
- Plantain**, plan'tān, *n.* a common British plant.
- Plantation**, plan-tā'shun, *n.* a large cultivated estate; tract where young trees are planted.
- Planter**, plan'ter, *n.* a plantation owner; one who plants.
- Plaque**, plāk, *n.* a tablet usually placed upon a wall to commemorate someone or some event.
- Plasm**, plazm, *n.* a mould; protoplasm.
- Plasma**, plaz'ma, *n.* fluid part of the blood; a kind of quartz.
- Plasmatic**, plaz-mat'ik, *adj.* formative.
- Plaster**, plās'ter, *n.* an adhesive salve; a limy composition for overlaying walls.
- Plastic**, plas'tik, *adj.* easily moulded.
- Plastron**, plas'tron, *n.* a breast covering used by fencers.
- Plot**, plat, *n.* a plot of ground.
- Plateau**, plat-tō', *n.* a high plain.
- Platinum**, plat'in-um, *n.* a metal.
- Platitude**, plat'it-ūd, *n.* a stale phrase; trite remark.
- Platonic**, plat-on'ik, *adj.* pure; relating to Plato.
- Platoon**, plā-toon', *n.* a small body of soldiers.
- Platter**, plat'er, *n.* a large flat plate or dish.
- Plaudit**, plaw'dit, *n.* applause; praise.
- Plausible**, plaw'zibl, *adj.* reasonable; specious.
- Playful**, plaw'ful, *adj.* sportive.
- Plea**, plē, *n.* an excuse; entreaty.
- Pleasantry**, plez'an-tri, *n.* gaiety; sprightly
- Please**, plēz, *v.* to gratify. [speech.]
- Pleat**, plēt, *n.* a fold made in cloth.
- Plebeian**, plē-bē-yan, *adj.* vulgar; common.
- Plebiscite**, pleb'is-it, *n.* referendum.
- Pledge**, plej, *n.* a promise; a security.
- Pleiades**, plē-yā-dēz, *n.* a cluster of stars in Taurus.
- Plenary**, plēn'ā-ri, *adj.* full; complete.
- Plenipotentiary**, plen-i-po-ten'shār-i, *n.* an ambas-
- Plenish**, plen'ish, *v.* to provide. [sador.]
- Plenitude**, plen'it-ūd, *adj.* fullness.
- Plenituous**, plen'tē-us, *adj.* plentiful.
- Pleonastic**, plē-ō-nas'tik, *adj.* redundant.
- Plethora**, pleth'ō-ra, *n.* excess of blood; repletion.
- Pliable**, pli'abl, *adj.* pliant; flexible.
- Pliers**, pli'erz, *n.* pincers.
- Plight**, plit, *v.* to pledge; *n.* condition; state.
- Plinth**, plinth, *n.* the square at the base of a column.
- Plough**, plow, *n.* an implement for turning over the soil.
- Pluck**, pluk', *adj.* courage; *v.* to pull feathers off a bird.
- Plumage**, ploom'āj, *n.* feathers of a bird.
- Plumb**, plum, *n.* a leaden weight on a line; *adj.* perpendicular.
- Plumber**, plum'er, *n.* a worker in lead and piping.
- Plumb-line**, plum'lin, *n.* the line of a plummet.
- Plume**, ploom, *n.* a feather.
- Plummet**, plum'et, *n.* a weighted line.
- Plumous**, ploom'us, *adj.* feathery.
- Plump**, *adj.* fat.
- Plunder**, plun'der, *v.* to rob; *n.* spoil.
- Plunge**, plunj, *v.* to dive; to rush into; to immerse.
- Plural**, ploo'ri, *adj.* concerning more than one.
- Pluralist**, ploo'ral-ist, *n.* a holder of more than one
- Plus**, *n.* sign (+) of addition. [benefice.]
- Plush**, *n.* a velvet cloth.
- Plutocracy**, ploo-tok'rā-si, *n.* government by the wealthy.
- Plutonian**, ploo-tō'n-i-an, *adj.* internal.
- Pluvial**, ploo'vi-al, *adj.* rainy. [layer.]
- Ply**, pli, *v.* to work at; to importune; *n.* thickness.
- Pneumatic**, nū-mat'ik, *adj.* relating to air.
- Poach**, pōch, *v.* to steal game; to cook eggs.
- Pock**, pok, *n.* a pustule on the skin.
- Pocket**, pok'et, *n.* a bag forming part of a garment; *v.* to take covertly.
- Podagra**, pō-da-grā, *n.* gout in the feet.
- Podgy**, poj'i, *adj.* short and fat.
- Poem**, pō'em, *n.* a composition in verse.
- Poetaster**, pō-et-as-ter, *n.* an inferior poet.
- Poetry**, pō-et-ri, *n.* a rhythmical embodiment of thoughts and fancies.
- Pogrom**, pō'-grom, *n.* a massacre or disturbance organised against a section of the community.
- Poignant**, poi'nant, *adj.* bitter; stinging; acutely painful.
- Point**, point, *n.* a sharp end; spot; gist of an argument; *v.* to indicate; to direct.
- Pointed**, point'ed, *adj.* sharp, direct, keen.
- Poise**, poiz, *v.* to balance.
- Poison**, poi'zn, *n.* any substance that, taken into the system, destroys or impairs life; *v.* to infect with poison.
- Polar**, pō-lar, *adj.* pertaining to the poles.
- Polarisation**, pō-lar-i-zā'shun, *n.* the act of communicating polarity. [of Poland.]
- Pole**, pōl, *n.* a rod; five and a half yards; native
- Pole-axe**, pōl'aks, *n.* a hatchet with a long handle.
- Polemic**, pōlem'ik, *n.* disputant; *adj.* controver-
- Pole-star**, pōl'stār, *n.* the north star. [sial.]



- Poley**, pō'li, *adj.* without horns.  
**Police**, pō-lēs, *n.* civil force.  
**Policy**, pō-lis-i, *n.* prudence; the art of governing.  
**Polish**, pō-lish, *v.* to make glossy; to refine; *n.* the substance used to produce polish.  
**Polite**, pō-lit', *adj.* courteous.  
**Politic**, pō-lit'-ik, *adj.* discreet.  
**Politics**, pō-lit'-iks, *n.* science of government.  
**Polity**, pō-lit'-i, *n.* structure of a government.  
**Poll**, pōl, *n.* head; a list; an election.  
**Pollard**, pō-l'ard, *n.* a lopped tree.  
**Pollen**, pō-len, *n.* the fertilising powder in flowers.  
**Pollent**, pō-lent, *adj.* powerful, strong.  
**Pollute**, pō-lūt', *v.* to taint; to corrupt.  
**Poltroon**, pōl-trōon', *n.* a coward.  
**Polygamy**, pōl-ig'am-i, *n.* plurality of wives.  
**Polyglot**, pōl'i-glōt, *adj.* many-languaged.  
**Polygon**, pōl'i-gon, *n.* a many-angled figure.  
**Polygram**, pōl'i-gram, *n.* a figure of many lines.  
**Polygraph**, pōl'i-graf, *n.* a copying instrument.  
**Polygraphy**, pōl-ig'rā-fī, *n.* art of writing in ciphers.  
**Polysyllable**, pōl-i-sil-ābl, *n.* word of more than three syllables.  
**Polytechnic**, pōl-i-tek'nik, *adj.* including many arts. [than one God].  
**Polytheism**, pōl-i-thē'izm, *n.* the doctrine of more  
**Pommel**, pum'el, *n.* the knob of a saddle; *v.* to beat.  
**Pomology**, pom-ol'ō-jī, *n.* science of fruit-raising.  
**Pomp**, pomp, *n.* ceremony; show; display.  
**Pompom**, pom'pom, *n.* a quick-firing gun.  
**Pompon**, pom'pon, *n.* a hat trimming.  
**Pompous**, pōm'pus, *adj.* self-important.  
**Poncho**, pon'chō, *n.* a short seamless cloak.  
**Ponder**, pon'der, *v.* to consider.  
**Ponderous**, pon'der-us, *adj.* weighty; heavy.  
**Pongee**, pon'jē, *n.* silk from cocoons of wild silk.  
**Poniard**, pon'yard, *n.* a small dagger. [worms].  
**Pontage**, pont'āj, *n.* bridge toll.  
**Pontiff**, pont'if, *n.* a high priest; the Pope.  
**Pontificate**, pont-if'ik-āt, *n.* the rule of a Pope.  
**Pontil**, pon-til, *n.* rod used in glass-making.  
**Pontoon**, pon-toon', *n.* a floating bridge; a flat  
**Pood**, pood, *n.* a Russian weight, 36 lb. [boat].  
**Pope**, pōp, *n.* the head of the Roman Catholic Church.  
**Popinjay**, pop'in-jā, *n.* a fop.  
**Poplar**, pop'lar, *n.* a well-known tree.  
**Poplin**, pop'lin, *n.* fabric of worsted and silk.  
**Poppy**, pop'pī, *n.* a plant with usually red flowers. one kind yielding opium.  
**Populace**, pop'ū-lās, *n.* the people.  
**Popular**, pop'ū-lar, *adj.* generally liked.  
**Population**, pop-ū-lā'shun, *n.* act of populating; the people in general.  
**Populous**, pop'ū-lus, *adj.* full of people.  
**Porcelain**, pōrs-lān, *n.* fine earthenware.  
**Porch**, pōrch, *n.* covered entrance-way.  
**Porcine**, pōr'sin, *adj.* pertaining to swine.  
**Pore**, pōr, *n.* minute passage in the skin.  
**Porifera**, pō-rif'er-ā, *n.* sponges.  
**Pork**, pōrk, *n.* flesh of swine.  
**Porous**, pōrus, *adj.* full of pores.  
**Porphyry**, pōr-fi-ri, *n.* a variegated hard stone.  
**Porpoise**, pōr'pus, *n.* a marine mammal.  
**Porridge**, pōr'ij, *n.* boiled meal and water.  
**Porringer**, pōr'in-jer, *n.* a porridge pan.  
**Port**, pōrt, *n.* a harbour; an opening; a Portuguese wine; bearing; left side of a ship.  
**Portable**, pōrt'ābl, *adj.* movable; that can be carried.  
**Portage**, pōrt'āj, *n.* carrying; price of carriage.  
**Portal**, pōrt'al, *n.* a gateway; an entrance.  
**Portcullis**, pōrt-kul'is, *n.* a sliding framework suspended over a gateway.  
**Porte**, pōrt, *n.* the Turkish court.  
**Portend**, por-tend', *v.* to forbode.  
**Portentous**, por-ten'tus, *adj.* ominous. [liquor].  
**Porter**, pōrt'er, *n.* one who carries parcels; a malt  
**Portfolio**, pōrt-fō'l-i-ō, *n.* case for holding papers; the office of a State minister.  
**Porthole**, pōrt'hōl, *n.* gun-hole; any opening in a ship's side for air or light. [way].  
**Portico**, pōrt'ik-ō, *n.* a piazza; a columned entrance.  
**Portion**, pōr'shun, *n.* a share; a dowry.  
**Portly**, pōrt'li, *adj.* dignified; corpulent.  
**Portmanteau**, pōrt-man'tō, *n.* a hand-bag.  
**Portoise**, pōr'tiz, *n.* the gunwale of a boat.  
**Portray**, pōr'trā', *v.* to draw; to describe.  
**Portrayal**, pōrt-rā'āl, *n.* the act of portraying.  
**Pose**, pōz, *v.* to assume an attitude; to puzzle; *n.* attitude.  
**Position**, po-zish'un, *n.* place; situation.  
**Positive**, poz'it-iv, *adj.* sure; actual; absolute.  
**Possess**, po-zes', *v.* to own.  
**Possessor**, po-ze-s'or, *n.* owner. [liquor].  
**Posset**, pos'et, *n.* milk curdled with wine or other  
**Possible**, pos'i-bl, *adj.* what can be done.  
**Post**, pōst, *n.* an upright piece of timber; pillar; place for the receipt of mail letters; *v.* to post.  
**Postal**, pōst'al, *adj.* pertaining to the post-office service.  
**Post-chaise**, pōst'shāz, *n.* a stage coach.  
**Post-date**, pōst-dāt, *v.* to postpone date.  
**Postdiluvian**, pōst-dil-ū-vi-an, *adj.* after the Deluge.  
**Poste-restante**, pōst-rest-ant', *n.* place in post-office where letters are kept till called for.  
**Posterior**, pos-tē-ri-or, *adj.* later; subsequent; rear.  
**Posterity**, pos-ter'it-i, *n.* descendants.  
**Post-haste**, pōst-hāst, *n.* top speed.  
**Posthumous**, pōst'ū-mus, *adj.* after death.  
**Postil**, pōs'til, *n.* marginal note.  
**Postillion**, pōst-il'yun, *n.* a rider of a carriage horse.  
**Postmeridian**, pōst-mer-id'i-an, *n.* afternoon.  
**Post-mortem**, pōst-mort'em, *adj.* after death.  
**Post-obit**, pōst-ō-bit, *n.* bond given by heirs securing repayment of money advanced.  
**Postpone**, pōst'pōn', *v.* to defer.  
**Post-prandial**, pōst-pran'di-al, *adj.* after dinner.  
**Postscript**, pōst'skript, *n.* writing added after a letter has been signed.  
**Postulate**, pos'tū-lāt, *n.* self-evident position.  
**Posture**, pos'tūr, *n.* attitude; position.  
**Posy**, pōz'i, *n.* nosegay; motto on a ring.  
**Potation**, pō-tā'shun, *n.* a drink.  
**Potato**, pō-tā'tō, *n.* an edible tuber.  
**Poteen**, pō-tēn', *n.* an illegally distilled Irish whisky.  
**Potent**, pō-tent, *adj.* powerful; having authority.  
**Potentiality**, pō-ten-shi-al'it-i, *n.* a potential thing.  
**Pother**, pōth'er, *n.* bustle; confusion.  
**Potion**, pō'shun, *n.* a dose; a draught.  
**Pot-pourri**, pōt'poo'r-ē, *n.* a special blending of dried flowers; a musical medley.  
**Potsherd**, pōt'sherd, *n.* a piece of broken pot.  
**Pottage**, pot'āj, *n.* a thick soup.  
**Potter**, pot'er, *v.* to trifle; *n.* a maker of earthenware.  
**Pottery**, pot'er-i, *n.* earthenware.  
**Pouch**, powch, *n.* a bag; a pocket.  
**Poultry**, pōl'tri, *n.* domesticated chickens, ducks, geese, etc.  
**Pounce**, pōwns, *v.* to fall upon; *n.* a fine powder.  
**Pound**, pōwnd, *v.* to bruise; *n.* a standard weight.  
**Poundage**, pōwnd'āj, *n.* duty per pound.  
**Pout**, powt, *v.* to sulk.  
**Powder**, pow'der, *n.* a dust; gunpowder.  
**Power**, pow'er, *n.* force; strength; might.  
**Pow-wow**, pow'wow, *n.* a Red Indian gathering; a friendly consultation.  
**Practicable**, prak'tik-ābl, *adj.* possible.  
**Practical**, prak'ti-kal, *adj.* useful.  
**Practice**, prak'tis, *n.* habit.  
**Practise**, prak'tis, *v.* to do as a habit.  
**Practitioner**, prak-tish'un-er, *n.* one who practises; a doctor.  
**Præmunire**, prē-mū-ni-rē, *n.* the act of ignoring the governing power.  
**Pragmatical**, prag-mat'ik-al, *adj.* officious; meddling.  
**Prairie**, prā'ri, *n.* a grassy plain. [ling].  
**Prance**, prans, *v.* to strut; to ride ride gaily.  
**Prank**, prāngk, *n.* a trick; a frolic.  
**Prate**, prāt, *v.* to talk idly or foolishly.  
**Pratique**, prā-tēk, *n.* leave to trade after quarantine.  
**Prawn**, n. a small crustacean fish. [tine].  
**Pray**, prā, *v.* to entreat; to supplicate the Almighty. [views].  
**Preach**, prēch, *n.* to publicly expound religious  
**Preacher**, prēch'er, *n.* one who preaches.  
**Preamble**, prē-am'bl, *n.* introduction; preface.  
**Prebend**, prē-bend, *n.* stipend granted to a canon.  
**Prebendary**, prē-bend-ar-i, *n.* cathedral stipendiary. [ful].  
**Precarious**, pre-kā'ri-us, *adj.* uncertain; doubtful.  
**Precaution**, pre-kaw'shun, *n.* previous care.  
**Precede**, prē-sēd', *v.* to go before.  
**Precedence**, prē-sē-dens, *n.* priority.  
**Precedent**, prē-sē-dent, *adj.* going before; anterior.  
**Precedent**, prē-sē-dent, *n.* example.  
**Precentor**, pre-sen'tor, *n.* choir-leader.  
**Precept**, prē-sept, *n.* doctrine; rule of action.  
**Precinct**, prē-singkt, *n.* boundary.  
**Precious**, presh'us, *adj.* worthy; valuable.  
**Predicce**, pres'i-plis, *n.* an abyss.

Precipitance, prĕ-sĭp'it-ans, *n.* rash haste.  
 Precipitate, prĕ-sĭp'it-ăt, *v.* to cast down.  
 Precipitous, prĕ-sĭp'it-us, *adj.* rash; steep.  
 Précis, prĕ-sĕ', *n.* an abstract or summary.  
 Precise, prĕ-sis, *adj.* exact.  
 Precision, prĕ-sizh'un, *n.* accuracy.  
 Preclude, prĕ-klood', *v.* to shut out. [out.  
 Preclusion, prĕ-klood'zhun, *n.* exclusion; a shutting  
 Precocity, prĕ-kos'it-i, *n.* premature development.  
 Precognition, prĕ-kog-nish'un, *n.* foresight.  
 Preconceive, prĕ-kon-sĕv', *v.* to imagine; to con-  
 ceive beforehand.  
 Preconception, prĕ-kon-sĕp'shun, *n.* forethought.  
 Preconcerted, prĕ-kon-sert'ed, *adj.* prearranged.  
 Precursor, prĕ-kur'sor, *n.* a forerunner. [plunder.  
 Predaceous, prĕ-ă'shus, *adj.* ravenous; living by  
 Predatory, prĕ-ă-to-ri, *adj.* plundering.  
 Predecessor, prĕ-de-sĕs'or, *n.* forerunner.  
 Predestination, prĕ-des-tin-ă'shun, *n.* the belief  
 that everything is foreordained.  
 Predial, prĕ-di-al, *adj.* connected with land; *n.* a  
 slave.  
 Predicable, prĕd'ik-abl, *adj.* attributable.  
 Predicament, prĕ-dik'ă-ment, *n.* plight.  
 Predicate, prĕd'ik-ăt, *v.* to affirm.  
 Predication, prĕd-ik-ă'shun, *n.* act of affirming.  
 Predict, prĕ-dikt', *v.* to foretell.  
 Prediction, prĕ-dik'shun, *n.* a prophecy.  
 Predilection, prĕ-dil-ek'shun, *n.* prepossession in  
 favour of.  
 Predisposition, prĕ-dis-po-zĭ'shun, tendency.  
 Predominate, prĕ-dom'in-ăt, *v.* to rule.  
 Pre-eminence, prĕ-em'in-ens, *n.* superiority.  
 Pre-emption, prĕ-em'shun, *n.* first option of  
 buying.  
 Preen, prĕn, *v.* to arrange feathers, as do birds.  
 Preface, prĕ-fas, *n.* an introduction.  
 Prefect, prĕfĕkt, *n.* a governor; a senior pupil  
 of a school detailed to keep order.  
 Prefer, prĕ-fer, *v.* to esteem before others; to  
 choose.  
 Preferable, prĕ-fer-abl, *adj.* worthy of preference.  
 Preference, prĕ-fer-ens, *n.* choice.  
 Preferment, prĕ-fer-ment, *n.* promotion.  
 Prefigure, prĕ-flġ'ur, *v.* to show beforehand.  
 Prefix, prĕ-flġs, *n.* a letter or word put before.  
 Prefix, prĕ-flġs', *v.* to place before.  
 Pregnant, prĕg'nant, *adj.* with young; fruitful.  
 Prehensile, prĕ-hen'sil, *adj.* that can grasp.  
 Prejudge, prĕ-jul', *v.* to judge beforehand.  
 Prejudice, prĕf'udis, *adj.* bias; prejudgment.  
 Prelacy, prĕl'ă'si, *n.* the office of a prelate.  
 Prelate, prĕl'ăt, *n.* a church dignitary.  
 Preliminary, prĕ-lim'in-ar-i, *adj.* previous; pre-  
 paratory.  
 Prelude, prĕl'ud, *n.* introduction; preface.  
 Premature, prĕ-mă-tur, *adj.* before its time; too  
 hasty.  
 Premeditate, prĕ-med'it-ăt, *v.* to plan beforehand.  
 Premier, prĕ-mi-er, *n.* prime minister; *adj.* first.  
 Premise, prĕ-miz', *n.* to state beforehand.  
 Premises, prĕ-mis-es, *n.* a building and its ad-  
 juncts. [insurance.  
 Premium, prĕ-mi-um, *n.* reward; payment for  
 Premonitory, prĕ-mon'it-or-i, *adj.* giving prior  
 notice of.  
 Preoccupy, prĕ-ok'ŭ-plĭ, *v.* to occupy beforehand.  
 Prepare, prĕ-păr', *v.* to get ready.  
 Prepend, prĕ-pens', *adj.* premeditated.  
 Preponderate, prĕ-pon-der-ăt, *v.* to outweigh.  
 Preposition, prĕ-p-o-zĭsh'un, *n.* part of speech  
 showing relation. [invite favour.  
 Prepossessing, prĕ-po-zes'ing, *adj.* in condition to  
 Preposterous, prĕ-pos'ter-us, *adj.* absurd.  
 Pre-Raphaelitism, prĕ-raf'ă-el'ĭtism, *n.* a styled  
 painting similar to that which prevailed before  
 Raphael.  
 Prerogative, prĕ-roġăt-iv, *n.* exclusive privilege.  
 Presage, prĕ-săġ, *v.* to predict; *n.* anything that  
 Presbyter, prĕz'bĭ-ter, *n.* a priest. [foreshows.  
 Presence, prĕ'shĭ-ens, *n.* foreknowledge.  
 Prescribe, prĕ-skrĭb', *v.* to appoint; to order; to  
 lay down.  
 Prescription, prĕ-skrĭp'shun, *n.* a written instruc-  
 tion for preparation of medicine; any act of  
 directing.  
 Prescriptive, prĕ-skrĭpt'iv, *adj.* acquired by usage.  
 Presence, prĕz'ĕns, *n.* being present; appearance.  
 Present, prĕ-zĕnt, *v.* to lay before another, to offer  
 Present, prĕ-zĕnt, *n.* a gift. [as a gift.  
 Presentable, prĕ-zĕnt-abl, *adj.* that may be pre-  
 sented.  
 Presentient, prĕ-zĕn'shl-ent, *adj.* pre-perceiving.

Presentiment, prĕ-sen'ti-ment, *n.* a premonition.  
 Presentment, prĕ-zĕnt'ment, *n.* the act of present-  
 ing. [serves.  
 Preservative, prĕ-zer'vă-tiv, *n.* that which pre-  
 serve, prĕ-zer'v', *v.* to keep safe; to defend.  
 President, prĕs'i-dĕnt, *n.* one at the head of a state,  
 company, or society.  
 Press, prĕs, *v.* to squeeze; to clasp; *n.* printing  
 machine; newspapers generally.  
 Press-gang, prĕs'gang, *n.* a body of men who in  
 war-time forcibly carried off men to serve on  
 warships.  
 Pressing, prĕs'ing, *adj.* urgent.  
 Pressman, prĕs'man, *n.* one who works at a print-  
 ing press; a journalist.  
 Prestige, prĕst-ĕzh', *n.* moral influence.  
 Presto, prĕs'to, *adv.* quickly.  
 Presume, prĕ-zŭm', *v.* to take for granted; to arro-  
 gate.  
 Presumption, prĕ-zŭmp'shun, *n.* arrogance.  
 Presumptuous, prĕ-zŭmp'tŭ-us, *adj.* over-con-  
 fident.  
 Pretence, prĕ-tĕns', *n.* excuse; assumption.  
 Pretension, prĕ-tĕn'shun, *n.* an immoderate  
 claim.  
 Preterite, prĕt'er-ĭt, *adj.* gone by; *n.* past-tense.  
 Pretermission, prĕ-termĭsh'un, *n.* the act of omit-  
 ting.  
 Preternatural, prĕ-ter-năt'ŭ-răl, *adj.* supernatural.  
 Pretext, prĕ-text, *n.* semblance; excuse; pretence.  
 Prevail, prĕ-văl', *v.* to overcome; to induce.  
 Prevalence, prĕvăl-ens, *n.* custom; predomi-  
 nance.  
 Prevaricate, prĕ-văr'ĭk-ăt, *v.* to equivocate.  
 Prevent, prĕ-vent', *v.* to hinder.  
 Preventive, prĕ-ven'tiv, *adj.* tending to prevent.  
 Previous, prĕ-vi'us, *adj.* prior.  
 Prevision, prĕ-vĭzh'un, *n.* forethought.  
 Prey, pră, *v.* to seize upon; *n.* spoil; plunder.  
 Price, prĭs, *n.* sum asked for a thing; reward.  
 Prick, prĭk, *v.* to spur; *n.* a sharp-pointed instru-  
 ment; a sting.  
 Prickly, prĭk'li, *adj.* thorny. [ment; a sting.  
 Pride, prĭd, *n.* self-esteem.  
 Priest, prĕst, *n.* a religious minister.  
 Priestcraft, prĕst'kraft, *n.* priestly policy.  
 Prig, prĭg, *n.* a conceited person.  
 Prill, prĭl, *v.* to grow sour.  
 Prim, prĭm, *adj.* precise.  
 Primacy, prĭmă-sĭ, *n.* office of archbishop.  
 Primal, prĭmal, *adj.* first.  
 Primarily, prĭmăr-i-lĭ, *adv.* in the first place.  
 Prime, prĭm, *adj.* chief; fine; first; strong; full.  
 Primer, prĭmer, *n.* first book of instruction.  
 Primeval, prĭ-mĕvăl, *adj.* original; belonging to  
 early times.  
 Priming, prĭm'ing, *n.* first coating of colour.  
 Primitive, prĭm'ĭt-iv, *adj.* original; first.  
 Primogeniture, prĭ-moġ-en'ĭtŭ-r, *n.* inheritance by  
 eldest son. [order.  
 Primordial, prĭ-mor'dĭ-al, *adj.* original; first in  
 Primrose, prĭm roz, *n.* one of the primula tribe;  
 a plant flowering in the spring.  
 Prince, prĭns, *n.* a king's son; a ruler.  
 Princess, prĭn'sĕs, *n.* a prince's consort; a king's  
 daughter.  
 Principal, prĭn'sĭ-pal, *adj.* chief; capital.  
 Principia, prĭn-sĭp'ĭ-ă, *n.* first principles.  
 Principle, prĭn'sĭp-pl, *n.* fundamental fact, belief  
 or truth.  
 Prink, prĭng' v. to deck for show.  
 Prior, prĭ-or, *adj.* former; *n.* the head of a monas-  
 tery.  
 Priority, prĭ-or'ĭtĭ, *n.* precedence. [tery.  
 Prism, prĭzm, *n.* a solid whose ends are similar and  
 parallel planes, and whose sides are parallelo-  
 grams.  
 Prison, prĭz'n, *n.* a jail; place of detention.  
 Pristine, prĭs'tĭn, *adj.* primitive original.  
 Private, prĭ-văt, *adj.* alone; secret; an ordinary  
 soldier. [manned.  
 Privateer, prĭ-vă-tĕr', *n.* a ship of war privately  
 Privation, prĭ-vă'shun, *n.* destitution; act of de-  
 priving.  
 Privilege, prĭv'ĭl-ĕġ, *n.* right; special advantage.  
 Privily, prĭv'ĭ-lĭ, *adv.* secretly.  
 Privy, prĭv'ĭ, *adj.* secret; private.  
 Prize, prĭz, *n.* a reward; something seized from  
 Probable, prŕb'ăbl, *adj.* likely. [an enemy.  
 Probate, prŕbăt, *n.* legal proof of a will.  
 Probation, prŕbăt'shun, *n.* trial; act of testing.  
 Probative, prŕbăt-iv, *adj.* serving for proof.  
 Probe, prŕb, *v.* to search; *n.* a surgeon's instru-  
 ment.  
 Probity, prŕb'ĭtĭ, *n.* sincerity; uprightness.



- Problem, *prôb'lem*, *n.* a question for solution.  
 Problematical, *prôb'lem-at'ik-al*, *adj.* questionable.  
 Proboscis, *prô-bôs'is*, *n.* a trunk; nose.  
 Procedure, *prô-sê'dûr*, *n.* legal process; mode of proceeding.  
 Proceed, *prô-sêd'*, *v.* to advance; to go on.  
 Proceeds, *prô-sêds*, *n.* returns; produce; rents.  
 Process, *prô-sēs*, *n.* operation.  
 Procession, *prô-sēs'shun*, *n.* a moving column of people.  
 Proclaim, *prô-klâm'*, *v.* to announce publicly.  
 Proclivity, *prô-kliv'it-i*, *n.* tendency; inclination.  
 Procrastinate, *prô-kras'tin-ât'*, *v.* to postpone.  
 Procreate, *prôkrê-ât'*, *v.* to generate. [formity.  
 Procrustean, *prô-krus'tê-an*, *adj.* forcing into con-  
 Proctor, *prôk'tôr*, *n.* an ecclesiastical lawyer; a university official.  
 Procumbent, *prô-kum'bent*, *adj.* forward-bending; lying face downward.  
 Procure, *prô-kûr'*, *v.* to obtain.  
 Prodigal, *prôd'ig-al*, *adj.* extravagant; lavish.  
 Prodigious, *prô-dij'us*, *adj.* huge; wonderful.  
 Prodigy, *prôd'ij-i*, *n.* a wonder.  
 Produce, *prôd'ûs*, *n.* yield; that which is produced.  
 Produce, *prô-dûs'*, *v.* to yield; to bring forth.  
 Product, *prod'ukt*, *n.* fruit; yield; thing pro-  
 Proem, *prô'em*, *n.* prelude. [duced.  
 Profane, *prô-fân'*, *adj.* secular; unholy.  
 Profess, *prô-fes'*, *v.* to avow; to own.  
 Profession, *prô-fesh'un*, *n.* occupation; a voca-  
 Proffer, *prôf'er*, *v.* to offer. [tion.  
 Proficient, *prô-fish'ent*, *adj.* skilled; able.  
 Profile, *prôfil*, *n.* outline; side view.  
 Profit, *prôfit*, *n.* gain; advantage.  
 Profligate, *prôf'il-gât*, *adj.* abandoned; dissolute.  
 Profound, *prô-fownd'*, *adj.* deep; intense.  
 Profuse, *prô-fûs*, *adj.* lavish.  
 Progeny, *prô-ġen-i*, *n.* offspring. [jaws.  
 Prognathous, *prôgn'-thus*, *adj.* with projecting  
 Prognosis, *prog-nô'sis*, *n.* a forecast of the course of  
 a disease. [taintment.  
 Programme, *prô'gram*, *n.* particulars of an enter-  
 Progress, *prô-gres*, *n.* advancement; improvement.  
 Prohibit, *prô-hib'it*, *v.* to forbid.  
 Project, *prôjekt*, *n.* a scheme; a plan.  
 Project, *prôjekt'*, *v.* to extend; to throw outward.  
 Projectile, *prôjekt'il*, *adj.* projecting; *n.* a missile.  
 Projector, *prôjekt'ôr*, *n.* one who forms plans.  
 Prolegomena, *prô-leg-om'en-a*, *n.* introduction to  
 a treatise. [labouring classes.  
 Proletarian, *prô-lê-târ-i-an*, *adj.* pertaining to the  
 Prolific, *prô-lif'ik*, *adj.* productive; fruitful.  
 Prolix, *prô-lik's*, *adj.* tedious; diffuse.  
 Prolixity, *prô-lik'sit-i*, *n.* great length; tedious-  
 Prologue, *prô-log*, *n.* introduction. [ness.  
 Prolong, *prô-long'*, *v.* to extend. [walking.  
 Promenade, *prom'en-âd*, *v.* to walk; *n.* a place for  
 Prominence, *prom'in-ens*, *n.* conspicuousness.  
 Promiscuous, *prô-mis'kû-us*, *adj.* without order.  
 Promise, *prom'is*, *v.* to engage to do; *n.* expecta-  
 tion.  
 Promissory, *prom'is-ô-ri*, *adj.* relating to a promise.  
 Promontory, *prom'on-tô-ri*, *n.* a headland.  
 Promote, *prô-môt'*, *v.* to advance; to encourage.  
 Prompt, *prômp't*, *adj.* ready; quick; *v.* to incite.  
 Promptitude, *prômp'tit-ûd*, *n.* readiness; quick-  
 Promulgate, *prô-mul'gât*, *v.* to publish. [ness.  
 Prone, *prôn*, *adj.* disposed; face downward.  
 Prong, *prong*, *n.* branch of a fork. [pronoun.  
 Pronominal, *prô-nom'in-al*, *adj.* pertaining to a  
 Pronounce, *prô-nouns'*, *v.* to speak; to utter.  
 Pronunciation, *prô-nun'ce-ashun*, *n.* manner of  
 uttering words.  
 Proof, *n.* trial; evidence; a first printed impres-  
 sion; *adj.* resisting.  
 Propagate, *prop'â-gât*, *v.* to reproduce; to spread.  
 Propel, *prô-pel'*, *v.* to force forward.  
 Propeller, *prô-pel'er*, *n.* screw wheel of a steamer;  
 or air-screw of an aeroplane.  
 Propensity, *prô-pen'sit-i*, *n.* tendency; inclination.  
 Proper, *prop'er*, *adj.* correct; suitable.  
 Property, *prop'er-ti*, *n.* estate; inherent quality.  
 Prophet, *prof'et*, *n.* one who foretells.  
 Prophylactic, *prof-il-lak'tik*, *n.* a preventive medi-  
 cine.  
 Propinquity, *prô-ping'kwit-i*, *n.* proximity.  
 Propitiate, *prô-pish'it-ât*, *v.* to conciliate.  
 Propitious, *prô-pish'us*, *adj.* favourable.  
 Proportion, *prô-pôr'shun*, *n.* adjustment; equality  
 of ratios.  
 Proposal, *prô-pô-zal*, *n.* a suggestion; an offer.  
 Propose, *prô-pôz'*, *v.* to offer.  
 Propound, *prô-pownd'*, *v.* to set forth.
- Proprietor, *prô-prîet'ôr*, *n.* an owner.  
 Propriety, *prô-prî-et-i*, *n.* fitness; good behaviour.  
 Propulsion, *prô-pul'shun*, *n.* act of driving forward.  
 Prorogue, *prô-rôg'*, *v.* to postpone.  
 Prosaic, *prô-zâ'ik*, *adj.* prosy; commonplace.  
 Proscenium, *pros-ên-lum*, *n.* the front part of a  
 stage.  
 Proscribe, *prô-skrib'*, *v.* to denounce; to prohibit.  
 Prosecute, *prô-sê-kût*, *v.* to sue; to follow.  
 Proselyte, *prô-sê-lit*, *n.* a convert.  
 Prosody, *pros'o-di*, *n.* the part of grammar treat-  
 ing on versification.  
 Prospect, *pros'pekt*, *n.* expectation; view; aspect.  
 Prospecting, *pros-pekt'ing*, *n.* searching for indica-  
 tions of precious minerals.  
 Prospectus, *pros-pekt'us*, *n.* the plan of a work or  
 public undertaking.  
 Prosper, *pros'per*, *v.* to succeed.  
 Prosperous, *pros'per-us*, *adj.* successful.  
 Prostitude, *pros'tit-ût*, *n.* a woman who sells her  
 body for immoral purposes; *v.* to debase.  
 Prostrate, *pros'trât*, *adj.* fallen; *v.* to throw down.  
 Prosy, *prôzi*, *adj.* tedious; tiresome.  
 Protagonist, *prô-tag'on-ist*, *n.* a leading character.  
 Protean, *prô-tê-an*, *adj.* changing shape.  
 Protect, *prô-tekt'*, *v.* to shield; to defend.  
 Protection, *prô-tek'shun*, *n.* preservation; defence  
 refuge; a fiscal policy favouring taxation of  
 imports. [tection.  
 Protégé, *prô-tê-zhâ'*, *n.* one under another's pro-  
 tection, *prô-tê-in*, *n.* the first element in any com-  
 pound.  
 Protest, *prô-test'*, *v.* to object; to declare openly.  
 Protocol, *prô-tô-kol*, *n.* the original writing of a  
 treaty.  
 Protomartyr, *prô-tô-mâr'ter*, *n.* the first martyr.  
 Protophyte, *prô-tô-fit*, *n.* the lowest order of plants.  
 Protoplasm, *prô-tô-plazm*, *n.* living matter.  
 Prototype, *prô-tô-tip*, *n.* the original of a copy.  
 Protozoa, *prô-tô-zô'a*, *n.* the lowest order of animal  
 Protract, *prô-trakt'*, *v.* to prolong. [life.  
 Protractor, *prô-trakt'ôr*, *n.* an instrument used  
 for measuring angles.  
 Protrude, *prô-trood'*, *v.* to shoot out.  
 Protuberance, *prô-tû'ber-ans*, *n.* a prominence; a  
 Proud, *prôwd*, *adj.* arrogant. [jutting out.  
 Prove, *prov'*, *v.* to test; to demonstrate.  
 Provender, *prov'en-der*, *n.* dry food for horses.  
 Proverb, *prov'erb*, *n.* a maxim.  
 Providence, *prov'id-ens*, *n.* divine supervision; fore-  
 sight; God.  
 Provident, *prov'id-ent*, *adj.* prudent; thrifty.  
 Province, *prov'ins*, *n.* a territory; a district; a  
 duty.  
 Provincial, *prô-vin'shal*, *adj.* pertaining to a pro-  
 vince or the country; unpolished.  
 Provision, *prô-vizh'un*, *n.* food; what is provided.  
 Proviso, *prô-vî-zo*, *n.* a condition.  
 Provoke, *prô-vok'*, *v.* to excite to anger; to sum-  
 mon.  
 Provost, *prov'ost*, *n.* major of a Scottish city.  
 Prow, *n.* fore part of a vessel.  
 Prowess, *pro-wes*, *n.* valour.  
 Prowl, *v.* to roam in quest of plunder.  
 Proximity, *prôks'im'it-i*, *n.* nearness.  
 Proxy, *proks'i*, *n.* substitute; a deputy.  
 Prude, *prôd*, *n.* a woman of affected modesty.  
 Prudent, *prôo'dent*, *adj.* discreet; frugal.  
 Prudential, *prôo-den'shal*, *adj.* discretionary.  
 Prudish, *prôo'dish*, *adj.* over-modest; affectedly  
 modest.  
 Prurience, *prôo'ri-ens*, *n.* burning desire.  
 Pry, *prî*, *v.* to peep into; to lift with a lever.  
 Psalm, *sâm*, *n.* a sacred song.  
 Psalter, *saw'l'er*, *n.* psalm book.  
 Psaltary, *saw'l'ter-i*, *n.* a stringed instrument.  
 Pseudonym, *sû'dô-nim*, *n.* an assumed name.  
 Psychic, *s'ikik*, *adj.* relating to the soul.  
 Psychology, *sî-kol'ô-jî*, *n.* the study of the mind.  
 Puberty, *pû'ber-ti*, *n.* adult age; maturity.  
 Public, *pub'lik*, *adj.* common; open; *n.* the people.  
 Publican, *pub'lik-an*, *n.* an inn or public-house  
 keeper.  
 Publication, *pub-lik-â'shun*, *n.* a thing published.  
 Publicist, *pub'li-sist*, *n.* a writer on public affairs.  
 Publish, *pub'lish*, *v.* to put in circulation; to pro-  
 claim.  
 Puck, *puk*, *n.* a mischievous fairy.  
 Pucka, *puk'a*, *adj.* substantial, genuine.  
 Pucker, *puk'er*, *v.* to corrugate; to wrinkle.  
 Puddle, *pud'l*, *n.* a small muddy pool.  
 Pudenda, *pû-den'da*, *n.* the genitals.  
 Puerile, *pû'er-il*, *adj.* childish.

**Puff**, *v.* to blow in whiffs; to pant; *n.* whiff of air.

**Puffery**, *puf'er-ī*, *n.* excessive laudation.

**Pug**, *n.* a snub-nosed dog; machine used for making bricks.

**Pugilist**, *pū'il-ist*, *n.* a boxer.

**Pugnacious**, *pug-nā'shūs*, *adj.* quarrelsome.

**Puissant**, *pū'is-ant*, *adj.* powerful.

**Pukka**. (See *Fucka*.)

**Pullulate**, *pul'ū-lāt*, *v.* to germinate.

**Pulmonary**, *pul'mon-ar-ī*, *adj.* pertaining to the lungs.

**Pulp**, *n.* soft, part of fruit, etc.; any soft mass; *v.* to make into pulp.

**Pulpit**, *pool'pit*, *n.* a preacher's desk.

**Pulsate**, *pul-sāt*, *v.* to throb.

**Pulse**, *puls*, *n.* the heart-throb.

**Pulverize**, *pul'ver-iz*, *v.* to reduce to powder.

**Pumice**, *pum'is*, *n.* a spongy volcanic stone.

**Pump**, *n.* an apparatus for raising water; a low shoe; *v.* to work a pump; to extract information.

**Pumpkin**, *pump'kin*, *n.* a plant of the gourd family.

**Pun**, *n.* a play upon words.

**Punch**, *punch*, *n.* a drink; a tool for making holes; *v.* to poke; to hit; to perforate.

**Puncheon**, *punch'un*, *n.* a large cask; a tool.

**Punchinello**, *punch-i-nel'ō*, *n.* a buffoon.

**Punctilio**, *pungk-til'yō*, *n.* a nice point.

**Punctilious**, *pungk-til'yūs*, *adj.* very exact.

**Punctual**, *pungkt'ū-al*, *adj.* exact as to time.

**Punctuate**, *pungkt'ū-āt*, *v.* to insert points in a writing.

**Puncture**, *pungkt'ūr*, *n.* a small hole made by a point; *v.* to prick a hole.

**Pundit**, *pun'dit*, *n.* a man of learning.

**Pungent**, *pun'jent*, *adj.* biting; keen.

**Punish**, *pun'ish*, *v.* to enforce a penalty; to chastise.

**Punt**, *n.* a flat-bottomed boat.

**Puny**, *pū'ni*, *adj.* small; feeble.

**Pupil**, *pū'pil*, *n.* a scholar.

**Puppet**, *pup'et*, *n.* a doll.

**Puppyism**, *pup'ī-izm*, *n.* conceit.

**Purana**, *pū-rā-nā*, *n.* sacred Sanskrit books.

**Purblind**, *pūr'blind*, *adj.* short-sighted.

**Purée**, *pūr-ā'*, *n.* sieved boiled food.

**Purgatory**, *pūr-gā-tor-ī*, *n.* the place wherein, the Roman Catholic faith teaches, souls are purified after death.

**Purge**, *puri*, *v.* to cleanse; to clear the bowels.

**Purist**, *pū'rist*, *n.* one who upholds purity of style.

**Puritan**, *pūr-i-tān*, *n.* someone who is strict in respect of religion and morals.

**Purl**, *v.* to flow gently.

**Purlieu**, *pūrl'ū*, *n.* environs; district.

**Purloin**, *pūr-loin'*, *v.* to pilfer.

**Purport**, *pūr'port*, *n.* meaning; tendency.

**Purpose**, *pūr-pus*, *n.* aim; object.

**Purr**, *pūr*, *v.* to murmur, as a cat.

**Purser**, *pūr'ser*, *n.* a ship's paymaster.

**Pursue**, *pūr-sū'*, *v.* to chase; to follow.

**Pursuivant**, *pūr'swi-vant*, *n.* a state official.

**Purdy**, *pūrs'ī*, *adj.* puffy, fat.

**Purtenance**, *pūr'ten-ans*, *n.* that which pertains to.

**Purulent**, *pūr'ū-lent*, *adj.* composed of pus.

**Purvey**, *pūr-vā'*, *v.* to provide; to cater.

**Purview**, *pūr'vū*, *n.* scope; extent.

**Pus**, *n.* matter of an ulcer.

**Pusillanimity**, *pū-sil-an-im'it-ī*, *n.* cowardice.

**Pustule**, *pūs'tūl*, *n.* a pimple.

**Putative**, *pū'tā-tiv*, *adj.* supposed; reputed.

**Putrefaction**, *pū-trē-fak'shun*, *n.* decomposition.

**Putrid**, *pū'trid*, *adj.* rotten.

**Putty**, *pūt'ī*, *n.* a cement.

**Puzzle**, *puz'l*, *v.* to perplex; *n.* a problem; a riddle.

**Pygmean**, *pig-mē'an*, *adj.* dwarfish.

**Pygmy**, *pig'mī*, *n.* a dwarf race.

**Pyjamas**, *pi-jā'mās*, *n.* a two-piece sleeping suit.

**Pylon**, *pi'lōn*, *n.* a tall steel structure built to carry high-tension wires.

**Pyramid**, *pir-ā-mid*, *n.* a solid, with triangular sides sloping upward to a terminating point.

**Pyre**, *pir*, *n.* a pile on which corpses are burned.

**Pyrriform**, *pir'ī-form*, *adj.* pear-shaped.

**Pyrogenous**, *pir-of'e-nūs*, *adj.* caused by fire.

**Pyrometer**, *pi-rom'ē-ter*, *n.* an instrument for measuring heat expansion. [fireworks.]

**Pyrotechnics**, *pi-rō-tek'niks*, *n.* the art of making

**Pyrrhic**, *pir'ik*, *adj.* of a victory won at great cost.

## Q

**Quack**, *kwak*, *n.* a medical pretender; *v.* to cry like a duck.

**Quadrangle**, *kwod'rang-gl*, *n.* a square bounded by buildings.

**Quadrant**, *kwod'rānt*, *n.* fourth part of a circle.

**Quadrat**, *kwod'rāt*, *n.* a metal space in printing.

**Quadrate**, *kwod'rāt*, *n.* a square.

**Quadrel**, *kwod'rel*, *n.* a square piece of stone, wood, or turf. [four years.]

**Quadrennial**, *kwod-ren-yal*, *adj.* occurring every

**Quadriiceps**, *kwod'ri-seps*, *n.* muscle between leg and thigh.

**Quadricorn**, *kwod'ri-korn*, *adj.* four-horned.

**Quadridentate**, *kwod-ri-dent'āt*, *adj.* four-toothed.

**Quadriform**, *kwod'ri-form*, *adj.* of fourfold form.

**Quadrilateral**, *kwod-re-lat'er-al*, *adj.* four-sided.

**Quadrille**, *kwad'rīl*, *n.* a square dance.

**Quadrissyllable**, *kwod-ri-sil'ā-bl*, *n.* word of four syllables.

**Quadrumanous**, *kwod-room'a-nus*, *adj.* four-handed.

**Quadruped**, *kwod'roo-ped*, *n.* four-footed animal.

**Quadruple**, *kwod-roo'pl*, *v.* to multiply by four; *adj.* fourfold.

**Quaff**, *kwof*, *v.* to drink copiously.

**Quagmire**, *kwag'mir*, *n.* boggy land; a marsh.

**Quail**, *kwāl*, *n.* an edible bird.

**Quaint**, *kwānt*, *adj.* odd; old-fashioned.

**Quake**, *kwāk*, *v.* to tremble. [of Friends.]

**Quaker**, *kwā'ker*, *n.* a member of the Society

**Qualify**, *kwol'fī*, *v.* to render legal or capable.

**Quality**, *kwol'it-ī*, *n.* character; rank; nature.

**Qualm**, *kwām*, *n.* nausea.

**Quandary**, *kwon'dar-ī*, *n.* perplexity; a hard plight.

**Quant**, *kwont*, *n.* a pole used in boats.

**Quantity**, *kwon'tit-ī*, *n.* amount; bulk.

**Quantum**, *kwōn'tum*, *n.* amount.

**Quaquaversal**, *kwā-kwā-vers'al*, *adj.* facing all ways.

**Quarantine**, *kwor'an'ten*, *n.* confinement to one place to avoid spread of infection.

**Quarl**, *kwārī*, *n.* fireclay covering for retorts.

**Quarrel**, *kwor'el*, *n.* a dispute; a brawl; a square of glass.

**Quarry**, *kwor'ī*, *n.* a stone-pit; game pursued.

**Quartan**, *kwaw'r'tan*, *adj.* happening every fourth

**Quarter**, *kwaw'r'ter*, *n.* a fourth part. [day.]

**Quarterdeck**, *kwaw'r'ter-deck*, *n.* upper deck.

**Quarterly**, *kwaw'r'ter-lī*, *adj.* held every three months. [who attends to the supplies.]

**Quartermaster**, *kwaw'r'ter-mā-ster*, *n.* an officer

**Quartette**, *kwaw'r-tet'*, *n.* music for four parts.

**Quarto**, *kuōr'tō*, *adj.* a page one quarter the size of a sheet of paper, usually 9 by 12 inches.

**Quartz**, *kwortz*, *n.* rock crystal.

**Quash**, *kwosh*, *v.* to annul; to crush.

**Quasi**, *kwā'sī*, *conj.* and as it were.

**Quassia**, *kwā'shā*, *n.* tonic bark.

**Quaternion**, *kwā-ter'ni-on*, *n.* a set of four.

**Quatrain**, *kwot'rān*, *n.* a stanza of four lines.

**Quaver**, *kwā'ver*, *v.* to tremble; to shake the voice; *n.* a note half the length of a crochét.

**Quay**, *kē*, *n.* a landing-place.

**Quean**, *kwēn*, *n.* a saucy woman.

**Queasy**, *kwē'zī*, *adj.* fastidious.

**Queen**, *kwēn*, *n.* a female sovereign; wife of a

**Queer**, *kwēr*, *adj.* odd; dubious. [king.]

**Quell**, *kwel*, *v.* to stop; to subdue.

**Quench**, *kwench*, *v.* to allay; to destroy.

**Querist**, *kwēr'ist*, *n.* a questioner.

**Quern**, *kwurn*, *n.* a stone for corn grinding.

**Querulous**, *kwēr'ū-lūs*, *adj.* irritable; complaining.

**Query**, *kwēr'ī*, *n.* a question.

**Quest**, *kwest*, *n.* search; pursuit.

**Question**, *kwest'yun*, *n.* an inquiry; a debatable point.

**Queue**, *kū*, *n.* a tall; a file of persons.

**Quibble**, *kwīb'l*, *n.* a cavil; an evasion.

**Quick**, *kwik*, *adj.* nimble; rapid; living.

**Quicklime**, *kwik'lim*, *n.* lime.

**Quicksand**, *kwik'sand*, *n.* shifting sand.

**Quickset**, *kwik'set*, *adj.* consisting of living shrubs; hawthorn.

**Quicksilver**, *kwik'sil-ver*, *n.* mercury.

**Quid**, *kwid*, *n.* a bit of chewing tobacco; slang; a sovereign.

**Quiddity**, *kwid'it-ī*, *n.* a cavil.

**Quiddle**, *kwid'l*, *v.* to trifle.

**Quidnunc**, *kwid-nungk'*, *n.* a pretender to knowledge.



Quiescence, kwí-es-ens, *n.* state of repose.  
 Quiet, kwí-et, *adj.* at peace; silent; still.  
 Quill, kwíl, *n.* a reed; a feather-pen; *v.* to plait.  
 Quilt, kwilt, *n.* a bed cover.  
 Quince, kwins, *n.* a fruit.  
 Quincentenary, kwín-sent'en-á-rí, *adj.* relating to 500 years; *n.* a 500th anniversary.  
 Quincunx, kwín-kungks, *n.* an arrangement of five things in a square, with one in the centre.  
 Quinine, kwín-in, *n.* an antipyretic.  
 Quinuat, kwín-at, *n.* the king-salmon.  
 Quinquangular, kwín-kwang-gú-lar, *adj.* having five angles. [every five years.]  
 Quinquennial, kwín-kwen'-i-ál, *adj.* occurring  
 Quinsy, kwín-zí, *n.* inflammation of tonsils.  
 Quint, kwint, *n.* sequence of five.  
 Quintal, kwint'al, *n.* a hundred weight.  
 Quintessence, kwint'es-ens, *n.* concentrated extract. [parts.]  
 Quintette, kwín-tet', *n.* music arranged for five  
 Quintuple, kwín-tú-pl, *adj.* fivefold.  
 Quip, kwíp, *n.* a gibe; sharp retort.  
 Quire, kwír, *n.* 24 sheets.  
 Quirk, kwirk, *n.* a quibble; a quick turn.  
 Quit, kwít, *v.* to pay; to release; to depart.  
 Quitclaim, kwít-kláim, *n.* deed of release.  
 Quite, kwít, *adv.* completely.  
 Quitrent, kwít-rent, *n.* a rent by which other obligations are discharged.  
 Quittance, kwít'tans, *n.* a discharge from obligation.  
 Quitter, kwít'er, *n.* a hoof sore; one who deserts.  
 Quiver, kwív'er, *v.* to tremble; *n.* a case for arrows.  
 Quixotic, kwiks-ot'ik, *adj.* absurdly romantic.  
 Quiz, kwíz, *v.* to banter; *n.* a comical fellow; a game in which teams are asked questions.  
 Quoin, kóin, *n.* a corner; a wooden or metal wedge used by printers.  
 Quoits, kóits, *n.* a game with iron rings.  
 Quondam, kwón-dám, *adj.* former.  
 Quop, kwóp, *v.* to move. [business.]  
 Quorum, kwó-rum, *n.* number sufficient for  
 Quota, kwó-tá, *n.* a proportionate part.  
 Quote, kwót, *v.* to cite.  
 Quoth, kwóth, *v.t.* said, used only when followed by its subject.  
 Quotidian, kwó-tíd'i-an, *adj.* daily.  
 Quotient, kwó-shent, *n.* result of division.  
 Quotum, kwó-tum, *n.* share; proportion.  
 Quran, ku'rán, Koran.

## R

Rabate, rá-bát', *v.* to beat down.  
 Rabbi, rab'í, *n.* a Jewish doctor of law.  
 Rabbie, rab'l, *n.* mob.  
 Rabid, rab'id, *adj.* furious; mad.  
 Rabies, rá-bis, *n.* a disease causing madness in dogs, which can be transmitted to human beings if they are bitten by an infected dog.  
 Raccoon, rak-koon', *n.* a small American wild animal.  
 Race, rás, *n.* mankind; a breed; a speed contest.  
 Raceme, ra-sém', *n.* a cluster.  
 Rachis, rá-kis, *n.* the spine.  
 Racial, rá-si-al, *adj.* relating to race.  
 Raciness, rá-si-ness, *n.* strength of flavour; spiritedness.  
 Rack, rak, *n.* an instrument of torture; framework for holding articles.  
 Racket, rak-et, *n.* clamour.  
 Rack-rent, rak-rent, *n.* rent to the utmost value.  
 Raconteur, rak-kong-ter', *n.* a narrator of stories.  
 Raddle, rad'l, *v.* to wrathe together; to intertwine.  
 Radial, rá-di-al, *adj.* pertaining to a ray or radius.  
 Radiant, rá-di-ant, *adj.* luminous; brilliant.  
 Radiator, rá-di-á-tor, *n.* apparatus for throwing out light or heat.  
 Radical, rad'ik-al, *adj.* extreme; *n.* an ultra Liberal.  
 Radicate, rad'-e-kate, *v.* to plant deeply; to root.  
 Radicle, rad'í-kl, *n.* a small root; plant embryo.  
 Radius, rá-di-us, *n.* semi-diameter.  
 Raffle, raf'l, *v.* to throw dice for a prize.  
 Raft, *n.* pieces of timber fastened together for floating upon.  
 Rafter, raf'ters, *n.* roof timbers.  
 Ragamuffin, rag'-á-muf-in, *n.* a low fellow.  
 Rage, ráj, *n.* excessive anger; object of desire.  
 Ragged, rag'ed, *adj.* tattered; jagged; uneven.  
 Ragout, rá-goo', *n.* a seasoned stew.  
 Raid, rád, *n.* inroad; hostile invasion for plunder.  
 Raillery, rál'er-í, *n.* banter. [or cars to pass over.]  
 Railway, rál-wá, *n.* a road laid with rails for trains.  
 Raiment, rá-mént, *n.* clothing; vesture.  
 Rainbow, rán'bó, *n.* bow in the clouds caused by the refraction and reflection of the sun's rays.  
 Raise, ráz, *v.* to lift up.  
 Rajah, rá'já, *n.* an Indian nobleman.  
 Rake, rák, *n.* a garden tool; a dissolute fellow; *v.* to scrape.  
 Raki, rak'í, *n.* a spirituous liquor drunk in the East.  
 Rally, rá'lí, *v.* to unite; a gathering.  
 Rambling, ram'bling, *adj.* wandering; desultory.  
 Ramification, ram-if-ik-á-shun, *n.* a subdivision.  
 Ramose, rá-móe, *adj.* branching.  
 Rampant, ramp'ant, *adj.* unbridled; *n.* an heraldic term applied to figures of animals on their hind legs.  
 Rampart, ram'part, *n.* wall round a fortified place.  
 Ranch, ransh, *n.* a cattle range; stock farm.  
 Rancid, ran'sid, *adj.* sour; musty.  
 Rancorous, rangk'er-us, *adj.* malignant; spiteful.  
 Random, ran-dóm, *adj.* haphazard.  
 Rankle, rangk'l, *v.* to fester.  
 Rankness, rangk'nes, *n.* sourness.  
 Ransack, ran'sak, *v.* to plunder; to search through. [for freedom.]  
 Ransom, ran'som, *v.* to redeem; *n.* price paid  
 Rapacious, rap-á'shus, *adj.* greedy.  
 Raphaelism, raf'-á-el-izm, *n.* the art principles of Raphael.  
 Rapids, rap'id's, *n.* rapid current in a river.  
 Rapine, rá-pin, *n.* the act of robbing and carrying off by force.  
 Raploch, rap'loh, *n.* homespun.  
 Rappee, rap'pé, *n.* snuff.  
 Rappel, rá-pel', *n.* a drum call.  
 Rapt, rapt, *adj.* overcome with ecstasy.  
 Rarefaction, rá-ré-fak'shun, *n.* expansion of  
 Rarefy, rá-rí-fi, *v.* to make porous. [bodies.]  
 Rarity, rá-rí-tí, *n.* an uncommon thing.  
 Rascality, ras-kal'it-í, *n.* villainy.  
 Rase, ráz, *v.* to erase; to demolish.  
 Rasp, rasp, *v.* to grate; *n.* a rough file.  
 Ratable, rá-ta-bl, *adj.* liable to be rated.  
 Ratan, rá-tan', *n.* a cane; a kind of palm.  
 Ratchet, rat'shet, *v.* check for a toothed wheel.  
 Rate, rát, *v.* to chide; to estimate; *n.* tax; value; standard.  
 Ratification, rat-if-ik-á'shun, *n.* sanction.  
 Ratio, rá-shi-o, *n.* rate relation of one quantity to  
 Ratio, rá-shun, *n.* allowance. [another.]  
 Rational, rash'un-al, *adj.* reasonable.  
 Ratline, rat'lin, *n.* a small ship's rope.  
 Rat's-bane, rats'bán, *n.* rat poison.  
 Rattan, rat'-tan, *n.* the rattle of a drum.  
 Ratteen, rat-en', *n.* thick kind of woollen.  
 Ratten, rat'en, *v.* to demolish a workman's tools because of disobedience to trades-union.  
 Ratting, rat'ing, *n.* setting dogs to kill rats; deserting principles; working for lower wages  
 Rattle, rat'l, *v.* to clatter. [than others.]  
 Raucous, ráw'cus, *adj.* hoarse.  
 Ravel, rav'el, *v.* to tangle; to disentangle.  
 Ravelin, rav'el-in, *n.* a detached fortification.  
 Raven, rá'ven, *n.* a species of crow.  
 Ravenous, rav'en-us, *adj.* greedy; hungry; voracious.  
 Ravine, rá-vén', *n.* a gorge; hollow between hills.  
 Ravish, rav'ish, *v.* to transport with joy; to carry off by force; to violate.  
 Rayah, rá'yá, *n.* a non-Mohammedan subject of  
 Raze, ráz, same as Rase. [Turkey.]  
 Razor, rá-zor, *n.* a shaving instrument.  
 Re-absorb, ré-ab-sorb', *v.* to absorb afresh.  
 React, ré-akt', *v.* to act one on another; to return an impulse.  
 Reagent, ré-á-jent, *n.* a substance that reacts.  
 Realize, Realise, ré'al-iz, *v.* to comprehend; to convert into money. [exists.]  
 Reality, ré-al'it-í, *n.* truth; certainty; that which  
 Realm, réim, *n.* a kingdom.  
 Realty, ré'al-tí, *n.* real estate.  
 Ream, rém, *n.* 20 quires. [the rear.]  
 Rearguard, ré-ré-gárd, *n.* the guard that protects  
 Reason, réz'n, *n.* intellect; the reasoning faculty; motive.  
 Reassert, ré-á-sert', *v.* to assert anew.  
 Reassure, ré-á-shoor', *v.* to assure again.  
 Rebatement, ré-bát'ment, *n.* deduction.  
 Rebellion, ré-bel'yun, *n.* sedition; opposition to established government.  
 Rebuff, ré-buf', *n.* a check; repulse.

Rebuke, *rê-bûk'*, *v.* to reprove; to chide.  
 Rebus, *rê-bus*, *n.* riddle.  
 Rebut, *rê-but'*, *v.* to repel.  
 Recalcitrant, *rê-kal'si-trant*, *adj.* refractory.  
 Recantation, *rê-kan-tâ'shun*, *n.* the act of recanting.  
 Recapitulate, *rê-kap-it'û-lât*, *v.* to reiterate; to recall; to summarise. [back.  
 Reception, *rê-kap'shun*, *n.* reprisal; act of taking  
 Recede, *rê-sêd'*, *v.* to retreat; to draw back.  
 Receipt, *rê-sêt'*, *n.* an acknowledgement; a recipe.  
 Recent, *rê-snt*, *adj.* fresh, newly happened.  
 Recension, *rê-sen'shun*, *n.* a critical revision.  
 Receptacle, *rê-sept'a-kl*, *n.* a place for holding things.  
 Recess, *rê-ses'*, *n.* a cavity; a niche; vacation.  
 Recession, *rê-sesh'un*, *n.* act of ceding back.  
 Recherché, *rê-she'r-shâ*, *adj.* refined; tasty; rare.  
 Recipe, *res'i-pê*, *n.* a prescription; formula for making up compounds of food, etc.  
 Recipient, *rê-sip'i-ent*, *n.* one who receives.  
 Reciprocal, *rê-sip'ro-kal*, *adj.* mutual; alternating.  
 Reciprocate, *rê-sip'ro-kât*, *v.* to interchange; to requite.  
 Reciprocity, *res-i-pros'i-ti*, *n.* interchange.  
 Recital, *rê-si'tal*, *n.* repetition of words or music.  
 Reckless, *rek'les*, *adj.* heedless. [narration.  
 Reclaim, *rê-klâm'*, *v.* to claim back; to recover.  
 Recluse, *rê-kloos'*, *n.* one who lives in solitude.  
 Recoct, *re-koht*, *v.* to cook over.  
 Recognize, *rek'og-niz*, *v.* to know.  
 Recall, *rê-koil'*, *v.* to rebound. [remembering.  
 Recollection, *rek-ô-lek'shun*, *n.* memory; act of  
 Recommendation, *rê-kô-mend-â'shun*, *n.* advice; commendation.  
 Recompense, *rek'om-pens*, *n.* reward; remuneration. [sistent.  
 Reconcile, *rek'on-sil*, *v.* to pacify; to render con-  
 Recondite, *rek'on-dit*, *adj.* profound; abstruse.  
 Reconnaissance, *re-kon-â-sans*, *n.* act of reconnoitring.  
 Reconnoitre, *rek-on-ô-tr*, *v.* to survey with a view to military operations.  
 Record, *rê-kord'*, *v.* to enroll; to write an account of. [account.  
 Record, *rek'ord*, *n.* a register; a history; an  
 Recorder, *rê-kord'er*, *n.* a municipal judge.  
 Recount, *rê-kownt'*, *v.* to relate.  
 Recoup, *rê-koop'*, *v.* to indemnify.  
 Recourse, *rê-kôrs*, *n.* resort; application for aid.  
 Recover, *rê-kuv'er*, *v.* to regain.  
 Recreant, *rek'rê-ant*, *adj.* cowardly; mean.  
 Recreation, *rek-rê-â'shun*, *n.* diversion; relaxation.  
 Recrement, *rek'rê-ment*, *n.* refuse. [accusation.  
 Recrimination, *rê-krim-in-â'shun*, a retorted  
 Recrudescence, *rê-kroo-des'ent*, *adj.* growing sore again.  
 Recruit, *re-kroot'*, *n.* a new soldier; *v.* to supply deficiency; to improve in health. [gram.  
 Rectangle, *rek tang-gl*, *n.* a right-angled parallelo-  
 Rectify, *rek'ti-fi*, *v.* to amend. [straight lines.  
 Rectilinear, *rek-ti-lin'ê-âr*, *adj.* bounded by  
 Rectitude, *rek'ti-tûd*, *n.* integrity; uprightness.  
 Rector, *rek'tor*, *n.* a parish clergyman.  
 Rectum, *rek'tum*, *n.* the last section of the large intestines.  
 Recumbent, *re-kum'bent*, *adj.* reclining.  
 Recuperative, *re-kû-per-â-tiv*, *adj.* recovering.  
 Recur, *re-kur'*, *v.* to return; to resort.  
 Recusant, *rek'û-zant*, *n.* one who refuses to conform.  
 Redactor, *re-dakt'or*, *n.* an editor.  
 Redden, *red'n*, *v.* to make red.  
 Redeemer, *rê-dê-mer*, *n.* the Saviour; one who redeems.  
 Redintegrate, *re-din'tê-grât*, *v.* to renew.  
 Redivivus, *re-di-vi-vus*, *adj.* come into existence again; restored.  
 Red-letter, *red'let'r*, *adj.* marked with red letters; remarkable, as a day.  
 Redolent, *red'ô-lent*, *adj.* recalling.  
 Redoubt, *re-dowt'*, *n.* a small outer fort.  
 Redoubtable, *re-dowt'abl*, *adj.* formidable.  
 Redound, *re-downd'*, *v.* to conduce.  
 Redress, *re-dres'*, *n.* recompense; *v.* to remedy.  
 Red-tape, *red-tâp'*, *n.* formality; official routine.  
 Reduce, *re-dûs'*, *v.* to diminish; to subdue.  
 Redundant, *re-dun-dant*, *adj.* excessive.  
 Reduplicate, *re-dû-plik-ât*, *v.* to double again.  
 Reed, *rêd*, *n.* a genus of plants with strap-like leaves that grow at the edge of water.  
 Reef, *rêf*, *n.* a chain of rocks; part of a sail.

Reek, *rêk*, *n.* smoke; vapour.  
 Reel, *rêl*, *v.* to dance; *n.* spool.  
 Re-eligible, *rê-el'ij-ibl*, *adj.* eligible again.  
 Re-enactment, *rê-en-akt'ment*, *n.* the act of acting afresh. [strengthen.  
 Re-enforce, *rê-en-fors'*, *v.* to enforce again; to  
 Re-export, *re-eks'port*, *v.* to export again what has been imported.  
 Refectory, *re-fekt'or-i*, *n.* refreshment hall in monasteries and convents.  
 Refer, *re-fer'*, *v.* to appeal; to submit to another.  
 Refine, *re-fin'*, *v.* to purify.  
 Reflect, *re-flekt'*, *v.* to think; to throw back.  
 Reflex, *rê-fleks*, *adj.* turned backward; *n.* a reflection.  
 Refflorescence, *rê-flor-es'ens*, *n.* reflowering.  
 Refluence, *ref'loo-ens*, *n.* a flowing back.  
 Reform, *re-form'*, *v.* to change for the better.  
 Reformatory, *re-form'at-ô-ri*, *n.* a name used in the past for a house or correction for juvenile offenders.  
 Refract, *rê-frakt'*, *v.* to bend; to turn aside.  
 Refractory, *re-frakt'or-i*, *adj.* unruly.  
 Refrain, *re-frân'*, *v.* to abstain.  
 Refrangible, *rê-fran'jibl*, *adj.* that may be refracted.  
 Refresher, *re-fresh'er*, *n.* fee to counsel for continued service; that which, or one who, refreshes.  
 Refrigerate, *re-frij'er-ât*, *v.* to make cool.  
 Refuge, *ref'ûj*, *n.* shelter. [alien.  
 Refugee, *ref-û-jê'*, *n.* one who takes refuge; an  
 Refulgence, *re-ful'jens*, *n.* brightness; lustre; splendour.  
 Refund, *re-fund'*, *v.* to repay; to reimburse.  
 Refurbish, *re-fur'bish*, *v.* to polish, to scour a second time.  
 Refusal, *re-fû'zal*, *n.* denial.  
 Refuse, *ref'ûs*, *n.* dregs; dross; waste matter; *v.* to deny.  
 Refutation, *ref-û-tâ'shun*, *n.* proof of error.  
 Regal, *rê-gal*, *adj.* royal.  
 Regale, *rê-gâl'*, *v.* to refresh with choice food.  
 Regalia, *rê-gâl'yâ*, *n.* insignia; ensigns of royalty.  
 Regatta, *re-gat-â*, *n.* boat or yacht races.  
 Regenerate, *re-jen'er-ât*, *v.* to produce anew.  
 Regent, *rê-jent*, *n.* deputy ruler.  
 Regicide, *rej's-id*, *n.* murderer of a king.  
 Régime, *râ-zhêm'*, *n.* administration; dietary.  
 Regiment, *rej'i-ment*, *n.* a body of soldiers.  
 Register, *rej'is-ter*, *n.* a list; a record.  
 Registrar, *rej'is-trâr*, *n.* a recorder.  
 Registry, *rej'is-tri*, *n.* office of registration.  
 Regnant, *reg'nant*, *adj.* reigning.  
 Regression, *rê-gresh'un*, *n.* return.  
 Regret, *rê-gret'*, *n.* sorrow; lament.  
 Regular, *reg'û-lâr*, *adj.* orderly; uniform; periodical. [a depth.  
 Regurgitate, *re-gur'ji-tât*, *v.* to pour back from  
 Rehabilitate, *re-hab-il'it-ât*, *v.* to restore.  
 Rehearsal, *re-her'sal*, *n.* a trial performance.  
 Rehearse, *re-hêrs'*, *v.* to repeat; to practise.  
 Reign, *reyn*, *n.* rule; prevalence.  
 Reimbursement, *rê-im-burs'ment*, *n.* act of repaying.  
 Rein, *reyn*, *n.* straps with which horses are driven; *v.* to curb.  
 Reins, *reyns*, *n.* the kidneys.  
 Reinsure, *rê-in-shoor'*, *v.* to insure again.  
 Reiterate, *re-it'er-ât*, *v.* to repeat often.  
 Rejoinder, *re-join'der*, *n.* a reply.  
 Rejuvenate, *re-joo'ven-ât*, *v.* to make young again.  
 Relapse, *re-laps'*, *n.* a falling back; *v.* to fall back.  
 Relative, *rel-â-tiv*, *adj.* having relation to.  
 Relaxation, *rê-laks-â'shun*, *n.* recreation; slackening.  
 Relay, *rê-lâ'*, *n.* fresh supply; *v.* to lay again.  
 Release, *re-lê's'*, *v.* to free; to discharge.  
 Relegation, *rel-ê-gâ'shun*, *n.* a sending away; exile.  
 Relentless, *re-lent'less*, *adj.* without relenting; un-  
 Relevancy, *rel'e-vans-si*, *n.* pertinence. [pitying.  
 Reliance, *rel-i'ans*, *n.* trust; confidence.  
 Relic, *rel'ik*, *n.* a memorial; a corpse.  
 Relics, *n. pl.* portions of bodies of saints.  
 Relict, *rel'ikt*, *n.* a widow.  
 Relief, *re-lêf'*, *n.* succour; release from.  
 Religion, *re-lij'un*, *n.* piety; belief; system of worship.  
 Relinquish, *re-lingk'wish*, *v.* to give up; to resign.  
 Reliquary, *rel'ik-wer-i*, *n.* casket for holding relics.  
 Relish, *rel'ish*, *v.* to enjoy; *n.* something tasty.  
 Reluctance, *re-luk'tans*, *n.* unwillingness.  
 Remainder, *re-mân'der*, *n.* what remains.



Remand, re-mând', *v.* to postpone; to send back.  
 Remedial, re-mê'di-al, *adj.* curative.  
 Remembrancer, re-mem'bran-ser, *n.* a memento; an exchequer officer.  
 Reminiscence, rem-in-is'ens, *n.* remembrance; a past event recalled.  
 Remise, re-miz', *v.* to render back; to release.  
 Remission, re-mish'on, *n.* relinquishment; relief.  
 Remissness, re-mis'nes, *n.* the act of being remiss; negligence.  
 Remit, re-mit', *v.* to pardon; to resign; to transmit.  
 Remittent, re-mit'ent, *adj.* alternately increasing and abating.  
 Remnant, re-m'nant, *n.* a fragment; what is left after main part has been removed.  
 Remonstrate, re-mon'strât, *v.* to urge against.  
 Remorse, re-mors', *n.* penitent anguish; regret.  
 Removal, re-moov'al, *n.* the act of removing.  
 Remunerative, re-mû'ner-at-iv, *adj.* lucrative; profitable.  
 Renaissance, rê-nâ'sans, *n.* a new birth.  
 Renal, rê-nal, *adj.* relating to the kidneys.  
 Rendering, ren'der-ing, *n.* an impersonation; act of returning; a version.  
 Rendezvous, rông-dâ-voo, *n.* a meeting place.  
 Renegade, ren'ê-gâd, *n.* an apostate; a deserter.  
 Renewal, re-nû'al, *n.* act of renewing.  
 Rennet, ren'et, *n.* inner membrane of the fourth stomach of a calf.  
 Renounce, rê-nouns', *v.* to cast off; to forsake.  
 Renovate, ren'ô-vât, *v.* to renew.  
 Rent, rent, *n.* money received for use of property; a fissure; *v.* torn.  
 Renunciation, rê-nun-si-â'shun, *n.* act of renouncing; abandonment.  
 Repair, re-pâr', *v.* to restore.  
 Reparation, rêp-a-râ'shun, *n.* the act of making restitution.  
 Repartee, rep-ar-tê', *n.* a smart retort.  
 Repeal, re-pêl', *v.* to revoke; to rescind.  
 Repeat, re-pêt', *v.* to do again; to rehearse.  
 Repeater, re-pêt'er, *n.* anything that repeats; a striking watch.  
 Repel, re-pel', *v.* to drive back.  
 Repent, re-pent', *v.* to regret; to be penitent.  
 Repertory, re-per'to-ri, *n.* a treasury; a collection.  
 Repine, re-pin, *v.* to murmur; to fret.  
 Replenish, re-plen'ish, *v.* to re-stock.  
 Replete, re-plêt', *adj.* full.  
 Replevin, re-plev'in, *n.* a writ to determine the legality of a seizure of goods.  
 Replica, rep-li-ka, *n.* a copy done by the original artist.  
 Replication, rep-li-kâ'shun, *n.* rejoinder.  
 Repone, re-pôn', *v.* to replace.  
 Report, ri-pôrt' *n.* a loud noise; a verbal or written account of any proceedings.  
 Reposal, re-pô'zal, *n.* act of reposing.  
 Repository, re-poz'it-ô-ri, *n.* a store-house.  
 Repoussé, râ-poo-sâ', *adj.* raised in relief by hammering.  
 Reprehend, rep-re-hend', *v.* to chide; to blame.  
 Represent, rep-re-zent', *v.* to show; to personate.  
 Repress, re-pres', *v.* to hold back.  
 Reprieve, re-prêv', *v.* to suspend a death sentence.  
 Reprimand, rep'ri-mand, *v.* to reprove.  
 Reprisal, re-priz'al, *n.* seizure in retaliation.  
 Reproach, re-prôch, *v.* to censure, to condemn.  
 Reprobate, rep'rô-bât, *n.* a depraved person; *v.* to reprove.  
 Reproof, re-proof', *n.* censure. [disapprove.  
 Reptile, rep'til, *n.* a crawling animal.  
 Republic, re-pub'lik, *n.* a commonwealth; state governed without a sovereign.  
 Repudiation, re-pû-di-â'shun, *n.* a rejection; disclamation.  
 Repugnant, re-pug'nant, *adj.* offensive; hostile.  
 Repulse, re-puls', *v.* to repel; to force back.  
 Repute, re-pût', *n.* good character; *v.* to hold in esteem.  
 Request, re-kwest', *v.* to ask; to solicit.  
 Requiem, rê-kwi-em, *n.* a mass for the dead.  
 Requirement, re-kwir'ment, *n.* demand; thing required.  
 Requisite, rek'wiz-it, *adj.* necessary; needful.  
 Requit, re-kwi'tal, *n.* recompense.  
 Reredos, rê-rô's, *n.* a carved background to an altar.  
 Rescind, rê-sind', *v.* to repeal.  
 Rescission, re-siz'h'un, *n.* the act of rescinding.  
 Rescript, rê'skript, *n.* an edict.  
 Rescue, res'kû, *v.* to save; to deliver.  
 Research, rê-sertch', *n.* investigation.

Resent, rê-zent', *v.* to resist; to be angered at.  
 Reservation, rez-er-vâ'shun, *n.* a proviso; reserved land. [retain.  
 Reserve, re-zerv', *n.* caution; coldness; *v.* to reserve.  
 Reservoir, rez-er-vawr, *n.* place where water is collected.  
 Residence, rez'id-ens, *n.* a dwelling.  
 Residuum, rez-id'û-um, *n.* the residue; what remains. [mission.  
 Resignation, rez-ig-nâ'shun, *n.* patience; submission.  
 Resile, re-zil', *v.* to recoil; to leap from.  
 Resilience, rez-il'e-ens, *n.* the act of springing back; elasticity.  
 Resin, rez'in, *n.* a substance exuded from certain trees.  
 Resistance, rez-zis'tans, *n.* opposition.  
 Resolute, rez-ô-lût, *adj.* determined; fixed.  
 Resolve, re-zolv', *v.* to decide; to analyse.  
 Resonance, rez-ô-nans, *n.* sonority; reverberation.  
 Resort, re-zort', *n.* place much frequented; *v.* to have recourse.  
 Resource, re-zors', *n.* expedient; source of aid.  
 Respect, res-pekt', *n.* regard; esteem. [means.  
 Respirator, res-pir-â-tor, *n.* an apparatus to breathe through in bad air or dangerous gases.  
 Respite, res'pit, *n.* delay; suspension of punishment.  
 Resplendent, res-plen'dent, *adj.* glowingly bright.  
 Respond, res-pond', *v.* to reply.  
 Responsible, res-pon'sibl, *adj.* accountable.  
 Responses, res-pon'shuns, *n.* the entrance examination for "Oxford University."  
 Responsive, res-pons'iv, *adj.* answering.  
 Restaurateur, rez-tô-râ-ter, *n.* a restaurant keeper.  
 Restitution, res-ti'tû'shun, *n.* restoration of rights.  
 Restive, res'tiv, *adj.* stubborn; unwilling.  
 Restoration, rez-to-râ'shun, *n.* recovery.  
 Restraint, re-strânt', *n.* repression.  
 Restriction, re-strik'shun, *n.* restraint; limitation.  
 Resultant, rez-zult'ant, *n.* the thing resulting.  
 Resume, re-zûm', *v.* to begin again. [the dead.  
 Resurrection, rez-ur-ek'shun, *n.* a raising from the dead.  
 Resuscitate, rez-us'it-ât, *v.* to revive; to restore.  
 Retail, rê-tâl, *v.* to sell in detail to consumers.  
 Retainer, rê-tân'er, *n.* an attendant; advance fee paid to secure services.  
 Retaliator, re-tal'i-ât, *v.* to strike back.  
 Retard, re-târd', *v.* to delay; to hinder.  
 Retch, retsh, *n.* ineffectual attempt to vomit.  
 Retention, re-ten'shun, *n.* act of retaining.  
 Reticence, ret'i-sens, *n.* reserve; silence.  
 Reticular, ret-ik'û-lar, *adj.* like network.  
 Retina, ret'i-nâ, *n.* the inner coating of the eye.  
 Retinue, ret'in'û, *n.* body of retainers.  
 Retort, re-tort', *v.* to answer back sharply.  
 Retort, re-tort', *n.* a chemical vessel.  
 Retraction, re-trak'shun, *n.* withdrawal.  
 Retreat, re-trêt', *n.* place of retirement; act of retreating; *v.* to draw back.  
 Retrenchment, re-trench'ment, *n.* curtailment.  
 Retribution, ret-ri-bû'shun, *n.* requital.  
 Retrievable, re-trêv'abl, *adj.* that may be regained.  
 Retrocede, rê-trô-sêd', *v.* to go back; to give back.  
 Retrograde, ret'rô-grâd, *adj.* going backward.  
 Retrospect, ret'rô-spekt, *n.* view of past scenes.  
 Retroussé, ra-trû'sâ, *adj.* turned up (used of a nose).  
 Reunion, rê-ûn'yun, *n.* union after separation.  
 Reveal, re-vêl', *v.* to show; to make known.  
 Revel, rev'el, *n.* a boisterous feast.  
 Revelation, rev-el-â'shun, *n.* disclosure.  
 Revenge, re-venj', *n.* vengeance; desire for retaliation; *v.* to injure in retaliation.  
 Revenue, rev'ê-nû, *n.* income, especially of a State.  
 Reverberate, rev'er-ber-ât, *v.* to resound; to echo.  
 Reverse, re-vêr', *v.* to adore; to respect.  
 Revert, rev'er-t, *n.* a day-dream; meditation.  
 Reverse, re-vers', *n.* misfortune; *adj.* turned backward; *v.* to turn in the opposite direction.  
 Reversion, re-ver'shun, *n.* succession in expectancy. [facing.  
 Retention, re-vet'ment, *n.* a retaining wall or review.  
 Review, re-vû, *n.* an inspection; a periodical; *v.* to inspect; to consider again.  
 Revile, re-vil', *v.* to reproach; to defame.  
 Revise, re-viz', *v.* to examine and correct.  
 Revive, re-riv', *v.* to re-animate; to refresh.  
 Revocable, rev'o-ka-bl, *adj.* that can be revoked.  
 Revolt, re-volt', *n.* act of rebellion; *v.* to rebel; to turn away.  
 Revolution, rev-ô-lû'shun, *n.* a sweeping governmental change; a motion round a centre.  
 Revolver, re-volver, *n.* a pistol with revolving barrel.

Revulsion, re-vul'shun, *n.* disgust; repugnance.  
 Rhadamant'he, rad-à-man'thin, *adj.* judicially inflexible.  
 Rhapsody, rap'sô-di, *n.* a rambling discourse or writing.  
 Rhenish, ren'ish, *adj.* pertaining to the Rhine.  
 Rhetoric, ret'ô-rik, *n.* elegance of form in speaking or writing.  
 Rheum, room, *n.* fluid secreted by the glands.  
 Rhino, ri'no, *n.* slang for money.  
 Rhinoceros, ri'nôs'er us, *n.* huge African mammal.  
 Rhizome, ri'sôm, *n.* an underground stem.  
 Rhomb, rom, *n.* a figure of four equal sides but unequal angles.  
 Rhomboid, rom'boïd, *n.* a figure like a rhomb, but with the opposite sides only equal.  
 Rhyme, rim, *n.* verse with identical sounds of the line endings.  
 Rhythm, rithm, *n.* a measured arrangement of words according to sound.  
 Rialto, rê-al'tô, *n.* an old Venetian exchange; a bridge over the Grand Canal.  
 Ribaldry, rib'ald-ri, *n.* obscurity; scurrility.  
 Ribbon, rib'on, *n.* a narrow strip of silk.  
 Rick, rik, *n.* a stack of hay or straw.  
 Rickets, rik'ets, *n.* a disease due to lack of vitamins.  
 Ricochet, rik-o-shâ', *n.* rebounding shot.  
 Riddance, rid'ans, *n.* deliverance; a moving away.  
 Riddle, rid'l, *n.* a puzzle; a sifter; *v.* to solve.  
 Ridge, rij, *n.* an elevation; an upper protuberance.  
 Ridicule, rid'ik-ul, *n.* derision.  
 Rife, rif, *adj.* abounding.  
 Riff-raff, rif-râf, *n.* the rabble.  
 Rifle, rif'l, *n.* a gun with grooved bore.  
 Rift, rift, *n.* a cleft; a fissure.  
 Righteous, rit'yus, *adj.* upright; virtuous.  
 Rightful, rit'ful, *adj.* just; legal; proper.  
 Rigid, rij'id, *adj.* stiff; severe; exact.  
 Rigmarole, rig'mâ-role, *n.* nonsense; confused statement.  
 Rigorous, rig-or-us, *adj.* severe.  
 Rill, ril, *n.* a small brook.  
 Rime, rim, *n.* hoar-frost.  
 Rind, rind, *n.* skin of fruit; bark. [disease.  
 Rinderpest, rin'der-pest, *n.* an infectious cattle [disease.  
 Ringbolt, ring'bolt, *n.* a ring through the head of a bolt.  
 Ringleader, ring'lê-dr, *n.* leader of a gang.  
 Ringlet, ring'let, *n.* a curl.  
 Ringworm, ring'worm, *n.* a fungoid skin disease.  
 Rinse, rins, *v.* to cleanse with water.  
 Riotous, ri'o-tus, *adj.* tending to riot. [bank.  
 Riparian, rip-â-ri-an, *adj.* pertaining to a river [bank.  
 Rippling, rip'ling, *adj.* in ripples.  
 Risible, riz'ibl, *adj.* causing laughter.  
 Risqué, ris'kâ, *adj.* slightly improper.  
 Ritual, rit'û-al, *n.* formula; ceremonial; book of religious rites.  
 Rival, ri'val, *n.* a competitor.  
 Rivet, riv'et, *n.* a one-headed bolt that is fastened by having its other end hammered to a head.  
 Road-hog, rôd'hog, *n.* a reckless motorist or cyclist. [ships can anchor.  
 Roadstead, rôd'sted, *n.* place near shore where  
 Roan, rôn, *adj.* a colour caused by a blend of white and red hairs.  
 Robbery, rôb'er-i, *n.* theft.  
 Robust, rôb'ust, *adj.* strong; hardy.  
 Rochet, rôch'et, *n.* a vestment worn by bishops.  
 Rocket, rôk'et, *n.* a firework projectile.  
 Rocco, rô-kô'ko, *adj.* an architectural style full of ornamental details.  
 Rodent, rôd'ent, *n.* a gnawing mammal; *adj.* gnawing.  
 Roe, rô, *n.* eggs of fish; female deer.  
 Rogation, rô-gâ'shun, *n.* the litany; supplication.  
 Roguery, rô-ger-i, *n.* fraud; mischief.  
 Roil, rôil, *v.* to disturb or stir up.  
 Rôle, rôl, *n.* part sustained by an actor.  
 Rollicking, rôl'ik-ing, *adj.* sportful; frolicsome.  
 Romance, rô-mans', *n.* an exciting fiction.  
 Romanesque, rô-man-esk', *adj.* pertaining to romance; architectural style.  
 Romantic, rô-man'tik, *adj.* sentimental; fanciful.  
 Romp, romp, *n.* a frolicsome girl; a game.  
 Rondeau, ron'dô, *n.* a special form of poem.  
 Rondie, ron'dle, *n.* a small circular tower built at the foot of a fort.  
 Rood, rood, *n.* quarter of an acre; the figure of the cross.  
 Rookery, rôok'er-i, *n.* collection of rooks' nests; a crowded lot of old buildings.

Roost, roost, *v.* to perch; *n.* a perch.  
 Ropewalk, rôp'wawk, *n.* place where ropes are made.  
 Ropy, rô-pi, *adj.* stringy.  
 Roseate, rô-zê-ât, *adj.* blooming; rosy.  
 Rosette, rô-zet', *n.* a ribbon rose.  
 Rosewater, rôz'waw-ter, *n.* water or spirit tinted with rose essence.  
 Roster, rôs'ter, *n.* a list of persons selected for duty.  
 Rostral, rôs'tral, *adj.* beak-like.  
 Rostrum, rôs'trum, *n.* a sale platform.  
 Rosy, rô-zî, *adj.* red; rose-lined; of good promise.  
 Rotary, rô'tar-i, *adj.* revolving.  
 Rote, rôt, *n.* repeating from memory.  
 Rotunda, rô-tun'dâ, *n.* a round house.  
 Rotundity, rô-tun'di-ti, *n.* roundness.  
 Rouble, rôo'bl, *n.* a Russian coin.  
 Rôu, rôo-â', *n.* a fashionable profligate.  
 Rouge, rôoj, *n.* face-colouring powder.  
 Rough, rôf, *adj.* uneven; coarse.  
 Rough-cast, rôf'kast, *adj.* rude; *n.* plaster mixed with gravel.  
 Rough-shod, rôf'shod, *adj.* having shoes armed with points.  
 Roulade, rôo-lâd', *n.* a musical embellishment.  
 Round, rôund, *adj.* circular; globular; plump.  
 Roundelay, rôwn'de-lâ, *n.* an ancient song.  
 Round robin, rôund-rôb'in, *n.* a writing signed in circular form so that one name does not have a more prominent position than another.  
 Rout, rôwt, *n.* a rabble; an assembly; a defeat.  
 Route, rôot, *n.* course; road.  
 Routine, rôotên', *n.* the regular course.  
 Rowdyism, rôw'di-izm, *n.* rude conduct.  
 Rowel, rôwel, *n.* the wheel of a spur.  
 Rowlock, rô'lok, *n.* an oar rest.  
 Royalist, rô'al-ist, *n.* adherent to a king.  
 Royalty, rô'al-ti, *n.* a kingship.  
 Rubato, rôo-bâ'to, *adj.* lengthening some notes at the expense of others.  
 Rubber, rôb'ber, *n.* a material possessing elasticity; stage in a card game.  
 Rubbish, rôb'ish, *n.* refuse; waste material.  
 Rubble, rôb'l, *n.* small undressed stones.  
 Rubicon, rôob'con, *n.* a famous river.  
 Rubicund, rôo'bi-kund, *adj.* red.  
 Rubidium, rôo-bid'i-um, *n.* a white metallic element.  
 Rubric, rôo'brik, *n.* service directions in prayer-books.  
 Ruby, rôo'bi, *n.* a precious stone.  
 Ructation, rôk-ta'shun, *n.* the act of belching.  
 Rudder, rôd'er, *n.* a helm.  
 Ruddy, rôd'i, *adj.* red.  
 Rudimental, rôo-di-men'tal', *adj.* elementary.  
 Rue, rôo, *v.* to regret.  
 Ruff, rôf, *n.* a plaited cloth worn round the neck.  
 Ruffian, rôf'ian, *n.* a brutal fellow.  
 Ruffle, rôf'l, *v.* to agitate; to annoy; to form like a ruff.  
 Rugged, rôg'ed, *adj.* rough; stormy.  
 Ruinous, rôo'in-us, *adj.* destructive. [comical.  
 Rum, rôum', *n.* an alcoholic drink; *adj.* queer.  
 Rumbling, rôumb'ling, *n.* a low continuous sound.  
 Ruminant, rôo'min-ant, *n.* a cud-chewing animal.  
 Rumour, rôo'mor, *n.* hearsay; unverified statement.  
 Rump, rôump, *n.* the buttocks.  
 Rump, rôump'l, *v.* to wrinkle; to crush.  
 Runagate, rôun'-gât, *n.* a vagabond; a wanderer.  
 Runaway, rôun'-wâ, *n.* a fugitive.  
 Rundle, rôun'dl, *n.* a rung of a ladder; a bull.  
 Runlet, rôun'let, *n.* a small cask.  
 Rupee, rôo'pê, *n.* an Indian coin.  
 Rupture, rôp'tûr, *v.* to fracture; *n.* hernia.  
 Rural, rôo'ral, *adj.* rustic.  
 Ruse, rôoz, *n.* a trick.  
 Russet, rôs'et, *adj.* reddish brown.  
 Rustic, rôs'tik, *adj.* rural.  
 Rustle, rôs'l, *v.* to make a soft sound; to hasten.  
 Rusty, rôs'ti, *adj.* covered with rust.  
 Ruthless, rôoth'les, *adj.* pitiless.  
 Rye, rô, *n.* a kind of grain.

## S

Sabbatarian, sab-ba-tâ-ri-an, *n.* one who strictly observes Sunday as the Sabbath.  
 Sabbath, sab'ath, *n.* day of rest. See General Information.  
 Sable, sâ'bl, *n.* an animal of the weasel species; *adj.* black; of sable fur.  
 Sabot, sâ-bô', *n.* a wooden shoe.



**Sabotage**, sa-bō'tazh', *n.* causing malicious damage to railways, machinery, etc., as a protest by discontented workmen.

**Sabre**, sā'br, *n.* a broad-bladed sword.

**Sabulous**, sab'ū-lus, *adj.* sandy, gritty.

**Saccharin**, sak'a-rin, *n.* a sweet coal-tar product used as a substitute for sugar.

**Saccharite**, sak'ā'rit, *n.* a fine kind of feldspar.

**Sachet**, sa-chā, *n.* a bag of perfume.

**Sackbut**, sak'but, *n.* a wind instrument.

**Sackcloth**, sak'kloth, *n.* a coarse cloth.

**Sacrament**, sak'rā-ment, *n.* the eucharist.

**Sacrifice**, sak'ri-fis, *v.* to kill and offer up to God; to yield up with loss. [sacred things.]

**Sacrilegious**, sak-ril-ē'jus, *adj.* profane; violating

**Sacristan**, sak'ris-tān, *n.* person responsible for the vestments and sacred vessels of a church; a sexton.

**Saddle**, sad'l, *n.* a rider's seat.

**Sadiron**, sad'i-run, *n.* a smoothing-iron.

**Safety-valve**, sāf'ti-valv, *n.* valve of a steam boiler to obviate bursting.

**Saga**, sā'ga, *n.* a general name of those old-time compositions which embrace the history and mythology of the Northern European races.

**Sagacious**, sā-gā'shus, *adj.* shrewd; of ready perception.

**Sage**, sāj, *adj.* wise; discreet; *n.* a wise man; a herb.

**Sagittate**, saj'i-tāt, *adj.* shaped like the head of an arrow.

**Sagum**, sā'gum, *n.* a Roman military cloak.

**Sail-loft**, sā'l'loft, *n.* loft where sails are made.

**Sainfoin**, sān'foin, *n.* a leguminous fodder plant.

**Saint**, sānt, *n.* an eminently pious person.

**Salaam**, sā-lām, *n.* Mahomedan word of salutation; homage; *v.* to make the salaam.

**Salacious**, sā-lā'shus, *adj.* obscene; lustful.

**Salamander**, sal'ā-man-der, *n.* a striped yellow and black amphibian.

**Salary**, sal'ar-i, *n.* wages; stipend.

**Salient**, sā'l-i-ent, *adj.* prominent.

**Saline**, sā'līn, *adj.* salty.

**Saliva**, sal-i-vā, *n.* spittle.

**Salivary**, sal'i-var-i, *adj.* pertaining to saliva.

**Sallow**, sal'ō, *adj.* pale yellow.

**Sally**, sā'l, *n.* a sudden rush out, as of troops; witty ebullition; *v.* to rush out suddenly.

**Salon**, sā-long', *n.* a reception room.

**Saloon**, sā-loon', *n.* a large hall.

**Saltant**, sal'tant, *adj.* leaping, dancing.

**Salubrious**, sal-oo'bri-us, *adj.* healthful; wholesome.

**Salutary**, sal'ū-tar-i, *adj.* wholesome, beneficial.

**Salvage**, sal'vaj, *n.* that which is saved; reward for saving a ship or cargo at sea.

**Salvation**, sal'vā'shun, *n.* redemption; deliverance.

**Salver**, sal'ver, *n.* a small tray. [ance.]

**Salvo**, sal'vo, *n.* a salute with guns; an exception.

**Samiel**, sā'mi-el, *n.* an Arabian simoon.

**Sampler**, sam'pler, *n.* one who samples; a piece of embroidery.

**Sanatorium**, san-ā-tō'ri-um, *n.* a health institution.

**Sanatory**, san'ā-to-ri, *adj.* conducive to health.

**Sanctify**, sangk'ti-fi, *v.* to make holy.

**Sanction**, sangk'shun, *n.* ratification; *v.* to ratify; to confirm.

**Sanctity**, sangk'ti-ti, *n.* holiness; piety.

**Sanctum**, sangk'tum, *n.* a sacred place.

**Sand**, sand, *n.* fine strong particles of rock.

**Sandal**, san'dal, *n.* a loose slipper.

**Sandix**, san'diks, *n.* red lead. [indifference.]

**Sanguifroid**, sang-frwō', *n.* coolness; self-possession.

**Sanguine**, sang-gwin', *adj.* hopeful; confident.

**Sanguineous**, sang-gwin'ē-us, *adj.* abounding in blood.

**Sanitary**, san'it-ar-i, *adj.* hygienic.

**Sanity**, san'it-i, *n.* saneness; soundness of mind.

**Sans**, sanz, *prep.* without.

**Sanserif**, sanse'rif, *n.* a form of type without serifs.

**Sapient**, sā'pi-ent, *adj.* wise.

**Sapling**, sap-ling, *n.* a young tree.

**Saponaceous**, sap-o-nā'shus, *adj.* soapy.

**Saporific**, sap-o-rif'ik, *adj.* imparting flavour.

**Sapphire**, saf'ir, *n.* a blue precious stone.

**Saracen**, sar'ā-sen, *n.* an Arab of the Middle Ages.

**Sarafan**, sar'a-fan, *n.* a gala dress.

**Sarcasm**, sār'kasm, *n.* a scornful remark; irony.

**Sarcenet**, sār-sē-net', *n.* a kind of fine silk.

**Sarcoma**, sār-kō'ma, *n.* kind of tumour.

**Sarcosis**, sār-kō'sis, *n.* a fleshy tumour.

**Sardonic**, sār-don'ik, *adj.* bitter; forced; malignant, as laughter.

**Sartorial**, sār-tō'ri-al, *adj.* relating to tailoring.

**Satanic**, sa-tan'ik, *adj.* devilish.

**Satchel**, sach'el, *n.* a small hand-bag.

**Satellite**, sat'el-it, *n.* a small star, one of a group attendant upon a planet; an obsequious follower.

**Satiety**, sā-ti'et-i, *n.* surfeit.

**Satin**, sat'in, *n.* a thick lustrous kind of silk.

**Satinet**, sat-in-et', *n.* a thin kind of satin.

**Satire**, sat-ir, *n.* literary ridicule; spoken ridicule.

**Satisfy**, sat-is-fi, *v.* to gratify; to supply to the full.

**Saturate**, sat'ū-rāt, *v.* to fill to excess; to soak.

**Saturnalia**, sat-ur-nā'li-ā, *n.* unrestricted revelry.

**Saturnine**, sat'ur-nin, *adj.* gloomy; sad.

**Satyr**, sā'ter, *n.* a sylvan god, part god and part man.

**Saucy**, saw'si, *adj.* pert; mischievous; insolent.

**Sault**, sawt, *n.* an assault; a leap.

**Saunter**, sawn'ter, *v.* to lounge around; to stroll.

**Sausage**, saw'sāj, *n.* chopped meat stuffed into a skin. [barian.]

**Savage**, sav'āj, *adj.* uncivilized; wild; *n.* a barbarian.

**Savant**, sav-ang', *n.* a learned person.

**Saviour**, sāv'yer, *n.* one who saves; Jesus.

**Savour**, sā'vor, *n.* flavour; taste.

**Sawyer**, saw'yer, *n.* one who saws.

**Saxophone**, sak'sa-fōn, *n.* a keyed musical instrument made of brass.

**Scabbard**, skab'ard, *n.* sword sheath.

**Scabious**, skā'bi-us, *adj.* scabby.

**Scabrous**, skā'brus, *adj.* rough; harsh; covered with small points.

**Scaffold**, skaf'old, *n.* a temporary wooden erection; platform upon which criminals are put to death.

**Scald**, skawld, *v.* to burn with a hot liquid; *n.* an ancient Scandinavian poet.

**Scale**, skāl, *n.* a balance; covering of fish; *v.* to climb.

**Scalene**, skā-lēn', *adj.* having three unequal sides.

**Scallop**, skol'up, *n.* an oyster-like bivalve with sinuous ridges; a shallow dish.

**Scalp**, skalp, *n.* outer covering of the skull; *v.* to cut off the scalp.

**Scalpel**, skal'pel, *n.* surgical knife.

**Scan**, skan, *v.* to scrutinize; to count poetic feet.

**Scandalize**, skan'dal-iz, *v.* to shock; to disgrace.

**Scant**, skant, *adj.* meagre; insufficient.

**Scantling**, skant'ling, *n.* a small piece of wood.

**Scanty**, skan'ti, *adj.* small; narrow; not full.

**Scape-goat**, skāp'gōt, *n.* one who is made to answer for the defaults of another.

**Scapular**, skap'ū-lar, *adj.* relating to the shoulder.

**Scar**, skār, *n.* mark left by wound; a cicatrice; a rugged bank.

**Scarcity**, skār'sit-i, *n.* deficiency; rareness.

**Scarecrow**, skār'krō, *n.* an effigy or thing put up to frighten away birds.

**Scarf**, skārf, *n.* a loose garment for neck or shoulders; a cravat.

**Scarfily**, skār-i-fi, *v.* to scratch and cut the skin.

**Scarp**, skārp, *n.* a steep slope of rock.

**Scathing**, skayth'ing, *adj.* withering; destroying.

**Scathless**, skāth'les, *adj.* unharmed.

**Scavenger**, skav'en-er, *n.* a street cleaner; anything that clears up refuse.

**Scenery**, sē'ner-i, *n.* natural landscape; painted representations on the stage.

**Sceptic**, skēp'tic, *n.* a person who doubts the truth of theories or asserted facts.

**Sceptre**, sep'tr, *n.* staff borne by monarchs as emblem of supreme authority.

**Schedule**, shed'ul, *n.* a list; an inventory.

**Scheme**, skē'mer, *n.* one who schemes.

**Schism**, sizm, *n.* church disunion.

**Scholar**, skol'ar, *n.* a student; a learned man.

**Scholastic**, skol-as'tik, *adj.* relating to schools.

**Schooner**, skoo'ner, *n.* a two-masted vessel.

**Science**, si'ens, *n.* classified knowledge.

**Scimitar**, sim'it-ār, *n.* a curved Turkish sword.

**Scintillation**, sin-til-ā'shun, *n.* the act of sparkling; a twinkling shining.

**Scolism**, sf'a-lizm, *n.* superficial knowledge.

**Scion**, si'on, *n.* a shoot of a plant used in grafting; a descendant.

**Scissors**, siz'ors, *n.* a two-bladed clipping instrument.

**Sconce**, skons, *n.* a candlestick; a fort; a skull.

**Scoriae**, skor'ē, *n.* volcanic ashes.

**Scorn**, skorn, *n.* contempt; disdain.

**Scot-free**, skot'frē, *adj.* free from payment.

**Scotia**, skō'shi-ā, *n.* Scotland.

**Scoundrel**, skoun'drēl, *n.* a base person.

Scourge, skurj, *n.* a whip made for punishing purposes; *v.* to whip excessively.

Scout, skowt, *n.* one sent out to watch the operations of an enemy; a member of a uniformed youth movement; *v.* to reject.

Scow, skow, *n.* a flat-bottomed boat.

Scowl, skowl, *v.* to wrinkle the brows in anger; to frown deeply.

Scrabble, skrab'l, *v.* to scrawl.

Scraggy, skrag'g, *adj.* lean; bony; rough.

Scramble, skram'bl, *v.* to clutch eagerly; to climb.

Scranch, skranch, *v.* to crunch.

Scratch, skrach, *v.* to rub with the nails; to tear the surface. [marks.]

Scrawl, skrawl, *v.* to scribble; to make rough

Scrawny, skraw'ni, *adj.* raw-boned.

Scream, skrēm, *v.* to make a piercing noise.

Screch, skrēch, *v.* to scream; to cry in shrill tone.

Screed, skrēd, *n.* a piece of writing; a piece of wood used for levelling plaster.

Screen, skrēn, *n.* anything which shelters or conceals.

Screw, skroo, *n.* a slender cylinder with spiral ridge or thread; *v.* to fasten with a screw.

Scribe, skrib, *n.* a writer.

Scrip, skrip, *n.* a wallet; certificate of shares.

Script, skript, *n.* type in imitation of writing.

Scriptural, skript'ū-ral, *adj.* according to the Scriptures. [contracts.]

Scrivener, skriv'en-er, *n.* one who draws up

Scrofulous, skrof'ū-lus, *adj.* afflicted with scrofula.

Scroll, skrol, *n.* a writing that can be rolled up; an architectural ornament.

Scrubby, skrub'f, *adj.* mean; stunted.

Scruft, skruft, *n.* nape of the neck.

Scruple, skroo'pl, *n.* conscientious hesitation; 20 grains.

Scrutinize, skroo'tin-iz, *v.* to examine minutely.

Scud, skud, *v.* to call or run swiftly.

Scull, skul, *n.* a short oar; boat; *v.* to propel by oars.

Scullery, skul'er-f, *n.* place for kitchen utensils.

Scullion, skul'yun, *n.* an inferior kitchen servant.

Sculptor, skulp'tor, *n.* a carver in stone or wood.

Scum, skum, *n.* refuse; froth.

Scupper, skup'er, *n.* a hole through which water is run off from a ship's deck.

Scuppet, skup'et, *n.* a shovel.

Scurf, skurf, *n.* dry scale.

Scurrilous, skur'il-us, *adj.* abusive; vulgar.

Scut, skut, *n.* the short tail of a rabbit.

Scutiform, skū'ti-form, *adj.* formed like a shield.

Scuttle, skut'l, *v.* to sink a ship by cutting holes in it.

Scythe, sith, *n.* a grass-cutting tool; a sickle.

Seal, sēl, *n.* an aquatic animal; a stamp with device; *v.* to affix a seal.

Seam, sēm, *n.* a joining where two edges are stitched together; a vein of mineral.

Seamstress, sēms'tres, *n.* a needlewoman.

Seance, sā'angs, *n.* a Spiritualist gathering; public gathering.

Sear, sér, *v.* to scorch; to cauterise.

Sea-room, sē'room, *n.* the open sea.

Season, sē'zn, *n.* a period of time; *v.* to make tasty.

Sebaceous, sē-bā'shus, *adj.* pertaining to fat.

Secant, sē'kant, *adj.* cutting; dividing into two parts.

Secoo, sek'ko, *n.* a fresco in which the colours look as though they have been sunk into the plaster. [out; separate.]

Secede, se-seed', *v.* to withdraw from union; go

Secession, sē-sesh'on, *n.* separation.

Seclude, sē-klood', *v.* to place in retirement.

Second, sek'und, *adj.* next after the first; inferior; *n.* one who supports; the 60th part of a minute.

Secondary, sek'un-da-ri, *adj.* subordinate.

Secrecy, sek'kres-i, *n.* privacy.

Secretary, sek're-tar-i, *n.* one employed to write; a chief departmental officer.

Secrete, sē-krēt, *v.* to hide.

Secretarianism, sek-ta'ri-an-izm, *n.* sect devotion.

Sector, sek'tor, *n.* a mathematical instrument.

Secular, sek'ū-lar, *adj.* temporal; worldly.

Security, sē-kū'rit-i, *n.* safety; a thing pledged.

Sedan, sē-dan', *n.* a portable chair-conveyance.

Sedate, sē-dāt', *adj.* calm; quiet.

Sedentary, sed'en-t-ā-ri, *adj.* inactive; sitting.

Sedge, sej, *n.* a coarse rush-like grass growing in wet places.

Sedimentary, sed-i-men't-ā-ri, *adj.* relating to sediment.

Seditious, sē-dish'us, *adj.* connected with sedition.

Seduce, sē-dūs', *v.* to allure; to entice from virtue.

Sedulous, sed'ū-lus, *adj.* diligent; assiduous.

See, sē, *n.* a diocese; *v.* to behold.

Seedling, sēd'ling, *n.* a plant from the seed.

Seemingly, sēm'ing-li, *adv.* in appearance.

Seemly, sēm'li, *adj.* proper; becoming.

Seesaw, sē'saw, *n.* an up-and-down movement.

Seethe, sēth, *v.* to boil; to concoct.

Seggar, seg'ar, *n.* clay shell in which fine pottery is baked.

Segment, seg'ment, *n.* a section.

Segregate, seg'rē-gāt, *v.* to separate.

Seignior, sē'n-yor-i, *n.* dominion; lordship; manor.

Seismic, sis'mik, *adj.* pertaining to earthquake.

Seismometer, sis'mom'ē-ter, *n.* an apparatus for measuring earth tremors.

Seizin, sē'zin, *n.* possession.

Seizure, sēz'ūr, *n.* the act of seizing.

Select, sē-lekt', *adj.* choice; *v.* to choose.

Self-denial, self-de-ni'al, *n.* denial of personal gratification.

Selfishness, self'ish-nes, *n.* absorption in self-interest.

Selvage, sel'vāj, *n.* edge of cloth.

Semaphore, sem'ā-fōr, *n.* a visual signalling apparatus.

Semblance, sem'blans, *n.* likeness.

Semibreve, sem'i-brēv, *n.* a note equal to half of a breve.

Semicolon, sem'i-kō-lon, *n.* a punctuation mark (;).

Seminal, sem'i-nal, *adj.* relating to seed.

Seminary, sem'in-ari, *n.* a superior school.

Semitic, sem-it'ik, *adj.* pertaining to the descendants of Shem.

Semivowel, sem-i-vow'el, *n.* a half-vowel.

Sempiternal, sem-pl-ter'nal, *adj.* endless; perpetual.

Senator, sen'a-tor, *n.* member of a senate.

Seneschal, sen'e-shal, *n.* a steward.

Senile, sē'nīl, *adj.* old; feeble.

Seniority, sē-ni-or-it-i, *n.* priority in age or length of service.

Sennit, sen'it, *n.* a braided cordage.

Sensation, sen-sā'shun, *n.* feeling.

Sense, sens, *n.* intelligence; meaning; feeling.

Sensitive, sen'sit-iv, *adj.* easily affected.

Sensual, sen'shoo-al, *adj.* carnal; relating to the senses.

Sentence, sen'tens, *n.* a decision.

Sententious, sen-ten'shus, *adj.* pithy in sentences; pompous in speech.

Sentient, sen'shent, *adj.* feeling; perceiving.

Sentiment, sen'ti-ment, *n.* feeling; thought; sensibility.

Sentry, sen'tri, *n.* a sentinel; a guard.

Sepal, sē'pel, *n.* a leaflike structure protecting the flower-bud.

Separable, sep'ar-abl, *adj.* capable of separation.

Senoy, sē-poi', *n.* native Indian soldier.

Sepsis, sep'sis, *n.* rottenness. [angles.]

Septangular, sept-ang'gu-lar, *adj.* with seven

Septenary, sep'te-nār-i, *n.* consisting of seven.

Septennial, sep'ten-ni'al, *adj.* occurring every seven

Septic, sep'tik, *adj.* making putrid. [years.]

Septuagint, sep'tū-ā-jint, *n.* Greek version of the Old Testament.

Sepulchre, sep'ul-ker, *n.* a tomb.

Sequel, sē'kwel, *n.* the continuation.

Sequence, sē-kwens, *n.* succession.

Sequester, sē-kwes'trāt, *v.* to separate; to dis-

Seraglio, sē-ra'l'yo, *n.* palace; harem. [perse.]

Seraphic, ser-af'ik, *adj.* angelic.

Sere, sér, *adj.* withered.

Serenade, ser-e-nād', *n.* an out-door night-song.

Serenity, ser-en'it-i, *n.* calmness.

Serf, serf, *n.* a slave.

Sergeant, sār'jent, *n.* a non-commissioned officer.

Serial, sē-ri-al, *adj.* appearing periodically; *n.* a story issued in a series.

Seriatim, sē-ri-ā'tim, *adv.* one following another.

Serif, se'rif, *n.* the end-stroke of a letter (typ.).

Serious, sē-ri-us, *adj.* grave.

Sermon, ser'mon, *n.* a discourse on a text.

Serpent, ser'pent, *n.* a snake; a bass wind instru-

Serrate, ser'āt, *adj.* toothed. [ment.]

Serried, ser'id, *adj.* massed; crowded.

Serum, sē'rum, *n.* the pale yellow part of the blood.

Serviceable, ser'vis-abl, *adj.* useful.

Servility, ser-vil'it-i, *n.* humble submission.

Servitude, serv'it-ūd, *n.* service.



**Sessile**, *ses'il*, *adj.* branching direct from the stem.  
**Session**, *sesh'un*, *n.* a sitting.  
**Setaceous**, *sê-tâ'shus*, *adj.* composed of bristles.  
**Seton**, *sê'ton*, *n.* thread for keeping wound open.  
**Settee**, *set-ê'*, *n.* a kind of sofa.  
**Setter**, *set'er*, *n.* a sporting dog.  
**Sever**, *sev'er*, *v.* to divide.  
**Severally**, *sev'er-al-i*, *adv.* separately.  
**Severalty**, *sev'er-al-ti*, *n.* sole tenancy.  
**Severity**, *sê-ver'it-i*, *n.* rigour.  
**Sewer**, *sô'er*, *n.* one who sews.  
**Sex**, *seks*, *n.* character of maleness and femaleness.  
**Sexagenarian**, *sek-sâ-jen-â-ri-an*, *n.* a person of sixty.  
**Sexennial**, *seks-en'ni-al*, *adj.* happening every six years. [angles].  
**Sextant**, *seks'tant*, *n.* an instrument for measuring.  
**Sexile**, *seks'til*, *n.* the position of two planets when 60° apart.  
**Sexton**, *seks'ton*, *n.* an under officer of a church.  
**Sextuple**, *seks'tupl*, *adj.* sixfold.  
**Sexual**, *seks'ü-al*, *adj.* relating to sex.  
**Shabby**, *shab'l*, *adj.* ragged; seedy.  
**Shackles**, *shak'lz*, *n.* fetters; handcuffs.  
**Shades**, *shâdz*, *n.* place where dead are deposited; obscure gloom.  
**Shadow**, *shâd'ô*, *n.* shade made by an object.  
**Shaft**, *shaft*, *n.* an arrow; a handle; entrance to a Shaggy, *shag'i*, *adj.* rough. [mine].  
**Shagreen**, *shâ-grên'*, *n.* a kind of leather.  
**Shah**, *shâ*, *n.* ruler of Persia.  
**Shako**, *shak'ô*, *n.* a military head-dress.  
**Shale**, *shal*, *n.* slaty rock; husk.  
**Shallop**, *shal'op*, *n.* a small boat. [ledge].  
**Shallowness**, *shâl'ô-nes*, *n.* lack of fullness of know-  
**Shambles**, *sham'blz*, *n.* slaughtering place used by butchers.  
**Shambling**, *sham'bling*, *adj.* shuffling.  
**Shamefaced**, *shâm'fâsd*, *adj.* bashful.  
**Shampoo**, *sham-poo'*, *v.* to wash and cleanse hair.  
**Shank**, *shângk*, *n.* that part of the leg between the knee and the ankle.  
**Shanty**, *shant'i*, *n.* a hut.  
**Shapely**, *shâp'l*, *adj.* well-formed.  
**Shard**, *shârd*, *n.* a shell; a fragment.  
**Shark**, *shârk*, *n.* a large sea-fish; a swindler.  
**Sharper**, *shârp'er*, *n.* a cheat.  
**Sharp-witted**, *shârp-wit-ted*, *adj.* having a nicely discerning mind.  
**Shatter**, *shât'ter*, *v.* to break in pieces.  
**Shaver**, *shâ'vër*, *n.* a sharp dealer; one who shaves.  
**Shawl**, *shawl*, *n.* a shoulder wrap.  
**Shawm**, *shawm*, *n.* an ancient reed instrument.  
**Sheaf**, *shêf*, *n.* a bundle of things tied round.  
**Shear**, *shêr*, *v.* to clip; *n.* an instrument for clipping.  
**Sheathe**, *shêth*, *v.* to cover; to replace in scabbard.  
**Sheave**, *shêv*, *n.* wheel of a pulley.  
**Shebeen**, *shê-been'*, *n.* a place where excisable liquors are illegally sold.  
**Sheen**, *shên*, *v.* brightness.  
**Sheepishness**, *shêp-ish-ness*; *n.* bashfulness.  
**Sheep's-eye**, *shêps-i*, *n.* a coy glance.  
**Sheep-shank**, *shêp'shangk*, *n.* a nautical knot; shank of a sheep.  
**Sheer**, *shêr*, *v.* to turn aside; *adj.* clear; precipitous.  
**Sheers**, *shêrs*, *n.* apparatus for lifting weights.  
**Sheet**, *shêt*, *n.* bed-linen; piece of paper; sail-  
**Sheet-anchor**, *shêt'ang-kor*, *n.* a large anchor.  
**Shekel**, *shê'kel*, *n.* a Jewish coin, worth about 2s. 6d.  
**Shell**, *shelf*, *n.* board for holding things; ledge of rock.  
**Shelter**, *shel'ter*, *n.* place of protection; refuge.  
**Shelve**, *shelv*, *v.* to set aside; to provide shelves.  
**Shepherd**, *shêp'herd*, *n.* one who tends sheep.  
**Sherbet**, *sher'bet*, *n.* drink made of water, sugar, and lemon.  
**Sheriff**, *sher'if*, *n.* an officer of the law.  
**Sherry**, *sher'i*, *n.* a strong Spanish wine.  
**Shibboleth**, *shib'bô-leth*, *n.* watchword.  
**Shield**, *shêld*, *n.* a piece of defensive armour held in front of the body.  
**Shiftless**, *shift'les*, *adj.* resourceless; dull.  
**Shillalah**, *shil-â-lâ*, *n.* a cudgel.  
**Shindy**, *shin'di*, *n.* noise; disturbance.  
**Shingle**, *shing'gl*, *n.* a thin board; coarse gravel.  
**Shipping**, *ship'ing*, *n.* ships in general.  
**Shipwreck**, *ship'rek*, *n.* wreck of a ship.  
**Shipwright**, *ship'rit*, *n.* a ship-constructor.  
**Shire**, *shir*, *n.* county; district under a sheriff.

**Shivery**, *shiv'er-i*, *adj.* quaky; loose.  
**Shoal**, *shôl*, *n.* a multitude, especially of fish.  
**Shock**, *shok*, *n.* a collision; a pile of sheaves.  
**Shoddy**, *shod'i*, *n.* a kind of cloth made from rags, sham.  
**Shoeblack**, *shoo'blak*, *n.* one who blacks shoes.  
**Shop-lifter**, *shop'lift-er*, *n.* a shop-thief.  
**Shopping**, *shop'ing*, *n.* the act of going to shops to  
**Shore**, *shôr*, *n.* coast. [make purchases].  
**Shorthand**, *short'hand*, *n.* a system of writing by symbols.  
**Shorts**, *shorts*, *n.* bran; coarse meal.  
**Shoulder**, *shôl'dër*, *n.* the joint connecting the arm and body.  
**Shoulder-blade**, *shôl'dër-blâd*, *n.* scapula.  
**Shove**, *shuv*, *v.* to push.  
**Shovel**, *shuv'el*, *n.* a tool for throwing earth.  
**Showery**, *show'er-i*, *adj.* rainy.  
**Showy**, *shô'i*, *adj.* gaudy. [ket balls].  
**Shrapnel**, *shrap'nel*, *n.* shell charged with mus-  
**Shred**, *shred*, *n.* a fragment; *v.* to tear into small pieces.  
**Shrewd**, *shrood*, *adj.* keen; alert; cunning.  
**Shrievalty**, *shreev'al-ti*, *n.* the office of a sheriff.  
**Shrimp**, *shrimp*, *n.* a small crustacean.  
**Shrine**, *shrin*, *n.* an altar; a reliquary.  
**Shrinkage**, *shrink'aj*, *n.* contraction.  
**Shrive**, *shriv*, *v.* to hear confession.  
**Shrivel**, *shriv'el*, *v.* to wrinkle.  
**Shroffage**, *shrof'aje*, *n.* the inspection of coins, and the separation of the good from the bad.  
**Shroud**, *shrowd*, *n.* part of a ship's rigging; wind-  
**Shrove-tide**, *shrov'tid*, *n.* days preceding Lent.  
**Shrub**, *shrub*, *n.* a woody plant.  
**Shrug**, *shrug*, *v.* to draw up the shoulders.  
**Shudder**, *shud'er*, *n.* a sudden tremor; *v.* to tremble.  
**Shuffle**, *shuf'l*, *v.* to evade; to alter the positions of.  
**Shunt**, *shunt*, *v.* to turn aside.  
**Shutter**, *shut'er*, *n.* a movable slide or cover.  
**Shuttle**, *shut'l*, *n.* an instrument that conveys weft to and fro within the web of a loom.  
**Shyness**, *shif'ness*, *n.* bashfulness.  
**Sibilant**, *sib'il-ant*, *adj.* hissing.  
**Sic**, *sik*, *adj.* thus in the original, referring to what looks like an error.  
**Sickle**, *sik'l*, *n.* a reaping hook. boards.  
**Sideboard**, *sîd'bord*, *n.* a side table, with cup-  
**Sidereal**, *si-dê-rê-al*, *adj.* starry.  
**Sidle**, *sîdl*, *v.* to go side foremost.  
**Siege**, *sêj*, *n.* a besiegement; military attempt to destroy or gain possession of a fortified place.  
**Sierra**, *sê-er-râ*, *n.* a ridge of mountains.  
**Siesta**, *si-es'ta*, *n.* an after-dinner sleep.  
**Sieve**, *siv*, *n.* a strainer.  
**Sigh**, *si*, *n.* a deep breathing; a lament.  
**Sightly**, *sit'l*, *adj.* pleasing. [signature].  
**Sign**, *sin*, *n.* a token; an omen; *v.* to write a  
**Signal**, *sig'nal*, *n.* a sign that warns.  
**Signalise**, *sig'nal-iz*, *v.* to render distinguished.  
**Signature**, *sig'nâ-tür*, *n.* a name signed or im-  
**Signet**, *sig'net*, *n.* a seal. [pressed].  
**Significant**, *sig-nif'ik-ant*, *adj.* important; ex-  
**Silage**, *sî'liz*, *n.* pickled animal fodder.  
**Silex**, *sî'lex*, *n.* silica.  
**Silica**, *sîl'ikâ*, *n.* a flinty mineral.  
**Silique**, *sîl'i-kwa*, *n.* pod with seeds adherent to both sutures.  
**Silk**, *silk*, *n.* fibre produced by a worm; cloth woven from this.  
**Silken**, *sîl'ken*, *adj.* silk-like.  
**Silkworm**, *sîlk'worm*, *n.* the worm that produces silk cocoons.  
**Sill**, *sîl*, *n.* the foot of a window or door.  
**Sillibub**, *sîl'i-bub*, *n.* any light composite liquor.  
**Silliness**, *sîl'i-nes*, *n.* foolishness.  
**Silo**, *sî'lô*, *n.* receptacle for ensilage or grain.  
**Silt**, *sîlt*, *n.* sediment.  
**Silva**, *sîl'vâ*, *n.* forest trees collectively.  
**Silvan**, *sîl'van*, *adj.* relating to woods.  
**Silvery**, *sîl'ver-i*, *adj.* bright; like silver.  
**Simian**, *sim'yan*, *adj.* ape-like.  
**Similar**, *sim'i-ler*, *adj.* alike.  
**Simile**, *sim'il-ê*, *n.* a similitude.  
**Simmer**, *sim'er*, *v.* to boil gently.  
**Simony**, *sî'mo-ni*, *n.* dealing in church prefer-  
**Simoom**, *sim-oom'*, *n.* a hot wind.  
**Simous**, *sî'mus*, *adj.* flat-nosed.  
**Smile**, *sim'per*, *v.* to smile affectedly.  
**Simplicity**, *sim-plis'it-i*, *n.* artlessness.

Simplify, sim'pli-fi, *v.* to make plain.  
 Simulate, sim-ū-lāt, *v.* to assume.  
 Simultaneous, sim-ul-tā-nē-us, *adj.* at the same time.  
 Sincerity, sin-ser'it-i, *n.* honesty.  
 Sinciput, sin'si-put, *n.* front of the head.  
 Sine, sin, *n.* a straight line from the end of an arch.  
 Sinecure, si-nē-kūr, *n.* an office without labour.  
 Sinew, sin'ū, *n.* a tendon; a muscle.  
 Single, sing'gl, *adj.* one; unmarried.  
 Single-minded, sing'l-mind'ed, *adj.* upright; sincere.  
 Singlet, sing'glet, *n.* an undershirt. [peculiar.  
 Singular, sing'gū-lar, *adj.* uncommon; rare;  
 Sinister, sin'is-ter, *adj.* unlucky; evil.  
 Sinistrous, sin'is-trus, *adj.* left-sided; wrong.  
 Sinking-fund, singk'ing-fund, *n.* fund for reducing public debt.  
 Sinuosity, sin-ū-os'it-i, *adj.* the quality of winding.  
 Sinuous, sin'-u-us, *adj.* winding, snake-like.  
 Siphon, si-fon, *n.* tube for drawing off liquor.  
 Sirdar, sir-dār, *n.* a Persian or Egyptian chief.  
 Sire, sir, *n.* a father.  
 Siren, si'ren, *n.* an enticing woman; a sea-nymph; a sound instrument to give warning.  
 Sirloin, sir'loin, *n.* loin of beef.  
 Sirocco, si-rok'o, *n.* a hot wind blowing from N. Africa.  
 Situation, sit-ū-ā'shun, *n.* location.  
 Sizable, si'za-bl, *adj.* of suitable size; bulky.  
 Sizar, si'zar, *n.* a Cambridge student who formerly earned his keep.  
 Size, siz, *n.* bulk; magnitude; a gluey substance.  
 Skein, skān, *n.* a roll of yarn; kind of thread.  
 Skeleton, skel'ē-ton, *n.* frame of an animal.  
 Skip, skip, *n.* a large wicker basket open at the top.  
 Sketch, sketch, *n.* an outline. [top.  
 Skewer, skū'er, *n.* a pin for holding meat together.  
 Skillful, skil'ful, *adj.* expert.  
 Skillet, skil'et, *n.* small boiler.  
 Skimmings, skim'ings, *n.* skimmed matter.  
 Skinflint, skinf'lint, *n.* a miserly person.  
 Skipper, skip'per, *n.* the captain of a ship; any captain.  
 Skirmish, skir'mish, *n.* a light military encounter.  
 Skittish, skit'ish, *adj.* easily frightened; fickle.  
 Skiver, skiv'er, *n.* split sheep-skin.  
 Skulk, skulk, *v.* to avoid in a cowardly way.  
 Skull, skul, *n.* bone of the head.  
 Sky-sail, ski'sāl, *n.* a small sail above the royal.  
 Slake, slāk, *v.* to quench.  
 Slander, slan'der, *n.* defamation.  
 Slang, slang, *n.* vulgar language.  
 Slash, slash, *v.* to cut; to hit out at random.  
 Slat, slat, *n.* a thin piece of wood.  
 Slattern, slat'ern, *n.* a slovenly person.  
 Slaty, slat'i, *adj.* like, or consisting of, slate.  
 Slaughter, slaw'ter, *n.* carnage; butchery.  
 Slaver, slāv'er, *n.* a slave-vessel.  
 Slaver, slāv'er, *n.* saliva running from the mouth.  
 Slavery, slāv'er-i, *n.* bondage.  
 Sledge, slej, *n.* a heavy hammer; a sleigh.  
 Sleek, slēk, *adj.* smooth; glossy.  
 Sleeper, slē'per, *n.* one who sleeps; a timber support for rails, etc.  
 Sleet, slēt, *n.* a mixture of rain and hail.  
 Sleeve, slēv, *n.* arm-cover.  
 Sleigh, slā, *n.* a vehicle with runners for sliding over the snow.  
 Sleight, slit, *n.* trick; cunning.  
 Sleuth-hound, slooth'hownd, *n.* a dog that follows game by scent.  
 Slight, slit, *n.* neglect; a snub; *adj.* small; feeble.  
 Slimy, sli-mi, *adj.* moist; sticky.  
 Slink, slink, *v.* to sneak away.  
 Slipper, slip'er, *n.* a low, easy shoe.  
 Slippery, slip'er-i, *adj.* in condition to cause one's feet to slip; uncertain; shifting.  
 Sloe, slō, *n.* the blackthorn and its fruit.  
 Slogan, slō'gan, *n.* a war-cry.  
 Sloop, sloop, *n.* a one-masted boat.  
 Slop, slop, *v.* to spill; *n.* dirty water.  
 Slope, slōp, *n.* slant; an incline.  
 Sloppy, slop'i, *adj.* wet and muddy.  
 Slot, slot, *n.* a socket; the footmark of a deer.  
 Sloth, slōth, *n.* laziness; an animal.  
 Slough, sluf, *n.* a boggy spot.  
 Slough, sluf, *n.* cast-off skin of a serpent; *v.* to cast off, like a slough.  
 Sloven, sluv'en, *n.* a slattern.  
 Sludge, slu-j, *n.* thick mud.  
 Slug, slug, *n.* a shell-less snail.  
 Sluggard, slug'erd, *n.* a lazy person; a drone.

Sluice, sloos, *n.* a floodgate.  
 Slum, slum, *n.* a mean street or neighbourhood.  
 Slump, slump, *v.* to sink in.  
 Slur, slur, *v.* to sully; a reproach; a stain.  
 Slut, slut, *n.* a slattern. [held in the hand.  
 Small-arms, smaw'farms, *n.* fire-arms that can be smatter, smat'er, *v.* to talk or write superficially.  
 Smear, smēr, *v.* to daub; to soil.  
 Smelt, smelt, *n.* a small fish.  
 Smelter, smelt'er, *n.* one who smelts; a place for smelting.  
 Smirch, smirch, *v.* to smear; to cloud; to degrade.  
 Smirk, smirk, *n.* an affected smile.  
 Smock, smok, *n.* blouse; chemise.  
 Smog, smog, *n.* a combination of natural fog and polluting substances.  
 Smoky, smōki, *adj.* sending forth smoke; covered with smoke.  
 Smother, smuth'er, *v.* to suffocate; to stifle.  
 Smouldering, smōld'er-ing, *adj.* burning slowly.  
 Smudge, smuj, *v.* to smear with smoke or dirt; *n.* a dirty mark. [gally.  
 Smuggle, smug'l, *v.* to import or export goods illegally.  
 Smuttness, smut'i-ness, *n.* dirt caused by smoke; obscenity. [refreshment.  
 Snack, snak, *n.* a small portion; a share; a light Snaffle, snaf'l, *n.* a bridle with a slender bit.  
 Snag, snag, *n.* a shoot; a tooth standing out; a knot; something which impedes.  
 Snappish, snap'ish, *adj.* harsh in reply; peevish.  
 Snarl, snarl, *v.* to growl.  
 Snathe, snāth, *n.* the handle of a scythe.  
 Sneer, snēr, *v.* to scoff; *n.* scorn; disdain.  
 Sneeze, snēz, *v.* to eject air violently through the nostrils.  
 Sniff, snif, *v.* to draw air audibly up the nose.  
 Snigger, snig'er, *v.* to laugh in a half-suppressed way.  
 Snivel, sniv'el, *v.* to whine; *n.* running of the nose.  
 Snob, snob, *n.* a pretentious person; one who affects a higher position than he can rightfully Snood, snood, *n.* a fillet. [claim.  
 Snore, snōr, *v.* to breathe audibly in sleep.  
 Snort, snort, *v.* to force air noisily through the nose.  
 Snout, snout, *n.* protruding part of an animal's head consisting of the nose and jaws.  
 Snow, snō, *n.* atmospheric vapour frozen into ice crystals; *v.* to fall to earth in white flakes.  
 Snub, snub, *v.* to check; to slight; *n.* a rebuke.  
 Soak, sōk, *v.* to drench; to steep.  
 Soap, sōp, *n.* a product made from the reaction of animal or vegetable fats and oils with caustic soda or potash and according to the soap-making process used may be soft soap, hard soap, soap flakes, soap powders, or toilet soap.  
 Soar, sōr, *v.* to fly aloft.  
 Sobriety, sō-br'i-et-i, *n.* temperance; seriousness.  
 Sobriquet, sō-brē-kā, *n.* a nickname.  
 Sociable, sō'sha-bl, *adj.* social; friendly; familiar.  
 Socialism, sō'shal-izm, *n.* belief in the common ownership of the means of production.  
 Society, sō-si-et-i, *n.* a community; an association; the fashionable world; social intercourse.  
 Sociology, sō-shi-ō-lō-jī, *n.* science of social existence.  
 Sock, sok, *n.* a short stocking. [ence.  
 Socket, sok'et, *n.* a cavity for holding something.  
 Sodality, sō-dal'it-i, *n.* fellowship. [inserted.  
 Sodomy, sod'ō-mī, *n.* sexual intercourse between males.  
 Soggy, sog'i, *adj.* wet; soaking.  
 Soil, soil, *n.* land; earth; *v.* to tarnish.  
 Soiree, swaw-rā, *n.* an evening party.  
 Sojourn, sō'jurn, *v.* to abide.  
 Solace, sol'as, *n.* comfort; consolation; *v.* to console. [cement.  
 Solder, sol'der, *v.* to fasten together with metallic.  
 Soldier, sol'djer, *n.* a man in military service.  
 Sole, sol, *n.* a fish; bottom part of foot or boot; alone.  
 Solecism, sol'ē-sizm, *n.* incorrect language; unfit-Solely, sol'l, *adv.* singly; only. [ness.  
 Solemnity, sol-em'nit-i, *n.* sacred ceremony; gravity.  
 Solicit, sol-is't, *v.* to request; to entreat.  
 Solicitor, sol-is't-er, *n.* one who solicits; a lawyer.  
 Solidarity, sol-id-ār'it-i, *n.* singleness of interest.  
 Solidity, sol-id'it-i, *n.* firmness.  
 Soliloquise, sol-il'ō-kwiz, *v.* to talk to one's self.  
 Solitary, sol'i-tari, *adj.* alone; by oneself.  
 Solo, sol'ō, *n.* performance by one voice or one instrument; a game of cards.  
 Soluble, sol'ū-bl, *adj.* dissolvable.



- Solution**, so-lū'shun, *n.* explanation; process of dissolving; the result of the dissolving.
- Solve**, solv, *v.* to disentangle; to settle.
- Sombre**, som'br, *adj.* gloomy; dark; melancholy.
- Somersault**, sum'er-saw't, *n.* a leap in which the leaper turns round and alights on his feet.
- Somnambulist**, som-nam'bū-list, *n.* a sleep-walker.
- Somniferous**, som-nif'er-us, *adj.* causing sleep.
- Somnolent**, som'no-lent, *adj.* sleepy; drowsy.
- Sonata**, sō-nā'tā, *n.* a musical composition in three or more movements.
- Sonnet**, son'et, *n.* a poem in 14 lines.
- Sonorous**, so-nō'rus, *adj.* resonant.
- Soothe**, sooth, *v.* to pacify; to calm; to console.
- Soothsayer**, sooth'sā-er, *n.* a fortune-teller.
- Sophism**, sō'fizm, *n.* a plausible fallacy.
- Sophisticate**, sō-fist'ik-āt, *v.* to corrupt; to adulterate.
- Soporific**, so'por'if-ic, *adj.* sleep-producing.
- Soprano**, so-prā'no, *n.* the highest voice (treble); one who sings in such a voice.
- Sortcery**, sor'ser-i, *n.* magic.
- Sordid**, sor'did, *adj.* mean; squalid.
- Sorrel**, sor'el, *n.* an acid-loving plant; *adj.* rather red.
- Sorrowful**, sor'ō-ful, *adj.* sad; regretful; melancholy.
- Sorry**, sor'i, *adj.* sad for something done, or for some person; worthless.
- Sortie**, sor'tē, *n.* a sally of troops from a besieged place.
- Soubrette**, soo-bret', *n.* a coquettish maid-servant in a comedy.
- Sough**, sow, *v.* to sigh, as the wind.
- Soul**, sōl, *n.* the spirit; life; intellect.
- Sound**, sownd, *n.* sensation aroused by certain vibrations received by the ear; a narrow passage of water.
- Sounding**, sownd'ing, *n.* the act of ascertaining the depth of water.
- Soundness**, sownd'nes, *n.* health; vital completeness.
- Source**, sōrs, *n.* origin; a spring.
- Souse**, sows, *v.* to duck; to plunge into water.
- Soutaine**, soo-tān', *n.* a cassolet.
- Souvenir**, soov-nēr', *n.* a keepsake.
- Sovereign**, sov'e-rin, *n.* ruler; a gold coin formerly worth 20s.; *adj.* supreme.
- Sow**, sow, *n.* a female pig.
- Spa**, spaw, *n.* a place having mineral waters.
- Space**, spās, *n.* void; 3-dimensional continuum.
- Space-time**, spās tim, *n.* 4-dimensional continuum (relativity) in which events take place.
- Span**, span, *n.* nine inches; a period of time.
- Spangle**, spang'el, *n.* a small boss of shining metal; *v.* to deck with spangles.
- Spaniel**, span-yel, *n.* a sporting dog.
- Spank**, spangk, *v.* to slap. [fast horse.]
- Spanker**, spangk'er, *n.* a sail; anything dashing; a spar.
- Spar**, spār, *n.* a mast or beam; a mineral.
- Spareness**, spār'nes, *n.* leanness.
- Sparerib**, spār'rib, *n.* ribs of pork.
- Sparse**, spārs, *adj.* thin; scattered.
- Spartan**, spār'tan, *adj.* severe; hardy.
- Spasm**, spazm, *n.* a cramp; sudden twitching.
- Spatula**, spat'ū-lā, *n.* a trowel; knife for spreading ointment.
- Spavin**, spav'in, *n.* a disease of the joints in horses.
- Spawn**, spawn, *n.* the eggs of fish and amphibia.
- Spay**, spā, *v.* to castrate.
- Specie**, spēs'hē, *n.* cash.
- Species**, spēs'hēs, *n.* a kind; a class.
- Specific**, spes'if'ik, *adj.* definite; *n.* a remedy.
- Specify**, spes'if-i, *v.* to designate.
- Specimen**, spes'f-men, *n.* a single object or part regarded as one of its kind.
- Specious**, spēs'hus, *adj.* plausible. [small speck.]
- Speckle**, spek'l, *v.* to mark with specks; *n.* a speck.
- Spectacle**, spek'tā-kl, *n.* a scene; a sight; a pageant.
- Spectacles**, spek'tā-klz, *n.* eye-glasses.
- Spectator**, spek'tā-tor, *n.* an eye-witness.
- Spectral**, spek'tral, *adj.* ghostly.
- Spectroscope**, spek'tro-skōp, *n.* an instrument used in examining spectra.
- Speculation**, spek'ū-lā'shun, *n.* investment; conjecture.
- Speculative**, spek'ū-lā-tiv, *adj.* theoretical.
- Speculum**, spek'ū-lum, *n.* a reflector.
- Speechless**, spēs'h'es, *adj.* dumb.
- Speedy**, spē'di, *adj.* quick; swift; rapid.
- Spelter**, spel'ter, *n.* impure zinc.
- Spendrift**, spend'θrift, *n.* a prodigal.
- Sperm**, *n.* male seed.
- Spermaceti**, sper-mā-set'i, *n.* a wax obtained from the Sperm Whale.
- Spherical**, sfer'ik-āl, *adj.* globular.
- Spheroid**, sfer'oid, *n.* a thing of sphere form but not completely round.
- Sphincter**, sfingkt'er, *n.* a muscle that contracts an aperture round which it is placed.
- Sphinx**, sfingks, *n.* a mythological monster with the head of a woman and the body of a lioness.
- Spice**, spīs, *n.* plant parts used for seasoning.
- Spicular**, spik'ū-lar, *adj.* sharp-pointed.
- Spigot**, spig'ot, *n.* peg for a faucet.
- Spike**, spik, *n.* a large nail; an ear of corn.
- Spindle**, spin'dl, *n.* a pin round which yarn is spun.
- Spine**, spin, *n.* the backbone.
- Spinster**, spin'ster, *n.* an unmarried woman; a woman who spins.
- Spiracle**, spir'a-kl, *n.* breathing-hole.
- Spiral**, spir'al, *adj.* winding like the thread of a spire.
- Spire**, spir, *n.* a steeple. [screw.]
- Spirit**, spir'it, *n.* vital force; soul; liveliness.
- Spirited**, spir'it-ed, *adj.* lively.
- Spiritual**, spir'it-ū-al, *adj.* holy; divine; not material. [ality.]
- Spirituality**, spir'-it-ū-āl'it-i, *n.* holiness; immateriality.
- Spirituous**, spir'it-ū-us, *adj.* ardent; volatile.
- Spit**, spit, *n.* saliva; an iron prong for roasting meat; *v.* to eject saliva from the mouth.
- Spite**, spit, *n.* a grudge; malice.
- Spittoon**, spit-oon' n. a spit-box.
- Splay-footed**, splā'-footed, *adj.* with feet turned outward.
- Spleen**, splēn, *n.* anger; melancholy; the milt.
- Splendour**, splen'der, *n.* brilliancy; magnificence.
- Splenetic**, splen-et'ik, *adj.* morose; peevish.
- Splenic**, splen'ik, *adj.* relating to the spleen.
- Splice**, spīs, *v.* to unite by interweaving or overlapping.
- Spint**, spint, *n.* thin piece of wood for holding fractured bones in place.
- Splinter**, splin'ter, *n.* a fragment of wood, glass, etc. [booty.]
- Spoil**, spoil, *v.* to impair; to rob; *n.* plunder.
- Spokesman**, spōks'man, *n.* one who speaks for himself and others.
- Spoliation**, spō-lā'shun, *n.* pillage; plunder.
- Spondyl**, spon'dil, *n.* a joint.
- Sponge**, spunj, *n.* a soft, porous marine animal used for washing purposes.
- Sponsor**, spon'sor, *n.* surety; a godfather.
- Spontaneous**, spon-tā'nē-us, *adj.* voluntary; of one's own accord.
- Spool**, spool, *n.* a hollow cylinder for holding yarn.
- Spoor**, spōr, *n.* the trail of an animal.
- Sporadic**, spō-rad'ik, *adj.* scattered, applied to epidemics.
- Spore**, spōr, *n.* a seed germ.
- Sporran**, spor'an, *n.* a pouch worn in front of a kilt.
- Sport**, sport, *n.* amusement, usually out-door.
- Sportful**, spōrt'ful, *adj.* full of sport; playful.
- Spousal**, spouz'al, *adj.* nuptial.
- Spouse**, spouz, *n.* husband or wife. [ligaments.]
- Sprain**, sprān, *v.* to strain; *n.* an overstrain of the sprawl.
- Sprawl**, sprawl, *v.* to spread; to be stretched out.
- Spree**, sprē, *n.* a carousal.
- Sprightly**, sprit'ly, *adj.* lively.
- Springe**, sprinj, *n.* a trap; a snare.
- Spring-tide**, spring'tid, *n.* tide at the period of the new and full moon.
- Springy**, spring'i, *adj.* full of springs; elastic.
- Sprite**, sprit, *n.* a spirit.
- Sprout**, sprout, *v.* to shoot; to bud; *n.* shoot of a spry.
- Spry**, sprī, *adj.* nimble. [plant.]
- Spumous**, spū-mus, *adj.* frothy.
- Spunk**, spungk, *n.* pluck; touchwood.
- Spur**, spur, *n.* an instrument with rowels, worn by horsemen and used for goading horses.
- Spurious**, spūr'ri-us, *adj.* counterfeit.
- Spurt**, spurt, *v.* to throw out; *n.* a short sudden effort.
- Sputter**, sput'er, *v.* to make spitting noises; to speak indistinctly.
- Spy**, spi, *n.* one who gets information for others secretly; *v.* to watch secretly; to look; to detect. [pigeon.]
- Squab**, skwob, *adj.* short and fat; *n.* a young squabble.
- Squabble**, skwob'l, *v.* to dispute noisily.
- Squadron**, skwod'ron, *n.* a small fleet; a company of cavalry.
- Squalid**, skwol'id, *adj.* foul; mean; dirty.
- Squall**, skawl, *n.* gust of wind; a violent scream.

**Squalor**, skwāl'or, *n.* dirt; filth; raggedness.  
**Squamous**, skwā'mus, *adj.* scaly. [scatter.]  
**Squander**, skwōn'der, *v.* to spend foolishly; *v.* to  
**Square**, skwār, *adj.* having four equal sides; *v.* to  
 make square.  
**Squash**, skwośh, *v.* to crush; to press flat; *n.* a  
 sort of gourd. [to sit on the ground.]  
**Squat**, skwot, *adj.* short and thick; crouching; *v.*  
**Squatter**, skwot'er, *n.* a settler on new land.  
**Squaw**, skwaw, *n.* a Red Indian wife.  
**Squeak**, skwēk, *n.* a sharp, quick sound; *v.* to  
 make such a sound.  
**Squeamish**, skwē'mish, *adj.* dainty; fastidious.  
**Squeeze**, skwēz, *v.* to crush or press; to hug.  
**Squill**, skwil, *n.* a bulbous rooted plant of the  
 Liliaceæ order.  
**Squint**, skwint, *v.* to look obliquely.  
**Squire**, skwir, *n.* a knight's attendant; a gallant;  
 a country landowner.  
**Squirm**, skwirm, *v.* to wriggle; to shrink.  
**Squirt**, skwirt, *v.* to eject in a stream.  
**Stability**, stā-bil'it-i, *n.* steadiness; firmness.  
**Stable**, stā'bl, *adj.* firm; durable; *n.* shelter for  
 horses. [chimneys; *v.* to pile.]  
**Stack**, stak, *n.* pile of hay or grain; group of  
**Staddle**, stād'l, *n.* a support.  
**Stadium**, stā'di-um, *n.* a Greek length measure.  
 606½ English feet.  
**Staff**, staf, *n.* a stick; a bâton; lines and spaces  
 for music characters; special officers.  
**Stage**, stāj, *n.* the theatre; a raised platform;  
 halting place on a journey.  
**Stage-coach**, stāj'kōch, *n.* coach plying for hire  
 between certain stages.  
**Stagger**, stag'er, *v.* to shock; to reel.  
**Staggers**, stag'erz, *n.* a disease in horses.  
**Stagnation**, stag-nā'shun, *n.* inaction; absence of  
 movement.  
**Staid**, stād, *adj.* steady; serious.  
**Stake**, stāk, *n.* a sharp-pointed stock; a post;  
 anything wagered; *v.* to wager; to pledge.  
**Stalacite**, stal-ak'tit, *n.* pendant of limestone in  
 caves.  
**Stale**, stāl, *adj.* tasteless; worn out.  
**Stalk**, stawk, *n.* stem; *v.* to walk with long strides.  
**Stall**, stawl, *n.* division of a stable; a bench on  
 which articles are arranged for sale; special  
 seat for clergy in a church; a certain seat in a  
 theatre.  
**Stallion**, stāl'yun, *n.* a male horse for breeding.  
**Stalwart**, stawl'wert, *adj.* robust; sturdy.  
**Stamen**, stā'men, *n.* male organ of a flower.  
**Stamina**, stām'in-ā, *n.* the chief strength.  
**Stammer**, stām'er, *v.* to speak with impediment;  
*n.* hesitating utterance.  
**Stampede**, stam-pēd', *n.* sudden panic among and  
 rushing away of horses, cattle, etc.  
**Stanch**, stānsh, or staunch, stawnsh, *adj.* firm  
 in principle; sound; *v.* to arrest the flow.  
**Stanchion**, stānsh'un, *n.* a bar or beam used as a  
 support.  
**Standard**, stand'ard, *n.* an ensign; an established  
 measure or quality; a test.  
**Stannary**, stān'ār-i, *n.* tin mine; *adj.* relating to  
 tin mines.  
**Stanza**, stan'zā, *n.* a verse.  
**Staple**, stā'pl, *n.* iron hoop; mart for merchandise;  
 chief products.  
**Starboard**, stār'bōrd, *adj.* right side of a ship.  
**Starchy**, stārch'i, *adj.* stiff; precise.  
**Stark**, stārk, *adv.* wholly; *adj.* downright.  
**Starry**, stār'i, *adj.* adorned with stars.  
**Startle**, stār'tl, *v.* to frighten; to alarm.  
**State**, stāt, *n.* the whole community; *v.* to declare.  
**Statedly**, stāt'ed-lī, *adj.* at fixed times.  
**Stately**, stāt'lī, *adj.* dignified; grand.  
**State-room**, stāt'room, *n.* a bedroom on a vessel.  
**Statesman**, stāts'man, *n.* a politician; one skilled  
 in government.  
**Static**, stat'ik, *n.* at rest.  
**Station**, stā'shun, *n.* an assigned post; rank;  
 stopping place on a railway.  
**Stationary**, stā'shun-ār-i, *adj.* fixed; settled.  
**Stationery**, stā'shun-er-i, *n.* writing materials  
 sold by a stationer. [figures.]  
**Statistics**, sta-tis'tiks, *n.* a collection of facts and  
**Statue**, stat'ū, *n.* an image carved in stone or  
 metal.  
**Statuette**, stat-ū-et', *n.* a small statue.  
**Stature**, stāch'ur, *n.* height.  
**Status**, stāt'us, *n.* condition; rank.  
**Statute**, stat'ūt, *n.* a law; an Act of Parliament.  
**Staunch**, stawnsh, *adj.* firm; steadfast.

**Stave**, stāv', *n.* a narrow piece of wood; *v.* to  
 break; to thrust away.  
**Stays**, stāz, *n.* a bodice; a corset; any support.  
**Steady**, sted'i, *adj.* firm; regular; sober.  
**Steak**, stāk, *n.* a slice of beef.  
**Stealth**, steilh, *n.* a secret act.  
**Steam**, stēm, *n.* vapour of heated water.  
**Stearine**, stē'ā-rin, *n.* chief component of solid fat.  
**Seatite**, stē'ā-tit, *n.* soapstone. [knives.]  
**Steel**, stēl, *n.* hardened iron; tool for sharpening  
**Steeple**, stēl'yārd, *n.* balance for weighing.  
**Steeple**, stēp'l, *n.* a spire.  
**Steer**, stēr, *n.* an ox; *v.* to guide.  
**Steerage**, stēr'āj, *n.* guidance; the fore part of a  
 ship.  
**Stellar**, stē'lar, *adj.* relating to stars.  
**Stench**, stensh, *n.* an evil odour.  
**Stencil**, sten'sil, *n.* a piece of thin material con-  
 taining letters or design cut out which can be  
 printed on another surface by passing ink or  
 paint brush over it.  
**Stenography**, sten-og'rā-fi, *n.* shorthand.  
**Stentorian**, sten-tō'ri-an, *adj.* loud-toned.  
**Step-child**, step'child, *n.* child to whom one is  
 parent only by marriage.  
**Step-father**, step'fāther, *n.* father by marriage.  
**Stepmother**, step'mother, *n.* mother by marriage.  
**Steppe**, step, *n.* an uncultivated plain.  
**Sterile**, ster'il, *adj.* barren.  
**Sterling**, ster'ling, *n.* British currency; of genuine  
 worth.  
**Stern**, stern, *adj.* severe; *n.* rear of ship; hind part.  
**Sternum**, stern'um, *n.* the breast-bone.  
**Sternutation**, stern-ū-tā'shun, *n.* the act of sneez-  
 ing.  
**Stertorous**, ster'to-rus, *adj.* breathing heavily;  
 snoring.  
**Stevadore**, stē'va-dōr, *n.* one who loads and un-  
 loads ships.  
**Steward**, stū'ard, *n.* a manager of an estate; a  
 waiter on a liner.  
**Stickle**, stik'l, *v.* to contend stubbornly.  
**Stifle**, stif'l, *v.* to smother; to suppress.  
**Stigma**, stig'mā, *n.* a blot; mark of disgrace.  
**Stigmatise**, stig'mā-tiz, *v.* to brand.  
**Stiletto**, stil-et'tō, *n.* a small dagger.  
**Still-born**, stil'bawn, *adj.* dead at birth.  
**Stilts**, stilts, *n.* sticks upon which a person can  
 walk elevated above the ground.  
**Stimulant**, stim'ū-lant, *n.* that which stimulates;  
 an alcoholic beverage.  
**Stingy**, stin'jī, *adj.* niggardly; mean.  
**Stink**, stink, *n.* a bad smell.  
**Stint**, stint, *v.* to limit; *n.* a limit.  
**Stipend**, stī'pend, *n.* salary; pay.  
**Stipulate**, stip'ū-lāt, *v.* to contract; to prescribe  
 terms.  
**Stirrup**, stir'up, *n.* a rest for a horseman's foot.  
**Stitch**, stich, *v.* to sew.  
**Stockade**, stok-ād', *n.* an enclosure of pointed  
 stakes.  
**Stockbroker**, stok'brō'ker, *n.* a dealer in stocks  
**Stocking**, stok'ing, *n.* hose. [and shares.]  
**Stocks**, stoks, *n.* public funds; a wooden frame  
 in which people were fastened as a punish-  
 ment.  
**Stoic**, stō'ik, *n.* one indifferent to pain or pleasure.  
**Stolid**, stol'id, *adj.* showing no emotions; dull.  
**Stomach**, stum'ak, *n.* the organ of digestion; the  
 belly.  
**Stomacher**, stum'ak-er, *n.* breast covering.  
**Stone**, stōn, *n.* a mineral; a gem; a weight of  
 14 lb.; *v.* to cast stones.  
**Stook**, stook, *n.* a group of sheaves set up.  
**Stoppage**, stop'āj, *n.* the act of stopping.  
**Stopper**, stop'per, *n.* a plug for bottle or vessel.  
**Storage**, stōr'āj, *n.* place where things are stored;  
 rent for storing.  
**Storied**, stōr'id, *adj.* historical; containing stories.  
**Stoup**, stūp, *n.* a drinking vessel.  
**Stout**, stowt, *adj.* plump; large; strong.  
**Stove**, stōv, *n.* place for a fire.  
**Stowage**, stō'āj, *n.* act of stowing; room for  
 articles stowed away. [apart.]  
**Straddle**, strād'l, *v.* to sit astride; to walk with legs  
**Straight**, strāt, *adj.* direct; in a right line.  
**Straightforward**, strāt-for'werd, *adj.* in a direct  
 course; upright.  
**Straightway**, strāt'wā, *adv.* immediately.  
**Strain**, strān, *n.* a sound; music; *v.* to stretch; to  
 filter; to overtask.  
**Strainer**, strān'er, *n.* a filtering apparatus.  
**Strait**, strāt, *adj.* narrow; strict.



- Strait-jacket**, strät'jak-et, *n.* jacket used for restraining the arms of lunatics.
- Strake**, sträk, *n.* iron band of a wheel; a breadth of ship-planking.
- Strand**, strand, *n.* shore; a thread of rope; *v.* to run aground.
- Stranger**, strän'jer, *n.* someone unknown.
- Strangle**, strang'gl, *v.* to choke.
- Strangles**, strang'glz, *n.* a disease in young horses.
- Strapping**, strap'ing, *adj.* tall; big; fine.
- Stratagem**, strat'ä-jem, *n.* an artifice; a trick.
- Strategist**, strat'ä-jist, *n.* one skilled in military tactics.
- Strath**, strath, *n.* a valley through which a river runs. [being stratified.]
- Stratification**, strat-if-ik-ä'shun, *n.* the condition of
- Stratum**, strät'um, *n.* a layer of rock.
- Streak**, strök, *n.* a stripe; *v.* to mark with streaks.
- Streamer**, ström'er, *n.* a long narrow flag; a beam of light.
- Strength**, strength, *n.* power, force; the number in a unit.
- Strenuous**, stren'ü-us, *adj.* resolute; active; [vigorous.]
- Stress**, stres, *n.* pressure; force.
- Stretch**, strech, *v.* to strain; to draw out.
- Stretcher**, strech'er, *n.* a litter; that which
- Strew**, stroo, *v.* to scatter. [stretches.]
- Striated**, strī-ä-ted, *adj.* marked with stripes.
- Strict**, strikt, *adj.* exact; severe; rigid.
- Stricture**, strikt'ür, *n.* censure; contraction.
- Stridulous**, strid'ü-lus, *adj.* harsh-sounding.
- Strife**, strif, *n.* contention.
- Strike**, strik, *v.* to hit; *n.* cessation from work by body of work-people in order to enforce or resist demands.
- Striking**, stri'king, *adj.* impressive.
- Stringent**, strin'jent, *adj.* urgent; exacting; hard-pressing.
- Stripling**, strip'ling, *n.* a youth.
- Strive**, striv, *v.* to try hard.
- Stroll**, ströl, *n.* a casual walk.
- Structure**, strukt'ür, *n.* a building; a frame.
- Struggle**, strug'l, *n.* a striving; a contention.
- Strumpet**, strum'pet, *n.* a prostitute.
- Stub**, stub, *n.* the short end of an object.
- Stubble**, stub'l, *n.* the stumps of straw left after the corn is cut.
- Stubborn**, stub'orn, *adj.* obstinate.
- Stucco**, stuk'ö, *n.* plaster.
- Stud**, stud, *n.* a set of horses; a small fastener.
- Studio**, stü'di-o, *n.* an artist's workshop.
- Study**, stüd'i, *n.* room for study; application.
- Stuff**, stof, *n.* a fabric; useless things.
- Stultify**, stul'ti-fi, *v.* to make foolish.
- Stumbling-block**, stum'bling-blok, *n.* an obstacle to progress.
- Stump**, stump, *n.* stub of a tree.
- Stun**, stun, *v.* to confound; to stupefy.
- Stupe**, stüp, *n.* cloth used in applying fomentation.
- Stupefy**, stü'pé-fi, *v.* to make dull.
- Stupendous**, stü-pen'dus, *adj.* wonderful; amazing; immense.
- Stupidity**, stü-pid'it-i, *n.* dullness; foolishness.
- Stupor**, stü'por, *n.* torpor of mind.
- Sturdy**, stur'di, *adj.* strong; hardy; stout.
- Stutter**, stut'er, *v.* to stammer.
- Sty**, sti, *n.* pen for swine; boil on the eye.
- Stygian**, stij'i-an, *adj.* infernal.
- Style**, stil, *n.* manner; title; filament of a pistil; pin of a dial.
- Styptic**, stip'tik, *adj.* that stops bleeding.
- Suasion**, swä'shun, *n.* persuasion.
- Suave**, swäv, *adj.* pleasant; bland.
- Suacid**, sub-as'id, *adj.* rather sour.
- Subaltern**, sub-al'tern, *n.* subordinate officer.
- Subalternate**, sub-al-ter'nät, *adj.* following by turns.
- Subaqueous**, sub-äk'wé-us, *adj.* being under water.
- Subdue**, sub-dü', *v.* to conquer; to overcome.
- Subdulous**, sü'ber-us, *adj.* cork-like.
- Subject**, sub'jekt, *adj.* being under authority; liable; *n.* one who is under another; member of a state.
- Subject**, sub-jekt', *v.* to bring under power; to expose; to subdue.
- Subjoin**, sub-join', *v.* to annex.
- Subjoinder**, subjoin'der, *n.* a remark succeeding another.
- Subjugate**, sub-jü-gät', *v.* to subdue.
- Subjunctive**, sub-jungkt'iv, *adj.* subjoined; added.
- Sublimate**, sub-lim-ät', *v.* to raise up; to exalt; to purify by heat.
- Sublime**, sub-ilm', *adj.* lofty; noble; grand.
- Sublunary**, sub'loo-na-ri, *adj.* relating to the world, or things beneath the moon.
- Submarine**, sub-mä-rén', *adj.* under the sea.
- Submit**, sub-mit', *v.* to yield; to refer to.
- Subordinate**, sub-or'din-ät, *adj.* inferior.
- Suborn**, sub-orn', *v.* to bribe; to cause to commit perjury.
- Subpoena**, sü-pé-nä, *n.* a summons to a witness.
- Subpolar**, sub-pó'lar, *adj.* below the poles.
- Subscribe**, sub-skrīb', *v.* to contribute; to give consent, to sign.
- Subsequent**, sub'sé-kwent, *adj.* coming after.
- Subservience**, sub-sér'vi-ens, *n.* abject submission.
- Subside**, sub-sid', *v.* to abate; to sink down.
- Subsidy**, sub'si-dí, *n.* money aid.
- Subsistence**, sub-sist'ens, *n.* means of support; the condition of living.
- Subsoil**, sub'soil, *n.* a layer of earth below the surface earth.
- Sub-species**, sub-spé'shéz, *n.* a subdivision of a species.
- Substantial**, sub-stan'shal, *adj.* real; tangible.
- Substantiate**, sub-stan'shi-ät, *v.* to prove; to support.
- Substitute**, sub'stit-üt, *v.* to put in place of.
- Substratum**, sub-strät'um, *n.* an under stratum.
- Substructure**, sub-strukt'ür, *n.* foundation; under structure.
- Subterfuge**, sub'ter-füj, *n.* an evasion.
- Subterranean**, sub-ter-ä'né-an, *adj.* underground.
- Subtle**, sub'til, *adj.* thin; fine; artful.
- Subtle**, sut'l, *adj.* artful; cunning.
- Subtract**, sub-trakt', *v.* to deduct.
- Suburban**, sub-ür'ban, *adj.* relating to suburbs.
- Subvention**, sub-ven'shun, *n.* a giving in aid; a subsidy.
- Subversion**, sub-ver'shun, *n.* an overthrowing; ruin.
- Successful**, suk-ses'ful, *adj.* prosperous; having achieved that which was aimed at.
- Successive**, suk-ses'iv, *adj.* following in order.
- Succinct**, suk-singkt, *adj.* short, clear.
- Succour**, suk'ur, *v.* to aid; to relieve.
- Succulence**, suk'ü-lens, *n.* juiciness.
- Succumb**, suk-um', *v.* to yield.
- Sucker**, suk'er, *n.* that which sucks; piston of a pump; a shoot; a river fish.
- Suckle**, sud'l, *v.* to feed with milk from the breast and udder.
- Sudorific**, sü-dö-rif-ik, *adj.* causing perspiration.
- Sue**, sü, *v.* to prosecute; to entreat.
- Sufferance**, suf-er-ans, *n.* endurance; permission.
- Sufficiency**, suf-ish'en-si, *n.* plenty.
- Suffocate**, suf'ö-kät, *v.* to smother.
- Suffragan**, suf-rä-gan, *n.* an assistant bishop.
- Suffrage**, suf'räj, *n.* a vote; testimony.
- Suffragette**, suf-rä-jet', *n.* a female advocate of women's franchise.
- Suffragist**, suf-rä-jist, *n.* an upholder of votes for women.
- Suffuse**, su-füz', *v.* to spread over.
- Suggest**, suj-jest', *v.* to hint; to intimate.
- Sugillation**, suj-il-ä'shun, *n.* mark from a blow.
- Suicide**, sü-i-sid, *n.* self murder.
- Suitable**, sü'tabl, *adj.* proper; befitting.
- Suite**, swét, a body of followers; a set of articles of furniture; a series of rooms.
- Suitor**, sü'tor, *n.* a lover; one who sues at law.
- Sulkiness**, sulk'í-nes, *n.* sullenness.
- Sullen**, sul'en, *adj.* morose; sulky.
- Sulphurous**, sul-fur-us, *adj.* of the nature of sulphur.
- Sultan**, sul'tan, *n.* the monarch of Turkey.
- Suitana**, sul-tä'nä, *n.* mother, wife, or daughter of Sultry, *adj.* hot; close. [a sultan.]
- Summary**, sum'är-i, *adj.* short; *n.* an abstract.
- Summit**, sum'it, *n.* top.
- Summon**, sum'on, *v.* to call.
- Sump**, sump, *n.* pit for receiving fusing metal.
- Sumptuous**, sumpt'ü-us, *adj.* costly; rich; splendid.
- Sunbeam**, sun'bém, *n.* a sun ray.
- Sundial**, sun'di-al, *n.* an instrument for telling the time by means of the sun's shadow cast by a style.
- Sundry**, sun'dri, *adj.* several.
- Sunstroke**, sun'strök, *n.* a disease resulting from exposure to the sun.
- Super**, sü'per, *n.* a stage supernumerary.
- Superable**, sü'per-abl, *adj.* capable of being overcome.
- Superabundance**, sü-per-ä-bun'dans, *adj.* more than enough.

**Superannuate**, sū-per-an'ū-āt, *v.* to pension off.  
**Superb**, sū-perb', *adj.* magnificent.  
**Supercargo**, sū-per-kār-go, *n.* an officer having charge of a ship's cargo.  
**Supercilious**, sū-per-sil'ār-i, *adj.* above the eyebrow. [bearing].  
**Supercilious**, sū-per-sil'ūs, *adj.* proud; over.  
**Supereminent**, sū-per-em'in-ent, *adj.* eminent in a high degree. [more than is necessary].  
**Supererogation**, sū-per-er-ō-gā'shun, *n.* a doing of.  
**Superficial**, sū-per-fish'al, *adj.* shallow; on the surface.  
**Superfluous**, sū-per-floo-us, *adj.* unnecessary.  
**Superintendent**, sū-per-in-tend'ent, *n.* an overseer.  
**Superiority**, sū-pē-ri-or'it-i, *n.* excellence; higher rank; advantage.  
**Superlative**, sū-per-lā-tiv, *adj.* best; in the highest degree.  
**Supernatural**, sū-per-nat'ū-ral, *adj.* miraculous; spiritual. [prescribed number].  
**Supernumerary**, sū-per-nū'mer-ār-i, *adj.* above the.  
**Superscription**, sū-per-skip'shun, *n.* act of superscribing; that which is written on the outside.  
**Supersede**, sū-pēr-sēd', *v.* to displace.  
**Supersensible**, sū-per-sens'ib'l, *adj.* beyond the senses.  
**Supercession**, sū-per-sesh'un, *n.* a setting aside.  
**Superstition**, sū-per-stish'un, *n.* belief in supernatural agents, visions, omens, etc.  
**Superstructure**, sū-per-strukt'ūr, *n.* structure above the foundation.  
**Supervene**, sū-per-vēn', *v.* to happen; to come unexpectedly.  
**Supervision**, sū-pēr-vizh'un, *n.* superintendence.  
**Supine**, sū-pin', *adj.* lying on the back; lazy; in-  
**Supplant**, sup-plant', *v.* to displace. [different].  
**Supple**, sup'l, *adj.* pliant. [tion; *v.* to add to].  
**Supplement**, sup-lē-ment, *n.* an appendix; an addi-  
**Supplicate**, sup-li-kāt, *v.* to entreat; to pray.  
**Supply**, sup-pli', *v.* to furnish; to provide; *n.* that which is supplied.  
**Supportable**, sup-port'abl, *adj.* that can be supported. [spurious].  
**Supposititious**, sup-poz-it-ish'us, *adj.* imaginary.  
**Suppression**, sup-presh'un, *n.* the act of suppressing.  
**Suppuration**, sup-ur-ā'shun, *n.* the forming of pus.  
**Supremacy**, sū-prem'ā-si, *n.* the condition of being supreme.  
**Surcharge**, sur-chârj', *v.* to overcharge; *n.* an overload.  
**Sureingle**, sur'sing-gl, *n.* a girth for holding a saddle; girdle of a cassock.  
**Surcoat**, sur-kōt, *n.* an overcoat.  
**Surd**, surd, *n.* a quantity incapable of being precisely indicated by numbers, or without root.  
**Surety**, shoort'i, *n.* one who guarantees; certainty.  
**Surf**, surf, *n.* foam made by waves.  
**Surfeit**, sur'fit, *v.* to cloy; *n.* excess.  
**Surgeon**, sur-jun, *n.* one who practises surgery.  
**Surly**, sur'li, *adj.* morose; mean; crabbed.  
**Surmise**, sur-miz', *v.* to suspect.  
**Surmountable**, sur-mownt'abl, *adj.* capable of being overcome.  
**Surname**, sur-nām, *n.* family name.  
**Surpass**, sur-pās', *v.* to do better than; to exceed.  
**Surplice**, sur-plis, *n.* garment worn by clergymen and choristers.  
**Surplus**, sur-plus, *n.* excess; more than required.  
**Surprise**, sur-priz', *n.* act of taking unawares; amazement.  
**Surrender**, sur-en'der, *v.* to yield up; to resign.  
**Surreptitious**, sur-ep-tish'us, *adj.* done by stealth.  
**Surrogate**, sur'ō-gāt, *n.* a deputy.  
**Survey**, sur-vā', *v.* to look; to examine; to measure land; *n.* view; examination.  
**Survivor**, sur-vi'vor, *n.* one who outlives another.  
**Susceptible**, sus-sep'tibl, *adj.* impressionable; sensitive.  
**Suspect**, sus-pekt', *v.* to doubt.  
**Suspense**, sus-pens', *n.* uncertainty; an anxious waiting.  
**Suspicion**, sus-pish'on, *n.* suspecting. [prolong].  
**Sustain**, sus-tān', *v.* to uphold; to maintain; to  
**Sustenance**, sus'ten-ans, *n.* food; maintenance.  
**Suture**, sū-tūr, *n.* a seam; the sewing up of a wound; joint of the skull.  
**Suzerain**, sū-zē-rān, *n.* a paramount ruler or lord.  
**Swab**, swob, *n.* a mop; *v.* to cleanse with a mop.  
**Saddle**, swod'l, *v.* to swathe.  
**Swagger**, swag'er, *v.* to brag.  
**Swain**, swān, *n.* a peasant; a lover; a youth.  
**Swale**, swāl, *n.* a shady place.

**Swallow**, swol'ō, *n.* a migratory bird; *v.* to take down the throat.  
**Swank**, swangk, *adj.* a showing off.  
**Sward**, swawrd, *n.* grass; turf; lawn.  
**Swarthy**, swawr'thi, *adj.* dark-skinned.  
**Swath**, swawth, *n.* a line of grass or corn cut down with the scythe.  
**Swathe**, swāth, *v.* to bind with bandages.  
**Sway**, swā', *v.* to govern; to wield; to influence; *n.* rule.  
**Swear**, swār, *v.* to take an oath; to use profane language.  
**Sweat**, swēt, *n.* perspiration.  
**Sweepstakes**, swēp'stāks, *n.* a sort of private lottery on a race or other contest.  
**Swell**, swēl, *v.* to dilate; *n.* a fop.  
**Swelter**, swēl'ter, *v.* to suffer from excessive heat.  
**Swill**, swil, *v.* to drench; to wash; to drink eagerly.  
**Swimmingly**, swim'ing-li, *adv.* as if swimming;  
**Swindler**, swind'ler, *n.* a cheat. [smoothly].  
**Swinish**, swi'nish, *adj.* piglike; gross.  
**Switch**, swich, *n.* a straight twig; a movable rail; *v.* to beat with a switch; to turn aside by switch rail.  
**Swivel**, swiv'el, *n.* a ring that turns on a staple.  
**Swoon**, swoon, *v.* to faint; *n.* a fainting fit.  
**Swoop**, swoop, *v.* to sweep down upon.  
**Sybarite**, sib'ā-rit, *n.* one given to luxury.  
**Sycophant**, sik'ō-fant, *n.* a fawning flatterer.  
**Syllable**, sil'ā-bl, *n.* a letter or combination of letters forming one sound.  
**Syllabus**, sil'ā-bus, *n.* a compendium; an outline.  
**Syllogism**, sil'ō-jizm, *n.* an argument consisting of two propositions and a conclusion.  
**Sylph**, silf, *n.* a fairy.  
**Sylvan**, sil'van, *adj.* relating to woods.  
**Symbol**, sim'bōl, *n.* an emblem; a token; a type.  
**Symmetry**, sim'ē-tri, *n.* the condition of the correct proportion of parts.  
**Sympathetic**, sim-pā-thet'ik, *adj.* compassionate.  
**Symphony**, sim'fō-ni, *n.* an orchestral composition.  
**Symposium**, sim-pō'zi-um, *n.* banquet of philosophers; a feast. [toms].  
**Symptomatic**, sim-to-mat'ik, *adj.* relating to symp-  
**Synagogue**, sin'ā-gog, *n.* a Jewish church.  
**Synchronise**, sing'krō-niz, *v.* to cause to occur at the same time.  
**Syncope**, sing'kō-pāt, *v.* to contract a word; to prolong a note of music.  
**Syncope**, sing'kō-pē, *n.* the omission of letters in a word; a swoon.  
**Syndic**, sin'dik, *n.* a magistrate.  
**Synod**, sin'od, *n.* an ecclesiastical body.  
**Synonym**, sin'ō-nim, *n.* a word having the same meaning as another word.  
**Synopsis**, sin-op'sis, *n.* a general view or outline.  
**Synoptical**, sin-op'tikl, *adj.* offering a general view.  
**Syntax**, sin'taks, *n.* the proper arrangement of words in sentences. [separate parts].  
**Synthesis**, sin'the-sis, *n.* making a whole out of  
**Syringe**, sir'ing, *n.* an instrument for injecting or spraying liquids.  
**Syrup**, sir'up, *n.* sweet juice.  
**System**, sis'tem, *n.* a formulated method; methodical arrangement; the human organism.

## T

**Tabard**, tab'ard, *n.* an old-time military tunic.  
**Tabby**, tab'l, *adj.* brindled; *n.* a kind of watered silk.  
**Tabefaction**, tab-e-fak'shun, *n.* a wasting away.  
**Tabella**, tā-bel'ā, *n.* a medicated lozenge.  
**Tabernacle**, tab'er-nak'l, *n.* place of worship; tent.  
**Tabernacular**, tab'er-nak'yu-lar, *adj.* latticed.  
**Tabid**, tab'id, *adj.* wasted by disease.  
**Tableau**, tab-lō', *n.* a picture.  
**Tableaux vivants**, tab'lō vē'vāngs, *n.* human representations of pictures.  
**Table d'hôte**, tā'bl-dōt, *n.* a fixed price meal at hotel or restaurant.  
**Table-land**, tā'bl-land, *n.* an elevated flat tract of land.  
**Tablet**, tab'let, *n.* a small flat surface for painting or writing upon.  
**Taboo**, tā-boo', *n.* a prohibition.  
**Tabour**, tā'bor, *n.* a small drum.  
**Tabret**, tā'bret, *n.* a small tabour.  
**Tabulate**, tā'b'u-lāt, *v.* to arrange in tabular form.  
**Tacit**, tass-it', *adj.* silent; implied.  
**Tacturn**, tas'it-urn, *adj.* reserved; silent.  
**Tack**, tack, *n.* a nail; *v.* to veer.



- Tacking**, tak'ing, *v.* changing the course of a sailing vessel.
- Tackle**, tak'l, *n.* apparatus for raising weights; fishing implements; *v.* to catch hold of.
- Tackling**, tak'ling, *n.* harness; ship-rigging.
- Tacky**, tak'i, *adj.* sticky.
- Tact**, takt, *n.* skill in social relations.
- Tactics**, tak'tiks, *n.* science of manœuvring in warfare.
- Tactile**, tak'til, *adj.* susceptible of touch.
- Tactical**, tak'tū'al, *adj.* relating to touch.
- Tael**, tal, *n.* a Chinese weight.
- Taffeta**, taf'ē-tā, *n.* a kind of silk.
- Taffrail**, taf'rel, *n.* upper part of ship's stern.
- Taggers**, tag'ers, *n.* thin sheet iron.
- Tailor**, tāl'or, *n.* maker of men's clothes.
- Taint**, tānt, *v.* to infect; *n.* corruption; infection.
- Take**, tāk, *v.* to acquire; get; seize.
- Talc**, tālk, *n.* a flaky, translucent mineral.
- Talent**, tal'ent, *n.* ability; natural gift; a weight.
- Talesman**, tā'lez-man, *n.* one chosen to supply vacancy in jury complement.
- Talion**, tā'le-un, *n.* the law of retaliation.
- Talisman**, tal'iz-man, *n.* a charm.
- Talkative**, tawk'at-iv, *adj.* loquacious.
- Tallow**, tal'ō, *n.* melted animal fat.
- Tally**, tal'i, *n.* a record by notched sticks; *v.* to agree.
- Talon**, tal'on, *n.* claw of a bird of prey.
- Talus**, tā'lus, *n.* slope of a rampart.
- Talpa**, tal'pa, *n.* a mole.
- Tamarin**, tam'a-rin, *n.* a small South American monkey.
- Tambour**, tam'boor, *n.* a small drum.
- Tambourine**, tam-boo-rēn', *n.* a shallow drum held in the hand.
- Tamper**, tam'per, *v.* to interfere with.
- Tampon**, tam'pon, *n.* a plug.
- Tan**, tan, *adj.* light brown colour; *v.* to convert skins into leather; to beat.
- Tandem**, tan'dem, *adv.* one before the other.
- Tang**, tang, *n.* a strong taste; tongue of a buckle.
- Tangent**, tan'jent, *n.* a line that touches a curve without cutting into it.
- Tangible**, tan'je-bl, *adj.* within reach by touch, possible.
- Tangle**, tan'gl, *n.* twisted together in confusion.
- Tank**, tank, *n.* a water container; a military motor vehicle.
- Tankard**, tangk'ard, *n.* a drinking vessel.
- Tannery**, tan'er-i, *n.* place where leather is tanned.
- Tantalising**, tan'tal-iz-ing, *adj.* teasing; tormenting.
- Tantamount**, tan'tā-mownt, *adj.* equivalent.
- Tantrum**, tāt'rūm, *n.* an active fit of bad temper.
- Tap**, tap, *v.* to strike gently; to pierce; to let out liquid; *n.* a pipe through which liquors are drawn.
- Tape**, tāp, *n.* a narrow fillet or band.
- Taper**, tā'per, *n.* a small wax candle; *v.* to diminish gradually.
- Tapestry**, tap'es-tri, *n.* hangings woven and sewn.
- Tapeworm**, tāp'wurm, *n.* an intestinal worm.
- Tapir**, tā'pir, *n.* a thick-skinned quadruped with a long flexible nose.
- Tapis**, tā-pē', *n.* carpet.
- Tappet**, tap'et, *n.* a machine lever.
- Tappets**, tap'ets, *n.* small arms connected with the valves of the cylinder of an engine.
- Tap-room**, tāp'room, *n.* room where liquors are served.
- Tap-root**, tāp'root, *n.* the central root.
- Tardy**, tār'di, *adj.* late.
- Tare**, tār, *n.* allowance weight for cask or bag; a Target, tār'get, *n.* a mark to shoot at. [weed.]
- Tariff**, tā'r'if, *n.* a charge; a duty on exports and imports.
- Tarn**, tārn, *n.* a small lake.
- Tarnish**, tār'nish, *v.* to soil; to taint.
- Tarpaulin**, tār-paw'lin, *n.* tar-covered canvas.
- Tarry**, tār-ri, *v.* to linger; to delay.
- Fart**, tārt, *n.* an article of pastry; *adj.* sour.
- Tartan**, tar'tan, *n.* Scottish plaid pattern.
- Tartuffe**, tār-too'f, *n.* a hypocrite.
- Task**, task, *n.* lesson; an imposed duty.
- Tassel**, tas'l, *n.* a bunch of silk.
- Taste**, tāst, *v.* to partake of; to try the flavour of; *n.* discernment.
- Tatter**, tat'er, *n.* a rag; *v.* to tear into pieces.
- Tatterdemalion**, tat-ter-de-male'yūn, *n.* a ragged fellow.
- Tattle**, tat'l, *n.* idle gossip; *v.* to prate.
- Tattoo**, tā-too', *n.* a drum and bugle call to soldiers; designs pricked into the skin.
- Taunt**, tawnt, *v.* to deride.
- Taut**, tawt, *adj.* tight.
- Tautology**, taw-to'lō-jī, *n.* needless repetition.
- Tavern**, tāv'ern, *n.* a public-house.
- Taw**, taw, *n.* a marble; *v.* to dress white leather.
- Tawdry**, taw'dri, *adj.* gaudy.
- Tawny**, taw'ni, *adj.* brownish yellow.
- Taxi**, or Taxi-cab, *n.* a public vehicle.
- Taxidermy**, taks-i-der'mi, *n.* the art of preserving skins.
- Taximeter**, taximētr, *n.* device for registering fares on taxis.
- Teacher**, tēch'er, *n.* an instructor.
- Teak**, teek, *n.* an East Indian tree. Used largely in shipbuilding.
- Team**, tēm, *n.* two or more horses.
- Tear**, tēer, *n.* water from the eye.
- Tear**, tāre, *v.* to rend.
- Tease**, tēz, *v.* to annoy; to raise nap on cloth.
- Teasel**, tēz'l, *n.* bur used in cloth dressing.
- Teat**, tēt, *n.* the nipple.
- Technical**, tek'nī-kal, *adj.* scientific; pertaining to an art or a profession.
- Tectonic**, tek-ton'ik, *adj.* relating to building.
- Ted**, ted, *v.* to spread new-mown grass.
- Tedious**, tē'di-us, *adj.* irksome.
- Teem**, tēm, *v.* to be full.
- Teens**, tēnz, *n.* years of age between 12 and 20.
- Teetotal**, tē-tō'tāl, *adj.* abstaining from alcoholic drinks.
- Teetotum**, tē-tō'tum, *n.* a spinning toy.
- Regular**, teg'ū-lar, *adj.* pertaining to tiles.
- Telary**, tel'a-ri, *adj.* resembling a web.
- Telepathy**, tel'ē-path-i, *n.* thought transmission.
- Telephone**, tel-e-phōn, *n.* instrument transmitting the voice to a distance.
- Telephoto**, tel'ē-fōt, *n.* an electrical instrument for reproducing images of objects at a distance.
- Telescope**, tēl-es-cōpe, *n.* instrument for seeing distant objects.
- Telesia**, tel'e-zhe-a, *n.* a sapphire; a gem.
- Television**, tēl-i-viz'h'on, *n.* the process of transmitting pictures by radio waves.
- Teller**, tel'er, *n.* paying officer at a bank; one who tells.
- Telluric**, tel'ū-rik, *adj.* relating to the earth.
- Temerarious**, tem-e-ra're-us, *adj.* rash; unreasonably adventurous.
- Temerity**, tem'er-it-i, *n.* rashness.
- Temper**, tem'per, *n.* frame of mind; mood; *v.* to moderate; to soften.
- Temperance**, tem'per-ance, *n.* sobriety.
- Temperate**, tem'per-āt, *adj.* moderate.
- Temperature**, tem'per-at-ūr, *n.* condition in reference to heat or cold.
- Tempestuous**, tem-pest'ū-us, *adj.* stormy; violent.
- Temple**, temp'l, *n.* place of worship.
- Templet**, tem'plet, *n.* pattern for moulding.
- Tempo**, tem'pō, *n.* time; rhythm. [spiritual.]
- Temporal**, tem'pō-ral, *adj.* transient; worldly; un-
- Temporary**, tem'pō-rā-ri, *adj.* only for a time.
- Temporise**, tem'pō-riz, *v.* to compromise; to delay.
- Temp**, tempt, *v.* to test; to allure.
- Temulence**, tem'ū-lens, *n.* intoxication.
- Tenable**, ten'ā-bl, *adj.* maintainable.
- Tenacity**, ten-as'it-i, *n.* firmness.
- Tenaculum**, te-nak'ū-lum, *n.* a surgical instrument for handling veins. [rental.]
- Tenancy**, ten'an-si, *n.* the holding of property at a Tench, tentch, *n.* a fresh-water fish having small deeply embedded scales.
- Tend**, tend, *v.* to guard; to watch.
- Tender**, ten'der, *n.* a fuel car attached to a locomotive; an offer; *adj.* soft; delicate.
- Tendon**, ten'don, *n.* a ligament.
- Tendrill**, ten'dril, *n.* spiral shoot of a plant.
- Tenebrous**, ten'ē-brus, *adj.* gloomy.
- Tenement**, ten'ē-ment, *n.* a dwelling; an apartment.
- Tenet**, ten'et, *n.* opinion; doctrine; principle.
- Tennis**, ten'iss, *n.* game with ball and racket, played usually under cover; lawn tennis.
- Tenon**, ten'on, *n.* piece of timber fitting in a mortice.
- Tenor**, ten'or, *n.* continued course; purport; part in music between bass and alto; a tenor singer.
- Tense**, tens, *n.* time-expressing inflection of a verb; *adj.* tightly stretched.
- Tensile**, tēn'sil, *adj.* capable of being stretched.
- Tentacle**, ten'tā-kl, *n.* a feeler used by certain fauna to grip objects.

**Tentative**, ten'tā-tiv, *adj.* experimental.  
**Tenuity**, ten-ū't-i, *n.* thinness; slenderness.  
**Tenure**, ten'ūr, *n.* the act of holding.  
**Tepid**, tep'id, *adj.* lukewarm.  
**Tercentenary**, ter-sen'te-nā-ri, *n.* a 300th anniversary.  
**Tergiversation**, ter-jiv-er-sā'shun, *n.* the act of turning one's back upon; shiftiness of conduct.  
**Term**, term, *n.* a limited time; an expression.  
**Termagant**, ter'mā-gant, *n.* a hot-tempered woman; a shrew.  
**Terminal**, ter'min-al, *adj.* final; ending.  
**Terminology**, ter-min-of'ō-jī, *n.* explanation of terms used.  
**Tern**, tern, *n.* an aquatic fowl.  
**Terpsichorean**, terp'sik-o-re-an, *adj.* pertaining to dancing.  
**Terrace**, ter'as, *n.* an elevated bank; an elevated row of houses; a flat roof.  
**Terrapin**, ter'ra-pin, *n.* a species of fresh-water tortoise. [land and water].  
**Terraqueous**, ter-āk'wē-us, *adj.* composed of both Terrene, ter-ēn', *adj.* relating to the earth.  
**Terrestrial**, ter-es'tri-al, *adj.* pertaining to the earth.  
**Terri-genous**, ter-rif'e-nus, *adj.* produced from or of the earth.  
**Territory**, ter'it-o-ri, *n.* country; state; domain.  
**Terror**, ter'ur, *n.* excessive fear.  
**Terse**, ters, *adj.* concise; short; forcible.  
**Tertian**, ter'shi-an, *adj.* happening every three days. [squares or tiles].  
**Tessellate**, tes'el-āt, *v.* to put down tessellated  
**Testacea**, tes-tā'shi-ā, *n.* shelled animals.  
**Testamentary**, tes-tā-men'tā-ri, *adj.* relating to a will.  
**Testator**, tes-tā'tor, *n.* a man who leaves a will.  
**Tester**, tes'ter, *n.* bed canopy; an earthen pot.  
**Testicle**, tes'ti-kl, *n.* male seed-secreting gland.  
**Testify**, tes'ti-fi, *v.* to bear witness.  
**Testudinal**, tes-tu'de-nal, *adj.* relating to or resembling the tortoise.  
**Testy**, test'i, *adj.* fretful.  
**Tetanus**, tet'ā-nus, *n.* cramp in the muscles;  
**Tetchy**, tech'i, *adj.* touchy; peevish. [lockjaw].  
**Tether**, teth'er, *v.* to restrain a beast by tying it with a rope; *n.* tethering rope.  
**Tetragon**, tet'rā-gon, *n.* a figure with four angles.  
**Teutonic**, tew-ton'ik, *adj.* German.  
**Tew**, tew, *v.* to toil; to work up; to worry.  
**Tewes**, tew'ee, *n.* a snokie flue or pipe.  
**Textile**, teks'til, *adj.* woven.  
**Textual**, teks'tū-al, *adj.* relating to or comprised in the text.  
**Thallium**, thal'i-um, *n.* a metal resembling lead.  
**Thanatoid**, than'ā-toid, *adj.* ghastly; deadly.  
**Thane**, than, *n.* an Anglo-Saxon noble.  
**Thanks**, thanks, *n.* expression of gratitude.  
**Thatch**, thach, *n.* a straw roof; *v.* to cover with straw.  
**Thaw**, thaw, *v.* to melt after frost.  
**Theatre**, thē'ā-ter, *n.* a playhouse; place for exhibitions or lectures; any scene of action.  
**Theave**, thēv, *n.* a first year's ewe.  
**Theme**, thēm, *n.* subject. [government].  
**Theocracy**, thē-ōk'rā-si, *n.* a state of divine  
**Theologian**, thē-ō-lō'jī-an, *n.* one learned in theology.  
**Theology**, theol-o-gi, *n.* the science of religion.  
**Theorem**, thē'ō-rem, *n.* a proposition submitted for  
**Theory**, thē'ō-ri, *n.* abstract principles. [proof].  
**Therapeutics**, therā'pū-tics, *n.* science of healing.  
**Therm**, thurm, *n.* heat unit.  
**Thermal**, thēr'mal, *adj.* pertaining to heat.  
**Thermostat**, ther'mo-stat, *n.* a heat regulator.  
**Thesis**, thē'sis, *n.* subject propounded for discussion.  
**Thespian**, thesp'i-an, *adj.* relating to tragedy; also applied to acting generally.  
**Thew**, thū, *n.* sinew.  
**Thible**, thi'bl, *n.* a porridge stirrer.  
**Thicket**, thik'et, *n.* low, closely set trees or shrubs.  
**Theft**, thēef, *n.* one who steals.  
**Thevery**, thēv'er-i, *n.* theft; roguery.  
**Thigh**, thi, *n.* top part of leg.  
**Thimble**, thimb'l, *n.* cap worn to protect the finger used in sewing.  
**Think**, th'ink, *v.* to cogitate.  
**Thistle**, this'l, *n.* a species of prickly plants; the emblem of Scotland.  
**Thole**, thol, *v.* to endure; to wait patiently.  
**Thong**, thong, *n.* a leather strap.

**Thorax**, thōr'aks, *n.* the part of the body between the head and abdomen.  
**Thorough**, thur'ō, *adj.* complete.  
**Thought**, thaw't, *n.* the action of the mind; reasoning power; idea; meditation.  
**Thousand**, thaw'zand, *n.* ten hundred.  
**Thraldom**, thraw'l-dom, *n.* slavery.  
**Thrash**, thrash, *v.* to beat.  
**Thread**, thred, *n.* a small twist of fibre; a filament; *v.* to insert a thread.  
**Threadbare**, thred'bār, *adj.* worn out; hackneyed.  
**Threat**, thret, *n.* a menace.  
**Threnody**, thren'ō-di, *n.* ode of lament.  
**Thresh**, thresh, *v.* to separate seeds of grain from the ears in which it is contained.  
**Threshold**, thresh'old, *n.* door-sill.  
**Thrift**, thrift, *n.* frugality.  
**Throat**, thrōt, *n.* the front part of the neck.  
**Throe**, thrō, *n.* extreme pain.  
**Throng**, throng, *n.* a crowd.  
**Throttle**, throt'l, *n.* the windpipe; *v.* to choke.  
**Throughout**, throo-ow't, *prep.* in every part; all through.  
**Thrum**, thrum, *n.* unused ends of weaver's yarn; *v.* to play carelessly with the fingers.  
**Thrush**, thrush, *n.* a disease; a song-bird.  
**Thrust**, thrust, *v.* to push away with force.  
**Thud**, thud, *n.* the dull sound of a blow or fall.  
**Thug**, thug, *n.* an Indian assassin; one who robs with violence.  
**Thule**, thūl, *n.* the most northerly part.  
**Thumscrow**, thum'skroo, *n.* an old instrument of torture.  
**Thump**, thump, *v.* to strike.  
**Thunderbolt**, thun'der-bōlt, *n.* shaft of lightning.  
**Thunderstruck**, thun'der-struk, *adj.* suddenly  
**Thwack**, thwak, *v.* to thump. [amazed].  
**Thwart**, thwaw't, *adj.* crosswise; *v.* to oppose.  
**Tibial**, tib'i-al, *adj.* relating to the large bone of the leg. [ing of bedding].  
**Tick**, tik, *v.* to click; *n.* credit; an insect; cover-  
**Ticket**, tik'et, *n.* a card giving the holder a right; a card indicating a price, etc.  
**Tickle**, tik'l, *v.* to please; to titillate.  
**Tide**, tid, *n.* flow of the sea.  
**Tide-gate**, tid'gāt, *n.* gate that shuts in the tide.  
**Tidings**, tid'ings, *n.* news.  
**Tidy**, ti'di, *adj.* neat; spruce.  
**Tier**, tēr, *n.* a row.  
**Tierce**, tērs, *n.* a 42-gallon cask.  
**Tif**, tif, *n.* a pettish quarrel.  
**Tiffany**, tif'an-i, *n.* a kind of silk.  
**Tiffin**, tif'fin, *n.* a small meal between breakfast and dinner—in India.  
**Tight**, tit, *adj.* firm.  
**Tile**, til, *n.* a small square of baked clay.  
**Tillage**, til'aj, *n.* cultivation.  
**Tilt**, tilt, *v.* to incline; *n.* a thrust.  
**Tilth**, tilth, *n.* depth of soil; cultivated land.  
**Timber**, tim'ber, *n.* building wood.  
**Timbre**, tim'br, *n.* quality of tone.  
**Timbrel**, tim'brel, *n.* a kind of tambourine.  
**Time**, tim, measure of duration, fourth dimension of space-time continuum.  
**Timely**, tim'li, *adj.* in good time; when wanted.  
**Time-server**, tim'serv-er, *n.* one who shapes his views to his own interests.  
**Timid**, tim'id, *adj.* bashful; faint-hearted.  
**Timon**, tī'mon, *n.* a helm.  
**Tincture**, tingk'tūr, *n.* a solution.  
**Tinder**, tin'der, *n.* kindling material.  
**Tinfoil**, tin'foll, *n.* thin leaves of tin.  
**Tinge**, tinj, *v.* to colour. [sensation].  
**Tingle**, ting'gl, *v.* to impart or feel a thrilling  
**Tinker**, tingk'er, *n.* a mender of tin and metal ware.  
**Tinkle**, tingk'l, *v.* to make sharp sounds.  
**Tinsel**, tin'sel, *n.* gaudy dress material.  
**Tiny**, tī'ni, *adj.* very small.  
**Tippet**, tip'et, *n.* small mantle.  
**Tipstaff**, tip'staf, *n.* a constable.  
**Tipsy**, tip'si, *adj.* drunk.  
**Tirade**, tir'ād, *n.* an outburst of abuse.  
**Tire**, tir, *v.* to weary; to dress.  
**Tirret**, tir'rit, *n.* a manacle.  
**Tissue**, tis'ū, *n.* cloth of gold or silver; the body's organic structure.  
**Titania**, ti-tā-ne-a, *n.* the queen of Fairyland.  
**Tithe**, tith, *n.* a tenth part; church tax.  
**Titillate**, tit'il-lāt, *v.* to tickle.  
**Title**, tit'l, *n.* appellation of rank; right; *v.* to  
**Titter**, tit'er, *v.* to laugh restrainedly. [name].  
**Title**, tit'l, *n.* a jot.



**Tittle-tattle**, tit'l-tat'l, *n.* idle gossip.  
**Titubation**, tit-yu-ba'shun, *n.* the act of rocking to and fro; a stumbling; tottering.  
**Titular**, tit'ü-lar, *adj.* nominal.  
**Toast**, töst, *n.* bread browned by heat; a sentiment; *v.* to toast bread; to drink to.  
**Toboggan**, tö-bog-an, *n.* a sled for sliding down snow slopes.  
**Tocsin**, tök-sin, *n.* an alarm-bell.  
**Toddy**, tod'i, *n.* sweetened water and liquor.  
**Toga**, tö-gä, *n.* an ancient Roman mantle.  
**Toggle**, tog-gl, *n.* a small wooden pin with tapering ends.  
**Toilet**, toil'ët, *n.* the process of washing; a lavatory.  
**Toilsome**, toil'sum, *adj.* wearisome.  
**Tokay**, tö-kä, *n.* an Hungarian wine.  
**Token**, tö-ken, *n.* a keepsake; a sign.  
**Tolerable**, tol'er-äbl, *adj.* capable of being endured; passable.  
**Toll**, töl, *n.* tax for right of passage; *v.* to strike a bell.  
**Tomahawk**, tom'ä-hawk, *n.* an Indian hatchet.  
**Tomb**, toom, *n.* a grave.  
**Tomboy**, tom'boy, *n.* a romping girl.  
**Tome**, töm, *n.* a large book.  
**Tomtom**, tom'tom, *n.* a flat drum used chiefly by natives in India.  
**Ton**, tun, *n.* 2,240 lb., or 20 cwt.  
**Tone**, tön, *n.* sound; quality of voice.  
**Tongs**, tongs, *n.* a fire implement.  
**Tonic**, ton'ik, *n.* a strengthening mixture.  
**Tonsorial**, ton-so're-al, *adj.* pertaining to a barber.  
**Tool**, tool, *n.* a workman's implement; one who is utilised by another.  
**Toothsome**, tooth'sum, *adj.* palatable.  
**Topaz**, tö-paz, *n.* a precious stone.  
**Tope**, töp, *n.* a large fish; an Indian tumulus.  
**Toper**, tö-per, *n.* a drunkard.  
**Tophaceous**, to-fä'shus, *adj.* sandy, gritty.  
**Topic**, top'ik, *n.* a subject for converse or writing.  
**Topography**, top-og'ra-fi, *n.* description of places.  
**Topple**, top'l, *v.* to fall.  
**Torch**, torch, *n.* a light of combustible material held in the hand.  
**Torment**, tor'ment, *n.* anguish.  
**Torment**, tor'ment, *v.* to torture; to vex.  
**Tornado**, tor-na'do, *n.* a very violent storm of small extent.  
**Torpid**, tor'pid, *adj.* sluggish; dull.  
**Torrent**, tor'ent, *n.* a swift stream; a rapid out-Torrid, tor'id, *adj.* hot and dry. [pouring].  
**Torsion**, tor'shun, *n.* the act of twisting.  
**Torso**, tor'sö, *n.* trunk of a statue.  
**Tort**, tort, *n.* a wrong.  
**Tortile**, tort'il, *adj.* twisted.  
**Tortuous**, tort'ü-us, *adj.* winding; twisted.  
**Torture**, tor'tür, *n.* excessive pain.  
**Toss**, tos, *v.* to throw.  
**Total**, tö'tal, *n.* the entire sum; *adj.* complete;  
**Totter**, töt'er, *v.* to walk unsteadily. [full].  
**Touching**, tuch'ing, *adj.* affecting; pathetic.  
**Tough**, tuf, *adj.* tenacious; hardy.  
**Tourist**, tour'ist, *n.* one who makes a tour.  
**Tournament**, tür-na-ment, *n.* a sporting contest for a prize.  
**Touse**, towz, *v.* to pull.  
**Tout**, tow't, *v.* to push for custom. [by a rope].  
**Tow**, tö, *n.* combed flax; *v.* to pull through water  
**Toward**, tö'ward, *adj.* apt; *prep.* in the direction  
**Towel**, tow'el, *n.* a cloth for wiping the skin. [of].  
**Tower**, tow'er, *n.* a high building; a fortress; *v.* to rise high.  
**Toxic**, tök-sik, *adj.* poisonous.  
**Trace**, träs, *n.* a mark; a footstep; *v.* to track.  
**Trachea**, tra'ke-a, *n.* the windpipe.  
**Track**, trak, *v.* to trace; *n.* a road.  
**Tract**, trakt, *n.* a space of territory; a small religious treatise.  
**Tractable**, trakt'äbl, *adj.* docile; easy to manage.  
**Traction**, trak'shun, *n.* act of drawing.  
**Trade**, träd, *n.* business; commerce; industry; *v.* to buy or sell.  
**Trade-mark**, träd'märk, *n.* a patented distinguishing device.  
**Trade-wind**, träd'wind, *n.* a constant sea-wind.  
**Tradition**, trä-dish'un, *n.* unwritten memorials.  
**Traduce**, tra-düs, *v.* to vilify.  
**Traffic**, traf'ik, *n.* trade. [tragic drama].  
**Tragedy**, traj'ë-dl, *n.* a fatal occurrence; a  
**Trail**, träl, *n.* a track; *v.* to track.  
**Train**, trän, *v.* to teach; *n.* a line of railway carriages.

**Train-oil**, trän'oil, *n.* oil from the fat of whales.  
**Trait**, trä, *n.* a characteristic; a feature.  
**Traitor**, trä'tor, *n.* one who betrays.  
**Traject**, trä-jek't, *v.* to throw or cast over.  
**Tram**, tram, *n.* tram-car.  
**Trammel**, tram'el, *v.* to hamper; to entangle.  
**Tramp**, tramp, *v.* to go on foot; *n.* a vagrant.  
**Trample**, tramp'l, *v.* to tread upon.  
**Trance**, trans, *n.* a vision.  
**Tranquil**, trang'kwil, *adj.* calm.  
**Transact**, trans-akt', *v.* to perform.  
**Transcend**, tran-send', *v.* to surpass.  
**Transcribe**, trans-krib', *v.* to copy.  
**Transept**, trans'ept, *n.* a cross aisle.  
**Transfer**, trans-fer', *v.* to convey.  
**Transfiguration**, trans-fig-ür-ä'shun, *n.* a change of form.  
**Transfix**, trans-flks', *v.* to pierce through.  
**Transform**, trans-form, *v.* to alter.  
**Transfuse**, trans-füz', *v.* to instil.  
**Transgressor**, trans-gres'or, *n.* one who errs; a sinner.  
**Transient**, trans'ient, *adj.* fleeting; passing; temporary.  
**Translate**, trans-lät', *v.* to interpret; to render into another language; to transfer.  
**Translucent**, trans-loo-sent, *adj.* pellucid.  
**Transmarine**, trans-mä-rën', *adj.* beyond the sea.  
**Transmigration**, trans-mi-grä'shun, *n.* passing from one body or country to another.  
**Transmit**, trans-mit', *v.* to send.  
**Transmontane**, trans-mön'tän, *adj.* across a mountain. [of].  
**Transmute**, trans-müt', *v.* to change the substance  
**Transparent**, trans-pä'rent, *adj.* to clear.  
**Transpire**, trans-pir', *v.* to happen; to exhale; to emit. [place].  
**Transplant**, trans-plant', *v.* to re-plant in another  
**Transport**, trans-port', *v.* to convey.  
**Transport**, trans'port, *n.* rapture; a conveyance.  
**Transpose**, trans-pöz, *v.* to interchange.  
**Transprint**, trans-print', *v.* to print in wrong places.  
**Transude**, trans'üd', *v.* to pass through pores.  
**Transverse**, trans-vers', *adj.* crosswise.  
**Trap-door**, trap'dör, *n.* a floor door.  
**Trash**, trash, *n.* worthless stuff.  
**Travail**, trav'äl, *v.* to labour in pain; *n.* childbirth. [journey].  
**Travel**, trav'el, *n.* journeying; *v.* to walk; to  
**Travesty**, trav'es-ti, *n.* burlesque; *v.* to burlesque.  
**Trawl**, trawl, *v.* to fish by dragging a trawl.  
**Treachery**, trech'er-i, *n.* trickery; betrayal.  
**Tread**, träd, *v.* to set the foot down; *n.* part of the stairs that are trodden on, or tyre that touches the ground.  
**Treadle**, tred'l, *n.* lever moved by the foot in mechanical operations.  
**Treason**, trë'sn, *n.* disloyalty.  
**Treasure**, trezh'ür, *n.* accumulated wealth; valuables; *v.* to hoard. [free entertainment].  
**Treat**, trët, *v.* to discourse upon; to entertain; *n.*  
**Treble**, treb'l, *adj.* threefold; *n.* highest part in  
**Trefoil**, trë'foil, *n.* clover. [music].  
**Trellis**, trë'lis, *n.* lattice-work.  
**Tremble**, trem'bl, *v.* to shake; to shiver.  
**Tremolo**, trem'ö-lö, *n.* a quivering note.  
**Trenchant**, trench'ant, *adj.* severe; cutting.  
**Trencher**, trensh'er, *n.* wooden plate.  
**Trend**, trend, *n.* tendency.  
**Trepan**, trë-pän', *v.* to ensnare; to perforate the skull; *n.* saw used in trepanning.  
**Trepidation**, trëp'i-dä'shun, *n.* state of alarm; trembling.  
**Trespass**, tres'pas, *v.* to infringe; to obtrude unlawfully on another's property.  
**Tress**, tres, *n.* a lock of hair.  
**Trestle**, tres'l, *n.* a support.  
**Tret**, tret, *n.* allowance for waste.  
**Triad**, triäd, *n.* three together. [an attempt].  
**Trial**, tri'al, *n.* an examination; a test; a hearing;  
**Triangle**, tri-ang'gl, *n.* a three-angled figure.  
**Triarchy**, tri-ar'ki, *n.* government by three persons.  
**Tribe**, trib, *n.* a race; a family.  
**Tribulation**, trib-ü-lä'shun, *n.* distress; severe affliction.  
**Tribunal**, tri-bü'näl, *n.* a court of justice.  
**Tribute**, trib'üt, *n.* tax paid by a conquered country; an acknowledgment.  
**Trice**, tris, *n.* an instant.  
**Trick**, trik, *n.* a dodge; an artifice.  
**Trickle**, trik'l, *v.* to drip.  
**Tricolour**, tri'kul-er, *n.* a three-coloured flag; national flag of France.

Tricycle, trī'sī-kl, *n.* a three-wheeled cycle.  
 Trident, trī'dent, *n.* a three-pronged sceptre.  
 Triennial, trī-en'i-al, *adj.* occurring every third year.  
 Trifle, trī'fl, *n.* anything of little value; *v.* to talk.  
 Trifoliate, trī-fō'l-i-āt, *adj.* three-leaved.  
 Trifurcate, trī-fur-kāt, *adj.* three-branched.  
 Trigger, trig'er, *n.* a release catch.  
 Trigon, trī-gon, *n.* a three-cornered figure.  
 Trigonometry, trig-ō-nom'ē-trī, *n.* science of triangles.  
 Triangular, trī-lat'er-al, *adj.* having three sides.  
 Trilateral, trī-lit'er-al, *adj.* having three letters.  
 Trill, trīl, *v.* to make a quivering sound.  
 Trilocular, trī-lok'ū-lar, *adj.* three-celled.  
 Trimmer, trim'er, *n.* a time-serving politician.  
 Trinal, trī'nal, *adj.* threefold.  
 Trinket, trīng'et, *n.* a small personal ornament.  
 Trinodal, trī-nō'dal, *adj.* three-jointed.  
 Trinomial, trī-nō'mi-al, *adj.* consisting of three parts.  
 Trio, trē'ō, *n.* a musical composition for three parts.  
 Tripartite, trī-pār-tit, *adj.* in three parts.  
 Tripe, trīp, *n.* the part of the stomachs of ruminating animals used as food.  
 Triphthong, trī'θong, *n.* union of three vowels in one syllable.  
 Triple, trīp'l, *adj.* threefold.  
 Tripod, trī-pod, *n.* a three-legged stand.  
 Triptych, trīp'tik, *n.* a set of tablets or paintings in three sections.  
 Trisect, trī-sekt', *v.* to divide into three.  
 Trisyllable, trī-sīl-ā-bl, *n.* word of three syllables.  
 Trite, trīt, *adj.* stale; hackneyed.  
 Triton, trī'ton, *n.* a marine demi-god.  
 Triturate, trīt'ū-rāt, *v.* to grind to fine powder.  
 Triumph, trī'umf, *n.* victory.  
 Triune, trī'un, *adj.* three in one.  
 Trivet, trīv'et, *n.* a thing supported on three feet.  
 Trivial, trīv'i-al, *adj.* trifling.  
 Trivium, trīv'i-um, *n.* the liberal arts—grammar, rhetoric, and logic.  
 Trochee, trō'kē, *n.* in poetry a metrical foot with the accent on the first syllable.  
 Troll, trōl, *v.* to sing; *n.* a Norse hill spirit.  
 Trolley, trōl'li, *n.* a pulley running on a wire to carry electricity; a flat cart.  
 Trollop, trōl'op, *n.* a slattern; a prostitute.  
 Trombone, trom-bōn', *n.* a brass musical instrument.  
 Tromometer, trō-mom'ē-ter, *n.* instrument for measuring earthquake shocks.  
 Troop, troop, *n.* a company of soldiers.  
 Trophy, trō'fi, *n.* a memorial of victory.  
 Tropics, trōp'iks, *n.* the torrid zone.  
 Troth, trōth, *n.* faith; fidelity.  
 Troubadour, troo'bā-door, *n.* a wandering poet of the Middle Ages.  
 Trouble, trūb'l, *v.* to disturb; to worry.  
 Trough, trof, *n.* a long hollow vessel.  
 Troupe, troop, *n.* a company.  
 Trousers, trou'zers, *n.* a garment with two legs, worn from the waist to the ankles.  
 Trousseau, troo-sō', *n.* a bride's outfit.  
 Trover, trō'ver, *n.* an action to recover goods wrongfully held.  
 Trow, trow, *v.* to presume; to suppose.  
 Trowel, trow'el, *n.* tool for handling mortar.  
 Troy-weight, troi-wāt, *n.* system in which 12 oz. equal 1 lb.  
 Truant, troo'ant, *n.* a strayer from duty; one who stays from school.  
 Truce, troos, *n.* temporary peace.  
 Truck, truk, *n.* a hand vehicle; *v.* to barter.  
 Truculent, truk'ū-lent, *adj.* savage; fierce.  
 Trudge, truj, *v.* to jog along.  
 Trug, trug, *n.* gardener's basket.  
 Truism, troo'izm, *n.* an axiom; a self-evident truth.  
 Trumpery, trump'er-i, *n.* rubbish.  
 Trumpet, tramp'et, *n.* a brass musical wind instrument; *v.* to proclaim loudly.  
 Truncate, trungk'āt, *v.* to cut off.  
 Truncheon, trun'shun, *n.* a club; a bludgeon.  
 Trundle, trund'l, *v.* to roll.  
 Truss, trus, *n.* a supporting bandage for ruptures; bundle of hay; *v.* to pack close.  
 Trust, trust, *n.* credit; faith; confidence.  
 Truth, trooth, *n.* fact; reality; fidelity.  
 Tryst, trīst, *n.* a meeting-place.  
 Tssetse-flies, tsset'se-flīes, *n.* tropical disease-spreading flies.  
 Tubular, tū'bū-lar, *adj.* tubiform.  
 Tucker, tuk'er, *n.* a kind of bib.

Tuft-hunter, tuft'hunt-er, *n.* one who eagerly courts celebrities.  
 Tuition, tū'sh'un, *n.* teaching.  
 Tumbler, tumb'ler, *n.* a drinking-glass; an acrobat.  
 Tumbrel, tum'brel, *n.* a two-wheeled cart; a ducking-stool; the kind of cart used for conveying French Revolutionary prisoners to the guillotine.  
 Tumid, tū'mid, *adj.* swollen.  
 Tumult, tū-mult, *n.* uproar; commotion.  
 Tumulus, tū-mū-lus, *n.* a grave mound; a barrow.  
 Tun, tun, *n.* a large cask; 252 gallons.  
 Tune, tūn, *n.* a musical strain.  
 Tunic, tū'nik, *n.* a loose over-garment; a membrane.  
 Tunnel, tun'el, *n.* a passage-way cut through the earth.  
 Tunny, tūn'i, *n.* a large tasty fish.  
 Turban, tur'ban, *n.* an Oriental head-dress.  
 Turbid, tur'bid, *adj.* muddy.  
 Turbine, tur'bin, *n.* a horizontal water-wheel.  
 Turbulent, turb'ū-lent, *adj.* tumultuous.  
 Tureen, tū-rēn', *n.* a large dish for holding soup.  
 Turgent, tur'jent, *adj.* swelling.  
 Turgid, tur'jid, *adj.* bloated.  
 Turmoil, tur'moil, *n.* uproar; trouble; disorder.  
 Turncoat, turn'kōt, *n.* one who turns from principles previously held.  
 Turnery, turn'er-i, *n.* the art of turning in a lathe; articles turned.  
 Turnpike, turn'pike, *n.* a road on which are toll gates.  
 Turpitude, tur'pit-ūd, *n.* baseness.  
 Turret, tur'et, *n.* a little tower.  
 Tusk, tusk, *n.* a protruding tooth of boar, and elephant.  
 Tutelage, tū'tel-āj, *n.* guardianship.  
 Tutor, tū'tor, *n.* an instructor.  
 Twaddle, twod'l, *n.* foolishness.  
 Tweed, twēd, *n.* a kind of cloth.  
 Tweezers, twē'zers, *n.* small pincers for pulling out hairs.  
 Twiddle, twīd-l, *v.* to fidget with.  
 Twilight, twī'lit, *n.* dusk.  
 Twill, twīl, *n.* ribbed fabric; *v.* to weave in diagonal ribs.  
 Twin, twin, *n.* a pair; one of two born at a birth.  
 Twinge, twīnj, *v.* to feel a darting pain.  
 Twinkle, twīngk'l, *v.* to sparkle.  
 Twirl, twerl, *v.* to whirl.  
 Twist, twist, *v.* to wind.  
 Twit, twit, *v.* to reproach.  
 Twitch, twīch, *v.* to jerk.  
 Twitter, twī'er, *v.* to make a tremulous noise, as swallows.  
 Tympan, tim'pan, *n.* a printer's frame on which sheets are laid for printing.  
 Tympanum, tim'pa-num, *n.* drum of the ear.  
 Type, tip, *n.* printing letter; an emblem; a model.  
 Typewriter, tip'rī-ter, *n.* a writing machine.  
 Typist, tīp'ist, *n.* user of a writing machine.  
 Tyranny, tir'an-i, *n.* oppression; cruelty.  
 Tyre, tīr, *n.* the outer band or cover of a wheel.  
 Tyro, tī'rō, *n.* a beginner.

## U

Uberty, yū'ber-te, *n.* abundance.  
 Ubiquity, ū-bīk'wīt-i, *n.* omnipresence.  
 Udder, ud'er, *n.* mammary glands.  
 Udometer, yu-dom'ē-ter, *n.* a rainfall-measuring instrument.  
 Ugly, ug'li, *adj.* disagreeable to the eye; plain.  
 Uidlander, wit'lan-der, *n.* Outlander [Dutch].  
 Ukase, ū-kās, *n.* a Russian decree.  
 Ulcer, ul'ser, *n.* a sore.  
 Ulna, ul'na, *n.* one of the two long bones of the forearm.  
 Ulster, ul'ster, *n.* a kind of overcoat.  
 Ulterior, ul-tē'ri-or, *adj.* farther; lying beyond.  
 Ululation, ul'lu-lā-shun, *n.* act of howling.  
 Ultimate, ul'tim-āt, *adj.* last; farthest.  
 Ultra, ul'trā, *adj.* extreme.  
 Ultramarine, ul-tra-mā-rēn', *adj.* beyond the seas.  
 Ultramontane, ul-tra-mon'tān, *adj.* beyond the mountains.  
 Ultra-violet rays, *n.* healing emanations.  
 Ultraneous, ul-trō'ne-us, *adj.* spontaneous.  
 Ullulation, ul'lu-lā-shun, *n.* act of howling.  
 Umbel, um'bel, *n.* head of a flower.  
 Umber, um'ber, *adj.* a brown colour.  
 Umbles, um'blz, *n.* a deer's entrails.  
 Umbrage, um'brāj, *n.* resentment; leafy shade.  
 Umpire, um'pīr, *n.* one who decides a dispute; one who adjudicates in a game.  
 Unadmonished, un-ad-mon'isht, *adj.* not cautioned.



Unadulterated, un-a-dul'ter-a-ted, *adj.* genuine; unmixed.  
 Unaffected, un-a-fek'ted, *adj.* with sincerity.  
 Unanimity, ū-nan-im'it-i, *n.* accord.  
 Unanswerable, un-an'ser-abil, *adj.* irrefutable.  
 Unawares, un-ā-wārs, *adv.* unexpectedly.  
 Unbecoming, un-be-kom'ing, *adj.* indecorous.  
 Unbend, un-bend', *v.* to relax. [indecent.  
 Unblushing, un-blush'ing, *adj.* without shame. [canons.  
 Uncanny, un-kan-i, *adj.* weird.  
 Uncanonical, un-kan-on'ik-al, *adj.* contrary to the  
 Unceremonious, un-ser-e-mō-ni-us, *adj.* without  
 formality.  
 Uncial, un'shal, *n.* the large written characters  
 in ancient MSS.  
 Uniform, un'si-form, *adj.* hook shaped.  
 Uncle, ung'kl, *n.* a father's or mother's brother.  
 Uncongenial, un-kon-je-ni-al, *adj.* not congenial.  
 Unconscionable, un-kon'shun-abil, *adj.* unjust;  
 unreasonable.  
 Unconstrained, un-kon-strane'd, *adj.* voluntary.  
 Uncouth, un-kooth', *adj.* awkward; rude; un-  
 mannerly.  
 Unction, ungk'shun, *n.* act of anointing; a fervour.  
 Undaunted, un-dawnt'ed, *adj.* bold, courageous.  
 Under, un'der, *prep.* beneath.  
 Underarm, un-der-ām', *adj.* in cricket, bowling  
 in which the arm is not raised above the head.  
 Undergo, un'-der-gō', *v.* to endure; to pass  
 through.  
 Undergraduate, un-der-grad' ū-āt, *n.* a student who  
 has not taken his degree.  
 Undergrowth, undergro'th, *n.* shrubs growing  
 below trees.  
 Underhand, un'der-hand, *adj.* secret.  
 Underling, un'der-ling, *n.* an under agent.  
 Undermine, un-der-min', *v.* to dig under; to  
 injure secretly. [from beneath.  
 Underpin, un-der-pin', *v.* to prop up; to support  
 Undershot, un-der-shot', *adj.* moved by water  
 passing beneath a water-wheel.  
 Understand, un-der-stand', *v.* to comprehend.  
 Understrapper, un'der-strap'er, *n.* one performing  
 inferior duties. [funerals.  
 Undertaker, un-der-tāk'er, *n.* one who manages  
 Underworld, un'der-wurld, *n.* the home of depart-  
 ed souls.  
 Underwrite, un-der-rit', *v.* to insure.  
 Undeserved, un-de-zerv'd, *adj.* not merited.  
 Undulate, un'dū-lāt, *v.* to move in wave-like  
 manner; to cause vibration. [biguity.  
 Unequivocal, un-e-kwiv'o-kal, *adj.* without am-  
 biguity.  
 Uneventful, un-e-vent'ful, *adj.* devoid of interest-  
 ing events.  
 Unfailing, un-fa'ling, *adj.* inexhaustible.  
 Unfaithful, un-fayth'ful, *adj.* not true to promise  
 or vows; unworthy of trust.  
 Unfeeling, un-feel'ing, *adj.* insensible to the feel-  
 ing of others; hard; cruel.  
 Unfledged, un-flejd', *adj.* immature.  
 Unguent, un-gwent, *n.* an ointment.  
 Ungulate, ung'gū-lāt, *adj.* belonging to the class  
 of animals having hooves.  
 Unhallowed, un-hal'ōd, *adj.* unholy.  
 Unicorn, ū-ni-korn, *n.* a fabulous monster.  
 Uniflorous, ū-ni-flō-rus, *adj.* one-flowered.  
 Uniform, ū-ni-form, *n.* regimental dress; livery;  
*adj.* undeviating.  
 Unilateral, ū-ni-lāt'er-el, *adj.* affecting only one  
 side.  
 Union, ūn'yun, *n.* concord; unity; harmony;  
 agreement.  
 Uniparous, ū-nip-ar-us, *adj.* producing one at a  
 birth.  
 Unique, ū-nēk', *adj.* alone in kind; without equal.  
 Unison, ū-nis-on, *n.* concord.  
 Unit, ūnit, *n.* a single thing; the least whole  
 number.  
 Unity, ū-ni-ti, *n.* concord; agreement in aim.  
 Univalve, ū-ni-valv, *n.* a shell with only a single  
 valve.  
 Universe, ūn'i-vers, *n.* the whole system of created  
 things. [of sounds.  
 Univocal, ū-niv'o-kal, *adj.* of one meaning; unison  
 Unjust, un'just, *adj.* unfair, contrary to justice.  
 Unless, un'les, *conj.* if not, except. [untidy.  
 Unkempt, un-kempt', *adj.* uncombed; rough;  
 Upman, un-man, *v.* to dishearten; to deprive of  
 manly qualities.  
 Unmitigated, un-mit'e-ga-ted, *adj.* not lightened  
 in effect.  
 Unnerve, un-nerv', *v.* to deprive of nerve; to  
 weaken.

Unparliamentary, un-pār-li-ment'ar-i, *adj.* opposed  
 to the usages of debate.  
 Unprincipled, un-prin'si-pld, *adj.* devoid of prin-  
 ciple.  
 Unravel, un-ray'el, *v.* to solve; to disentangle.  
 Unsophisticated, un-so-fis'ti-ka-ted, *adj.* pure,  
 simple.  
 Unsullied, un-sul'id, *adj.* pure; unspecked.  
 Unthankful, un-thangk'ful, *adj.* not grateful;  
 unwelcome.  
 Upas, ū-pas, *n.* a tree with poisonous sap.  
 Upbraid, up-brād', *v.* to reprove; to reproach.  
 Upheaval, up-hēv'al, *n.* a heaving up.  
 Uphill, up'hil, *adj.* difficult; rising.  
 Uphold, up-hold', *v.* to maintain; to hold up.  
 Upholsterer, up-hol'ster-er, *n.* one who supplies  
 furniture.  
 Upland, up'land, *n.* high ground.  
 Uppish, up'pish, *adj.* snobbish; assuming.  
 Uprightness, up'rit-nes, *n.* integrity; erectness.  
 Up roar, up'rōr, *n.* disorder; clamour.  
 Upset, up'set', *v.* to overthrow; to discompose.  
 Upshot, up'shot, *n.* the end; the conclusion.  
 Upstart, up'start, *n.* a parvenu.  
 Urban, ur'ban, *adj.* relating to a city.  
 Urbane, ur-bān', *adj.* polite; courteous.  
 Urchin, ur'chin, *n.* a mischievous child; an elf;  
 a hedgehog.  
 Urdu, oor'doo, *n.* the Hindustani language.  
 Urgency, ur-jen-si, *n.* pressing necessity.  
 Urine, ū-rin, *n.* waste fluid secreted by the  
 kidneys.  
 Urn, urn, *n.* a base.  
 Ursiform, ur'si-form, *adj.* bear-like.  
 Usage, ū'sāj, *n.* custom; treatment.  
 Usance, yu'zans, *n.* use; interest on money.  
 Usher, ush'er, *n.* doorkeeper; under-teacher;  
 one who conducts persons to seats, as in church  
 or place of amusement.  
 Utulation, us-tu-la'shun, *n.* burning; scorching.  
 Usual, ū'zhū-al, *adj.* customary.  
 Usufruct, ū'sū-frukt, *n.* temporary use of property.  
 Usurp, ū-zurp', *v.* to seize and hold illegally.  
 Usury, ū'zhū-ri, *n.* excessive interest for money  
 lent.  
 Utensil, ū-ten'sil, *n.* a vessel; an implement.  
 Uterine, ū'ter-in, *adj.* born of the same mother by  
 a different father; relating to the womb.  
 Utilise, ū-ti-liz, *v.* to employ.  
 Utility, ū-ti-lit'i, *n.* usefulness; profit.  
 Utmost, ut'most, *adj.* extreme.  
 Utopian, yu-to-pē-an, *adj.* imaginary, visionary.  
 Utricular, ū-trik'ū-lar, *adj.* containing little  
 bladders or cells.  
 Utter, ut'er, *v.* to speak; *adj.* extreme; farthest.  
 Uveous, ū'vē-us, *adj.* grape-like. [wife.  
 Uxorious, ugz-ō'ri-us, *adj.* unduly devoted to a  
 wife.

## V

Vacant, vā'kant, *adj.* empty.  
 Vacate, va-kate', *v.* to lease; to surrender posses-  
 sion of. [tion.  
 Vaccination, vak'sin-ā'shun, *n.* protective inocula-  
 tion.  
 Vachery, vash'er-i, *n.* a cow pen; a dairy.  
 Vacillate, vas'il-āt, *v.* to waver.  
 Vacuum, vak'ū-um, *n.* an empty space.  
 Vade mecum, vā'de-me-kum, *n.* a pocket com-  
 panion or note-book.  
 Vain, va'frus, *adj.* sly; cunning; crafty.  
 Vagabond, vag-ā-bond, *n.* a vagrant; an idle per-  
 vagary, vā-ga-ri, *n.* a freak; a whim. [son.  
 Vagrant, vag'rant, *n.* an idle wanderer.  
 Vague, vāg, *adj.* indefinite.  
 Valance, val'ans, *n.* bed drapery.  
 Vale, vāl, *n.* a valley. [adj. bidding farewell.  
 Valetudinary, val-e-dikt'ō-ri, *n.* a farewell address;  
 Valet, val'ā, *n.* personal servant to a gentleman.  
 Valetudinarian, val-e-tū-din-ā-ri-an, *n.* a person of  
 infirm health; one who fusses about his  
 health.  
 Valiant, val'i-ant, *adj.* brave; heroic.  
 Valid, val'id, *adj.* legal; regular; sound.  
 Valise, val-es', *n.* travelling bag.  
 Valley, val'i, *n.* a plain lying between hills.  
 Vallum, val'um, *n.* a rampart.  
 Valour, val'or, *n.* courage; bravery.  
 Valuable, val'ū-abil, *adj.* possessing value.  
 Valve, valv, *n.* cover to an aperture.  
 Vamp, vamp, *v.* to mend; to improvise an  
 accompaniment; to flirt with; *n.* upper  
 leather of shoe; a woman who exploits her  
 sexual attractions.

Van, van, *n.* the front of an army or fleet; *n.* a covered waggon.  
 Vandal, vān'dl, *n.* someone who destroys beautiful things.  
 Vandyke, van-dik', *n.* an indented border or collar; a small pointed beard.  
 Vane, vān, *n.* a weathercock; a flag or banner.  
 Vanguard, van'gārd, *n.* the front line of an army.  
 Vanish, van'ish, *v.* to fade or dissolve away; to disappear.  
 Vanity, van'it-i, *n.* empty pride; conceit.  
 Vanquish, vang'kwish, *v.* to subdue.  
 Vantage, vant'aj, *n.* advantage; opportunity.  
 Vapid, vap'id, *adj.* insipid.  
 Vapour, vā'por, *n.* mist; gaseous matter arising from a heated fluid; *v.* to boast.  
 Variation, vā'ri-ā'shun, *n.* a varying; change; diversity.  
 Varicose, vā'ri-kōs, *adj.* enlarged; dilated.  
 Variety, vā'ri-ēt-i, *n.* difference; change; a class.  
 Varlet, vār'let, *n.* a scoundrel; a footman.  
 Varnish, vār'nish, *n.* glossy resinous liquid used as a preservative.  
 Vary, vār-i, *v.* to alter; to diversify.  
 Vascular, vas'kū-lar, *adj.* relating to vessels of animal or vegetable bodies.  
 Vase, vāz, *n.* an ornamental vessel of glass, pottery, etc.  
 Vaseline, vas'e-lin, *n.* petroleum jelly.  
 Vassal, vas'al, *n.* a retainer.  
 Vast, vāst, *adj.* stupendous; immense.  
 Vat, vat, *n.* a large vessel for holding liquor.  
 Vaticinate, va-tis'in-āt, *v.* to foretell.  
 Vaudeville, vō'di-vil, *n.* a song; an entertainment.  
 Vault, vawlt, *n.* a tomb; *v.* to leap.  
 Vaunt, vawnt, *n.* a boast; *v.* to boast.  
 Veal, vēl, *n.* flesh of a calf.  
 Vedette, ve-det', *n.* a mounted sentry.  
 Veer, vēr, *v.* to turn.  
 Vegetate, veg'ē-tāt, *v.* to live with little mental or physical effort.  
 Vegetation, vej-ē-tā'shun, *n.* plant life.  
 Vehemence, vē'hē-mens, *n.* impetuosity; violence.  
 Vehicle, vē'hikl, *n.* a carriage; any kind of conveyance.  
 Veil, vāl, *n.* covering for the face; anything that conceals an object; a disguise.  
 Vein, vān, *n.* a blood-vessel; a streak; a current.  
 Veldt, velt, *n.* a South African grassy plain.  
 Vellicate, vel'ik-āt, *v.* to twitch.  
 Vellum, vel'um, *n.* parchment.  
 Velocity, vel-os-it-i, *n.* speed; swiftness.  
 Velvet, vel'vet, *n.* a silk pilecloth.  
 Venal, vē'nal, *adj.* mercenary; sordid.  
 Vend, vend, *v.* to sell.  
 Vendor, ven'dor, *n.* one who sells.  
 Veneer, ve-nēr', *n.* a thin surface of superior wood over an inferior; surface show; *v.* to overlay.  
 Venerable, ven'er-ābl, *adj.* worthy of reverence.  
 Vener, ven'er-i, *n.* hunting; sexual commerce.  
 Vengeance, ven'jens, *n.* revenge; retribution.  
 Venial, vē'ni-āl, *adj.* pardonable.  
 Venison, ven'i-zn, *n.* the flesh of the deer.  
 Venom, ven'om, *n.* poison.  
 Venous, vē'nus, *adj.* pertaining to veins.  
 Vent, vent, *n.* an air opening; escape.  
 Ventage, vent'age, *n.* a small opening.  
 Ventilation, ven-til-ā'shun, *n.* state of being ventilated.  
 Ventral, ven'tral, *adj.* pertaining to the belly.  
 Ventricle, vent'rikl, *n.* a small opening in an animal body.  
 Ventriloquism, ven-tril'ō-kwizm, *n.* the art of uttering sounds as if they came from other places or persons.  
 Venture, ven'tūr, *n.* an enterprise; *v.* to hazard.  
 Venue, ven'ū, *n.* place where an action can be brought.  
 Veracity, vē-as'it-i, *n.* a truth; sincerity.  
 Verandah, vē-an'dā, *n.* an open portico.  
 Verbal, ver'bal, *adj.* by word of mouth; oral.  
 Verbatim, ver-bā'tim, *adv.* word for word.  
 Verbiage, verb'i-āj, *n.* profusion of words.  
 Verdant, ver'dant, *adj.* green; flourishing.  
 Verdict, ver'dikt, *n.* decision. [etc.]  
 Verdigris, ver'di-gris, *n.* the rust of copper, brass.  
 Verecund, ver'e-kund, *adj.* shy; modest; bashful.  
 Verge, verj, *n.* border; edge.  
 Verger, verj'er, *n.* a mace-bearer; a cathedral beadle.  
 Verify, ver'if-i, *v.* to confirm.  
 Verisimilitude, ver-i-sim-il'it-ūd, *n.* appearance of truth; probability.

Veritable, ver'e-ta-bl, *adj.* genuine; conforming to truth or fact.  
 Verjuice, ver'joos, *n.* juice of green fruit.  
 Vermicelli, ver-mi-chel-i, *n.* long edible tubes made from flour.  
 Vermicular, ver-mik'ū-lar, *adj.* worm-like.  
 Vermilion, ver-mil'yun, *n.* a bright red colour.  
 Vermin, ver'min, *n.* noxious insects and animals.  
 Vernacular, ver-nak'ū-lar, *adj.* native.  
 Vernal, ver'nal, *adj.* relating to spring.  
 Versant, ver'sant, *adj.* familiar.  
 Versatile, vers'ā-til, *adj.* turning easily; of varied  
 Verse, vers, *n.* poetry; a stanza. [capacity]  
 Version, ver'sh-un, *n.* translation; edition; account.  
 Vertebra, vert'e-brā, *n.* the joint of the backbone.  
 Vertex, ver'teks, *n.* the summit.  
 Vertical, vert'ik-al, *adj.* perpendicular.  
 Vertigo, vert'i-gō, *n.* dizziness.  
 Verve, verv, *n.* energy; vital power.  
 Vesicle, ves'ik-l, *n.* small bladder, blister, or cell.  
 Vespers, ves'pers, *n.* evening service.  
 Vessel, ves'el, *n.* a ship; a utensil.  
 Vest, vest, *n.* a waistcoat; *v.* to clothe; to place in possession.  
 Vestibule, vest'ib-ūl, *n.* entrance hall, corridor, or Vestige, vest'ij, *n.* a trace. [porch]  
 Vestry, ves'tri, *n.* a room in which church vestments are kept and church officials meet; the assembly of church officials.  
 Vesuvian, ves-ū'vi-an, *n.* a kind of match.  
 Veteran, vet'er-an, *n.* one who has served long; an aged person.  
 Veterinary, vet'er-in-ar-i, *adj.* pertaining to the curing of diseases of animals; *n.* a practitioner of this art.  
 Veto, vē'to, *n.* prohibition; power of rejection.  
 Vex, veks, *v.* to harass; to annoy.  
 Via, via, *n.* by way of.  
 Viable, vi'ābl, *adj.* capable of existing.  
 Viaduct, vi'ā-dukt, *n.* a bridge-like structure crossing a valley and uniting with roads at each end.  
 Vial, vi'al, *n.* a small bottle.  
 Vials, vi'ands, *n.* food; victuals.  
 Vibrate, vi'brāt, *v.* to oscillate. [clergyman]  
 Vicar, vik'ar, *n.* substitute; deputy; a parish  
 Vice, vis, *n.* wickedness; a blemish; a screw-press.  
 Vice-consul, vis-kon'sul, *n.* one acting for a Consul.  
 Vicegerent, vis-jē'rent, *adj.* acting for another.  
 Viceroy, vis'roi, *n.* a king's deputy.  
 Vicinity, vi-sin'i-ti, *n.* neighbourhood.  
 Vicious, vish'us, *adj.* wicked; base; immoral.  
 Vicissitude, vi-sis'it-ūd, *n.* change; trial.  
 Victim, vik'tim, *n.* one who is sacrificed or deluded.  
 Victor, vik'tor, *n.* conqueror.  
 Victuals, vit'lz, *n.* food.  
 Vide, vi'dē, *imperf. of verb.* see.  
 Viduous, vid'ū-us, *adj.* widowed.  
 Vie, vi, *v.* to contend.  
 Vigesimal, vi-jes'im-al, *adj.* twentieth.  
 Vigil, vij'il, *n.* a watching in the night.  
 Vigilant, vij'il-ant, *adj.* watchful; alert.  
 Vignette, vin-et', *n.* a small engraving or small photo portrait.  
 Vigour, vig'or, *n.* strength; energy; force.  
 Viking, vi'king, *n.* an old Scandinavian pirate  
 Vile, vil, *adj.* base; mean; wicked. [leader]  
 Vilify, vil'ē-fi, *v.* to defame; to slander.  
 Villa, vil'ā, *n.* suburban residence.  
 Village, vil'āj, *n.* a small group of houses forming a social unit.  
 Villain, vil'an, *n.* a scoundrel.  
 Villenage, vil'en-āj, *n.* a kind of servitude that existed in the Middle Ages.  
 Vindicate, vin'di-kāt, *v.* to defend; to maintain.  
 Vindictive, vin-dik'tiv, *adj.* desiring revenge.  
 Vinegar, vin'e-gar, *n.* culinary acetic acid.  
 Vineyard, vin'yard, *n.* field where grapes are grown.  
 Vintner, vint'ner, *n.* a wine dealer.  
 Viola, vi-ō-la, *n.* a tenor violin.  
 Violate, vi'ō-late, *v.* to disobey; to transgress.  
 Violence, vi'ō-lens, *n.* force.  
 Violin, vio-lin, *n.* a fiddle.  
 Violoncello, vē-ō-lon-chel'ō, *n.* a double-bass viol.  
 Viperous, vi'per-us, *adj.* malignant; venomous.  
 Virago, vi-rā-go, *n.* a termagant; a violent-tempered woman.  
 Virgin, ver'jin, *n.* a chaste maiden.  
 Virginal, ver'jin-al, *adj.* maidenly; *n.* an old keyed instrument.  
 Virgule, ver'gūl, *n.* a small rod; a comma.



**Viridity**, vir-id'it-f, *n.* greenness.  
**Virile**, vir'il, *adj.* strong; manly.  
**Virtu**, ver'too, *n.* objects of art and antiquity; love of such things.  
**Virtual**, vir'tü-al, *adj.* in effect.  
**Virtue**, ver'tü, *n.* moral worth; purity; duty.  
**Virtuoso**, ver-tü-ö-zo, *n.* one devoted to objects of virtu; a skilled musician, painter, etc.  
**Virulent**, vir'u-lent, *adj.* malignant.  
**Virus**, vi'rüs, *n.* contagious matter.  
**Visage**, viz'aj, *n.* the face; the countenance.  
**Viscera**, vis'er-ä, *n.* the bowels.  
**Viscid**, vis'id, *adj.* sticky.  
**Visible**, viz'ibl, *adj.* perceptible.  
**Vision**, vizh'un, *n.* the sense of seeing; anything seen; a dream.  
**Visit**, viz'it, *v.* to attend; to pay calls on.  
**Visor**, viz'or, *n.* the mask portion of a helmet.  
**Vista**, vis'tä, *n.* a view through an avenue.  
**Visual**, vizh'u-al, *adj.* pertaining to sight.  
**Vital**, vit'al, *adj.* relating to life; essential.  
**Vitamin**, vit-a-min, *n.* substance essential in foods to normal nutrition and growth.  
**Vitiate**, vish'i-at, *v.* to corrupt; to annul.  
**Vitreous**, vit'rë-us, *adj.* glass-like.  
**Vitriolic**, vit-ri-ol'ik, *adj.* bitter; sharp; acid.  
**Vituperate**, vit-tü-per-at, *v.* to abuse.  
**Vivacity**, vi-vas'it-i, *n.* animation.  
**Vivid**, viv'id, *adj.* bright; striking.  
**Viviparous**, vi-vip'ar-us, *adj.* producing young alive. [animals]  
**Vivisection**, viv-i-sek'shun, *n.* dissection of live  
**Vixen**, vik's'en, *n.* a female fox; a spiteful woman.  
**Vizard**, viz'ard, *n.* a mask.  
**Vizier**, viz'er, *n.* Turkish official.  
**Vocal**, vö'kal, *adj.* having, or uttered by, a voice.  
**Vocalist**, vö'kal-ist, *n.* a singer.  
**Vocation**, vö-kä'shun, *n.* occupation; trade.  
**Vociferous**, vo-sif'er-us, *adj.* noisy; clamorous.  
**Vogue**, vög, *n.* fashion; common use.  
**Voice**, voiz, *n.* uttered sound.  
**Void**, void, *adj.* empty; *n.* vacancy.  
**Volant**, vö'lant, *adj.* flying.  
**Volatile**, vol'ä-til, *adj.* flighty; evaporating quickly.  
**Volcano**, vol-kä'no, *n.* a burning mountain.  
**Volts**, völs, rodents, including water rats.  
**Volition**, vö-lish'un, *n.* will-power.  
**Volley**, vol'i, *n.* a simultaneous discharge of fire.  
**Volt**, völt, *n.* unit of electro-motive force. [amps.]  
**Volume**, vol'ü-bl, *adj.* fluent of speech.  
**Volume**, vol'üm, *n.* dimension; quantity; a book.  
**Voluntary**, vol'un-tä-i, *adj.* of free choice.  
**Volunteer**, vol-un-tär, *v.* to offer; *n.* one who serves voluntarily.  
**Voluptuous**, vo-lup'tü-us, *adj.* sensual.  
**Vomit**, vom'it, *v.* to throw up.  
**Voodoo**, voo'doo, *n.* negro witchcraft.  
**Voracity**, vo-ras'it-i, *n.* greediness.  
**Vortex**, vor'teks, *n.* whirlpool. [service]  
**Volary**, vö'tä-ri, *n.* one devoted to a pursuit or  
**Vote**, vöt, *n.* the expression of choice; suffrage; *v.* to select by voting.  
**Votive**, vö'tiv, *adj.* given by vow.  
**Vouch**, vouch, *v.* to attest.  
**Vouchsafe**, vouch-säf, *v.* to deign; to grant.  
**Vow**, vow, *n.* a sacred promise to perform a certain act; *v.* to make such a promise.  
**Vowel**, vow'el, *n.* a simple open sound; one of the five letters—*a, e, i, o, u.*  
**Voyage**, vol'aj, *n.* a journey by sea.  
**Vulcanise**, vul'kan-iz, *v.* to combine with sulphur.  
**Vulgar**, vul'gar, *adj.* low; coarse; common.  
**Vulnerable**, vul'ner-äbl, *adj.* capable of being injured.  
**Vulpine**, vul'pin, *adj.* concerning the fox.  
**Vulture**, vul'ture, *n.* carrion-eating bird.  
**Vying**, vi'ing, *v.* emulating; competing.

## W

**Wadding**, wod'ing, *n.* soft cotton material used for stuffing.  
**Waddle**, wod'l, *v.* to walk like a duck.  
**Wade**, wäd, *v.* to walk in water.  
**Wadi**, Wady, wod'i, *n.* a valley containing the bed of a mountain river, dry except in rainy season.  
**Water**, wä'fer, *n.* a thin cake; a little round pasty substance formerly used in sticking letters.  
**Waft**, woft, *v.* to float.  
**Wag**, wag, *v.* to move from side to side; *n.* a wit.  
**Wage**, wäj, *n.* pay for service; *v.* to carry on.  
**Wager**, wä'jer, *n.* a bet.

**Waggon**, wag'on, *n.* a four-wheeled vehicle for conveying goods. [found ownerless.]  
**Waif**, wäf, *n.* a homeless wanderer; anything  
**Wail**, wäl, *n.* a cry of lament; *v.* to lament.  
**Wain**, wän, *n.* a waggon.  
**Wainscot**, wän'skot, *n.* a wooden wall lining.  
**Waist**, wäst, *n.* the part of the body immediately above the hips.  
**Waiter**, wä'ter, *n.* an attendant.  
**Waits**, wates, *n.* members of a musical band who play and sing in the streets at Christmas time.  
**Waive**, wäv, *v.* to relinquish. [waken.]  
**Wake**, wäk, *n.* a watch; track of a vessel; *v.* to  
**Wale**, wäl, *n.* a streak caused by a stripe; a ridge in cloth.  
**Walk**, wawk, *v.* to proceed by footsteps; *n.* gait.  
**Wallet**, wol'et, *n.* a small bag; a knapsack.  
**Wall-eye**, waw'i, *n.* a white, or blind, eye.  
**Wallop**, wol'op, *v.* to flog. [in vice.]  
**Wallow**, wol'ö, *v.* to roll about, as in mire; to live  
**Walnut**, wal'nut, *n.* tree and its nut.  
**Waiz**, waw'iz, *n.* a round dance.  
**Wan**, won, *adj.* pale.  
**Wand**, wond, *n.* a slender stick; a rod of authority.  
**Wander**, won'der, *v.* to rove.  
**Wane**, wän, *v.* to decrease; *n.* decline.  
**Want**, wont, *n.* condition of need.  
**Wanton**, won'tun, *adj.* loose; frolicsome; licen-  
**War**, wawr, *n.* armed conflict of nations. [tious]  
**Warble**, wawr'bl, *v.* to sing with trills.  
**Ward**, waw'rd, *n.* a person under guardianship; custody; *v.* to guard.  
**Wardage**, wawr'daje, *n.* money paid for services of policemen as watchmen.  
**Warden**, wawr'dn, *n.* a guardian, a keeper.  
**Wardrobe**, wawr'röb, *n.* a place for storing clothes in; apparel.  
**Ward-room**, wawr'röom, *n.* officers' mess-room on a warship.  
**Ware**, wär, *n.* merchandise; goods.  
**Warfare**, wawr'fare, *n.* hostilities; war.  
**Warily**, wä'ril-i, *adv.* cautiously.  
**Warm**, wawrm, *adj.* moderately hot.  
**Warn**, wawrn, *v.* to caution.  
**Warp**, wawrp, *n.* the lengthwise yarn in a weaver's loom; *v.* to twist; to pervert.  
**Warrant**, wor'ant, *n.* security; writ; *v.* to guarantee; to justify.  
**Warren**, wor'en, *n.* ground where rabbits burrow.  
**Wart**, wawrt, *n.* a hard excrescence on the skin.  
**Wary**, wä'ri, *adj.* cautious; cunning.  
**Wash**, wosh, *v.* to make clean with water.  
**Wash-board**, wosh'börd, *n.* board round the bot-  
**tom** of the walls of a room; a rubbing board.  
**Washer**, wosh'er, *n.* a ring for lessening friction.  
**Washing**, wash'ing, *n.* clothes sent to a laundry.  
**Washy**, wosh'i, *adj.* watery; feeble.  
**Waspish**, wosp'ish, *adj.* pettish; snappy.  
**Wassail**, wos'al, *n.* spiced liquor.  
**Waste**, wäst, *n.* unnecessary loss; refuse.  
**Wastrel**, wäyst'rel, *n.* refuse; a profligate.  
**Watch**, wöch, *v.* to keep a look out; *n.* an instrument for indicating the time; the act of keeping watch.  
**Watchet**, wot'chet, *adj.* a shade of blue.  
**Watchword**, woch'werd, *n.* password; motto.  
**Water**, waw'ter, *v.* to pour water; to irrigate; *n.* transparent liquid.  
**Water-colour**, waw'ter-kul'ur, *n.* colour, which, to be applied, must be diluted with water.  
**Waterhen**, waw'ter-hen, *n.* the gallinule; a water  
**Waterman**, waw'ter-man, *n.* a boatman. [fowl]  
**Water-melon**, waw'ter-mel-un, *n.* a luscious fruit.  
**Waterproof**, waw'ter-proof, *n.* an article rendered impervious to water. [waters gather.]  
**Watershed**, waw'ter-shed, *n.* a district where  
**Waterspout**, waw'ter-spout, *n.* a whirling column of water spouting into the air.  
**Wattle**, wot'l, *n.* a twig; a hurdle.  
**Wave**, wäv, *n.* a moving swell of water; an undulation; *v.* to make undulatory movements.  
**Wave-length**, wäv'length, *n.* term used in wireless  
**Waver**, wä'ver, *v.* to hesitate. [telegraphy.]  
**Waxen**, waks'en, *adj.* wax-like.  
**Waybill**, wä'bil, *n.* a list of passengers and goods in a public conveyance.  
**Wayfarer**, wä'far-er, *n.* a traveller.  
**Waylay**, wä-lä, *v.* to attack from ambush.  
**Wayward**, wä'werd, *adj.* froward; wilful.  
**Weak**, wëk, *adj.* feeble.  
**Weal**, wël, *n.* welfare.  
**Wealth**, welth, *n.* riches. [a child.]  
**Wean**, wën, *v.* to alienate; to discontinue suckling

- Weapon, wep'un, *n.* a fighting implement.  
 Wear, wär, *v.* to use; to have on the person, as  
 Weary, we'ri, *adj.* tired. [clothes].  
 Weather, weth'er, *n.* the state of the atmosphere.  
 Weathercock, weth'er-kok, *n.* an ornament set  
 upon a building to indicate wind direction.  
 Weathergage, weth'er-gäi, *n.* the position of a ship  
 to the windward of another.  
 Weatherglass, weth'er-glas, *n.* a barometer.  
 Weave, wēv, *v.* to interlace threads; as in a loom.  
 Weazen, wez'n, *adj.* dried up; thin. [brane].  
 Webbed, webd, *adj.* having toes united by a mem-  
 Wedge, wej, *n.* a cleaving tool; a piece of wood or  
 metal used for holding anything in place.  
 Wedlock, wed'lok, *n.* marriage.  
 Wee, we, *adj.* very small.  
 Weed, wēd, *n.* a plant growing in the wrong place.  
 Weedy, we'di, *adj.* full of weeds; overgrown.  
 Week, wēk, *n.* seven days.  
 Ween, wēn, *v.* to think; to fancy.  
 Weep, wēp, *v.* to shed tears.  
 Weeless, weet'les, *adj.* unknown.  
 Weevil, wēv'il, *n.* beetle harmful to plants.  
 Weft, weft, *n.* the wool of cloth.  
 Weight, wāt, *n.* gravity; heaviness; importance.  
 Weir, weer, *n.* a dam in a river or stream to raise  
 the water.  
 Weird, wērd, *adj.* wild; eerie; unearthly.  
 Welcome, wel'kum, *adj.* agreeable; *n.* a warm re-  
 Weld, weld, *v.* to unite. [ception].  
 Welfare, wel'fär, *n.* good fortune; happiness.  
 Welkin, wel'kin, *n.* the sky.  
 Well, wel, *n.* source of water; *adj.* in good health.  
 Well-being, wel-bē'ing, *n.* welfare.  
 Well-bred, wel-bred', *adj.* well-born; refined.  
 Well-spring, wel'spring, *n.* source.  
 Welsh, welch, *n.* people of Wales.  
 Welsher, wel'cher, *n.* a cheat on race-courses.  
 Welt, welt, *n.* edging round a shoe; *v.* to sew on  
 Welter, wel'ter, *v.* to wallow. [a welt].  
 Wench, wensh, *n.* a girl.  
 Wend, wend, *v.* to go; to betake.  
 Wether, weth'er, *n.* a castrated sheep.  
 Whack, hwak, *v.* to strike.  
 Whale, hwäl, *n.* the largest marine mammal.  
 Whalebone, hwäl'bön, *n.* elastic substance ob-  
 tained from the jaws of whales.  
 Whang, hwang, *n.* a leather thong.  
 Wharf, hwawrf, *n.* quay to load or unload ships  
 upon or from.  
 Wheal, hwäl, *n.* a raised mark on the skin caused  
 by a blow; well being.  
 Wheat, hwēt, *n.* cereal supplying flour for bread.  
 Wheaten, hwē'ten, *adj.* made of wheat.  
 Wheedle, hwēd'l, *v.* to coax.  
 Wheel, hwēl, *n.* a circular frame turning on an axis.  
 Wheelbarrow, hwēl'bar-ō, *n.* a one wheeled hand-  
 cart.  
 Wheelwright, hwēl'rit, *n.* a maker of wheels and  
 carts.  
 Wheeze, hwēz, *v.* to breathe heavily.  
 Whelm, hwelm, *v.* to overwhelm.  
 Whelp, hwelp, *n.* a puppy.  
 Whereas, hwär-az, *adv.* considering; when in  
 fact.  
 Wherret, hwer'ret, *v.* to trouble; to tease; to  
 Wherry, hwer'i, *n.* a shallow boat. [hurry].  
 Whet, hwet, *v.* to sharpen.  
 Whether, hweth'er, *pron.* which of the two?  
 Whetstone, hwet'ston, *n.* a sharpening tool.  
 Whey, hwey, *n.* the residue after removal of  
 curd from milk in the process of cheese  
 making.  
 Whiff, hwif, *n.* a puff of air or smoke.  
 Whiffle, hwif'l, *v.* to scatter; to talk foolishly.  
 Whilom, hwi'lom, *adv.* at one time; formerly.  
 Whim, hwim, *n.* a caprice; a freak.  
 Whimper, hwim'per, *v.* to whine.  
 Whin, hwin, *n.* gorse or furze.  
 Whine, hwin, *v.* to murmur.  
 Whinny, hwin'i, *v.* to neigh.  
 Whip, hwip, *n.* a lash with a handle; *v.* to lash.  
 Whip-hand, hwip'hand, *n.* to obtain mastery over.  
 Whir, hwer, *n.* a buzzing sound.  
 Whirl, hwerl, *v.* to revolve quickly.  
 Whirlwind, hwerl'wind, *n.* a rotating wind.  
 Whisk, hwisk, *n.* a kind of brush; *v.* to beat, as an  
 egg.  
 Whiskey, hwis'ki, *n.* spirit made from barley.  
 Whisper, hwisp'er, *v.* to speak low down.  
 Whist, hwist, *n.* a card game.  
 Whistle, hwist'l, *v.* to make a shrill noise.  
 White, hwit, *adj.* of the colour of freshly fallen snow.

- Whitewash, hwit'wosh, *v.* to coat with lime-water.  
 Whither, hwith'er, *adv.* where; to what place?  
 Whitlow, hwit-lo, *n.* painful inflammation of  
 fingers.  
 Whittle, hwit'l, *v.* to cut with a knife; *n.* a kind  
 Whiz, hwiz, *n.* a hissing sound. [of knife].  
 Whole, hōl, *n.* total.  
 Wholesale, hōl'säl, *adj.* buying in large quantities  
 to sell again.  
 Wholesome, hōl'sum, *adj.* good; sound.  
 Whoop, hwoop, *v.* to shout.  
 Whorl, hworl, *n.* a cluster.  
 Whore, hōr, *n.* a prostitute.  
 Why, hui, *adv.* for what reason.  
 Wick, wik, *n.* the twisted threads or blazing part  
 in the centre of lamps or candles.  
 Wicked, wik'ed, *adj.* sinful.  
 Wicker, wik'er, *adj.* made of twigs.  
 Wicket, wik'et, *n.* a small gate.  
 Widen, wid'en, *v.* to broaden.  
 Widow, wid'ō, *n.* a woman whose husband is dead.  
 Widower, wid'ō-er, *n.* a man whose wife is dead.  
 Width, width, *n.* breadth.  
 Wield, wēld, *v.* to handle.  
 Wife, wif, *n.* a woman whose husband is alive.  
 Wig, wig, *n.* artificial hair for the head.  
 Wiggle, wig'l, *v.* to squirm.  
 Wight, wit, *n.* a person.  
 Wigwam, wig'wam, *n.* an Indian hut.  
 Wild, wild, *adj.* savage; desert; stormy.  
 Wilderness, wil'der-nes, *n.* a desert.  
 Wile, wil, *n.* a sly action.  
 Wilful, wil'ful, *adj.* obstinate.  
 Will, wil, *n.* volition; intention.  
 Willingness, wil'ing-nes, *n.* readiness.  
 Willow, wil'o, *n.* tree furnishing osiers.  
 Wimple, wim'bl, *adj.* lively; brisk; nimble.  
 Wince, wins, *v.* to flinch.  
 Winch, winsh, *n.* a crank; a hoisting apparatus.  
 Wind, wind, *n.* a current of air.  
 Windage, wind'äi, *n.* the difference between a  
 gun's diameter and that of a ball.  
 Wind-bound, *adj.* detained by contrary winds.  
 Windfall, wind'fawl, *n.* a unexpected good  
 fortune.  
 Wind-gall, wind-gawl, *n.* tumour on a horse's fet-  
 lock.  
 Winding-sheet, wind'ing-shēt, *n.* shroud.  
 Windlass, wind'lass, *n.* a weight-raising machine  
 on a ship.  
 Window, wind'ō, *n.* an opening for light.  
 Window-sash, wind'ō-sash, *n.* frame in which  
 glass is set.  
 Windpipe, wind'pīp, *n.* the trachea.  
 Windward, wind'wērd, *adv.* towards the wind.  
 Wine-bibber, win'bib-er, *n.* a great wine-drinker.  
 Wing, wing, *n.* the limb of a bird used in flying; *v.*  
 to take flight.  
 Winning, win'ing, *adj.* coming first; attractive.  
 Winnow, win'ō, *v.* to sift.  
 Winter, win-ter, *n.* the coldest season.  
 Wire, wir, *n.* a thread of metal.  
 Wireless, wir'-les, *n.* colloquialism for wireless  
 telegraphy.  
 Wire-puller, wir'pool-er, *n.* an intriguer; one who  
 Wiry, wir'i, *adj.* tough. [controls secretly].  
 Wise, wiz, *adj.* discreet; just.  
 Wisecare, wiz'äk-er, *n.* one who assumes wisdom.  
 Wish, wish, *n.* desire.  
 Wisp, wisp, *n.* bundle of straw or hay.  
 Wistful, wist'ful, *adj.* attentive.  
 Wit, wit, *n.* ready sense.  
 Witch, wich, *n.* a woman of supposed magical  
 power.  
 Witchery, wich'er-i, *n.* enchantment.  
 Withdrawal, with-draw'al, *n.* a moving or taking  
 Withe, with, *n.* a willow twig. [back].  
 Wither, with'er, *v.* to dry up.  
 Withers, with'erz, *n.* the neck-joint of a horse.  
 Withhold, with-hold', *v.* to hold back.  
 Withstand, with-stand', *v.* to oppose.  
 Withy, with'i, *n.* a species of willow.  
 Witless, wit'les, *adj.* stupid; without sense.  
 Witness, wit'nes, *n.* one who bears testimony.  
 Witticism, wit'te-sizm, *n.* a brilliant saying.  
 Wizard, wiz'ard, *n.* a sorcerer; a conjurer.  
 Wobble, wōb'l, *v.* to move unsteadily from side to  
 side.  
 Woe, wō, *n.* grief; sadness.  
 Womanhood, woom'an-hood, *n.* the condition of  
 being a woman.  
 Wonder, wun'der, *n.* surprise.  
 Wont, wōnt, *adj.* accustomed.



Wanted, wŏnt'ed, *adj.* customary.  
 Woo, woo, *v.* to make love to.  
 Wood, wood, *n.* timber; a small forest.  
 Woodcut, wood'kut, *n.* a wood engraving.  
 Wooden, wood'en, *adj.* made of wood; stupid.  
 Woodland, wood'land, *n.* forest land.  
 Wooser, woo'er, *n.* a lover.  
 Wool, wool, *n.* weft.  
 Wool, wool, *n.* the hair of sheep, etc.  
 Woolen, wool'en, *adj.* made of wool.  
 Word, wurd, *n.* an oral or written sign.  
 Wording, werd'ing, *n.* manner of expression.  
 Wordy, werd'i, *adj.* verbose.  
 Work, werk, *n.* labour; toil; a composition.  
 Workhouse, werk'how's, *n.* a public institution for the destitute.  
 Workman, werk'man, *n.* an artisan; a labourer.  
 World, wurd, *n.* the earth.  
 Worldly, werld'l, *adj.* pertaining to the world.  
 Worm, werm, *n.* an earth-feeding animal; thread of a screw.  
 Worry, wūr'i, *n.* trouble; vexation; to bite savagely.  
 Worship, wer'ship, *n.* devotion; adoration.  
 Worst, werst, *adj.* the most wicked.  
 Worsted, wers'ted, *n.* consisting of combed wool.  
 Wort, wert, *n.* a plant.  
 Worth, werth, *n.* value; price.  
 Wound, woond, *n.* an injury; *v.* to injure.  
 Wraith, rāth, *n.* a ghost.  
 Wrangle, rang'gl, *v.* to quarrel; to dispute.  
 Wrangler, rang'gl'er, *n.* one who wrangles; one who achieves a first mathematical position at Cambridge University.  
 Wrap, rap, *v.* to fold.  
 Wrath, rāth, *n.* anger; fury.  
 Wreath, rēth, *n.* a garland.  
 Wreck, rek, *n.* a destroyed ship; *v.* to ruin.  
 Wrench, rench, *v.* to wrest.  
 Wrest, rest, *v.* to force from.  
 Wrestle, res'l, *v.* to contend with; to try to throw.  
 Wretch, rech, *n.* a miserable person. [down.  
 Wriggle, rig'l, *v.* to twist.  
 Wring, ring, *v.* to twist; to strain.  
 Wrinkle, ring'kl, *n.* a crease.  
 Wrist, rist, *n.* the joint connecting the hand with the arm.  
 Writ, rit, *n.* a legal summons.  
 Write, rit, *v.* to inscribe.  
 Writhe, rīth, *v.* to twist; to be distorted with pain.  
 Wrong, rong, *n.* injustice; injury.  
 Wrath, rōth, *v.* angry.  
 Wrought-iron, rawt'i-urn, *n.* malleable iron containing very little carbon.  
 Wry, rī, *adj.* twisted.

## X

X-rays, Ex-rāis, *n.* radium emanations.  
 Xanthine, zan'thin, *n.* yellow dyeing matter.  
 Xanthous, zan'thus, *adj.* yellow.  
 Xebec, zē'bek, *n.* a small vessel.  
 Xerasia, zēr-ā'si-a, *n.* a hair disease.  
 Xerophyte, zēr'ō-fit, *n.* a plant which can live with very little water.  
 Xiphoid, zif'oid, *adj.* sword-fish shaped.  
 Xylem, zī'lem, *n.* the woody cells of plants.  
 Xylocarp, zī'lo-karp, *n.* a woody fruit.  
 Xylonite, zī'lo-nit, *n.* a celluloid material.  
 Xylophagous, zī'lof-ā-gus, *adj.* feeding on wood.  
 Xylophone, zī'lo-fōn, *n.* a wooden musical instrument.  
 Xyster, zist'er, *n.* a surgical instrument for scraping bones.

## Y

Yacca, yak'a, *n.* a West Indian evergreen.  
 Yacht, yot, *n.* a pleasure vessel.  
 Yak, yak, *n.* Tibetan ox, used for draught.  
 Yam, yam, *n.* a tropical root.  
 Yammer, yam'er, *v.* to lament.  
 Yank, yangk, *v.* to jerk.  
 Yankee, yang'kē, *n.* an American.  
 Yap, yap, *v.* to yelp like a cur.  
 Yard, yārd, *n.* a measure of 3 feet; an enclosed space; a ship's beam.  
 Yardstick, yārd'stik, *n.* a stick 3 feet long.  
 Yarely, yare'l, *adj.* quickly.  
 Yarn, yārn, *n.* spun wool cotton, flax, or silk; a sailor's story.  
 Yarrish, yar'rish, *adj.* a dry rough taste.  
 Yarrow, yār'ō, *n.* an herb.

Yataghan, yah'ta-gan, *n.* a long Turkish sword.  
 Yawl, yawl, *n.* a ship's boat.  
 Yawn, yawn, *n.* act of gaping; *v.* to gape.  
 Yaws, yaws, *n.* a serious disease of the tropics.  
 Yea, yā, *adv.* affirmative; yes.  
 Year, yēn, *v.* to bring forth young.  
 Year, yēr, *n.* a period of 12 months.  
 Yearling, yēr'ling, *n.* an animal a year old.  
 Yearn, yern, *v.* to desire eagerly.  
 Yeast, yeast, *n.* a unicellular plant used to produce fermentations.  
 Yell, yel, *v.* to utter a sharp cry.  
 Yellow, yel'ō, *adj.* of a bright gold colour.  
 Yelp, yelp, *v.* to bark shrilly.  
 Yen, yen, *n.* a Japanese coin.  
 Yeoman, yō'man, *n.* a farmer; a freeholder.  
 Yesterday, yes'ter-dā, *n.* the day last past.  
 Yew, yoo, *n.* an evergreen tree.  
 Yiddish, yid'ish, *n.* a dialect used by Jews.  
 Yield, yēld, *v.* to produce.  
 Yoke, yōk, *n.* bondage; a piece of wood used to link working oxen.  
 Yoke-fellow, yōk'fel-ō, *n.* an associate.  
 Yoke, yō'kel, *n.* a country bumpkin.  
 Yolk, yōk, *n.* yellow of an egg.  
 Yonder, yon'der, *adv.* at a distance within sight.  
 Yore, yōr, *n.* ancient days.  
 Young, yung, *adj.* not long born; *n.* the offspring of animals.  
 Youth, yōth, *n.* state of youngness; a young man.  
 Yucca, yuk-a, *n.* an evergreen flowering plant.  
 Yuck, yuk, *v.* to itch.  
 Yule, yool, *n.* the old-time name of Christmas.

## Z

Zabra, zā'bra, *n.* a small Spanish vessel.  
 Zaccho, zak'ko, *n.* the lowest portion of the pedestal of a column.  
 Zanella, zā-nel'a, *n.* a twilled fabric for covering Zany, zā'ni, *n.* a buffoon. [umbrellas.  
 Zareba, zar'e-ba, *n.* a stockade, an encampment.  
 Zax, zaks, *n.* a slater's hammer.  
 Zeal, zēl, *n.* ardour.  
 Zebra, zē'bra, *n.* a striped African equine.  
 Zebu, zē'boo, *n.* the humped ox.  
 Zeine, ze'in, *n.* a proteid found in Indian corn.  
 Zend, zend, *n.* early Persian language.  
 Zenith, zen'ith, the highest point of the heavens.  
 Zephyr, zef'er, *n.* a gentle wind.  
 Zero, zē'ro, *n.* nothing; the point from which a thermometer is graduated.  
 Zest, zest, *n.* eagerness; relish.  
 Zetetic, ze-tet'ic, *n.* a seeker.  
 Zibeline, zi'be-lin, *n.* a fur of the sable kind.  
 Zigzag, zig'zag, *n.* a series of short alternating turns from side to side.  
 Zinc, zīngk, *n.* a white coloured metal.  
 Zincode, zīng'kōd, *n.* positive pole of a galvanic battery.  
 Zingari, zīng'a-rī, *n.* gypsies.  
 Zither, zīth'er, *n.* a flat-stringed musical instrument.  
 Zodiac, zō'di-ak, *n.* imaginary inner circle in the heavens containing the twelve signs through which the sun travels.  
 Zoic, zō'ik, *adj.* relating to animals.  
 Zoilean, zō-lē'an, *adj.* severe and bitter criticism.  
 Zone, zōn, *n.* a girdle; a division of the earth.  
 Zoochemistry, zō'ok'e-mī, *n.* chemistry pertaining to animals.  
 Zoography, zō'og-rā-fi, *n.* description of animals.  
 Zoolite, zō'ō-lit, *n.* fossil animal substance.  
 Zoology, zō'ō-lō-jī, *n.* the natural history of animals.  
 Zoom, zūm, *v.* to move rapidly up or down with a loud noise.  
 Zoophyte, zō'ō-fit, *n.* a plant-like animal, as the sponge.  
 Zoospore, zō'ō-spōr, *n.* a spore capable of moving.  
 Zootomy, zō'ōt-ō-mī, *n.* the anatomy of animals.  
 Zouave, zwāv, *n.* a soldier in certain infantry regiments of the French army.  
 Zulu, zū'loo, *n.* an African negro tribe.  
 Zygomatic, zig'ō-mat'ik, *adj.* pertaining to the cheekbone.  
 Zygon, zī'gon, *n.* a connecting bar.  
 Zyme, zīm, *n.* a germ supposed to cause zymotic disease; a ferment.  
 Zymotic, zi-mot'ik, *adj.* pertaining to fermentation.  
 Zythum, zī'thum, *n.* a liquor made from wheat and malt.

# FAMILIAR FOREIGN PHRASES AND CLASSICAL QUOTATIONS

Fr., French. Gr., Greek. Ger., German. It., Italian. L., Latin. Sp., Spanish.

à bas (Fr.), down, down with.  
 ab extra (L.), from without.  
 ab incunabilis (L.), from the cradle.  
 ab initio (L.), from the beginning.  
 ab intra (L.), from within.  
 à bon chat, bon rat (Fr.), to a good cat, a good rat; well attacked and defended; tit for tat; a Rowland for an Oliver.  
 à bon marché (Fr.), cheap, a good bargain.  
 à bras ouverts (Fr.), with open arms.  
 absente reo (L.), the accused being absent.  
 absit invidia (L.), let there be no ill-will; envy apart.  
 ab uno disce omnes (L.), from one specimen judge of all the rest; from a single instance infer the whole.  
 ab urbe condita (L.), from the building of the city; i.e., Rome.  
 a capite ad calcem (L.), from head to heel.  
 à chaque saint sa chandelle (Fr.), to each saint his candle; honour where honour is due.  
 à cheval (Fr.), on horseback.  
 à compte (Fr.), on account; in part payment.  
 à corps perdu (Fr.), with might and main.  
 à couvert (Fr.), under cover; protected; sheltered.  
 ad astra (L.), to the stars.  
 ad calendas Græcas (L.), at the Greek calends; i.e., never, as the Greeks had no calends in their mode of reckoning.  
 à demi (Fr.), by halves; half-way.  
 a Deo et rege (L.), from God and the king.  
 ad hoc (L.), arranged for this purpose; special.  
 ad hominem (L.), to the man; to an individual's interests or passions; personal.  
 adhuc sub iudice lis est (L.), the case has not yet been decided.  
 a die (L.), from that day.  
 ad infinitum (L.), to infinity.  
 ad interim (L.), in the meantime.  
 ad libitum (L.), at pleasure.  
 ad modum (L.), after the manner of.  
 ad nauseam (L.), to disgust or satiety.  
 ad referendum (L.), for further consideration.  
 ad rem (L.), to the purpose; to the point.  
 ad valorem (L.), according to the value.  
 affaire d'amour (Fr.), a love affair.  
 affaire d'honneur (Fr.), an affair of honour; a duel.  
 affaire de cœur (Fr.), an affair of the heart.  
 à fortiori (L.), with stronger reason.  
 à gauche (Fr.), to the left.  
 à genoux (Fr.), on the knees.  
 à haute voix (Fr.), aloud.  
 à huis clos (Fr.), with closed doors; secretly.  
 à la belle étoile (Fr.), under the stars; in the open air.  
 à la bonne heure (Fr.), well timed; all right; very well; as you please.  
 à l'abri (Fr.), under shelter.  
 à la mode (Fr.), according to the custom or fashion.  
 à la Tartufe (Fr.), like Tartuffe, the hero of a celebrated comedy by Molière; hypocritically.  
 al fresco (It.), in the open air; out-of-doors.  
 al più (It.), at most.  
 alter ego (L.), another self.  
 à merveille (Fr.), to a wonder; marvellously.  
 amor patriæ (L.), love of country.  
 amour-propre (Fr.), self-love; vanity.  
 ancien régime (Fr.), the ancient or former order of things.  
 anis in herba (L.), a snake in the grass.  
 anno Christi (L.), in the year of Christ.  
 anno Domini (L.), in the year of our Lord.  
 anno mundi (L.), in the year of the world.  
 annus mirabilis (L.), year of wonders; wonderful year.  
 ante bellum (L.), before the war.  
 ante lucem (L.), before light.  
 ante meridiem (L.), before noon.  
 à outrance (Fr.), to the utmost; to extremities; without sparing.  
 à pied (Fr.), on foot.  
 à point (Fr.), to a point, just in time, exactly right.  
 à posse ad esse (L.), from possibility to reality.  
 ariston metron (Gr.), the middle course is the best; the golden mean.

arrière-pensée (Fr.), hidden thought; mental reservation.  
 au courant (Fr.), fully acquainted with.  
 audi alteram partem (L.), hear the other side.  
 au fait (Fr.), well acquainted with; expert.  
 au fond (Fr.), at bottom.  
 auf Wiedersehen! (Ger.), till we meet again.  
 au pis aller (Fr.), at the worst.  
 au revoir (Fr.), adieu till we meet again.  
 aut vincere aut mori (L.), either to conquer or to die; death or victory.  
 a verbis ad verbera (L.), from words to blows.  
 a vinculo matrimonii (L.), from the bond of matrimony.  
 à volonté (Fr.), at pleasure.  
 a vostra salute (It.) }  
 à votre santé (Fr.) } to your health.  
 a vuestra salud (Sp.) }  
 bas bleu (Fr.), a blue-stock; a literary woman.  
 beau monde (Fr.), the world of fashion.  
 beaux esprits (Fr.), men of wit; gay spirits.  
 beaux yeux (Fr.), fine eyes; good looks.  
 ben trovato (It.), well or cleverly invented.  
 bête noire (Fr.), a black beast; a bugbear.  
 bon gré mal gré (Fr.), with good or ill grace; willing or unwilling.  
 bonhomie (Fr.), good-nature; artlessness.  
 bonne bouche (Fr.), a delicate or tasty morsel.  
 bon vivant (Fr.), a good liver; a gourmand.  
 brutum fulmen (L.), a harmless thunderbolt.  
 canaille (Fr.), rabble.  
 candida Pax (L.), white-robed Peace.  
 casus belli (L.), that which causes or justifies war.  
 causa sine qua non (L.), an indispensable cause or condition.  
 caveat emptor (L.), let the buyer beware (or look after his own interest).  
 cela vas sans dire (Fr.), that goes without saying; needless to say.  
 ceteris paribus (L.), other things being equal.  
 chacun son goût (Fr.), every one to his taste.  
 cogito, ergo sum (L.), I think, therefore I exist.  
 comme il faut (Fr.), as it should be.  
 compos mentis (L.), sound of mind; quite sane.  
 compte rendu (Fr.), an account rendered; a report or statement drawn up.  
 conditio sine qua non (L.), a necessary condition.  
 conseil de famille (Fr.), a family consultation.  
 consensus facit legem (L.), consent makes the law.  
 consilio et animis (L.), by wisdom and courage.  
 consilio et prudentia (L.), by wisdom and prudence.  
 constantia et virtute (L.), by constancy and virtue.  
 contra bonos mores (L.), against good manners.  
 contretemps (Fr.), an unlucky accident; a hitch.  
 cordon bleu (Fr.), blue ribbon; a cook of the highest class.  
 cordon sanitaire (Fr.), a line of guards to prevent the spreading of contagion or pestilence.  
 corpus delicti (L.), the body or substance of a crime or offence.  
 corrigenda (L.), things to be corrected.  
 coup de grâce (Fr.), a finishing stroke.  
 coup d'état (Fr.), a sudden decisive blow in politics; a stroke of policy.  
 coup de soleil (Fr.), sunstroke.  
 credat Judeus Apella (L.), let Apella, the superstitious Jew, believe it (I won't); tell that to the marines.  
 cucullus non facit monachum (L.), the cowl does not make the friar.  
 cui bono? (L.), For whose advantage is it? to what end?  
 culpam poena premit comes (L.), punishment follows hard upon crime.  
 cum grano salis (L.), with a grain of salt; with some allowance.  
 cum privilegio (L.), with privilege.  
 corrente calamo (L.), with a fluent pen.  
 da locum melioribus (L.), give place to your betters.  
 damnant quod non intelligunt (L.), they condemn what they do not comprehend.  
 data et accepta (L.), expenditures and receipts.  
 de bon augure (Fr.), of good augury or omen.  
 de bonne grâce (Fr.), with good grace; willingly.



*de die in diem* (L.), from day to day.  
*de facto* (L.), in point of fact; actual or actually.  
*dei gratia* (L.), by God's grace.  
*de jure* (L.), from the law; by right.  
*de mal en pis* (Fr.), from bad to worse.  
*de novo* (L.), anew.  
*deo volente* (L.), God willing; by God's will.  
*de profundis* (L.), out of the depths.  
*dernier ressort* (Fr.), a last resource.  
*deus ex machina* (L.), one who puts matters right at a critical moment; providential intervention.  
*dies non* (L.), a day on which judges do not sit.  
*distingué* (Fr.), distinguished; of genteel or elegant appearance. [idleness.  
*dolce far niente* (It.), sweet doing-nothing; sweet double entendre (Fr.), a double meaning; a play on words.  
*dramatis personæ* (L.), characters of the drama or play.  
*dum spiro, spero* (L.), while I breathe, I hope.  
*ecce homo* ! (L.), behold the man !  
*ehou ! fugaces labuntur anni* (L.), alas ! the fleeting years glide by.  
*einmal ist keinmal* (Ger.), just once doesn't count.  
*en avant* (Fr.), forward.  
*en badinant* (Fr.), in sport; in jest.  
*en déshabillé* (Fr.), in undress.  
*en famille* (Fr.), with one's family; in a domestic state.  
*enfant terrible* (Fr.), a terrible child, or one that makes disconcerting remarks.  
*enfin* (Fr.), in short; at last; finally.  
*en passant* (Fr.), in passing; by the way.  
*en plein jour* (Fr.), in broad day.  
*en rapport* (Fr.), in harmony; in agreement; in relation.  
*en règle* (Fr.), according to rules; in order.  
*entente cordiale* (Fr.), cordial understanding, especially between two states.  
*entre nous* (Fr.), between ourselves.  
*entre vérité* (Fr.), in truth; verily.  
*e pluribus unum* (L.), one out of many; one composed of many.  
*esprit de corps* (Fr.), the animating spirit of a collective body, as a regiment, learned profession or the like.  
*et sequentes, et sequentia* (L.), and those that follow.  
*et tu, Brute !* (L.), and thou also, Brutus !  
*ex animo* (L.), heartily; sincerely.  
*ex capite* (L.), from the head; from memory.  
*ex cathedra* (L.), from the chair or seat of authority, with high authority.  
*exceptio probat regulam* (L.), the exception proves the rule.  
*ex curia* (L.), out of court.  
*ex dono* (L.), by the gift.  
*exeunt omnes* (L.), all go out or retire.  
*exit* (L.), he goes out.  
*ex mero motu* (L.), from his own impulse, from his own free will.  
*ex nihilo nihil fit* (L.), out of nothing, nothing comes; nothing produces nothing. —  
*ex officio* (L.), in virtue of his office. [spective.  
*ex post facto* (L.), after the deed is done; retro-facté à face (Fr.), face to face.  
*façon de parler* (Fr.), manner of speaking.  
*faire bonne mine* (Fr.), to put a good face upon the matter.  
*fait accompli* (Fr.), a thing already done.  
*Jama clamosa* (L.), a current scandal; a prevailing report.  
*faute de mieux* (Fr.), for want of better.  
*fauz pas* (Fr.), a false step; a slip in behaviour.  
*festina lente* (L.), hasten slowly.  
*fiat iustitia, ruat cælum* (L.), let justice be done though the heavens should fall.  
*fiat lux* (L.), let there be light.  
*fide et amore* (L.), by faith and love.  
*fide et fiducia* (L.), by fidelity and confidence.  
*fide et fortitudine* (L.), with faith and fortitude.  
*fidei defensor* (L.), defender of the faith.  
*fide non armis* (L.), by faith, not by arms.  
*fide, sed cui vide* (L.), trust, but see whom.  
*fides et iustitia* (L.), fidelity and justice.  
*fides Punica* (L.), Punic faith; treachery.  
*filius nullius* (L.), a son of nobody; a bastard.  
*finis coronat opus* (L.), the end crowns the work.  
*flagrante bello* (L.), during hostilities.  
*flagrante delicto* (L.), in the commission of the crime.  
*florere* (L.), let it flourish.  
*fons et origo* (L.), the source and origin.

*force majeure* (Fr.), irresistible compulsion; war, strike, Act of God, etc.  
*forensis strepitus* (L.), the clamour of the forum.  
*fortuna favet fortibus* (L.), fortune favours the bold.  
*functus officio* (L.), having performed one's office or duty; hence, out of office.  
*gaudeamus igitur* (L.), so let us be joyful !  
*genius loci* (L.), the genius or guardian spirit of a place.  
*gradus diverso, via una* (L.), the same road by different steps.  
*grande parure* (Fr.), full dress.  
*grande toilette* (Fr.), full dress.  
*guerra al cuchillo* (Sp.), war to the knife.  
*Hannibal ante portas* (L.), Hannibal before the gates; the enemy close at hand.  
*hiatus valde defendendus* (L.), a chasm or deficiency much to be regretted.  
*hic et nunc* (L.), here and now.  
*hic et ubique* (L.), here and everywhere.  
*hic jacet* (L.), here lies.  
*hic labor, hoc opus est* (L.), this is a labour, this is a toil.  
*hic sepultus* (L.), here buried.  
*hoc genus omne* (L.), all of this sort or class.  
*hoi polloi* (Gr.), the many; the vulgar; the rabble.  
*hominis est errare* (L.), to err is human.  
*homme de robe* (Fr.), a man in civil office.  
*homme d'affaires* (Fr.), a man of business.  
*homme d'esprit* (Fr.), a man of wit or genius.  
*honi soit qui mal y pense* (O. Fr.), evil to him who evil thinks.  
*honores mutant mores* (L.), honours change men's manners or characters.  
*hors de combat* (Fr.), out of condition to fight.  
*hors de propos* (Fr.), not to the point or purpose.  
*hors-d'œuvre* (Fr.), out of course; out of order.  
*ich dien* (Ger.), I serve.  
*idée fixe* (Fr.), a fixed idea.  
*id est* (L.), that is.  
*il a le diable au corps* (Fr.), the devil is in him.  
*Ilias malorum* (L.), an Iliad of ills; a host of evils.  
*il penseroso* (It.), the pensive man.  
*il sent le fagot* (Fr.), he smells of the faggot; he is suspected of heresy.  
*imperium in imperio* (L.), a state within a state; a government within another.  
*in actu* (L.), in act or reality. [last struggle.  
*in articulo mortis* (L.), at the point of death; in the in capite (L.), in chief.  
*in curia* (L.), in court.  
*index expurgatorius* (L.), a list of books prohibited  
*index prohibitorius* } to Roman Catholics.  
*in esse* (L.), in being; in actuality.  
*in extenso* (L.), at full length.  
*in extremis* (L.), at the point of death.  
*in memoriam* (L.), to the memory of; in memory.  
*in nubibus* (L.), in the clouds.  
*in petto* (It.), in (my) breast; to one's self.  
*in re* (L.), in the matter of.  
*in sano sensu* (L.), in a proper sense.  
*in situ* (L.), in its original situation.  
*in vino veritas* (L.), there is truth in wine; truth is told under the influence of intoxicants.  
*ipse dixit* (L.), he himself said it; a dogmatic saying or assertion.  
*ipsissima verba* (L.), the very words.  
*ipso facto* (L.), in the fact itself.  
*ipso jure* (L.), by the law itself.  
*jacta est alea* (L.), the die is cast.  
*je ne sais quoi* (Fr.), I know not what.  
*joci causa* (L.), for the sake of a joke.  
*labor omnia vincit* (L.), labour conquers everything.  
*l'allegro* (It.), the merry man.  
*lapsus linguae* (L.), a slip of the tongue.  
*lares et penates* (L.), household gods.  
*laus Deo* (L.), praise to God.  
*le beau monde* (Fr.), the fashionable world.  
*lector benevole* (L.), kind or gentle reader.  
*le jeu n'en vaut pas la chandelle* (Fr.), the game is not worth the candle; the object is not worth the trouble.  
*le mot de l'énigme* (Fr.), the key to the mystery.  
*le point du jour* (Fr.), daybreak.  
*lèse-majesté* (Fr.), high-treason.  
*lettre de cachet* (Fr.), a sealed letter containing private orders; a royal warrant.  
*lex loci* (L.), the law or custom of the place.  
*lex non scripta* (L.), unwritten law; common law.  
*lex scripta* (L.), written law; statute law.  
*locum tenens* (L.), a deputy.

*lucris causa* (L.), for the sake of gain.  
*magnum opus* (L.), a great work.  
*mala fide* (L.), with bad faith; treacherously.  
*mal à propos* (Fr.), ill-timed; out of place.  
*malgré nous* (Fr.), in spite of us.  
*malheur ne vient jamais seul* (Fr.), misfortunes never come singly.  
*malum in se* (L.), evil or an evil in itself.  
*mardi gras* (Fr.), Shrove-Tuesday.  
*mariage de convenance* (Fr.), marriage from motives of interest rather than of love.  
*mauvaise honte* (Fr.), false modesty.  
*mauvais goût* (Fr.), bad taste.  
*mea culpa* (L.), my fault; by my fault.  
*me iudice* (L.), I being judge; in my opinion.  
*mens agitat molem* (L.), mind moves matter.  
*mens legis* (L.), the spirit of the law.  
*mens sana in corpore sano* (L.), a sound mind in a sound body.  
*meo periculo* (L.), at my own risk.  
*meo voto* (L.), according to my wish.  
*mise en scène* (Fr.), the getting up for the stage, or the putting on the stage.  
*modus operandi* (L.), manner of working.  
*more suo* (L.), in his own way.  
*motu proprio* (L.), of his own accord.  
*multum in parvo* (L.), much in little.  
*mutatis mutandis* (L.), with suitable or necessary alteration.  
*nervus probandi* (L.), the sinews of the argument.  
*nihil ad rem* (L.), irrelevant.  
*nil desperandum* (L.), there is no reason to despair.  
*noblesse oblige* (Fr.), rank imposes obligations; much is expected from one in good position.  
*volens volens* (L.), willing or unwilling.  
*nom de plume* (Fr.), an assumed name of a writer.  
*non compos mentis* (L.), not of sound mind.  
*non sequitur* (L.), it does not follow.  
*nosce te ipsum* (L.), know thyself.  
*nota bene* (L.), mark well.  
*nudis verbis* (L.), in plain words.  
*obiter dictum* (L.), a thing said by the way.  
*omnia vincit amor* (L.), love conquers all things.  
*ora pro nobis* (L.), pray for us.  
*O tempora ! O mores !* (L.), O the times ! O the manners (or morals) !  
*oui-dire* (Fr.), hearsay.  
*padrone* (It.), a master; a landlord.  
*par excellence* (Fr.), by way of eminence.  
*pari passu* (L.), at an equal pace or rate of progress.  
*particeps criminis* (L.), an accomplice in a crime.  
*pas de quoi* (Fr. abbrev. *il n'y a pas de quoi*), don't mention it.  
*passim* (L.), everywhere; in all parts of the book, chapter, etc.  
*pâté de foie gras* (Fr.), goose-liver pie.  
*pater patriæ* (L.), father of his country.  
*patres conscripti* (L.), the conscript fathers; Roman senators.  
*pax vobiscum* (L.), peace be with you.  
*per ardua ad astra* (L.), through rough ways to the stars; through suffering to renown.  
*per capita* (L.), by the head or poll.  
*per contra* (It.), contrariwise.  
*per diem* (L.), by the day; daily.  
*per se* (L.), by itself; considered apart.  
*piéd-a-terre* (Fr.), a resting-place; a temporary lodging.  
*pis aller* (Fr.), the worst or last shift.  
*plebs* (L.), the common people.  
*poco à poco* (It.), little by little. [called for.]  
*poste restante* (Fr.), to remain in the post-office till  
*prima vista* (L.), at first view, or consideration.  
*primus inter pares* (L.), first among equals.  
*pro forma* (L.), for the sake of form.  
*pro patria* (L.), for our country.  
*pro tanto* (L.), for so much; for as far as it goes.  
*pro tempore* (L.), for the time being.  
*quid pro quo* (L.), one thing for another; tit for tat; an equivalent.  
*qui m'aime, aime mon chien* (Fr.), love me, love my dog. [sent.]  
*qui tacet consentit* (L.), he who is silent gives consent.  
*quod erat demonstrandum* (L.), which was to be proved or demonstrated.  
*quod erat faciendum* (L.), which was to be done.  
*quod vide* (L.), which see; refer to the word just mentioned.  
*quo jure ?* (L.), by what right ? [tence.]  
*raison d'être* (Fr.), the reason for a thing's existence (L.), in the matter or affair of.  
*reculer pour mieux sauter* (Fr.), to draw back in order to make a better spring.

*reductio ad absurdum* (L.), the reducing of a position to a logical absurdity.  
*requiescat in pace* (L.), may he (or she) rest in peace.  
*respicere finem* (L.), look to the end.  
*respublica* (L.), the commonwealth.  
*revenons à nos moutons* (Fr.), let us return to our sheep; let us return to our subject.  
*re vera* (L.), in truth.  
*sans peur et sans reproche* (Fr.), without fear and without reproach.  
*sans rime ni raison* (Fr.), without rhyme or reason.  
*sans souci* (Fr.), without care.  
*sartor resartus* (L.), the butcher repatched; the tailor patched or mended.  
*sauve qui peut* (Fr.), let him save himself who can.  
*savoir-faire* (Fr.), the knowing how to act; tact.  
*savoir-vivre* (Fr.), good-breeding; refined manners.  
*semper idem* (L.), always the same.  
*serialim* (L.), in a series; one by one.  
*sic passim* (L.), so here and there throughout; so everywhere.  
*sicut ante* (L.), as before.  
*sine die* (L.), without a day being appointed.  
*sine mora* (L.), without delay.  
*sine qua non* (L.), without which, not; indispensable condition.  
*sotto voce* (It.), in an undertone.  
*spirituel* (Fr.), intellectual; witty.  
*stet* (L.), let it stand; do not delete.  
*sub iudice* (L.), under consideration.  
*sub pœna* (L.), under a penalty.  
*sub rosa* (L.), under the rose; privately.  
*sub voce* (L.), under such or such a word.  
*sui generis* (L.), of its own or of a peculiar kind.  
*summum bonum* (L.), the chief good.  
*tableau vivant* (Fr.), a living picture; the representation of some scene by a group of persons.  
*tant mieux* (Fr.), so much the better.  
*tant pis* (Fr.), so much the worse.  
*tempora mutantur, nos et mutamur in illis* (L.), the times are changing and we with them.  
*tempus fugit* (L.), time flies.  
*tête-à-tête* (Fr.), together in private.  
*tiers état* (Fr.), the third estate; the commons.  
*to kalon* (Gr.), the beautiful; the chief good.  
*to prepon* (Gr.), the becoming or proper.  
*tour de force* (Fr.), a feat of strength or skill.  
*tout à fait* (Fr.), wholly; entirely.  
*tout à l'heure* (Fr.), instantly.  
*tout de suite* (Fr.), immediately.  
*tu quoque* (L.), thou also.  
*ubique* (L.), everywhere.  
*ubi supra* (L.), where above mentioned.  
*ultra licitum* (L.), beyond what is allowable.  
*ultra vires* (L.), beyond powers or rights conferred by law.  
*urbi et orbi* (L.), to the city (Rome) and the world.  
*utile dulci* (L.), the useful with the pleasant.  
*ut infra* (L.), as below.  
*ut supra* (L.), as above stated.  
*vade in pace* (L.), go in peace.  
*varie lectiones* (L.), various readings.  
*variorum note* (L.), the notes of various commentators.  
*vede et crede* (L.), see and believe.  
*veni, vidi, vici* (L.), I came, I saw, I conquered.  
*verbatim et literatim* (L.), word for word and letter for letter.  
*verbum sat sapienti* (L.), a word is enough for a wise man.  
*ver non semper viret* (L.), spring is not always green.  
*vezata questio* (L.), a disputed question.  
*via media* (L.), a middle course.  
*via trita, via luta* (L.), the beaten path is the safe path.  
*vice versa* (L.), the terms of the case being reversed.  
*videlicet* (L.), that is to say; namely.  
*vi et armis* (L.), by force of arms; by main force; by violence.  
*vigilate et orate* (L.), watch and pray.  
*vita brevis, ars longa* (L.), life is short; art is long.  
*vinat regina* ! (L.), long live the queen !  
*vivat rex* ! (L.), long live the king !  
*viva voce* (L.), by the living voice; orally.  
*voilà* (Fr.), behold; there is; there are.  
*voilà tout* (Fr.), that's all.  
*volo, non valeo* (L.), I am willing, but unable.  
*vox populi, vox Dei* (L.), the voice of the people is the voice of God.



## ABBREVIATIONS IN COMMON USE

## A

A.1.—First class (at Lloyd's).  
 A.A.—Automobile Association.  
 A.A.A.—Amateur Athletic Association.  
 A.A.O.C.A.—Associate of the Association of Certified and Corporate Accountants.  
 A.A.I.—Associate of the Chartered Auctioneers' and Estate Agents' Institute.  
 A.B.—Able-bodied Seaman.  
 A.B.A.—Amateur Boxing Association.  
 A.B.C.—Aerated Bread Company; Associated British Cinemas; Associated Broadcasting Company Limited; the Alphabet.  
 A.C.A.—Associate of Institute of Chartered Accountants.  
 A.C.C.S.—Associate of the Corporation of Certified Secretaries.  
 A.C.I.S.—Associate of the Chartered Institute of Secretaries.  
 A.C.P.—Associate of the College of Preceptors.  
 A.D.—*Anno Domini* (In the year of our Lord).  
 A.D.A.—Atomic Development Authority.  
 A.D.C.—Aide-de-Camp. [same degree].  
 Ad eund.—*Ad eundem gradum* (admitted to the Ad. lib.—*ad libitum* (at pleasure)).  
 A.F.A.S.—Associate of the Faculty of Architects and Surveyors.  
 A.F.C.—Air Force Cross.  
 A.F.L.—American Federation of Labour.  
 A.I.A.—Associate of the Institute of Actuaries.  
 A.I.A.C.—Associate of the Institute of Company Accountants.  
 A.I.B.P.—Associate of the Institute of British Photographers.  
 A.I.I.A.—Associate of the Institute of Industrial Administration.  
 A.Inst.P.—Associate of the Institute of Physics.  
 A.I.R.I.—Associate of the Institution of Rubber Industry.  
 A.L.A.—Associate of the Library Association.  
 A.L.S.—Associate of the Linnean Society.  
 A.M.—*Anno Mundi* (Year of the World); *Ante Meridie* (before midday); *Artium Magister* (Master of Arts).  
 A.M.I.Chem.E.—Associate Member of the Institution of Chemical Engineers.  
 A.M.I.C.E.—Associate Member of the Institution of Civil Engineers.  
 A.M.I.E.E.—Associate Member of the Institution of Electrical Engineers.  
 A.M.I.Mech.E.—Associate Member of the Institution of Mechanical Engineers.  
 A.M.I.Mun.E.—Associate Member of the Institution of Municipal Engineers.  
 Anon.—Anonymous.  
 A.P.—Associated Press.  
 A.P.M.—Assistant Provost Marshal.  
 A.R.A.—Associate of the Royal Academy.  
 A.R.A.M.—Associate of the Royal Academy of Music.  
 A.R.C.A.—Associate of Royal College of Arts.  
 A.R.C.M.—Associate of Royal College of Music.  
 A.R.C.O.—Associate of Royal College of Organists.  
 A.R.C.S.—Associate of Royal College of Science.  
 A.R.I.B.A.—Associate of the Royal Institute of British Architects.  
 A.R.I.C.S.—Associate of the Royal Institution of Chartered Surveyors.  
 A.R.P.—Air Raid Precautions. [Society].  
 A.R.P.S.—Associate of the Royal Photographic Society.  
 A.R.S.M.—Associate of the Royal School of Mines.  
 A.R.W.S.—Associate of Royal Society of Painters in Water-Colours.  
 A.S.—Anglo-Saxon; Academy of Science.  
 A.S.A.A.—Associate of the Society of Incorporated Accountants and Auditors.  
 A.S.D.I.C.—Anti-Submarine Detector Indicator Committee.  
 A.T.C.—Air Training Corps.  
 A.U.C.—*Anno urbis condite* (in the year of the founding of the city).  
 A.V.—Authorised Version.

## B

b.—born; bowled.  
 B.A.—Buenos Aires; Bachelor of Arts.

B.A.O.R.—British Army of the Rhine.  
 B.Arch.—Bachelor of Architecture.  
 Bart. or Bt.—Baronet.  
 B.B.C.—British Broadcasting Corporation.  
 B.C.—Before Christ; British Columbia.  
 B.Ch (or Ch.B.)—Bachelor of Surgery.  
 B.C.L.—Bachelor of Civil Law.  
 B.Com.—Bachelor of Commerce.  
 B.D.—Bachelor of Divinity.  
 Bde.—Brigade.  
 B.D.S. (B.Ch.D.)—Bachelor of Dental Surgery.  
 B.Eng.—Bachelor of Engineering.  
 B.E.A.C.—British European Airways Corporation.  
 B.E.F.—British Expeditionary Force.  
 B.E.M.—British Empire Medal.  
 B.I.S.—Bank of International Settlements; British Information Service (in U.S.).  
 B.Litt.—Bachelor of Letters.  
 B.M.A.—British Medical Association.  
 B.Mus.—Bachelor of Music.  
 B.O.A.C.—British Overseas Airways Corporation.  
 B.O.T.—Board of Trade.  
 Brit. Ass.—British Association.  
 B.R.—British Restaurant; British Railways.  
 B.Sc.—Bachelor of Science.  
 B.S.I.—British Standards Institution.  
 B.S.T.—British Summer Time.  
 B.Th.—Bachelor of Theology.  
 B.Th.U.—British thermal unit.  
 B.V.M.—Blessed Virgin Mary.

## C

c.—Cents; centimes; *circa* (about).  
 C.—Roman numeral for 100; Conservative; Centigrade.  
 C.A.—Chartered Accountant.  
 Cantab.—Of Cambridge University.  
 Cantuar.—Of Canterbury.  
 Cap.—Chapter (Latin, *caput*). [fined to Barracks].  
 C.B.—Companion of the Order of the Bath; Con.  
 C.B.E.—Commander of the Order of the British Empire.  
 C.C.—County Council. [Empire].  
 cc.—cubic centimetres.  
 C.E.—Civil Engineer.  
 C.E.A.—Central Electricity Authority (formerly B.E.A. (British Electricity Authority)).  
 C.E.M.A.—Council for the Encouragement of Music and the Arts. (Superseded by Arts Council of Great Britain.)  
 C.F.—Chaplain to the Forces.  
 Cf.—*confer* (compare).  
 C.G.M.—Conspicuous Gallantry Medal. [T.U.C.).  
 C.G.T.—Confédération Générale du Travail (French).  
 C.H.—Companion of Honour.  
 Ch.M.—Master of Surgery (Edinburgh).  
 C.I.—Imperial Order of the Crown of India; Channel Islands.  
 C.I.D.—Criminal Investigation Department.  
 C.I.E.—Companion of the Order of the Indian Empire.  
 Cie.—Compagnie (Company).  
 c.i.f.—Cost, Insurance and Freight.  
 C.I.G.S.—Chief of the Imperial General Staff.  
 C.I.O.—Congress of Industrial Organisations.  
 C.-in-C.—Commander-in-Chief. [U.S.A.).  
 Circ.—*Circa* (about).  
 C.J.—Chief Justice.  
 C.L.B.—Church Lads' Brigade.  
 C.M.G.—Companion of St. Michael and St. George.  
 C.M.S.—Church Missionary Society.  
 C.O.—Commanding Officer; Colonial Office; Conscientious Objector.  
 Co.—County; Company.  
 c/o.—care of.  
 C.O.D.—Cash on Delivery.  
 C. of E.—Church of England.  
 C. of I.—Church of Ireland.  
 C. of S.—Church of Scotland.  
 C.O.I.—Central Office of Information.  
 C.O.S.—Charity Organisation Society.  
 C.P.R.—Canadian Pacific Railway.  
 Cr.—Creditor; crown; created.  
 C.S.C.—Conspicuous Service Cross. [India].  
 C.S.I.—Companion of the Order of the Star of St. J.—Commander of the Order of St. John of C.T.C.—Cyclists' Touring Club. [Jerusalem].  
 C.U.—Cambridge University.  
 C.U.A.C.—Cambridge University Athletic Club.

C.U.F.C.—Cambridge University Football Club.  
C.V.O.—Commander of the Royal Victorian Order.  
Cwt.—Hundredweight.

**D**

D.—Duke; 500 (Roman numerals).  
d.—Pence (Lat. *denarius*): died; daughter.  
D.B.E.—Dame of Order of British Empire.  
D.C.—District of Columbia, U.S.A.  
D.C.L.—Doctor of Civil Law.  
D.C.M.—Distinguished Conduct Medal.  
D.D.—Doctor of Divinity.  
D.D.S.—Doctor of Dental Surgery.  
D.D.T.—Dichloro-Diphenyl-Trichlorethane.  
deg.—Degree.  
del.—*L. delinavit* (he drew).  
Dele. or d.—Delete, cancel.  
D.F.C.—Distinguished Flying Cross.  
D.G.—*Dei Gratia* (by the Grace of God).  
Dioc.—Diocese; Diocesan.  
Ditto or do.—The same.  
D.L.—Deputy-Lieutenant.  
D.Litt. (Camb.)—Doctor of Letters.  
D.Litt. (Oxon.)—Doctor of Literature.  
D.N.B.—Dictionary of National Biography.  
Dol. or \$.—Dollar. [the greatest].  
D.O.M.—*Deo Optimo Maximo* (To God, the best).  
Dom.—Dominus.  
D.P.H.—Diploma in Public Health.  
Dr.—Doctor; debtor.  
dr.—Drachm.  
D.Sc.—Doctor of Science.  
D.S.C.—Distinguished Service Cross.  
D.M.—Doctor of Medicine (Oxford).  
D.S.I.R.—Department of Scientific and Industrial Research.  
D.S.M.—Distinguished Service Medal. [Order].  
D.S.O.—Companion of the Distinguished Service.  
D.Th.—Doctor of Theology.  
D.V.—*L. Deo volente* (God willing).  
dwt.—Pennyweight.

**E**

E. and O.E.—Errors and Omissions Excepted.  
Ebor.—York.  
E.C.A.—Economic Co-operation Administration (superseded by M.S.A.).  
Eccel.—Ecclesiastical.  
E.C.E.—Economic Council for Europe.  
E.C.O.—European Coal Organisation.  
Ed.—Editor; Edition.  
e.g.—*L. exempli gratia* (for example).  
Enc. Brit.—Encyclopedia Britannica.  
E.R.—Elizabeth Regina (Queen Elizabeth).  
E.R.P.—European Recovery Programme.  
Et al.—*Et alibi* (and elsewhere).  
Etc., &c.—*Et cetera* (and other things).  
Et seq.—and the following.

**F**

f.—fathom; franc; founded.  
F. or Fahr.—Fahrenheit.  
F.A.—Football Association.  
F.A.C.C.A.—Fellow of the Association of Certified and Corporate Accountants.  
F.A.I.—Fellow of the Chartered Auctioneers' and Estate Agents' Institute.  
F.A.N.Y.—First Aid Nursing Yeomanry.  
F.A.O.—Food and Agricultural Organisation.  
F.A.S.—Fellow of the Antiquarian Society.  
F.B.A.—Fellow of the British Academy.  
F.B.I.—Federation of British Industries; Federal Bureau of Investigation.  
F.B.O.A.—Fellow of the British Optical Association.  
F.B.S.—Fellow of the Botanical Society.  
F.C.A.—Fellow of Institute of Chartered Accountants.  
F.C.C.S.—Fellow of the Corporation of Certified Secretaries.  
F.C.I.S.—Fellow of the Chartered Institute of Secretaries.  
F.C.P.—Fellow of the College of Preceptors.  
F.C.S.—Fellow of the Chemical Society.  
F.D.—*L. Defensor Fidei* (Defender of the Faith).  
ff.—folios; and following; fortissimo.  
F.G.S.—Fellow of the Geological Society.  
F.I.A.—Fellow of the Institute of Actuaries.  
F.I.A.A.—Fellow Incorporated Association Architects.

F.I.A.C.—Fellow of the Institute of Company Accountants.  
F.I.A.S.—Fellow Incorporated Association Surveyors.  
F.I.B.P.—Fellow of the Institute of British Photographers.  
F.I.F.—Fellow of the Institute of Fuel.  
F.I.I.A.—Fellow of the Institute of Industrial Administration.  
F.I.M.—Fellow of the Institute of Metallurgy.  
F.Inst.P.—Fellow of the Institute of Physics.  
F.I.R.I.—Fellow of the Institution of the Rubber Industry.  
F.J.I.—Fellow of the Institute of Journalists.  
F.L.A.—Fellow of the Library Association.  
Flor.—*Floruit* (he or she flourished).  
F.L.S.—Fellow of the Linnean Society.  
F.M.—Field Marshal.  
Fo.—Folio (one sheet).  
f.o.b.—Free on Board. [Great Britain].  
F.P.S.—Fellow of the Pharmaceutical Society of F.R.Ae.S.—Fellow of the Royal Aeronautical Society. [Music].  
F.R.A.M.—Fellow of the Royal Academy of F.R.A.S.—Fellow of the Royal Astronomical Society; or of the Royal Asiatic Society.  
F.R.C.M.—Fellow of the Royal College of Music.  
F.R.C.O.—Fellow of the Royal College of Organists. [sicilians].  
F.R.C.P.—Fellow of the Royal College of Physicians.  
F.R.C.P.E.—Fellow of the Royal College of Physicians, Edinburgh.  
F.R.C.S.—Fellow of the Royal College of Surgeons.  
F.R.C.V.S.—Fellow of the Royal College of Veterinary Surgeons.  
F.R.F.P.S.—Fellow of the Royal Faculty of Physicians and Surgeons. [Society].  
F.R.G.S.—Fellow of the Royal Geographical F.R.Hist.Soc.—Fellow of the Royal Historical Society.  
F.R.H.S.—Fellow of the Royal Horticultural Society. [British Architects].  
F.R.I.B.A.—Fellow of the Royal Institute of F.R.I.C.—Fellow of the Royal Institute of Chemistry.  
F.R.I.C.S.—Fellow of the Royal Institution of Chartered Surveyors.  
F.R.M.S.—Fellow of the Royal Microscopical Society.  
F.R.Met.S.—Fellow of the Royal Meteorological Society.  
F.R.P.S.—Fellow of the Royal Photographic Society.  
F.R.S.—Fellow of the Royal Society.  
F.R.S.A.—Fellow of the Royal Society of Arts.  
F.R.S.E.—Fellow of the Royal Society of Edinburgh.  
F.R.S.L.—Fellow of the Royal Society of Literature.  
F.S.A.—Fellow of the Society of Antiquaries.  
F.S.A.A.—Fellow of the Society of Incorporated Accountants and Auditors.  
F.S.M.C.—Fellow of the Spectacle Makers Company.  
F.S.S.—Fellow of the Statistical Society.  
F.Z.S.—Fellow of the Zoological Society.

**G**

G.A.T.T.—General Agreement on Trade and Tariffs.  
G.B.E.—Knight (or Dame) Grand Cross of the Order of the British Empire.  
G.C.—George Cross.  
G.C.B.—Knight Grand Cross of the Bath.  
G.C.I.E.—Knight Grand Commander of the Indian Empire.  
G.C.M.G.—Knight Grand Cross of St. Michael and St. George.  
G.C.S.I.—Knight Grand Commander of Star of India. [Royal Victorian Order].  
G.C.V.O.—Knight (or Dame) Grand Cross of G.H.Q.—General Head-Quarters.  
G.I.—American soldier (from the army term "Government Issue" applied to kit and equipment).  
G.M.—George Medal; Grand Master. [ment].  
G.M.C.—General Medical Council.  
G.M.T.—Greenwich Mean Time.  
G.O.C.—General Officer Commanding.  
G.O.M.—Grand Old Man.  
Govt.—Government.  
G.P.—General Practitioner.  
G.P.O.—General Post Office.  
G.T.C.—Girls Training Corps.



## H

H.E.—His Excellency; His Eminence; High Explosive.  
 Heb.—Hebrew.  
 H.H.—His (or Her) Highness.  
 Hhd.—Hogshead.  
 H.I.H.—His (or Her) Imperial Highness.  
 H.I.M.—His (or Her) Imperial Majesty.  
 H.J.S.—*Hic jacet sepultus* (Here lies buried).  
 H.M.—His (or Her) Majesty.  
 H.M.A.S.—Her Majesty's Australian Ship.  
 H.M.I.—Her Majesty's Inspector.  
 H.M.S.—Her Majesty's Ship; or Service.  
 H.M.S.O.—Her Majesty's Stationery Office.  
 Hon.—Honourable.  
 h.p.—horse-power; or half-pay.  
 H.R.E.—Holy Roman Empire.  
 H.R.H.—His (or Her) Royal Highness.  
 H.V.—Health Visitor.  
 H.W.M.—High Water Mark.

## I

I.—*Imperator*, or *Imperatrix* (Emperor or Empress).  
 Ib. or *ibid.*—*ibidem* (in the same place).  
 I.C.F.T.U.—International Confederation of Free Trade Unions.  
 I.C.I.—Imperial Chemical Industries.  
 Id.—(*idem*) the same.  
 I.D.B.—Illicit diamond buying.  
 i.e.—*id est* (that is).  
 Ign.—*ignotus* (unknown).  
 I.H.S.—*Iesus Hominum Salvator* (Jesus the Saviour of Men).  
 I.L.O.—International Labour Office.  
 I.L.P.—Independent Labour Party.  
 imp.—Imperial.  
 Inc.—Incorporated.  
 Incog.—*Incognito* (in secret).  
 Inf.—*infra* (below).  
 In loc.—*in loco* (in its place).  
 Inst.—Instant; Institute; Institution.  
 int.—Interest.  
 inv.—*invenit* (he designed).  
 I.O.G.T.—Independent Order of Good Templars.  
 I.O.M.—Isle of Man.  
 I.O.O.F.—Independent Order of Odd Fellows.  
 I.O.U.—I owe you.  
 I.o.W.—Isle of Wight.  
 I.q.—*Idem quod* (the same as).  
 I.Q.—Intelligence Quotient.  
 I.R.—Inland Revenue.  
 I.R.A.—Irish Republican Army.  
 I.R.O.—International Refugee Organisation.  
 I.S.M.A.—Incorporated Sales Managers' Association.  
 I.S.O.—Imperial Service Order; International Standardization Organisation.  
 I.S.S.—International Student Service.  
 I.T.A.—Independent Television Authority (set up in 1954); Institute of Travel Agents; Industrial Transport Association; Invalid Tricycle Association.  
 I.T.U.—International Telecommunications Union.  
 Ital. or It.—Italian; Italics; Italy.

## J

J.P.—Justice of the Peace.

## K

K.B.E.—Knight Commander of British Empire.  
 K.C.—King's Counsel.  
 K.C.B.—Knight Commander of the Bath.  
 K.C.I.E.—Knight Commander of the Indian Empire.  
 K.C.M.G.—Knight Commander of St. Michael and St. George.  
 K.C.S.I.—Knight Commander of the Star of India.  
 K.C.V.O.—Knight Commander of the Royal Victorian Order.  
 K.G.—Knight of the Order of the Garter.  
 Kil. or Km.—Kilometre.  
 Kilo or KG.—Kilogramme.  
 K.P.—Knight of the Order of St. Patrick.  
 K.T.—Knight of the Order of the Thistle.  
 Kt. (or Knt.).—Knight Bachelor.

## L

L.—50 (Roman numerals).  
 L.A.C.—London Athletic Club.  
 L.A.H.—Licentiate of Apothecaries' Hall, Dublin.  
 lat.—Latitude.  
 Lat.—Latin.  
 lb.—pound (weight).  
 l.b.w.—leg before wicket.  
 L.C.C.—London County Council.  
 L.C.J.—Lord Chief Justice.  
 L.C.P.—Licentiate of the College of Preceptors.  
 L.D.S.—Licentiate in Dental Surgery.  
 Lic. Med.—Licentiate in Medicine.  
 lit.—Literature; Literary.  
 Lit. Hum.—Classics.  
 Litt. D.—Doctor of Literature.  
 L.J.—Lord Justice.  
 L.L.—Lord Lieutenant.  
 LL.B.—Bachelor of Laws.  
 LL.D.—Doctor of Laws.  
 LL.M.—Master of Laws.  
 L.M.—Licentiate in Midwifery.  
 L.M.S.S.A.—Licentiate in Medicine and Surgery, Soc. of Apothecaries.  
 loc. cit.—*loco citato* (in the place referred to).  
 long.—Longitude.  
 Loq.—*Loquitur* (speaks).  
 L.P.—Lord Provost.  
 L.R.A.M.—Licentiate of Royal Academy of Music.  
 L.R.C.P.—Licentiate of the Royal College of Physicians.  
 L.R.C.S.—Licentiate of the Royal College of L.R.C.S.E.—Licentiate of the Royal College of Surgeons, Edinburgh.  
 L.S.—*Locus sigilli* (place for the seal).  
 L.S.D.—*Librae, Solidi, Denarii* (Pounds, shillings and pence).  
 L.S.E.—London School of Economics.  
 L.T.A.—Lawn Tennis Association.  
 Ltd.—Limited.  
 L.W.M.—Low-water mark.

## M

M.—Member; Monsieur; 1000 (Roman numerals).  
 M.A.—Master of Arts.  
 M.A.F.—Ministry of Agriculture and Fisheries.  
 M.B.—Bachelor of Medicine.  
 M.B.E.—Member of British Empire.  
 M.C.—Master of Ceremonies; Military Cross.  
 M.C.C.—Marylebone Cricket Club.  
 M.Ch.—Master of Surgery.  
 M.Ch.D.—Master of Dental Surgery.  
 M.C.S.P.—Member of the Chartered Society of M.D.—Doctor of Medicine. (Physiotherapy).  
 M.D.S.—Master of Dental Surgery.  
 M.F.H.—Master of Foxhounds.  
 Mgr.—Monseigneur; Monsignor.  
 M.I.—Military Intelligence.  
 M.I.Chem.E.—Member of Institution of Chemical Engineers. (Engineers).  
 M.I.C.I.—Member of the Institution of Civil M.I.E.E.—Member of the Institution of Electrical Engineers.  
 M.I.Mar.E.—Member of the Institute of Marine Engineers.  
 M.I.Mech.E.—Member of the Institution of Mechanical Engineers.  
 M.Inst.Met.—Member of Institute of Metals.  
 M.I.Min.E.—Member of the Institution of Mining Engineers.  
 M.I.Mun.E.—Member of the Institution of Municipal Engineers. (Architects).  
 M.Inst.N.A.—Member of Institute of Naval M.Inst.T.—Member of Institute of Transport.  
 M.I.T.M.A.—Member of the Institute of Trade Mark Agents.  
 M.J.I.—Member of Institute of Journalists.  
 Mle.—*Maisemoiselle* (Miss).  
 mm.—millimetres.  
 M.M.—Military Medal.  
 MM.—Messieurs; Gentlemen.  
 Mme.—Madame.  
 Mods.—Moderation (first public exam. at Oxford).  
 M.O.H.—Medical Officer of Health; Ministry of Health.  
 M.P.—Member of Parliament; Military Police.  
 m.p.h.—miles per hour.  
 M.P.S.—Member of the Pharmaceutical Society of Great Britain. (Society).  
 M.R.Ae.S.—Member of the Royal Aeronautical

M.R.A.S.—Member of the Royal Asiatic Society.  
M.R.C.P.—Member of the Royal College of Physicians.  
M.R.C.P.E.—Member of the Royal College of Physicians, Edinburgh. [Surgeons.  
M.R.C.S.—Member of the Royal College of Surgeons, Edinburgh.  
M.R.C.S.E.—Member of the Royal College of Surgeons, Edinburgh.  
M.R.C.V.S.—Member of the Royal College of Veterinary Surgeons.  
M.R.I.—Member of the Royal Institution.  
M.R.P.—Mouvement Républicain Populaire (Right Party in France).  
M.S.—Master of Surgery.  
MS.—Manuscript, Manuscripts.  
M.S.A.—Mutual Security Agency (took place of E.C.A.).  
M.Sc.—Master of Science.  
M.T.B.—Motor Torpedo Boat.  
mt.—mountain.  
Mus. Bac. or B.—Bachelor of Music.  
Mus. Doc. or D.—Doctor of Music.  
M.V.D.—Russian Police. (Descendant of N.K.V.D. and O.G.P.U.)  
M.V.O.—Member of the Royal Victorian Order.

N

n.—noun; nephew.  
N.A.A.F.I.—Navy, Army and Air Force Institutes.  
NATO.—North Atlantic Treaty Organisation.  
N.B.—*L. Nota Bene* (note well); North Britain.  
N.C.B.—National Coal Board.  
N.C.O.—Non-Commissioned Officer.  
N.C.U.—National Cyclists' Union.  
Nem. Con.—*Nemine contradicente* (no one contradicting); unanimously.  
Nem. diss.—*Nemine dissente* (no person disagreeing); unanimously.  
Net. Nett.—(It.) (*Netto*) free from all deductions.  
N.K.V.D.—People's Commissariat for Internal Affairs (took place of O.G.P.U.); controlled the Police. Superseded by M.V.D.  
No.—*Numero* (number).  
Non seq.—*Non sequitur* (it does not follow).  
N.P.—Notary Public.  
N.R.A.—National Rifle Association.  
N.S.—Nova Scotia; New Style in the Calendar (in Great Britain since 1752).  
N.S.P.C.C.—National Society for the Prevention of Cruelty to Children.  
N.S.W.—New South Wales. [South Australia.  
N.T.—New Testament; Northern Territory of N.U.R.—National Union of Railwaymen.  
N.U.T.—National Union of Teachers.  
N.W.P.—North-western Provinces.  
N.W.T.—North-western Territories.  
N.Z.—New Zealand.

O

%—per cent.  
ob., or obit.—Died.  
Obs.—Obsolete.  
O.B.E.—Officer British Empire Order.  
O.C.T.U.—Officer Cadet Training Unit.  
O.E.D.—Oxford English Dictionary.  
O.E.E.C.—Organisation for European Economic Co-operation (Marshall Aid).  
O.G.P.U.—Russian Police. Superseded by N.K.V.D.  
O.H.M.S.—On Her Majesty's Service.  
O.K.—Slang term for all correct (*ori krekt*).  
O.M.—Order of Merit.  
op. cit.—*opere citato* (in the work cited).  
o/p.—Out of print.  
O.P.—*Ordinis Predicatorum* (of the Order of Preachers—Dominican ecclesiastical title).  
O.P.—Opposite to prompter (stage term); out of print.  
O.S.—Old Style in the Calendar (of Great Britain before 1752); ordinary seaman.  
O.T.—Old Testament.  
O.T.C.—Officers' Training Corps; Organization for Trade Co-operation (set up in 1955 to administer G.A.T.T.).  
O.U.—Oxford University.  
O.U.A.C.—Oxford University Athletic Club.  
O.U.B.C.—Oxford University Boating Club.  
Ovo.—Octavo.  
Oxon.—Oxfordshire; of Oxford University.  
oz.—Ounce.

P

P.E.N.—Poets, Playwrights, Essayists, Editors and Novelists (Club).  
P.E.P.—Political and Economic Planning (Society).  
P.C.—Privy Councillor; Police Constable.  
p.c.—*per centum* (by the hundred); postcard.  
P.D.S.A.—People's Dispensary for Sick Animals.  
Per pro.—Per procurator.  
Ph.D.—Doctor of Philosophy.  
pinx(it).—He (or She) painted it.  
Pl.—Place; Plural.  
P.L.A.—Port of London Authority.  
PLUTO.—Pipe Line Under The Ocean.  
P.M.—*Post Meridiem* (after midday); Pacific Mail; Prime Minister.  
P.M.G.—Postmaster-General.  
P.M.O.—Principal Medical Officer.  
P.N.E.U.—Parents' National Education Union.  
P.O.—Post Office.  
P. & O.—Peninsular and Oriental Steamship Co.  
Pop.—Population.  
pp.—pages.  
P.P.C.—Fr. *Pour prendre congé* (to take leave).  
P.P.E.—Philosophy, Politics, and Economics.  
P.P.S.—Further postscript.  
P.Q.—Parliamentary Question.  
P.R.A.—President of the Royal Academy.  
Preb.—Prebendary.  
Pres.—President.  
P.R.I.—President of the Royal Institute (of Painters in Water Colours).  
P.R.P.—President of the Royal Society of Portrait Painters.  
Prof.—Professor.  
Pro tem.—*Pro tempore* (for the time being).  
Prov.—Provost.  
Prox.—*Proximo* (next).  
P.R.S.—President of the Royal Society.  
Ps.—Psalm.  
P.S.—*Postscriptum* (postscript).  
P.T.—Physical Training.  
Pte.—Private.  
P.T.O.—Please turn over.

Q

Q.—Queen.  
Q.C.—Queen's Counsel.  
q.e.d.—*quod erat demonstrandum* (which was to be proved, applied to a theorem).  
q.e.f.—*quod erat faciendum* (which was to be done, applied to a problem).  
Q.M.C.—Queen Mary College.  
Q.M.G.—Quartermaster-General.  
Qto.—(Quarto) folded in four. [tity].  
Quant. suff.—*Quantum sufficit* (a sufficient quantity).  
q.v.—*quod vide* (which see).

R

R.—Réaumur.  
R.A.—Royal Academy; Royal Academician; Royal Artillery.  
R.A.C.—Royal Armoured Corps; Royal Automobile Club.  
R.Ae.C.—Royal Aero Club.  
R.Ae.S.—Royal Aeronautical Society.  
R.A.F.—Royal Air Force.  
R.A.M.—Royal Academy of Music.  
R.A.M.C.—Royal Army Medical Corps.  
R.A.N.—Royal Australian Navy.  
R.A.O.C.—Royal Army Ordnance Corps.  
R.A.P.C.—Royal Army Pay Corps.  
R.A.S.—Royal Astronomical, or Asiatic, Society.  
R.A.S.C.—Royal Army Service Corps.  
R.A.V.C.—Royal Army Veterinary Corps.  
R.B.A.—Royal (Society of) British Artists.  
k.B.S.—Royal Society of British Sculptors.  
R.C.—Roman Catholic.  
R.C.N.—Royal Canadian Navy.  
R.C.V.S.—Royal College of Veterinary Surgeons.  
R.D.—Royal Naval Reserve Decoration; Rural Dean; Refer to Drawer.  
R.D.C.—Rural District Council.  
R.D.I.—Designer for Industry of the Royal Society of Arts.  
R.E.—Royal Engineers.  
Rear-Adm.—Rear-Admiral.  
Rec.—Recorder.  
Rect.—Rector.



Reg. Prof.—Regius Professor.  
 Regt.—Regiment; Regent. [Engineers.  
 R.E.M.E.—Royal Electrical and Mechanical  
 Res.—Resigned; reserve.  
 Rev.—Reverend.  
 R.G.S.—Royal Geographical Society.  
 R.H.A.—Royal Horse Artillery; Royal Hibernian  
 Academy.  
 R.Hist.S.—Royal Historical Society.  
 R.H.S.—Royal Humane Society.  
 R.I.—Rhode Island; Royal Institution; Royal  
 Institute (of Painters in Water Colours).  
 R.I.B.A.—Royal Institute of British Architects.  
 R.I.I.A.—Royal Institute of International Affairs  
 (Chatham House, London).  
 R.I.P.—*Requiescat in pace* (may he or she rest in  
 peace).  
 R.L.O.—Returned Letter Office.  
 R.M.—Royal Marines; Resident Magistrate.  
 R.M.A.—Royal Military Academy.  
 R.M.S.—Royal Meteorological Society; Royal  
 Mail Steamer.  
 R.N.—Royal Navy. [tion.  
 R.N.L.I.—Royal National Life-Boat Institu-  
 R.N.R.—Royal Naval Reserve.  
 R.N.V.R.—Royal Naval Volunteer Reserve.  
 Ro. (recto).—on the right-hand page.  
 R.O.I.—Royal Institute of Oil Painters.  
 R.P.—Member of the Royal Society of Portrait  
 Painters.  
 r.p.m.—revolutions per minute.  
 R.S.A.—Royal Society of Arts; Royal Scottish  
 Academician.  
 R.S.M.—Regimental Sergeant Major.  
 R.S.P.C.A.—Royal Society for the Prevention of  
 Cruelty to Animals. [answer.  
 R.S.V.P.—(Fr. *Répondez s'il vous plaît*) please  
 R.S.W.—Royal Scottish Society of Painters in  
 Water Colours.  
 R.T.O.—Railway Transport Officer.  
 Rt. Hon.—Right Honourable.  
 Rt. Rev.—Right Reverend (of a Bishop).  
 R.U.—Rugby Union.  
 R.V.—Revised Version.  
 R.W.S.—Royal Society of Painters in Water  
 Colours.  
 E.Y.S.—Royal Yacht Squadron. [Colours.

## S

s.—succeeded; son; shilling.  
 S.—South; Saint. [America.  
 S.A.—South Australia; South Africa; South  
 Sarum.—Salisbury.  
 Sc.—*Scilicet* (to wit).  
 SCAP.—Supreme Command Allied Powers.  
 Sc.D.—Doctor of Science.  
 S.C.M.—State Certified Midwife; Student  
 Christian Movement.  
 sculptures.—*sculpsit* (he engraved). [Treaty.  
 S.E.A.T.O.—South-East Asia Collective Defence  
 Sec.—Secretary; Second.  
 s.f.—*sub finem* (near the end).  
 S.G.—Solicitor-General. [in Europe.  
 SHAPE.—Supreme Headquarters of Allied Powers  
 Sic.—So written.  
 S.J.—Society of Jesus (Jesuits).  
 S.O.—Sub Office (Postal).  
 S.O.S.—“Save Our Souls,” Distress Signal.  
 s.p.—*sine prole* (without issue).  
 S.P.C.K.—Society for Promoting Christian  
 Knowledge.  
 S.P.G.—Society for the Propagation of the  
 Gospel. [Senate and People of Rome).  
 S.P.Q.R.—*Senatus Populusque Romanus* (The  
 Sq.—Square.  
 S.R.N.—State Registered Nurse.  
 S.S.—Steamships; Saints.  
 S.S.A.F.A.—Soldiers', Sailors' and Airmen's  
 Families Association.  
 S.S.C.—Solicitor before Supreme Court (Scotland).  
 St.—Street; Saint.  
 Stet.—Let it stand.  
 Stip.—Stipend; Stipendiary.  
 Supt.—Superintendent.  
 Syn.—Synonymous; synonym.

## T

T.A.—Territorial Army.  
 t.b.—Tuberculosis.  
 T.C.D.—Trinity College, Dublin.  
 T.D.—Territorial Decoration.  
 Temp.—Temperature; Temporary.

## Tn.—Ton.

T.N.T.—Trinitrotoluene (High Explosive).  
 Toc H.—Talbot House.  
 tr.—Transpose. [Charge.  
 T.R.C.—Thames Rowing Club; Tithe Rent  
 Trin.—Trinity.  
 T.T.—Tubercular Tested; Teetotal.  
 T.U.C.—Trades Union Congress.  
 T.V.A.—Tennessee Valley Authority.  
 T.W.I.—Training Within Industry.  
 T.Y.C.—Thames Yacht Club; Two Year Old (or  
 Thousand Yards) Course.

## U

U.—boat.—German submarine.  
 U.C.D.—University College, Dublin.  
 U.D.C.—Urban District Council.  
 U.K.—United Kingdom.  
 Ult.—*Ultimo* (last).  
 Univ.—University.  
 UNA.—United Nations Association.  
 UNESCO.—United Nations Educational, Scien-  
 tific and Cultural Organisation.  
 U.P.—United Press.  
 U.P.U.—Universal Postal Union.  
 UNICEF.—United Nations International Child  
 ren's Emergency Fund (created 1946).  
 UN.—United Nations.  
 UNRRA.—United Nations Relief and Rehabilita-  
 tion Administration (wound up 1947).  
 U.S.A.—United States of America.  
 U.S.A.A.F.—United States Army Air Force.  
 U.S.N.—United States Navy.  
 U.S.S.R.—Union of Soviet Socialist Republics.

## V

v.—*versus* (against).  
 V.—Five (Roman numeral); Version; Vicar;  
 Viscount; Vice.  
 v. or vid.—*Vide* (see).  
 V.A.—Victoria and Albert.  
 V.A.D.—Voluntary Aid Detachment.  
 V.C.—Victoria Cross.  
 V.C.H.—Victoria County Histories.  
 V.D.—Venereal Disease; Volunteer Decoration.  
 V1.—Flying Bomb.  
 V2.—Rocket.  
 V.E. Day.—Victory in Europe Day, 8th May,  
 1945.  
 Ven.—Venerable (of an Archdeacon).  
 Verb Sap.—*Verbum sapienti satis est* (a word to  
 the wise is enough).  
 Very Rev.—Very Reverend (of a Dean).  
 Vet.—Veterinary.  
 V.G.—Vicar-General.  
 Vice-Adm.—Vice-Admiral.  
 Vict.—Victoria.  
 V.I.P.—Very Important Person.  
 Visc.—Viscount.  
 V12.—*Videlicet* (namely). [August, 1945.  
 V.J. Day.—Victory over Japan Day, 15th  
 Vo.—(verso) on the left-hand page.  
 Vol.—Volume.

## W

W.A.—West Australia.  
 W.D.—War Department.  
 W.E.A.—Workers' Education Association.  
 W.F.T.U.—World Federation of Trade Unions.  
 WHO.—World Health Organisation.  
 WMO.—World Meteorological Organisation (Spec-  
 agency UN).  
 W.I.—Women's Institute.  
 W.L.A.—Women's Land Army.  
 W.O.—War Office.  
 W.R.A.C.—Women's Royal Army Corps.  
 W.R.A.F.—Women's Royal Air Force.  
 W.R.N.S.—Women's Royal Naval Service.  
 W.S.—Writer to the Signet.  
 W.V.S.—Women's Voluntary Services.

## X

X.—Ten (Roman numerals).  
 Xmas.—Christmas.

## Y

yds.—yards.  
 Y.M.C.A.—Young Men's Christian Association.  
 Y.W.C.A.—Young Women's Christian Association.

# *Classical Mythology*



Brief accounts of the doings of the Classic gods  
and heroes of ancient Greece.



# Classical Mythology

*A knowledge of the Classics may not be a necessity to success in business, or in any other sphere except a purely scholastic one. At the same time, it greatly adds to one's enjoyment of literature, art, and conversation to possess some acquaintance with the imaginary characters, places and incidents of the ancient mythology which has been such an inspiring influence to writers of all ages. Few people outside literary and educational workers have opportunity or leisure sufficient to acquire or keep up a knowledge of this particular branch of learning. Thus it may be useful to present in dictionary form the stories in brief of the Classic gods, goddesses, heroes, and heroines of the old Grecian and Roman literature. It will help to a better understanding of the countless references which are made from time to time in the literature of the day to Classic subjects. It is a great wonderland of poesy and romance, and forms a realm all its own.*

## A

- Abderus**, armour-bearer to Hercules. He was torn to pieces by the mares of Diomedes.
- Absyrtus**, a son of Æetes, King of Colchis, murdered by his sister Medea when she fled with Jason.
- Acamas**, son of Theseus and Phædra, went with Diomedes to demand Helen from the Trojans, and afterwards took part in the Trojan war.
- Acantha**, a nymph loved by Apollo, and transformed into the acanthus.
- Acarns and Amphoterus**, sons of Alcæon and Callirrhoe.
- Acestes**, King of Drepanum, assisted Priam at Troy, and entertained Æneas on his voyage.
- Achæi**, descendants of Achæus, one of the chief divisions of the ancient Greeks.
- Achæmenides**, son of Adramastus, abandoned by Ulysses, on the coast of Sicily, and found by Æneas.
- Achates**, friend of Æneas, renowned for his fidelity, whence the term *fidus Achates*.
- Acheloides**, the Sirens, daughters of Achelous.
- Achelous**, son of Oceanus and Tethys, god of the river Achelous, in Epirus. Contending with Hercules for Dejanira, he changed himself into a serpent, and then into an ox, when Hercules broke one of his horns and defeated him.
- Acheron**, a son of Ceres, changed into a river in Tartarus for supplying the Titans with water in their battle with the gods. Over this river Charon ferried the souls of the dead.
- Acherusia**, a lake near Memphis, over which the bodies of the dead were ferried by Charon.
- Achilles**, son of Peleus and Thetis; when an infant, was plunged by his mother into the Styx, and made invulnerable, except in the heel, by which she held him. Was the most famous Grecian hero in the Trojan war; but, quarrelling with Agamemnon about Briseis, refrained from fighting till the death of his friend Patroclus. He then slew Hector in battle at the Scæan Gate, and achieved other deeds of valour, but ultimately was slain, being wounded with an arrow in his vulnerable heel by Paris.
- Achillides**, Pyrrhus, son of Achilles.
- Acis**, a Sicilian shepherd, son of Faunus and Simæthis, loved by Galatea, crushed to death by his rival Polyphemus with a rock, but changed by Galatea into a stream on Mount Ætna.
- Acætes**, pilots of the ship which carried off Bacchus when asleep, and were changed into sea-monsters for ridiculing the gods.
- Acontes**, a hunter changed into stone by Medusa's head at the nuptials of Perseus and Andromeda.
- Acrisius**, son of Abas and Ocalea, and father of Danaë. *See Danaë.*
- Actæon**, son of Aristæus and Autonoe, changed into a stag, and devoured by his own dogs for watching Diana at her bath.
- Admeta**, daughter of Eurystheus, and priestess of Juno's temple at Argos. Hercules presented her with the girdle of the Queen of the Amazons.
- Admetus**, son of Pheres and Clymene, king of Phærae, in Thessaly, married Theone, daughter of Thestor, and, on her death, Alcestitis, daughter of Peleus. Apollo served Admetus for nine years as shepherd, and the Fates granted him that Admetus should never die if another person laid down his life for him, which Alcestitis did. Admetus was one of the Argonauts, and was present at the hunt of the Calydonian boar.
- Adonis**, son of Cinyras by Myrrha and beloved by Venus. Killed by a wild boar while hunting, and changed by Venus into the anemone. The gods of the underworld allowed him to spend six months of every year on earth with Venus.
- Adrastus**, king of Sicyon and leader of the Seven against Thebes (*see Eteocles*), of whom he alone survived. Ten years later he led the Epigoni, sons of the Seven, to destroy Thebes.
- Æacus**, son of Jupiter and Ægina. His people being destroyed by pestilence, Jupiter transformed ants into men, who became his subjects, and Æacus called them *Myrmidones*. Æacus became judge of hell with Minos and Rhadamanthus.
- Æetes**, king of Colchis, and father of Medea, Absyrtus and Chalciopé. Killed Phrixus, who had fled to his court on a golden ram, to gain the fleece, which the Argonauts regained.
- Ægeus**, king of Athens, who consulted the oracle about children, and on his return rested at the court of Pittheus of Trozene, whose daughter Æthra he married. He told her if she had a son, to send him to Athens as soon as he could lift a stone under which Ægeus had concealed his sword. A son was born, Theseus, who went to Athens where Ægeus was living with Medea; the latter tried to kill Theseus, but he escaped and revealed himself by the sword to Ægeus. When Theseus returned from Crete, after the death of the Minotaur, he forgot to hoist, as agreed on, the white sails as a signal of success, and Ægeus, concluding he was dead, threw himself from a high rock into the sea.
- Ægis**, the shield of Jupiter, bearing the Gorgon's head in the centre.
- Ægisthus**, son of Thyestes and, according to one legend, Thyestes' daughter Pelopia. Thyestes was told he could avenge himself on his brother Atreus only by a son by himself and his daughter, whom he consecrated to Minerva in order to preserve her, but afterwards not recognising her, he had a son by her, Ægisthus. Thyestes had seduced Atreus' wife, Ærope, and later in revenge Atreus had murdered three of Thyestes' sons, Ægisthus alone escaping. Ægisthus was sent by Thyestes to murder Atreus, after which Ægisthus ascended the throne of Mycenæ, and banished the Atrides—Agamemnon and Menelaus—who fled to Polyphidus of Sicyon, and thence to Ceneus of Ætolia. They married the daughters of Tyndareus, king of Sparta, whom Menelaus succeeded, while Agamemnon went to claim Argos. But Ægisthus became reconciled to the Atrides, and was made guardian of Agamemnon's kingdom and his wife Clytæmnestra during his absence at Troy.

He fell in love with her, and they murdered Agamemnon on his return, but both were subsequently killed by Orestes, son of Agamemnon. *Ægyptus.* (See Danaus.)

*Æneades*, descendants of Æneas.

*Æneas*, a Trojan prince, son of Anchises and Venus, reared by a Nymph, and taught by Chiron. Fought in the Trojan War with Diomedes and Achilles, and rescued his father, Anchises, and the household gods from the flames of Troy, and led his son Ascanius, leaving Creusa, his wife, to follow. Retiring to Ida he built twenty ships and visited Polymnestor in the Thracian Chersonesus, Delos, the Strophades, Crete, and Epirus, and then King Acestes at Drepanum, in Sicily, where he buried his father. Hence he sailed for Italy, but was driven to Africa, and was entertained by Queen Dido of Carthage, who became enamoured of him, but Æneas left suddenly, by order of the gods, and Dido killed herself. He was then driven to Sicily and went thence to Cumæ, where the Sibyl conducted him to the lower world. After a voyage of seven years and the loss of thirteen ships he reached the Tiber, where King Latinus promised him his daughter, Lavinia, betrothed to Turnus by her mother, Amata. Turnus declared war, and in a combat with Æneas was killed. Æneas then married Lavinia, and in her honour built Lavinium: he succeeded Latinus, and after a short reign was killed in war with the Etrurians or drowned in the Numicus. The Cæsars traced their origin to Æneas, and his wanderings form the subject of the *Æneid* of Virgil.

*Æolus*, son of Hippotes, made king of the winds in Æoliæ; presented Ulysses, on his return from Troy to Ithaca with all the adverse winds in bags; but his companions from curiosity opened them, and Ulysses was driven out of his course.

*Ærope*, wife of Atreus and mother of Agamemnon and Menelaus. She was seduced by her husband's brother, Thyestes, whose curse brought tragedy to the house of Atreus. The descendants of Atreus were known as the Atrides.

*Æscacus*, son of Priam by Alexirrhoe, or by Arisba. Enamoured of Hesperia, he pursued her into the woods, when she flung herself into the sea and was made a bird, Æscacus being at the same time changed into a cormorant.

*Æsculapius*, the god of healing, son of Apollo, was physician to the Argonauts, but was struck by Jupiter with his thunderbolt for restoring men to life.

*Æson*, son of Cretheus, and brother of Pelias, succeeded his father in Iolichus, but was deposed by Pelias, see Jason. One story says that Æson killed himself during the absence of Jason to avoid the persecution of Pelias, but according to Ovid he was rejuvenated by Medea.

*Agamemnon*, son of Atreus, king of Mycenæ, and leader of the Greek armies in the Trojan wars. He and his brother Menelaus suffered because of the curse laid on their father. Menelaus married Helen, and Agamemnon married Helen's sister, Clytæmnestra, who bore him Orestes, Electra, and Iphigenia. He regained the kingdom of Mycenæ, and Menelaus succeeded Tyndareus at Sparta. When Paris carried off Helen, Agamemnon assumed command of the forces against Troy and showed great valour. After the capture of Troy, Cassandra prophesied his murder by Clytæmnestra, but disregarding her he returned to Argos, where, as he was leaving the bath, Clytæmnestra and Ægisthus murdered him.

*Agenor*, king of Phœnicia, son of Neptune and Libya, married Telephassa, by whom he had Cadmus, Phoenix, Cilix and Europa. Ancestor of Dido.

*Aglala*, or *Pasithea*, one of the Graces.

*Ahenobarbus*, so named because his beard was changed to bronze by Castor and Pollux for refusing to believe in the victory at Lake Regillus.

*Ajax*: I. the son of Telamon and Peribœa. The most famous fighter of the Greeks next to Achilles. Sought to gain possession of the arms of Achilles at the latter's death, and on their being gained by Ulysses, he slaughtered a flock of sheep under the impression that they were the sons of Atreus; he then stabbed himself, and the blood from his wound changed

into the hyacinth. II. son of Oileus, and swiftest of the Greeks after Achilles. Wrecked on his return from Troy, and drowned by Neptune for boasting when he escaped from the wreck.

*Albion*, Neptune's son by Amphitrite. Founded Britain and introduced astronomy and ship-building.

*Alcathous*, son of Pelops, who, being accused of slaying his brother Chrysippus, escaped to Megara, where, killing a lion that had destroyed the king's son, he succeeded to the kingdom.

*Alcestis*, daughter of Pelias and Anaxibia, and wife of Admetus, who won her by coming in a chariot drawn by wild beasts. She offered to die in place of Admetus, and did so, but was restored to life by Hercules.

*Alcimedæ*, mother of Jason by Æson.

*Alcinous*, son of Nausithous and Peribœa, king of Phœacia. Married his niece, Arete, by whom he had several sons and a daughter, Nausicaa.

*Alcithoe*, daughter of Minyas, changed into a bat, and her spindle and yarn into a vine and ivy, for ridiculing Bacchus.

*Alcmæon*, son of Amphiarus and Eriphyle. Was driven mad for slaying his mother, but was cured, and married Arsino. He left her for Callirrhoe, and the brothers of Arsino killed him.

*Alcmene*, daughter of Electryon of Argos, was promised to Amphitryon on condition that he would revenge on the Telebœæ the death of her brothers. In Amphitryon's absence Jupiter assumed his form, and became by Alcmene father of Hercules, who was born at the same birth with Iphichus, her son by Amphitryon.

*Alcetryon*, a youth placed on guard by Mars when visiting Venus, to warn him of the approach of Phœbus. Transformed into a cock for falling asleep.

*Alpheus*, a river of Arcadia, whose god fell in love with Arethusa, changed by Diana into a fountain in Ortygia, a small island near Syracuse, where the Alpheus was supposed to rise again after passing under the sea.

*Athæa*, daughter of Thestius and Eurythemis, married King Ceneus. (See Meleager.)

*Amalthæa*, daughter of King Melissus, of Crete. She fed the infant Jupiter with goat's milk.

*Amata*, wife of King Latinus, espoused the claims of Turnus, to whom she had betrothed Lavinia before Æneas's arrival. On Æneas succeeding, she destroyed herself.

*Amazons*, a mythical race of warlike women, dwelling in Asia Minor, who came to the help of Troy in the Trojan war.

*Ambrosia*, the food of the gods, bestowing immortal youth and beauty.

*Ammon*, a name assumed by Jupiter in Libya, where he appeared as a ram to Hercules and revealed a fountain, nine days' journey from Alexandria. Here a temple was erected which had a famous oracle.

*Amphiarus*, son of Oecleus, or of Apollo, by Hyperanæstra: figured in the hunt of the Calydonian boar, and in the Argonautic expedition. He was a great prophet, and though he foresaw the fatal end, he was persuaded by his wife Eriphyle to join the expedition of Adrastus against Thebes, where the earth swallowed him up before his enemies could kill him.

*Amphinomus* and *Anapius*, two brothers who saved their parents on their shoulders when Catana was burning, and for their bravery were placed by Pluto in Leuce after death.

*Amphion*, the twin brother of Zethus, born to Jupiter by Antiope on Mount Cithaeron, whither she had fled to avoid the wrath of Dirce. A shepherd scoured the infants, and Amphion became a great musician. Amphion and Zethus besieged Lycus in Thebes, and put him to death, and tied his wife Dirce to a wild bull, which dragged her over precipices till she died. Amphion became king of Thebes and husband of Niobe, and the stones of the city wall moved into position of their own accord at his playing.

*Amphitrite*, the daughter of Oceanus and Tethys, and mother of Triton, by Neptune.

*Amphitryon*, king of Thebes, who, as avenger of the deaths of the sons of Electryon was offered the latter's crown and daughter Alcmene. Jupiter appeared in the form of Amphitryon, and Alcmene bore Hercules.

*Amycus*, son of Neptune, became king of Mella.



and had great skill at boxing. Was killed by Pollux at this sport.

**Amyntor**, king of Argos, blinded his son Phoenix for insulting Clytia, his concubine.

**Anyone**, daughter of Danaus and Europa. Married to Enceladus, and killed him on the marriage night. She was the only one of the fifty Danaides absolved from the duty of filling the leaky vessel in hell because of having supplied Argos with water in a drought. Neptune falling in love with her carried her off, and she bore him Nauplius.

**Anaxibia**, sister of Agamemnon, wife of Nestor.

**Anceus**, an Argonaut, son of Neptune and Astypalæa, acted as pilot of the *Argo*. Was king of Ionia, and married Samia, daughter of the Mæander, by whom he had four sons, Perilas, Enudus, Samus, Alithersus, and a daughter Parthenope. While behaving cruelly to a slave, the latter turned scornfully and told his master he would never taste the wine. Anceus angered pressed the grapes into his cup, when the servant exclaimed "There's many a slip 'twixt the cup and the lip." The next moment a wild boar rushed into the vineyard and Anceus was killed in attempting to drive the beast away.

**Anchises**, the son of Capys by Themis, and so beautiful that Venus paid court to him on Mount Ida, and bore him *Æneas*. For boasting of this he was struck by lightning and blinded.

**Anchurus**, the son of Midas. When the oracle declared that a certain gulf in the earth would never cease to swallow up what was above until what Midas held most dear was thrown into it, he leapt in and was never seen again. Midas erected an altar of stones on the spot, which was changed to gold after Midas became possessed of his fatal gift.

**Androcles**, a Roman slave who was thrown into the arena to the lions, but was saved by being recognised by one of the animals, Androcles having once extracted a thorn from its foot in an African cave. He was pardoned and given the lion, which he used to lead about with him.

**Androgynæ**, a mythical race of hermaphrodites, who lived in the region of Africa beyond the Nasamones.

**Andromache**, daughter of King Eetion of Thebes, and wife of Hector. The scene in Homer's *Iliad*, describing her taking leave of Hector on his going forth is one of the best known passages in the poem. After Hector's death and the fall of Troy, Andromache became the prize of Pyrrhus. Still later she married Helenus.

**Andromeda**, daughter of Cepheus, king of Ethiopia, by Cassiope, having been promised as a bride to Phineus, her uncle, became the victim of Neptune's anger, by reason of the boast of her mother that she was more beautiful than the Nereids. The sea-god visited the country with an inundation and sent a huge sea monster to ravage the land. To appease Neptune, Andromeda, at the command of the oracle of Ammon, was chained to a rock and given up to the monster. Perseus came to the rescue with Medusa's head, turned the dragon to stone and liberated and married Andromeda. After her death she was placed in heaven as a constellation.

**Anius**, son of Apollo, was king of Delos, and father of Eno, Sperma and Elais, to whom Bacchus gave the power of changing whatever they pleased into wine, corn and oil. He afterwards transformed them into doves to prevent Agamemnon carrying them off to Troy to supply the Greek forces with provisions. According to another story, they actually did supply the Greeks for the first nine years of the war.

**Antæus**, a Libyan giant, son of Terra and Neptune, fought with Hercules, by whom he was finally vanquished, Hercules holding him in the air away from the earth, whose touch gave him strength, and squeezing the life out of him.

**Antenor**, one of the wisest of the Trojans, who went to Italy after the fall of Troy, where he built Padua.

**Antigone**, daughter of *Edipus* by *Jocasta*. When Creon forbade the body of her brother Polynices to be buried, she defied him, and was therefore shut up in a cave, where she killed herself.

**Antilocheus**, son of Nestor and Eurydice, killed at Troy by Memnon.

**Antimachus**, a Trojan who conspired with Paris to oppose Helen, when Menelaus and Ulysses came as ambassadors.

**Antiope**, daughter of King Nycteus, of Thebes, was wooed by Jupiter, and to escape her father's anger fled to Mount Cithæron, where she bore the twins Amphiion and Zethus. After many other lovings, marriages, and wanderings, she finally became the wife of Phocus, son of Ornytion.

**Antiphus**, son of Priam, killed by Agamemnon.

**Aon**, son of Neptune, became king of Boeotia, after whom the Boeotians were called Aones, and the country Aonia.

**Aphrodite**, the Greek name of Venus.

**Apollo**, the son of Jupiter and Latona, born on the Isle of Delos, which Neptune raised from the bottom of the sea as a refuge for Latona, who was persecuted by Juno. When Jupiter killed Apollo's son *Æsculapius* by his thunder-bolt, Apollo killed Cyclops, who had forged the bolt, for which Jupiter banished Apollo from heaven. Then Apollo went to Thessaly, and served nine years as a shepherd. He aided Neptune to build the walls of Troy, and on King Laomedon refusing him his promised reward, he destroyed the inhabitants with a pestilence. Apollo was the god of music and the arts, of flocks and herds, and of protection and punishment; but his two chief connections were with colonisation and prophecy. His oracle at Delphi was revered throughout the ancient world. Among his other names were Pythius, Phoebus, Cynthius, Lycius, Clarius, Ismenius, Vulturius, Smintheus, etc. His oracles were at Delphi, Delos, Claros, Tenedos, Cyrrha, and Patara. Apollo was later identified with the Sun and introduced at Rome, but he was not originally a Roman god.

**Arachne**, daughter of Idmon of Colophon, a dyer in purple. She was so expert with her needle that she challenged Minerva. The goddess could find no fault with her work, and tore it up in fury, whereupon Arachne hanged herself in despair. But Minerva took pity on her and changed the rope into a cobweb and Arachne into a spider.

**Arcas**, son of Jupiter and Callisto, who ruled over Pelasgia, which was called Arcadia after him.

**Ares**, the Greek name for Mars.

**Arethusa**, a nymph who was pursued by the river god Alpheus in the Peloponnese and changed by Diana into a fountain which flowed under the sea and reappeared near Syracuse.

**Argestes**, in Greek legend the personification of the east wind.

**Argia**, daughter of Adrastus, married Polynices, and was put to death by Creon for burying her husband against Creon's orders.

**Argiphontes**, a name given to Mercury after killing the hundred-eyed Argus.

**Argo**, the ship of Jason.

**Argonautæ**, the companions of Jason on the *Argo*. Among them were Hercules, Theseus, *Æsculapius*, Nestor, Orpheus, Castor and Pollux. (See Jason.)

**Argos**, the capital of Argolis, built by seven Cyclopes. Agamemnon was king of Argos during the Trojan war.

**Argus**, possessed of a hundred eyes, of which only two slept at a time. Juno set him to watch Io, but Mercury slew him; afterwards his eyes were put on the tail of Juno's sacred peacock.

**Ariadne**, the daughter of Minos of Crete. Falling in love with Theseus she gave him a clue to extricate himself from the labyrinth where he was in danger of being destroyed by the Minotaur. Theseus slew the monster and married Ariadne, but deserted her later at Naxos. Bacchus gave her a crown of seven stars, which was turned into a constellation.

**Arion**, a famous musician who, when returning from Sicily to Corinth with rich prizes, was threatened with murder by the sailors. He leapt into the sea, but a dolphin, charmed by his playing, carried him safely to land.

**Aristæus**, son of Apollo and Cyrene, born in Libya, reared by the Seasons, and fed on nectar and ambrosia. Married Autonoe by whom he had Actæon. Later he pursued Orpheus's wife Eurydice, who died from being stung by a serpent. He was the first to teach men the management

of bees, and after his death he was deified, and looked on as the protector of the olive.

**Arne**, daughter of Æolus, wooed by Neptune in the form of a bull.

**Artemis**, the Greek name of Diana.

**Aruntius**, a Roman made drunk by Bacchus for ridiculing his rites, and killed by his daughter Medullina for insulting her.

**Ascalaphus**, son of Acheron, being appointed by Pluto to watch Proserpine in the Elysian fields, testified that the goddess had eaten pomegranates. For this Proserpine changed Ascalaphus into an owl.

**Ascanius**, son of Æneas and Creusa and founder of Alba Longa.

**Astarte**, a Syrian goddess, corresponding to the Greek Venus.

**Asteria** was the daughter of Coeus, the Titan, and bore the celebrated Hecate. Zeus paid court to her in the form of an eagle, and she threw herself into the sea, where she was changed into an island, later called Delos.

**Astræa**, daughter of Astræus, or, according to others, of Titan, was the goddess of Justice, and lived during the Golden Age. Disgusted with the wickedness of mortals, she returned to heaven, and was made into the constellation Virgo, and is represented as holding a pair of scales in one hand, and a sword in the other.

**Astræus**, husband of Aurora, and one of the Titans.

**Asryanax**, son of Hector and Andromache, who was thrown from the walls of Troy by the victorious Greeks.

**Atalanta**, a swift-footed Arcadian huntress, who took part in the hunt of the Calydonian boar, and was awarded the prize of victory by Meleager. She refused to marry, and insisted that all suitors should run a race with her in which the penalty of defeat was death. At last Milanion (or, according to the Boeotian legend, Hippomenes), favoured by Venus, had three golden apples from the garden of the Hesperides given him, and as he ran he threw them down one after another. Atalanta fascinated by them stopped to pick them up and thus Milanion won the race and married her.

**Atë**, the goddess of infatuation who led men into rash actions.

**Athamas**, king of Orchomenos, and son of Æolus. He married Nephele, who bore him Phrixus and Helle. Later he divorced her and married Ino, by whom he had Learchus and Melicerta. Ino was jealous of Nephele's children and persuaded an oracle to predict that a pestilence then raging could only by their sacrifice be arrested. On being led to the altar they fled to Colchis through the air on a golden ram, whose fleece was later sought by Jason, but Helle fell off into the sea, hence called the Hellespont. Juno despatched the fury Tisiphone to torture Athamas to madness. In this condition he killed Learchus, whereon Ino threw herself into the sea, and was changed into a sea-deity.

**Athena**, the Greek goddess corresponding to the Roman Minerva.

**Atlantides**, a name given to the descendants of Atlas, including Mercury and Hermaphroditus.

**Atlantides**, the seven daughters of Atlas—Maia, Electra, Taygeta, Asterope, Merope, Alcyone, and Celano, called Hesperides, after their mother Hesperis, and at death changed into Pleiades.

**Atlantis**, a legendary island in the Atlantic, west of Gibraltar. It was once rich and powerful and blessed with every beauty, but was later swallowed up in the ocean owing to the increasing wickedness of its inhabitants.

**Atlas**, the son of Iapetus and Clymene, married Hesperis, who bore him the seven Atlantides. After vanquishing the Gorgons, Perseus sought refuge with Atlas, who refused him help; whereon Perseus produced Medusa's head, and changed him into the Atlas mountain, which is so lofty as to have given rise to the notion that Atlas carried the heavens on his shoulders.

**Atræus**, son of Pelops by Hippodamia, and elder brother of Thyestes. According to one legend, suspected of the murder of his half-brother Chrysippus, he fled to Mycenæ and succeeded Eurystheus as king, marrying Ærope, who bore him Agamemnon and Menelaus. Thyestes, the brother of Atræus, who had been banished for

seducing Ærope, sent Atræus's eldest son by a former wife to murder his own father, but Atræus killed the youth, in ignorance of his origin. On learning the truth he slew the sons of Thyestes, Ægisthus alone escaping, and served them up to their father at a banquet. For this crime Atræus and his house were cursed by the gods, and he himself was finally killed by Ægisthus.

**Atreides**, any descendant of Atræus, but especially Agamemnon or Menelaus.

**Atropos**. (See *Parcæ*.)

**Attis**, or **Atys**, a beautiful youth worshipped in conjunction with Cybele.

**Augias**, king of Elis. He had enormous stables which had never been cleaned, and Hercules was set to clean them as one of his labours, for which he was to receive a tenth of the herds of Augias. Hercules diverted the waters of the Alpheus into the stables, but Augias regarding this as a trick refused the reward. Hercules then conquered Elis and killed Augias.

**Aurora**, in Roman legend, the goddess of dawn, identified with the Greek Eos, wife of Astræus, the Titan, whose children were Argestes (east wind), Boreas (north wind), Zephyr (westerly wind), Notus (south wind, called by the Romans Auster).

**Auster**, a south-west wind that brought rain and fogs in winter and a dry wind in summer.

**Autolytus**, son of Mercury, was an Argonaut. He was a robber of flocks whose marks he changed, but Sisyphus, son of Æolus, got the better of him by putting his marks under the feet of his oxen.

**Automedon**, son of Dioreus, was charioteer to Achilles, and afterwards to Pyrrhus.

**Avernus**, a lake between Cumæ and Puteoli, the waters of which were so fatal that no birds could live near it. It was one of the entrances to Tartarus.

## B

**Bacchanalia** were Roman festivals in honour of Bacchus and were marked by wild revelry.

**Bacchantes**, priestesses of Bacchus who danced and threw themselves about in barbaric abandonment at the Bacchanalian orgies.

**Bacchus**, to the Greeks Dionysus, the god of wine, son of Jupiter and Semele, the daughter of Cadmus. Juno was jealous of Semele and compassed her death before Bacchus was born, but the child was saved by Jupiter's protection, and nursed by Ino. While being brought up by the nymphs of Mt. Nysa he made wine from the grape, and afterwards made expeditions to many lands to teach the use of the vine, the tilling of the earth, and the art of collecting honey, and was raised to the rank of a divinity. He is generally represented crowned with vine and ivy-leaves. Bacchus married Ariadne after she was deserted by Theseus at Naxos.

**Baucis**, an old Phrygian woman who lived with her husband, Philemon, in a hut and was visited by Jupiter and Mercury in disguise. As a reward for the hospitality extended to them, Jupiter transformed the cottage into a splendid temple. The couple lived to a ripe old age and at death were changed into trees before the temple's doors.

**Bellerophon**, son of Glaucus, king of Ephyræ, and named Bellerophon after slaying Bellerus. After many other adventures, he set out to subdue the Chimæra at the instigation of Iobates, who had been asked to kill Bellerophon by Proteus, whose wife accused Bellerophon of insulting her. Aided by Minerva he achieved his task, afterwards marrying Cassandra. When he tried to fly to heaven on the back of Pegasus, Jupiter sent a gadfly to sting the horse, which threw Bellerophon to earth, and he wandered about blind for the rest of his life.

**Bellona**, the goddess of war, daughter of Phorcys and Ceto, and companion or sister of Mars. Her priests, called Bellonarii, inflicted wounds on themselves when offering sacrifices.

**Bergion and Albion**, two giants, sons of Neptune, were killed with stones from heaven when opposing Hercules crossing the Rhone.

**Beroë**, the nurse of Semele, whose shape Juno assumed in approaching Semele.

**Biston**, son of Mars and Callirrhoe and founder of Biston in Thrace.



**Bomoniceæ**, youths who were whipped at the altar of Diana Orthia during her festivals, the one who cried out the least being awarded a prize.

**Bona Dea**, the Roman goddess of chastity, who was sister, wife or daughter of Faunus. The Vestals celebrated her festival on 1st May, when no male was permitted to be present.

**Boreas**, in Greek legend the personification of the north wind, son of Astræus and Aurora. He was worshipped as a deity, and is said to have possessed twelve mares of such fleetness that they could cross the sea without wetting their feet.

**Brancæus**, son of Smerus of Miletus, and loved by Apollo, who gave him power of prophecy. He delivered oracles at Didyme.

**Briareus**, a colossal giant with a hundred hands and fifty heads, son of Cœlus and Terra, who helped the Olympians against the Titans.

**Briseis**, a beautiful woman who was part of the spoils appropriated by Achilles on the conquest of Lyrnessus. Later Agamemnon claimed her, causing Achilles to withdraw from the Trojan war. After the death of Patroclus she was given back to Achilles.

**Bucephalus**, favourite horse of Alexander the Great, which died in India.

**Busiris**, king of Egypt and son of Neptune and Libya. When Hercules was in Egypt Busiris had him bound hand and foot and carried to the altar; but Hercules freed himself and slew both Busiris and his courtiers.

## C

**Caballinus Fons**, the Hippocrene fountain on Mount Helicon dedicated to the Muses, the water being made to gush from the ground by a blow from the hoof of Pegasus.

**Cacus**, the giant, was a son of Vulcan and Medusa, and lived on Mount Aventine. He stole some of the herds of Hercules and dragged them by the tails to his cave. Hercules heard them low, however, when passing, and attacked and strangled Cacus.

**Cadmus**, son of Agenor, king of Phœnicia, who, while searching for his sister Europa, who had been carried off by Jupiter, was told by the Delphic oracle to follow a certain cow and to found a city where the cow should sink to the grass. This city was Thebes, and when Cadmus had killed a dragon which lived near by, and sown its teeth in the ground, the armed men who sprang up formed the original population. Cadmus married Harmonia, daughter of Venus, and after death they were turned into snakes.

**Caduceus**, the magic wand of Mercury with which he conducted the souls of the dead across the Styx and could raise the dead to life.

**Cæneus**, a maiden changed into a man by Neptune, who took part in the Argive expedition and Calydonian hunt. Was later transformed into a bird, but in Elysium once more became a maiden.

**Calchas**, the Greek soothsayer and high priest. Was chosen to go with the Greeks against Troy, but declared that the fleet could not sail until Iphigenia was sacrificed; that the plague could not be stopped till Chryseis was restored to her father; and that Troy could not be taken without Achilles' aid, nor without a ten years' siege.

**Callope**, the Muse of poetry, and daughter of Jupiter and Mnemosyne. She was mother to Orpheus by Apollo.

**Callirrhœ**, daughter of Scamander, married Tros, and became the mother of Ganymede and Assaracus. Coreus fell in love with her, but she scorned him. This angered Bacchus, whose priest Coreus was, and the god sent a pestilence, whereupon the oracle demanded that Callirrhœ should be sacrificed. Coreus, compelled to lead the nymph to the altar, stabbed himself. Callirrhœ fled to Attica, and on the brink of a fountain there, killed herself.

**Callisto**, an attendant of Diana, and a daughter of King Lycaon of Arcadia. She bore a son, Arcas, to Jupiter, who changed her into a bear and placed her in the sky among the stars.

**Calydon**, a city of Ætolia devastated by a boar sent by Diana in revenge for the neglect of her divinity. This gave rise to the famous Hunt of the Calydonian Boar, in which many noted

princes took part. Meleager succeeded in slaying the animal, and presented its head to Atlanta.

**Calypso**, nymph in Homer's *Odyssey*, who lived on the island of Ogygia. She offered Ulysses hospitality on his being shipwrecked, then entreated him to make her his wife, and on his refusal detained him seven years.

**Camenæ**, nymphs belonging to the religion of ancient Italy, later identified with the Greek Muses.

**Camilla**, a warlike Volscian heroine, who was killed in the war between Aeneas and Turnus.

**Capaneus**, one of the Seven against Thebes, son of Hipponous and Astinome, and husband of Evadne. Having vowed to take Thebes in spite of Jupiter, the god killed him with a stroke of lightning, and on hearing the news Evadne committed suicide.

**Cassandra**, daughter of Priam and Hecuba, and beloved by Apollo, who granted her the gift of prophecy, but, when she resisted him, ordained that no one should believe her. After the fall of Troy she became the captive of Agamemnon, who took her to Mycenæ, where Clytæmnestra put her to death.

**Cassiopea**. (See *Andromeda*.)

**Castalia**, a fountain on Parnassus, sacred to Apollo and the Muses.

**Castor**. (See *Dioscuri*.)

**Cecrops**, reputed first king of Attica and founder of Athens.

**Celæno**, daughter of Atlas, loved by Neptune.

**Centaur**s, a race half horses and half men, who inhabited Mount Pelion. They engaged in the famous contest with the Lapithæ, but in the end the greater part of them were killed by Hercules, and the rest driven to Mount Pindus.

**Cerberus**, the many-headed dog which kept watch over the gates of Hades. It was one of the "labours" of Hercules to bring Cerberus to earth, and his hardest task.

**Ceres**, in the Roman mythology, called Demeter by the Greeks, was the goddess of the earth's produce, especially of corn. When her daughter Persephone, or Proserpine, was carried away by Pluto, the goddess in her anger caused the earth to withhold its fruits, and was only appeased when Persephone was brought back. But as she had eaten a pomegranate seed in Hades, Persephone had to spend a third of each year in the lower world.

**Chaos**, the unfathomable void from which the world and its first occupants, gods, men, and all things of the earth, were gradually shaped.

**Charon**, son of Erebus, whose duty it was to ferry the souls of the dead over the waters of the Styx and Acheron to the infernal regions, receiving an *obolus* for each ferrying; hence the old Roman custom of putting an *obolus* into the mouth of a corpse before interment.

**Charybdis**. (See *Scylla* and *Charybdis*.)

**Chimæra**, a monster shaped like a lion in front, a dragon behind, and a goat in the middle, which devastated Lycia until killed by Bellerophon.

**Chiron**, the most famous of the Centaurs, killed by an arrow from the bow of Hercules.

**Chryseis**, a daughter of a priest of Apollo, taken prisoner by Achilles and given to Agamemnon. Her father asked for her release, but Agamemnon refused, whereupon Apollo sent a plague upon the Greek. To free them from this Agamemnon had to surrender Chryseis.

**Circe**, daughter of Helius and Perseis, gained fame as a sorceress, and after putting to death the Prince of Colchis, her husband, was banished to the Island of *Æea*. It was to this island that Ulysses and his companions were driven, and, drinking of Circe's magic cup, they were turned into swine, Ulysses himself being saved by partaking of a herb that made the magic potion powerless. Circe was then forced to give his companions back their former shape.

**Clio**. (See *Muses*.)

**Clotho**. (See *Parcæ*.)

**Clytæmnestra**, daughter of Tyndareus and Leda, sister of Castor, Pollux and Helen. She was wife of Agamemnon, and while he was at Troy she lived with *Ægistheus* in adultery. On Agamemnon's return she murdered him, but was later slain by her son, Orestes.

**Clytie**, a water-nymph with whom Apollo fell in love, but because of her revengeful conduct

towards Leucothoë, who had deserted her, Apollo transformed her into a sunflower, so that it might always be turned towards him in his daily journey across the heavens.

**Comus**, the god of revelry and feasting.

**Coriolanus**, a Roman exiled because of his haughty bearing towards the people. He joined the Volsci and led them against Rome, but finally his mother and wife, at the head of the Roman matrons, persuaded him to retreat without attacking the city.

**Cornucopia**, the horn of plenty, was supposed to have its origin as the gift of Jupiter to Amalthea, in return for her having fed him while young with goat's milk.

**Creon**, king of Thebes, who gave up the throne to **Œdipus** and later resumed it. His harshness to **Antigone** caused the suicide of his son **Hæmon**, her lover.

**Cronus**. (See **Saturn**.)

**Cupid**, god of love, by the Greeks called **Eros**. He was the son of **Venus** by **Jupiter** (or, as some represent, **Mercury**). (See **Psyche**.)

**Cybele**, mother-goddess of **Phrygia**.

**Cyclopes**, a race of shepherds of gigantic stature, with only one eye, in the middle of the forehead. They lived near **Mount Etna**, and assisted **Vulcan** at his forges. (See **Polyphemus**.)

**D**

**Dædalus**, a cunning craftsman, who flew from **Crete** to **Italy** with his son **Icarus** by means of wings fastened to their shoulders with wax. **Dædalus** arrived safely, but **Icarus** flew too near the sun, which melted the wax, so that he fell into the sea.

**Danaë**, who was visited by **Jupiter** in a shower of gold, was the mother of **Perseus**, **Jupiter** being the father. Before the birth of **Perseus**, an oracle predicted that the son that would be born would kill his grandfather, **Acrisius**, king of **Argos**, and father of **Danaë**. To avoid that calamity the mother was immured in a brazen tower, and after the birth of **Perseus**, she and the child were put in a chest and thrown into the sea, but drifted to the shore of **Seriphus** and were saved. The oracle's prediction was afterwards fulfilled, **Acrisius** being accidentally slain by **Perseus**.

**Danaus**, son of **Belus**, king of **Tyre**, and twin brother of **Ægyptus**. **Ægyptus** had fifty sons, **Danaus** had fifty daughters, and **Danaus**, to escape his brother and his sons, fled with his daughters to **Argos** and became king. Hearing of this the sons of **Ægyptus** betook themselves to **Argos**, and demanded their uncle's daughters for wives. Their aims were frustrated, however, by each wife killing her husband on the wedding night, with a dagger provided by their father. One only escaped, **Lyncæus**, who killed **Danaus**. Another version says that the uncle and nephew were reconciled, and reigned together for many years.

**Daphne**, a nymph who was changed into a laurel when being pursued by **Apollo**. The laurel thus became his favourite tree.

**Daphnis**, a Sicilian shepherd famous as a flute-player. He was struck with blindness for faithlessness to a **Naiad**.

**Dardanus**, son of **Jupiter** and **Electra**, was the founder of **Troy** and ancestor of the **Trojans**. It is his name that is commemorated in the **Dardanelles**.

**Deianira**. (See **Hercules**.)

**Delphi**, in **Central Greece**, famous for the temple and oracle of **Apollo**.

**Demeter**. (See **Ceres**.)

**Deucalion**, a son of **Prometheus**, and his wife **Pyrrrha**, were the only persons saved when **Jupiter** destroyed **Greece** by a deluge. To effect the re-peopling of the earth, they were ordered to throw behind them the bones of their mother, so picking up some stones from "mother earth," they flung them from them. The stones cast by **Deucalion** were transformed into men, and those by **Pyrrrha** into women.

**Diana** (called **Artemis** by the Greeks), the chaste goddess of hunting, daughter of **Jupiter** and **Latona**, and twin sister of **Apollo**. She was also the goddess of light, and was worshipped

in various guises chiefly in **Arcadia**, **Ephesus**, and **Tauris**.

**Dido**, founder and queen of **Carthage**, who fled thither from **Tyre**. **Virgil** makes her fall in love with **Æneas** and kill herself when he left.

**Diomedes**, king of **Argos**, and one of the champions of the **Grecian** army in the **Trojan War**. He contended even with gods, and is one of the most prominent fighting figures of the **Iliad**.

**Dionysus**. (See **Bacchus**.)

**Dioscuri**, the name given to **Castor** and **Pollux**, twin sons of **Tyndareus** and **Leda**. They rescued their sister **Helen** from **Theseus**, took part in the **Argonautic** expedition and performed many great deeds while on earth. **Pollux** was famed for his skill in boxing, **Castor** for the management of horses, and they were looked on as the patrons of seafarers. **Castor** was killed by **Idas**, but at the request of **Pollux**, **Jupiter** allowed them to share alternate days in heaven and the underworld.

**Dirce**, wife of **Lycas**. Because of her cruelty her step-sons caused a wild bull to drag her about till she died, and then threw her body into a fountain in **Boeotia**.

**Dryades**, the nymphs of the trees, were supposed to have their birth with and die with the trees, over which they were the divinities.

## E

**Echo**, a sportful nymph, who diverted the attention of **Juno** while **Jupiter** made love to other nymphs. When **Juno** discovered the deception, she transformed the deceiver into an echo, depriving her of the power of speaking except when spoken to. Subsequently **Echo** pined away for the love of **Narcissus**, until only her answering voice remained to perpetuate her name.

**Electra**, daughter of **Agamemnon**, seeing the danger that her brother **Orestes** was in after the murder of her father by her mother **Clytemnestra**, had him sent away to **Phocis**, where he was protected by **King Strophius**. In revenge for this, **Clytemnestra** compelled **Electra** to marry a peasant, but the peasant never sought to be more than husband in name, so that when later **Orestes** returned, **Clytemnestra** was put to death, and **Electra** became the wife of her brother's friend, **Pylades**.

**Elysium**, the abode of the shades of the blessed.

**Endymion**, a beautiful youth whom **Selene**, the moon-goddess, put into perpetual sleep on a **Carian** mountain-side that she might kiss him without his knowledge.

**Eos**. (See **Aurora**.)

**Eratō**. (See **Muses**.)

**Erebus**, the son of **Chaos**, and one of the deities of **Hades**. The name is also used as a synonym for darkness, referring to the region through which departed souls pass to **Hades**.

**Eros**. (See **Cupid**.)

**Eteocles**, a son of **Œdipus** and **Iocasta**. After his father's death, he and his brother **Polynices** agreed to reign in alternate years, **Eteocles**, as the elder, taking the first turn. At the end of his year he refused to relinquish the crown to **Polynices**, and **Adrastus**, king of **Argos**, was appealed to. **Adrastus**, whose daughter had become the wife of **Polynices**, sent an army and seven of his bravest generals (the **Seven** against **Thebes**) to his son-in-law's aid, and a severe conflict ensued. In the end the two brothers agreed to settle their differences by single combat, and both were slain.

**Eumenides**, or **Furies**, were the avenging deities, three hideous winged maidens who pursued and punished the guilty.

**Euphrosyne**, one of the three **Graces**.

**Europa**, daughter of **Phœnix** and beloved of **Jupiter**, who assumed the shape of a white bull and carried her off to **Crete**, where she became the mother of **Minos**, **Sarpædon**, and **Rhadamanthus**.

**Eurydice**. (See **Orpheus**.)

**Eurystheus**. (See **Hercules**.)

**Euterpe**. (See **Muses**.)

**Evander**, son of **Mercury**, who led a colony from **Arcadia** to **Italy**, which was later incorporated in **Rome**. He taught his neighbours the blessings of peace.



## F

**Faunus**, an old Italian deity, protector of agriculture and shepherds. He was later identified with the Greek Pan.

**Flora**, the goddess of flowers (Greek Chloris).

**Furies**. (See Eumenides.)

## G

**Galatea**. (See Acis.)

**Ganymede**, Jupiter's cup-bearer, a mortal youth of such grace and beauty that the god had him carried off to Olympus on the back of an eagle.

**Genius Loci**, the special divinity allotted to a particular place or building.

**Glaucus**, a Boeotian fisherman, who was made a sea deity by Oceanus, and carried off Ariadne from Naxos. Apollo granted him the gift of prophecy.

**Golden Fleece** (The) forms one of the most entrancing of the legends of mythology. The fleece was that of the ram Chrysomallos and was deposited on a tree at Colchis, being guarded by a terrible dragon. (See Athamas and Jason.)

**Gorgons**, three hideous maidens, whose heads were covered with snakes instead of hair. (See Medusa.)

**Graces** (Greek Charites) were three in number, Euphrosyne, Aglaia, and Thalia, and represented the perfection of grace and beauty of body and mind. They were daughters of Jupiter and are usually shown as attendants on Venus.

## H

**Hades**, or Pluto, was the god of the underworld, son of Saturn, brother of Jupiter and Neptune, and husband of Proserpine. In classical depictions the god is represented seated on a throne, Cerberus lying at his feet. Hades is also the name given to the infernal regions.

**Hæmon**, son of Creon and lover of Antigone. He killed himself on hearing of her death.

**Hamadryads**, tree-nymphs.

**Harpies**, greedy monsters with female heads and long claws and wings, who were used by the gods to torment mortals.

**Hebe**, cupbearer to Jupiter and the gods, and daughter of Jupiter and Juno. She is represented as the goddess of youth, and by the Romans was named Juventas.

**Hecate**, often represented with three heads, was supposed to preside over magic and enchantments, and her dominion extended over hell, heaven, earth, and sea. In heaven she was Luna, on earth Diana, and in Hades Proserpine or Hecate. She dwelt particularly at cross roads and was associated with the howling of dogs.

**Hector**, son of King Priam and Hecuba, and husband of Andromache, was captain of the Trojan forces and the most valiant of them all. After repeated victories over Grecian leaders he was last slain by Achilles, whom he provoked to fight again by killing Patroclus, and his body was dragged in triumph three times round the walls of Troy. Jupiter interposed and ordered the body to be given up to Priam, after which the warrior was buried with great pomp.

**Hecuba**, wife of Priam was a dignified and much-enduring mother, whose lot it was to see her husband and her favourite sons killed by the enemy. After the fall of Troy she fell to the lot of Ulysses and accompanied the conquerors on the voyage back to Greece, but while halted in the Thracian Chersonesus, after trying to avenge the murder of her son, Polydorus, she cast herself into the sea at Cynæum.

**Helen**, daughter of Jupiter and Leda, famed for her beauty. In her youth she was carried off to Attica by Theseus and Pirithous, but rescued by her brothers Castor and Pollux. Among her suitors were the most celebrated princes of the age, but she ultimately became the wife of Menelaus, King of Lacedæmon. After three years of happiness, Paris, son of Priam, king of Troy, came on a visit to the court of Menelaus, and persuaded Helen to follow him to Troy. To avenge this outrage the Trojan war was begun.

When Paris was killed, in the ninth year of the war, she married Deiphobus, but afterwards betrayed him in order to regain the favour of Menelaus, which she succeeded in doing, and remained with him until his death. Of her own fate there are numerous varying accounts.

**Helenus**, son of Priam and Hecuba, famous for his prophetic powers, who deserted from the Trojans to the Greeks. After the Trojan war he settled in Epirus and married Andromache.

**Helicon**, a range of mountains in Boeotia, sacred to Apollo and the Muses.

**Helios**, or Sol, the god of the sun, who daily drove his four-horsed chariot across the sky.

**Helle**. (See Athamas.)

**Hephestus**, the Greek name for Vulcan.

**Hera**, the Greek name for Juno.

**Heracleida**, the name given to the descendants of Hercules, who were said to have led the Dorians in the invasion of Peloponnesus.

**Hercules** (Greek, Heracles), son of Jupiter and Alcmæna, is the personification of physical strength, and the most wonderful stories are related of his exploits. Even while in his cradle he strangled two serpents which Juno had sent to destroy him. At eighteen he killed the lion of Mount Cithæon. Afterwards, having been rendered mad by Juno, he killed his own children and those of his brother, and on recovering was so plunged in grief that he exiled himself and went to consult the oracle of Apollo at Delphi. He was commanded to serve Eurystheus for twelve years, during which period he was to perform twelve "labours." The gods equipped him for his tasks and he carried them through successfully. The first was to kill the lion of Nemea, which he choked to death; the second was to destroy the nine-headed Lernean hydra, which he killed with his club of brass, the gift of Vulcan; the third was to capture the Arcadian stag, which he caught in a trap; the fourth to destroy the wild boar of Erymanthus; the fifth, to clean the Augean stables; sixth, to kill the carnivorous birds of Stymphalis; seventh, to capture the wild bull of Crete; eighth, to capture the mares of Diomedes; ninth, to obtain the girdle of the Queen of the Amazons; tenth, to capture the oxen of Geryon; eleventh, to obtain some golden apples from the garden of the Hesperides; and twelfth, to bring to earth Cerberus, the three-headed dog of Hades. He was now free from service to Eurystheus and returned to Thebes. He married Deianira, daughter of Ceneus of Calydon, and when Nessus, a Centaur, tried to outrage her, Hercules shot him with a poisoned arrow. The dying Nessus told Deianira to keep his blood, as it would always preserve her husband's love. Later, fearing that she was being supplanted by Iole, Deianira sent Hercules a garment soaked in the blood of Nessus, and it poisoned him. On his death he was carried to Olympus and endowed with immortality.

**Hermes**, Greek name for Mercury.

**Hero and Leander**. (See Leander.)

**Hesperides**, the three daughters of Atlas and Hesperis, appointed to protect the golden apples which Earth gave to Juno at her marriage to Jupiter. The hundred-headed dragon, Ladon, was always on guard at the foot of the tree, but was slain by Hercules when he seized the apples.

**Hesperus**, the evening star.

**Hippocrene**, a fountain at the foot of Mount Helicon, originally set flowing by the ground being struck by the hoofs of Pegasus, the winged horse. It was dedicated to the Muses.

**Hippolytus**, son of Theseus, who was accused by Phædra, his stepmother, of attempting to dishonour her. He was accordingly cursed by Theseus and killed in his chariot through the agency of Neptune, but his innocence was later discovered, and Phædra slew herself.

**Horatius**, a Roman who, with two others, defended the bridge over the Tiber against the whole Etruscan army while the citizens were cutting it down. When the bridge was destroyed he sprang into the river and swam safely back.

**Hyacinthus**, a beautiful youth, killed by accident by Apollo while playing quoits. From his blood sprang the hyacinth.

**Hydra**, a monster of seven or more heads, each of

which grew again when cut off. It was killed by Hercules.

**Hygeia**, the goddess of health.

**Hylas**, a beautiful youth loved by Hercules, whom he accompanied on the Argo. When on shore drawing water he was carried off by the Naiads.

**Hylus**, son of Hercules and Deianira.

**Hymen**, the god of marriage.

**Hyperion**, one of the Titans, was father by Thea of the Sun (Helios), the Moon (Selene), and the Dawn (Eos). His father was Heaven (Uranus), his mother Earth (Ge).

## I

**Icarus**. (See *Dædalus*.)

**Io**, a princess of Argos, whom Jupiter loved and changed into a heifer for fear of Juno. But Juno was aware of the change and put Argus to watch Io. When Argus was killed by Mercury Juno tormented the animal with a gadfly from Io to place until she reached the Nile, where Io recovered her form and bore a son to Jupiter.

**Iphigenia**, daughter of Agamemnon and Clytemnestra. At the outbreak of the Trojan War it was proclaimed by the priest of Apollo that the wrath of the gods, aroused by the killing of the sacred stag by Agamemnon, could not be appeased except by the sacrifice of Iphigenia, and contrary winds detained the fleets until this was performed. Just as the knife of the priest was uplifted, Artemis carried off Iphigenia to Tauris, and a goat that appeared in her place was immolated instead of her. The Greeks then proceeded against Troy. Iphigenia became a priestess, and was afterwards instrumental in saving the life of her brother Orestes when he was about to be sacrificed.

**Iris**, messenger of the gods and goddess of the rainbow.

**Ixion**, king of Thessaly, and husband of Dia, to whose father Deioneus he promised a valuable gift, but being unable to obtain the gift, he put his father-in-law to death to get out of his promise. Jupiter, after a long period of expiation, summoned him to Olympus and placed him at the table of the gods. Afterwards Ixion began to make love to Juno, but Jupiter substituted a cloud of the shape of the goddess, and from this the Centaurs were born. Then as a punishment Ixion was condemned to be bound to a fiery wheel that never ceased to roll through Hades.

## J

**Janus**, an old Italian god with two faces, facing opposite ways. He was the god of doors, because every door looks both ways. He had a temple at Rome that was open in time of war and closed during peace.

**Jason**, son of Æson and Alcimede. When Æson was driven from the throne of Iolcus by his half-brother Pelias, Jason was saved and brought up by the Centaur Chiron. When grown up he demanded his father's kingdom, and Pelias promised to hand it over if Jason would bring him the Golden Fleece (see *Athamas*) which was kept by King Æetes of Colchis in the custody of a dragon. Accordingly Jason gathered a band of heroes and set out in the ship *Argo*. Æetes agreed to surrender the Fleece if Jason would perform various seemingly impossible feats—yoking the fire-breathing oxen and sowing the dragon's teeth. Medea, daughter of Æetes fell in love with him, and with her aid he performed the tasks and returned home with the Fleece, taking Medea with him. Medea then tricked the daughters of Pelias into killing their father. For a time Jason and Medea lived happily, but then Jason deserted her for Glauce or Creusa, whereupon Medea killed her children by Jason, sent Glauce a poisoned garment which burned her up, and fled to Athens. Jason slew himself in grief.

**Juno** (Greek *Hera*), daughter of Saturn and Rhea, sister and wife of Jupiter, and queen of heaven. She was an exacting and jealous wife, and avenged herself with severity upon the numerous mortal maidens of whom Jupiter became enamoured as well as upon their offspring. She was the mother of Mars, Hebe, Lucina,

and Vulcan. She aided the Greeks in the Trojan war.

**Jupiter** (Greek *Zeus*), son of Saturn and Rhea, was the lord of heaven and presumed father of gods and men. He was brought up in a cave on Mount Ida to hide him from his father, who had eaten the rest of his children, and while a child conquered the Titans. Thus he became master of the world, and after giving the empire of the sea to Neptune, and that of the infernal regions to Pluto, installed himself king of heaven. The story of his adventures and amours occupies a chief part of the mythological legends, and are referred to under the distinctive names of the personages or places concerned. He is usually depicted seated on a throne, with thunderbolts in one hand ready to be hurled against his enemies, and a sceptre of cypress in the other, and wearing a wreath of olive or myrtle.

## L

**Lachesis**. (See *Parcae*.)

**Laertes**, King of Ithaca and father of Ulysses.

**Laocoon**, priest of Apollo, and son of Priam. For the part he took in opposing the entrance into Troy of the wooden horse of the Greeks, Minerva caused two gigantic serpents to issue from the sea and engage Laocoon's two sons in their coils. The father rushed to the rescue of his sons, and the next moment all three were in the grasp of the serpents, and were crushed to death.

**Laodamia**, wife of Protesilaus, in answer to whose prayers her husband was restored to life for three hours. When he died a second time, Laodamia died with him.

**Laomedon**, father of Priam, for whom Neptune built the walls of Troy. Laomedon refused to give the promised reward, so Neptune sent a monster to plague the city. It was killed by Hercules, but when Laomedon again broke his word, he was slain by the hero.

**Lapithæ**. (See *Pyriouths*.)

**Lares**, the spirits of dead ancestors, who watched over a house.

**Latona**, or **Leto**, daughter of a Titan, loved by Jupiter and persecuted by Juno. She wandered from place to place till Jupiter gave her a refuge on Delos, where she bore him Apollo and Diana.

**Leander**, a youth of Abydos, who swam nightly across the Hellespont to visit Hero, a priestess in Sestos, guided by a lamp which Hero hung out from a tower. The light being blown out one wild night Leander lost his way and was drowned, on discovering which Hero threw herself into the sea.

**Leda**, wife of Tyndareus, king of Sparta, who was loved by Jupiter in the form of a swan, and brought forth two eggs, from one of which sprang Helen, and from the other Castor and Pollux.

## M

**Mars** (Greek *Ares*), the god of war, son of Jupiter and Juno, and lover of Venus.

**Medea**. (See *Jason*.)

**Medusa**, one of the Gorgons, killed by Perseus, whose face turned the gazer to stone.

**Meleager**, son of Æneus, king of Ætolia, and Althæa, was one of the Argonauts, and led the chase after the Calydonian boar. It had been decreed by the Fates that he should live as long as a certain firebrand should not be burned up, and his mother snatched the brand from the fire and jealously guarded it. When Althæa heard of Meleager's slaying of the boar she went to the temple to return thanks, but on the way she saw the bodies of her brothers whom Meleager had slain because they protested against the skin being given to Atalanta. This so incensed Althæa that she cast the fatal firebrand on the fire, and when it was consumed Meleager died.

**Melpomene**. (See *Muses*.)

**Menelaus**, king of Sparta and brother of Agamemnon, was the husband of Helen, and after she left him for Paris, he entered upon the Trojan war, in which he bore himself with great bravery. After the war he forgave Helen and



took her back, but they did not reach Sparta until eight years later.

**Mentor**, the friend of Ulysses, who, during the latter's absence at Troy, saw to the education of Ulysses's son Telemachus, which he did so well that the term Mentor has become proverbial for a wise guide.

**Mercury** (Greek Hermes), son of Jupiter and Maia, was Jupiter's messenger, and patron of travellers, shepherds, traders, and robbers, and god of merchandise. Many of his exploits turn upon thievery or mischief. He wore a winged cap and had wings to his feet, and could transport himself from place to place with the speed of the wind.

**Midas**, king of Phrygia, who having done Bacchus some service was permitted to choose his reward. So he asked that whatever he touched might be turned into gold, and his prayer was granted. But the things he ate, the clothes he wore, the water he washed in, turned into gold, and he soon asked for the gift to be revoked. For giving the opinion that Pan made better music than Apollo he was given ass's ears, but his barber was the only man to find out. He could not keep the discovery to himself, but whispered it into a hole in the earth. Later reeds grew up and as they were shaken by the wind they murmured the words: "King Midas has ass's ears," and so revealed the secret.

**Minerva**, the goddess of wisdom, war, and the liberal arts (Greek, Athena, also Pallas), was the daughter of Jupiter, and sprang full-grown from her father's brain. She was impervious to the passion of love and is depicted as wearing a helmet, and carrying a shield. She was patron goddess of Athens, which she won in a contest with Neptune. He produced the horse and she the olive. The gods considered the latter the more useful, and so awarded her the land.

**Minos**, king of Crete. (See Minotaur.)

**Minotaur** was half bull, half man, and was the offspring of Pasiphaë and a bull. This came about by Minos's refusal to sacrifice a white bull to Neptune, whereupon the latter caused Pasiphaë to become enamoured of a beautiful bull. The Minotaur was confined in a labyrinth by Minos, and every year the monster devoured seven youths and seven maidens, which the king compelled the Athenians to send. Ultimately the Minotaur was slain by Theseus, with Ariadne's help.

**Morpheus**, son of Somnus, was the god of sleep and dreams. He is generally represented as a chubby, winged child, holding poppies in his hand.

**Muses**, nine divinities presiding over the arts. Their names and attributes were: Clio, history; Euterpe, lyric poetry; Thalia, comedy; Melpomene, tragedy; Terpsichore, dance; Erato, erotic poetry; Polymnia, religious song; Urania, astronomy; Calliope, epic poetry.

## N

**Naiads**, water nymphs.

**Narcissus**, a beautiful youth, son of the river-god Cephissus. The nymph Echo fell in love with him, but he did not return her passion. To avenge this offence, Venus caused him to become enamoured of his own reflection in the waters of a fountain, and he pined away until he was changed into a flower.

**Nemesis**, a Greek goddess who meted out happiness and misery to mortals, and abased those who were too fortunate.

**Neoptolemus**, or **Pyrrhus**, son of Achilles. He fought at Troy and later settled in Epirus, where he was killed by Orestes.

**Nephele**. (See Athamas.)

**Neptune** (Greek Poseidon) was the son of Saturn and Rhea and brother of Jupiter and Pluto. He was king of the sea and also god of horses. He made love to Amphitrite as a dolphin, and assumed other shapes for other like deceptions. He is usually represented with a trident in his hand being drawn across the sea in a chariot by brazen-hoofed horses, attended by tritons and nymphs.

**Nereus**, a sea deity, son of Oceanus and Terra, and husband of Doris, by whom he had fifty daughters called the Nereides. He was gifted with prophecy, and lived in the Ægean Sea.

**Nessus**. (See Hercules.)

**Nestor**, king of Pylos, and grandson of Neptune. When Hercules slew Nestor's father Neleus, and eleven brothers, Nestor was saved because his tender age detained him at home. He joined the Greeks in the Trojan war, although an old man, and did more good service by wise counsel than many of the heroes by force of arms.

**Niobe**, daughter of Tantalus, and wife of Amphion, by whom she had seven sons and seven daughters. Intense pride in her offspring caused her to sneer at Latona, who had only two children, Apollo and Diana, and, to avenge this insult, all Niobe's sons were killed by Apollo's darts, and all her daughters, except Chloris, were destroyed by Diana, while Niobe herself was transformed by Jupiter into stone, which in summer shed incessant tears.

**Nisus**, king of Megara and father of Scylla. When Minos was besieging Megara, Scylla fell in love with him, and pulled out the lock of purple hair on which her father's life depended. Nisus died, but Minos was so disgusted with Scylla's conduct that he sailed away without her. She leapt into the sea after him, but Nisus, who had been changed into a sea-eagle, pounced on her, whereupon she became a fish.

**Notus**, in Greek mythology, the south wind. The Romans called him Auster.

**Nymphs**, female deities with whom the Greeks peopled the whole of nature. There were (1) Sea nymphs, both Oceanides and Nereides; (2) Naiads, who were fresh-water nymphs; (3) Dryads and Hamadryads, tree nymphs; (4) Oreades, mountain nymphs.

## O

**Oceanus**, god of the water which surrounded the earth, from which the sun and stars rose, and father of all river gods and water nymphs.

**Odysseus**, Greek name of Ulysses.

**Oedipus**, son of Laius, king of Thebes, and Jocasta.

It was predicted before Oedipus was born that Laius would perish by the hands of his son, so as soon as the boy was born he was ordered to be destroyed, but Jocasta gave the child to a servant who carried him to a mountain and left him there. He was discovered by a shepherd and educated as his own child. When grown to manhood he had an accidental meeting with Laius. The latter was driving along in his chariot, and the road being narrow the king ordered Oedipus to make way for him. Oedipus refused and in the encounter that ensued Laius was slain by his son, as the oracle had predicted. Proceeding to Thebes, Oedipus found the population in the power of the Sphinx sent by Juno to lay waste the country, everyone who failed to answer the riddle the Sphinx propounded being destined to death. The kingdom and the hand of the queen were offered to whomsoever would answer the riddle and free the people from the monster. Oedipus solved the riddle, and the Sphinx killed itself in mortification. Oedipus became king and married his own mother by whom he had Eteocles, Polynices, Antigone, and Ismene. Later, Thebes was overrun by a plague and the oracle announced that the epidemic would not stop until the murderer of Laius was discovered. In the end, Oedipus was made aware of his true position and identity, and the revelation caused Jocasta to hang herself, and Oedipus to tear his eyes out. Afterwards he wandered forth with his daughter Antigone and died at Colonus, near Athens.

**Enomaus**, a son of Mars by Sterope, the daughter of Atlas. He was king of Pisa, in Elis, and father of Hippodamia.

**Enone**. (See Paris.)

**Olympus**, a mountain of Macedonia and Thessaly (now Lacha). The ancients supposed that its top reached the heavens, and from that developed the idea of its being the abode of the gods.

**Omphale**, queen of Lydia, and daughter of Jarda-nus. She desired to see Hercules, and her wish was gratified. After the murder of Eurystus, Hercules fell sick, and was ordered to be sold as a slave, that he might recover his health and senses. Omphale bought him out of slavery, and he became enamoured of the queen, who bore him a son.

Oreades, nymphs of the mountains.

**Orestes** (see Electra), son of Agamemnon and Clytemnestra, who avenged his father's murder by killing his mother and Egisthus. After that deed the Furies haunted him and he fled from one country to another, but was pardoned by Artemis when he brought her sacred image from Tauris. There he found his sister Iphigenia. He became king of Mycenæ and Sparta and married Hermione, daughter of Menelaus.

**Orion**, a famous giant and hunter. When he demanded the hand of Merope, daughter of Enopion, king of Chius, her father set him the task of clearing the island from wild beasts as the price of betrothal. This deed Orion easily achieved, but Enopion, on the pretence of complying, intoxicated Orion, and when he was asleep put his eyes out. Afterwards he recovered his eyesight by turning his vacant eyes to the rising sun, and at once revenged himself upon the king. After death, Orion was placed in heaven, where one of the constellations bears his name.

**Orpheus**, son of Egeus and Calliope, had a lyre given to him by Apollo, and played upon it so exquisitely that all things inanimate as well as animate were charmed. He was one of the heroes of the Argonautic expedition, and on his return married Eurydice. Later Eurydice died from the sting of a serpent, when Orpheus followed her to Hades and charmed Pluto and his associates so much that his wife was allowed to accompany him back to earth, on condition that he did not look upon her until the borders of Hades had been passed. The temptation was too great: he looked, and lost her for ever. In grief for her he spurned the Thracian women, who tore him to pieces in a Bacchic orgy.

**Ossa**. (See Pelion.)

## P

**Palamedes**, a Greek hero in the Trojan war, who incurred the enmity of Ulysses. By a trick the latter got the Greeks to kill Palamedes as a traitor.

**Palladium**, an image of Pallas at Troy on which the safety of the town depended; it was stolen by Ulysses and Diomedes.

**Pallas**, or **Pallas Athene**, the Greek goddess identified with Minerva.

**Pan**, the god of shepherds, huntsmen, and rural people, said to have been the son of Mercury. He is represented with two small horns, a flat nose, and the lower limbs of a goat. He was full of tricks and mischief, loved music, and danced with the nymphs.

**Pandora**, the first woman on earth. When Prometheus stole fire from heaven, Jupiter in revenge ordered Vulcan to make a woman out of the earth, who was also called Pandora, and endowed with every gift. She married Epimetheus, and gave her husband a box which she had brought with her from heaven. When this box was opened, there issued from it every kind of human ill and distemper, which spread themselves over the world. Hope alone remained at the bottom of the box to shed its influence in easing the troubles of life.

**Parcæ**, the three Fates—Clotho, who held the distaff upon which the thread of life was spun; Lachesis, who turned the spindle and decided the actions and events of life; and Atropos, who held the scissors to cut the thread of life.

**Paris**, son of Priam, was brought up as a shepherd, and married Ænone, a nymph of Mt. Ida. At the marriage of Peleus and Thetis, the goddess of discord threw an apple among the assembly, inscribed "For the Fairest." Each of the goddesses present claimed the apple, and when the claimants had been reduced to three—Juno, Venus, and Minerva—Paris was called upon to give judgment, and decided in favour of Venus, who rewarded him with Helen. (See Helen.) When Paris was wounded he returned to Ænone, but she refused to heal the wound, and Paris died. Ænone thereupon killed herself.

**Parnassus**, a mountain of Phocis, dedicated to the Muses, and to Apollo and Bacchus.

**Pasiphaë**, a daughter of Helius, wife of Minos, and mother of Ariadne and the Minotaur.

**Pasithea**, or **Aglaia**, one of the Graces.

**Patroclus**, the intimate friend of Achilles, whom he

followed to Troy. When Achilles refused to fight, Patroclus borrowed his famous armour and helped the Greeks when they were hard pressed. But he was killed by Hector, and the desire to avenge him brought Achilles again into the field.

**Pax**, goddess of peace.

**Pegasus**, the winged horse which sprang from the blood of Medusa after Perseus had cut off her head. He was given to Bellerophon to conquer the Chimæra, and after the task was completed, Bellerophon wanted to scale the heavens on the back of Pegasus, but the animal threw him, and flew up to Olympus alone, and was placed among the constellations by Jupiter.

**Peleus**, son of Æacus, who married the Nereid Thetis. (See Paris.) Achilles was their son.

**Pelias**, the twin brother of Neleus, and the son of Neptune by Tyro. His birth was concealed by his mother, and he was exposed in the woods, but his life was saved by shepherds and he received the name Pelias from a spot of the colour of lead on his face. After the death of Cretheus, Tyro's second husband, he seized the kingdom, expelling Æson, the son of Cretheus and Tyro. (See Jason.)

**Pelion**, a mountain of Thessaly. In their wars against the gods, the giants placed Mount Ossa on Pelion, to scale the heavens with greater ease.

**Pelops**, son of Tantalus, who was cut up by his father and served up to the gods, but then restored to life. He won Hippodamia as his bride, by defeating her father Enomachus in a chariot race in which death awaited the conquered. For the misfortunes of his family, see Atreus and Thyestes.

**Penelope**. (See Ulysses.)

**Pentheus**, king of Thebes, killed by his mother Agave and her sisters in Bacchic fury.

**Penthesilea**, queen of the Amazons, killed at Troy by Achilles.

**Persephone**. (See Ceres.)

**Perseus**, son of Jupiter and Danaë, who was set the task of obtaining Medusa's head by Polydectes, who wished to get rid of him, and marry Danaë. Obtaining Pluto's helmet, which rendered him invisible, and other aids from other gods and goddesses, he flew to the land of the Gorgons. Finding them asleep, he was able to cut off Medusa's head, and flew away with it, reaching the court of Polydectes in time to save his mother Danaë from falling into his toils. (See Andromeda.)

**Phædra**. (See Hippolytus.)

**Phæthon**, son of Helius, who was killed when trying to drive his father's chariot across the sky.

**Philemon**. (See Baucis.)

**Phœbus**, a name of Apollo.

**Phrixus**. (See Athamas.)

**Pirithous**, king of the Lapithæ in Thessaly. At his wedding to Hippodamia a drunken Centaur stole the bride, and this caused the celebrated battle between Lapithæ and Centaurs, which the former won.

**Pleiades**, the seven daughters of Atlas, who being pursued by Orion appealed to the gods for succour and were transformed into doves and placed among the stars.

**Pluto**. (See Hades.)

**Pollux**. (See Dioscuri.)

**Polynices**. (See Eteocles.)

**Polyphemus**, son of Neptune and chief of the Cyclops. He lived in a cave near Mount Ætna. Ulysses and twelve companions entered this cave, and six of them were devoured by the monster. Then he fell asleep and Ulysses put his one eye out and escaped. (See Acis.)

**Poseidon**, Greek name for Neptune.

**Priam**, son of Laomedon, king of Troy, husband of Hecuba and father of Hector, Paris, and forty-eight other sons. At the fall of Troy he was killed by Neoptolemus.

**Priapus**, god of fertility.

**Prometheus**, a Titan, who was the benefactor of men in spite of Jupiter. He stole fire for them from heaven, and taught them useful arts. For this he was chained to a rock, with an eagle tearing at his ever-renewed liver, until Hercules rescued him.

**Proserpine**. (See Ceres.)

**Proteus**, a soothsayer who lived in a cave on the island of Pharos, and who could only be made to utter his prophecies when caught asleep, as



while awake he had the power of changing his shape so as not to be recognised.

**Psyche**, a nymph whom Cupid married and visited nightly, concealing his features from her and leaving before dawn. She contrived to see him one night, however, as he slept, by lighting her lamp, and was enraptured with his beauty. He was awakened by the falling upon him of a drop of oil and fled. After that she wandered in search of him, but incurred the hatred of Venus, who tried to thwart the lovers. Psyche was ultimately united to Cupid, however, and endowed with immortality.

**Pygmalion**, a sculptor who carved a statue in ivory of a woman, and appealed to Venus to breathe life into it. The goddess did, and he married the animate statue, who bore him Paphos.

**Pylades**, friend of Orestes and husband of Electra.

**Pyrrihus**, another name of Neoptolemus.

**Pyrriha**. (See Deucalion.)

**Python**, the famous serpent of the caves of Mount Parnassus. It was born from the mud left by the Deucalion deluge. Apollo slew the monster.

## R

**Remus**. (See Romulus.)

**Rhadamanthus**, son of Jupiter and Europa, who lived such a life of rectitude that at his death he was appointed one of the three judges of Hades, Minos and Æacus being the other two.

**Rhea**, goddess of the earth, wife of Saturn and mother of Jupiter.

**Romulus**, twin brother to Remus, son of the vestal virgin Sylvia. The mother was condemned to be buried alive and the children thrown into the Tiber, but the boys were rescued and suckled by a she-wolf. Afterwards they founded a city, but quarrelled as to its situation, and Remus was killed. Romulus then founded Rome.

## S

**Sarpedon**, king of Lycia, killed by Patroclus at Troy.

**Saturn**, the oldest divinity of Roman mythology, and supposed to be the god of agriculture. With him is identified the Greek Cronus, a son of Uranus and Terra, who usurped his father's kingdom, his brothers assenting on condition that he did not bring up any male children. Saturn therefore always devoured his sons as soon as they were born, but his wife, Rhea, concealed from her husband her sons Jupiter, Neptune, and Pluto, and gave him large stones to swallow instead of her male offspring. It was this that led to the Titans making war upon Saturn, and his ultimate overthrow by his son Jupiter.

**Satyrs**, rustic deities addicted to sensual pleasures and associated with the worship of Bacchus.

**Scylla and Charybdis**. Scylla was a dangerous rock near the Italian coast in the Strait of Messina. This rock was a peril to mariners, but in avoiding it they were often drawn into the Charybdis whirlpool on the opposite side.

**Selene**, goddess of the moon.

**Semele**, daughter of Cadmus and mother of Bacchus. Hera, being jealous of Jupiter's love for her, persuaded Semele to ask him to come to her in his true shape. He did so, and Semele was killed by the lightning, but gave birth to Bacchus whom Jupiter saved by closing him up in his thigh till he was due to be born.

**Sibyls** were women with the gift of prophecy, one of whom compiled the Sibylline books which were kept at Rome.

**Silenus**, a jovial old Satyr, companion of Bacchus.

**Sirens**, sea nymphs who lured to death by their songs all who heard them.

**Sisyphus**, son of Æolus, who was punished in the underworld by having to roll uphill a huge rock, which as soon as it reached the top always rolled down again.

**Somnus**, god of sleep.

**Styx**, chief river of the underworld.

## T

**Tantalus**, a son of Jupiter. For revealing his father's secrets he was punished with a raging thirst and the water and fruits that he saw close at hand always receded from his grasp.

**Tartarus**, the depths of Hades.

**Telemachus**, son of Ulysses and Penelope.

**Telephus**, son of Hercules, wounded by Achilles and then cured by him, as without his aid the Greeks could not capture Troy.

**Tereus**, a Thracian king, who married Procne, daughter of Pandion of Athens but put her away to marry her sister Philomela, whose tongue he cut out. But the sisters communicated with each other, and Procne killed her son Itys and served his flesh up to Tereus. They then fled, pursued by Tereus, and the gods changed them into birds. Procne became a swallow, Philomela a nightingale, and Tereus a hawk.

**Terpsichore**, the Muse of Dancing.

**Tethys**, daughter of Uranus and wife of Oceanus.

**Thalia**, the Muse of Comedy.

**Themis**, the goddess of law and justice, and wife of Jupiter.

**Theseus**, son of Ægeus, the king of Athens, and legendary hero of Attica. His most famous exploit was the slaying of the Minotaur. He went to Crete as one of the youths whom the Athenians sent annually to Minos, but Ariadne, daughter of Minos, fell in love with him, and with her help he slew the Minotaur and escaped from the labyrinth. He took Ariadne away with him, but deserted her on Naxos. Other exploits of his were his battle with the Amazons, whose queen he seized, and the carrying off of Helen from Sparta to Athens, whence she was rescued by Castor and Pollux.

**Thetis**. (See Peleus.)

**Thïsbe**, a maiden beloved by Pyramus. Their parents opposed their union and they appointed to meet at the tomb of Ninus. Thïsbe reached the place first, but seeing a lion ran away, letting her garment fall in her flight. Pyramus seeing this when he came thought she had been murdered and killed himself. Then Thïsbe returned and at the sight of her dead lover put an end to her own life.

**Thyestes**, son of Pelops and brother of Atreus, whose wife he seduced. Atreus took revenge, and Thyestes pronounced the curse which brought misfortune to the house of Atreus.

**Tiresias**, one of the most famous prophets of antiquity. He was a Theban, and blind.

**Titans** were a race of giants who waged a ten years' war with Jupiter, but were ultimately conquered and imprisoned in a cavern near Tartarus.

**Tithonus**, son of Laomedon and brother of Priam. He was loved by Aurora, who secured him immortality, but not eternal youth, so that in his old age he shrivelled up.

**Triton**, a sea deity, son of Neptune, who calms the waves with his trumpet.

**Turnus**, an Italian prince, killed by Æneas, whose settlement in Italy he resisted.

**Tyndareus**, king of Sparta, husband of Leda.

## U

**Ulysses** (Greek Odysseus), son of Laertes, husband of Penelope, father of Telemachus, and king of Ithaca. He was the wildest of the Greek leaders at Troy, and inventor of the wooden horse. His wanderings on the way home from Troy form the subject of Homer's *Odyssey*. They lasted 20 years, but finally he returned home, and killed the suitors by whom Penelope had been surrounded during his absence, and whom she had constantly put off.

**Uranus**, god of Heaven, husband of Earth, de-throned by his son Saturn.

## V

**Venus** (Greek Aphrodite), the goddess of love, daughter of Jupiter and Dione, but according to later legend born of the foam of the sea. She received the prize of beauty in the judgment of Paris. Cupid was her son.

**Vesta**, the goddess of the hearth.

**Vulcan** (Greek Hephæstos), the god of fire, and son of Jupiter and Juno. He made the armour of the gods and had his workshops in volcanic mountains.

## Z

**Zephyr**, Greek personification of westerly winds.

**Zeus**, Greek name for Jupiter.

# General Information



Some 5,000 entries on subjects of general interest,  
alphabetically arranged

## *Appendices*

**Nobel Prizewinners**

**705-06**

|

**The National Trust Properties**

**707-08**



# General Information

WHEN this volume was first published over half a century ago the editor explained how this section originated. "If we keep our eyes and ears open," he wrote, "we must be struck by the number of names, subjects, and allusions met with in the daily press of which we know little or nothing." He therefore collected information about a number of subjects which had aroused his curiosity and condensed it into the small space at his disposal. The section has steadily grown and changed over the years as new knowledge has come to light.

## A

**Aard-Vark**, the name given by the Boers to a genus of ant-eating mammals peculiar to Africa; also known as antbears. They live in burrows, where they stay until after dark, when they attack the nests of termites; much esteemed as food by the natives.

**Abacus**, the uppermost portion of the capital of a column (arch.); also an instrument used by the Greeks and Romans for arithmetical calculations, consisting of bars with perforated beads. Similar instruments were used by the Egyptians, Chinese, and Russians.

**Abaddon**, the angel of the bottomless pit—Apollyon, Satan.

**Abattis**, a military term signifying an entrenchment of trees placed side by side, with the branches outwards.

**Abbeys**, monastic or conventual establishments governed by an abbot or an abbess were among the earliest Christian institutions. Monasticism owes its extension in the west to the Benedictines—they founded many abbeys in the 6th and 7th centuries and by 1415 no fewer than 15,070 had been established by this order alone. The buildings of a Benedictine abbey (and later of the Cistercian abbeys) were usually built according to one plan. Remains of Benedictine abbeys may still be seen at York and Westminster. Fountains Abbey is the largest and best preserved Cistercian house in England. From the dissolution of the monasteries by Henry VIII. monasticism practically ceased in this country. There are a few modern monasteries.

**Abdication**. The term usually refers to the act of a sovereign who relinquishes the supreme power in a State. There have been only two instances since the Conquest of the abdication of an English monarch: that of James II., in 1688, and that of Edward VIII. in 1936. Defeat in the first and second world wars caused the abdication of many Continental rulers.

**Abduction** is the term used for the unlawful taking away of any person. In English law used chiefly for the taking away of a wife from husband against her will or of a child from parent or guardian against their will. Serious offences are severely punishable as felony or misdemeanour.

**Abecedarians**, a small sect of Anabaptists of the 16th century, opposed to learning of every kind.

**Aberdeen University**, founded in 1494 and now constituted by the Union of King's College (1505) and Marischal College (1593) in 1860.

**Aberration**, in astronomy, is the apparent displacement of a star due to the motion of the observer with the earth. In optics (i) spherical aberration, causing blurring of an image, is due to failure of lens to bring light to a single focus, (ii) chromatic aberration, causing coloured fringes to an image, is due to the refractive index of glass being different for light of different colours. For instance, violet light is bent more than red.

**Abiogenesis**, or spontaneous generation; the origination of living from non-living matter. The term is applied to such discredited ideas as that frogs could be generated spontaneously by the action of sunlight on mud, or maggots arise spontaneously in dead meat without any eggs from which the maggots hatch being present. Spallanzani (1729-1799) upset the hypothesis of spontaneous generation; Pasteur dealt it a death-blow.

**Aborigines**, a term first applied to an ancient mythical people of central Italy, derives from

the Latin *ab origine* = from the beginning. It now signifies the original inhabitants of any country, in particular the aboriginal tribes of Australia. In contrast to their highly complex social and religious customs, the material culture of Australian aborigines is very low and ill adapted to stand up to contact with European civilisation. Originally estimated at 300,000, their number has dropped in the last 200 years to some 50,000, concentrated on reservations in the northern part of the continent.

**Absinthe**, an aromatic spirit formerly much consumed in France, and made from a distillation of wormwood and other roots macerated in alcohol. The manufacture is prohibited in France and Switzerland. Absinthe-drinking is a great evil, destroying the power of the brain and ultimately inducing paralysis. Zola's novel *L'Assommoir* was a scathing indictment of the absinthe habit.

**Absolution**, an ecclesiastical term denoting the liberation of a person guilty of sin from its consequences by the act or intercession of religious authority. Now confined in its strict form chiefly to the Roman Catholic and Greek Churches, although used to some extent in the Anglican communion.

**Academy** is a Greek term, originally applied to the groves where Plato taught, but subsequently adopted to indicate higher educational institutions of a special kind. Academies of science are numerous in all parts of the world, and in addition there are what may be called Literary Academies, of which the French Academy, established in 1635, is a notable example. There are also Academies of History, of Medicine, of Music, and of Art. The London Royal Academy of Arts was founded in 1768, Sir Joshua Reynolds being its first president. The British Academy, for the promotion of historical, philosophical, and philological studies, was founded in 1902, and is incorporated by Royal charter.

**Acetic Acid**, an organic acid produced when ordinary (ethyl) alcohol is fermented by the organism called *Acetobacter aceti*. The same oxidation process yields vinegar; this is a weak and crude solution of acetic acid obtained by trickling dilute alcoholic liquor over beechwood shavings at 35° C. The souring of wine is due to same process. Acetic acid is used as a food preservative and flavouring material, and in the manufacture of cellulose acetate and white lead.

**Acetylene**, a powerful illuminating gas (compounded of hydrogen and carbon), readily soluble in acetone, will inflame spontaneously when brought in contact with chlorine. Used as an illuminant in bicycle lamps, also to a small extent for house lighting. The flame it gives when burnt with oxygen in the oxy-acetylene blow-lamp is very hot and is used for welding.

**Acids** are compound substances which combine chemically with an alkali or base and result in a new body that has neither acid nor alkaline properties. These resultant bodies are termed salts. All acids contain hydrogen which is replaceable by metals, salts being formed as the hydrogen is liberated. The range of acids is very great. The chief mineral acids are sulphuric, hydrochloric, and nitric, and are capable of being utilised for an immense variety of commercial purposes.

**Acolyte**, one who assists the priest at Mass by saying the responses and by waiting on him.

**Acrobats** were originally rope dancers, and among the ancient Greeks and Romans this kind of

performance was very popular. In modern days the term has had a much extended meaning, and includes performers in a variety of feats of strength and dexterity which were not practised by the ancients; thus, in the general term acrobats are included men and women who perform on the trapeze, the horizontal bar, etc.

**Acrostic**, a kind of verse which has afforded amusement to ingenious triflers from very ancient times, and consists of a composition so arranged that the initial letters of the lines, read consecutively, form certain names or words.

**Acts of Parliament** comprise public Acts which are binding on all citizens, and private Acts which refer to particular persons or places. The statute-book is generally held to open late in the reign of Edward I. It became a fixed constitutional principle that an act of parliament, to be valid, must express concurrently the will of the entire legislature. An act takes effect from the day on which it receives the royal assent, where no other date is named. Nothing short of repeal can limit its operation. Originally the collective acts each session formed but one statute, to which a general title was attached, and for this reason up to 1892 an act of parliament was generally cited as the chapter of a particular statute, *e.g.*, 24 and 25 Vict. c. 101. Now, by the Short Titles Act 1892 it is optional to cite the most important acts to that date by their short titles, either individually or collectively. Most modern acts have borne short titles independently of the Act of 1892. (*See also* A Citizen's Guide.)

**"Addled Parliament."** James I.'s second Parliament, called together in 1614, and dissolved without legislating, on its refusal to grant supplies.

**Advent**, a period devoted to religious preparation for the coming celebration of the Nativity (Christmas). It comprises four Sundays, and commences on the one preceding or following St. Andrew's Day (Nov. 30), or on St. Andrew's Day itself. Advent was not observed before the 4th century.

**Advertising** is by derivation a method of "drawing attention to" anything. In its more usual and specific sense it refers to the various methods by which commerce attracts attention to its products, by which public services are explained to the public, and by which causes or parties announce their aims or programmes.

The history of advertising—until the arrival of the popular press at the end of the 19th century—has much significance for the social historian—it covers the trade fairs of the Middle Ages, the signs and banners of the craft and merchant guilds, the trade cards of the 18th-century dealers, the amazing claims for "sovereign specifics," and even that relic of the spoken, as opposed to the printed advertisement, the town crier. In the 20th century advertising has become an essential part of modern economics. It has been realised that to make good products is important, but that first to mark them, and then to market them are equally important duties of successful business. Advertising has become the final link in a chain of service which joins producer with consumer.

The revenue which accrues to the newspapers from advertising space sold to advertisers enables them to keep down the cost of newspapers, while adding to the editorial services they provide. When successfully practised, therefore, advertising has had three notable effects. It has enabled the products of mass production to reach the masses at prices well within their reach; it has been instrumental in improving the general standards of living, of comfort, of health, and of cleanliness; it has enabled great newspapers to give the masses a news, entertainment and educational service which is an essential part of the machinery of a free democracy.

The machinery which modern advertising has created for its own production has only recently been rationalised. It has required new kinds of technicians, mostly connected with journalism and the visual arts, and with printing in all its varied processes. The "copywriter" is the journalist with a flair for ideas which the commercial artist can illustrate; the "com-

mercial artist" is the craftsman who can apply his art to the subtle business of selling; and when copywriters and commercial artists have done their work, there is needed the skill of those who must translate a joint message into terms of metal, ink, and paper. These co-operative craftsmen are grouped into separate businesses known as Advertising Agencies—equipped to study and analyse markets, to hire space in newspapers, magazines, cinemas, shops, and on hoardings, and to fill the space with messages, which attract attention, compel reading, and carry conviction.

Advertising, frequently sponsored by H.M. Government, has earned a new prestige by its brilliance and efficiency in serving the nation by explaining rationing, by stimulating production, by encouraging saving, and by promoting safety and health. Advertising has proved it can be as effective a weapon for social purposes as for commercial success.

The amount spent on advertising in the United Kingdom during 1954 is estimated at about £280 million, which compares with £90 million spent in 1935.

**Advocatus Diaboli** ("the devil's advocate"), a Roman Catholic functionary who presents opposing evidence in regard to the life of any deceased person it may be proposed to canonise.

**Advowson** is the right of presentation to a vacant church benefice, and the person exercising the right is called the patron. Advowsons originated from the right of feudal lords who had built or endowed churches to nominate the incumbent, and this right came to be regarded as a right of real property. The buying and selling of advowsons has been greatly restricted since the passing of the Benefices Act, 1898 (Amendment) Measure, 1923.

**Aedynum**, the innermost sanctuary or secret chamber of ancient temples, access to which was forbidden to all but the priests. The most famous is the temple of Apollo at Delphi.

**Aeolian Harp**, a musical instrument once very popular. It consists of catgut stretched over a wooden sound-box which, when placed out of doors in the wind, can be made to emit many pleasing harmonies.

**Aerenchyma**. Plant tissue which is spongy because there are large air spaces between the cells in which gases can circulate. This aerating tissue is characteristic of marsh and water-plants.

**Aerodynamics**, the science of gases (especially air) in motion, particularly in relation to aircraft (aeronautics). The idea of imitating the birds by the use of wings is of ancient origin. It was Leonardo da Vinci, however, who first carried out experiments in a scientific manner. The invention of the balloon in 1783 and the researches of scientists and engineers in the 19th century ultimately led to the development of the aeroplane. (*See* Wright, Orville, "Prominent People.")

**Aerolites**, the name given to the class of meteorites composed chiefly of heavy silicates. The other two main classes are *siderolites* (nickel-iron and silicates) and *siderites* (nickel-iron).

**Affirmation** is a declaration made in lieu of an oath by persons objecting to be sworn because of religious or other scruples. Perjury applies to affirmations the same as to oaths.

**Afrikaner**, type of cattle bred in South Africa.

**Afrikaaner**, an Afrikaans-speaking South African, usually of Dutch descent.

**After-damp** is a mixture of carbon dioxide and nitrogen that occurs in a mine after an explosion and causes suffocation to human beings. It is also called "choke-damp" and "black damp."

**Agape**, a "love-feast" held by the early Christians in commemoration of the Lord's Supper.

**Agar-agar**, a vegetable jelly obtained from seaweeds, and largely employed in the Orient in the composition of soups and jellies. Used by bacteriologists to render solid culture media such as broth and blood upon which bacteria are cultivated. Before the second world war Japan had a virtual monopoly in agar-agar; U.S.A. and British Commonwealth now make it in quantity.

**Agaric**, large fungi of the family *Agaricaceae*, which includes the mushroom and what are popularly called "toadstools," though the idea



that these two lay terms sharply differentiate between edible and poisonous fungi is an incorrect one. Characteristic of the agarics is the presence of a cap or *pileus* (bearing underneath the spore-shedding gills) and a stalk or *stipe*.

**Agate**, a variegated stone composed of nearly pure silica (silicon dioxide). Parallel bands of colour are often characteristic. Germany, Brazil, and India furnish the main supplies, and Scotland has a species of agate called Scotch pebble.

**Agave**, the American aloe or Century Plant which sometimes does not attain to flowering maturity under sixty or seventy years, and then dies. The flower spray may reach a height of 20 feet and in its development the rush of sap is so great that the Mexicans collect for brewing the strong spirit called mescal. 1,000 litres of sap can be obtained from a single plant. One species of agave yields sisal used for making cord and rope.

**Age** is a term of wide application, variously used at different periods. In classical mythology five successive ages or races were defined—the golden or primitive, when people enjoyed unalloyed happiness without labour and lived on the fruits of the earth; the silver, when the worship of the gods was neglected; the brazen, which was warlike and violent; the heroic, when the gods and semi-gods held sway; and the iron, representing the lowest point of human degradation. Hesiod and Ovid both retain this classification. It is common to call the ages after some pre-eminent, dominating personality or characteristic; thus, we have the age of Pericles, the Augustan age, the Elizabethan age, the dark ages, the middle ages, the steam age, and now the atomic age. Then there are the geological ages—classifying the ages according to the evidences of the various strata. (See pp. 162-64.) Archeologists identify prehistoric man by his tools and weapons and speak of the Old Stone Age, the New Stone Age, the Bronze Age, and the Iron Age. Such ages refer not to time but to cultures. (See pp. 174-75.) As regards individual life, age has its four main divisions of infancy, youth, manhood, and old age. Shakespeare gave us his "Seven Ages"; Keats adopted the four seasons classification.

**Agnostic**, a word used by T. H. Huxley in 1869 to describe a person who says he does not know whether or not there is a Supreme Power behind the universe. He neither affirms nor denies the existence of God but suspends judgment. The rise of agnosticism was a characteristic of the 19th century.

**Agnus Dei** (Lamb of God), a short anthem said or sung at a certain point of the Roman Catholic Mass or Anglican communion service. (John i. 29.)

**Ahriman**, the Zoroastrian spirit of destruction.

**Air** is a mixture of gases forming the atmosphere we breathe. Nitrogen, oxygen, and argon are always present in air; a typical sample of dry air might contain these gases in the following proportions (by volume): nitrogen, 78.06%; oxygen, 21%; argon, 0.94. A small quantity of carbon dioxide is present, about 3 parts in 10,000 parts of air. This carbon dioxide is the source of carbon compounds built up by green plants in photosynthesis; in the process carbon dioxide is absorbed from the air and oxygen returned, the reverse of the respiratory process of animals. Air also contains a quantity of water vapour, and traces of ammonia, nitrogen oxides, hydrogen, sulphur dioxide, hydrogen sulphide, ozone, and of the rare gases helium, krypton, neon, and xenon. In a city smoke and dust particles may be as abundant as 100,000 particles per cubic centimetre. A litre of air at 0° centigrade and 760 millimetres pressure weighs 1.2932 grams.

**Air-pump**. Early air-pumps consisted of a receiver, from which the air is to be exhausted, and a pump, which is a metal cylinder with a piston in it, for drawing off the air. First invented by Guericke (1602-86). Modern pumps depend on the suction exerted by a flowing liquid such as mercury or water. The high-vacuum pump is a recent development.

**Alabama Claims** were claims for compensation made by the United States against Great Britain for damage done to American shipping during the Civil War by the *Alabama* privateer,

which was finally sunk by the *Kearsage*, of the U.S. Navy. The claim was decided by arbitration at Geneva in 1872, the Court giving a verdict for the claimants for over £3,160,000.

**Alabaster**, a soft crystalline form of sulphate of lime, or granulated gypsum, easily worked for statuary and other ornamental articles, and capable of being highly polished. Volterra, in Tuscany, yields the finest; that in highest ancient repute came from Alabastron in Egypt, near to the modern Antinoh.

**Al Araf**, the mid-heaven of the Koran, where those whose deeds have been neither decidedly good nor very bad spend their after-life.

**Alb**, white vestment reaching to the feet, worn by priests.

**Albatross**, a large white ocean bird whose wings measure from ten to twelve feet when out-stretched.

**Albert Memorial**, a large Gothic monument designed by Sir Gilbert Scott, and embellished with sculptures by eminent artists. Erected in memory of Prince Albert in Kensington Gardens at a cost of £120,000.

**Albigenses**, the name given to an heretical religious sect who were active in the South of France in the 12th and 13th centuries. They protested against attempts at suppression by the Roman Church, acting principally through the inquisition. The heresy was finally crushed, and during the struggle the brilliant Provençal civilisation was destroyed.

**Albino**, a term first applied to designate certain negroes mottled with white spots whom the Portuguese navigators met with in Africa. It is now used in regard to all persons of white skin and hair and pink eyes. Albinos cannot see well in the sunlight; it is only in semi-darkness that they discern objects clearly. The albino peculiarity is also found in other living creatures besides man.

**Al Borak**, a winged being on which Mahomet was credited with having travelled through the heavens.

**Albumen**, white of egg. It coagulates under heat, or by the action of acid or alcohol, and is further capable of soluble or insoluble modifications. It provides an anti-toxin in corrosive sublimate poisoning.

**Alcalde**, a Spanish mayor, judge or magistrate, or in Portugal a justice of the peace; not to be confounded with the similar word "alcade," which signifies the keeper of a castle or prison along both shores of the Mediterranean. The latter is a military term, the former signifies always a civil functionary, but both are from the same Arabic root.

**Alcazar**, the famous palace at Seville, in ancient days the residence of the Moorish kings.

**Alchemy** was from the 12th to the 17th century regarded by many philosophers and enthusiasts as a science capable of demonstration in the production of one or other of three supposed chemical combinations—the philosopher's stone, which was to transmute the baser metals into gold; the elixir of life, that was to prolong existence indefinitely; and the alkahest, or universal solvent. Men of great attainments, monarchs, ecclesiastics, and all classes of people dabbled in alchemy; lives were given up entirely to it, fortunes were wasted upon it. Geber, Roger Bacon, Albertus Magnus, Paracelsus, and many other men of note were devoted alchemists. The experiments of the alchemists, however, in spite of their being directed towards an impossible end, resulted in many discoveries that were of value to the real science of chemistry.

**Alcohols** are chemical compounds, containing carbon, hydrogen, and oxygen. Unless otherwise specified "alcohol" in the singular means "ethyl alcohol" (ethanol); this is produced by distilling fermented liquors. Industrially ethyl alcohol is used in the manufacture of chloroform, ether, perfumes, etc. Diluted with wood alcohol or other denaturants ethyl alcohol becomes "methylated spirits"; the denaturants are varied according to the industrial purpose for which it is required, the methylated spirits then being largely exempt from duty. Wood alcohol (methyl alcohol or methanol) can be obtained by distilling wood, or synthetically from water gas.

**Alcoholic Strength.** In Great Britain the standard is the proof gallon which is an imperial gallon of spirits containing 49.28 per cent. of alcohol by weight or 57.1 per cent. by volume at 60° F. In Europe the strength of spirits is usually measured by the Guy-Lussac hydrometer. In the U.S.A., because of the smaller gallon, 1.37 U.S. proof gallons = 1 British proof gallon. 70° proof means 30° under proof.

**Aldehyde,** the generic term for a class of chemical bodies. Except for formaldehyde, which is a gas, aldehydes are volatile liquids. They are produced by oxidation of primary alcohols. Most important aldehyde is formaldehyde used in making the plastics described as formaldehyde resins. Formalin (formaldehyde solution in water) is much used for preserving zoological specimens.

**Alderman** (Anglo-Saxon *ealdorman*), a title given by the Saxons to persons of high and hereditary distinction, such as princes, earls, and governors. Afterwards adopted to designate the members of municipal corporations, next in dignity to the Mayor.

**Aldine Editions** are the beautiful books printed in Venice by the Renaissance printer Aldo Pio Manuzio and his family between 1490 and 1597. Italics were first introduced in these books.

**Alexandrine,** a twelve-syllable metre, the leading measure in French poetry, derived from the romantic tales collected in the 12th century around the name of Alexander the Great.

**Algae,** flowerless plants living mostly in water. Seaweeds and the green pond scums are the best known algae. The green powder found on trees is composed of a microscopic alga (*Protococcus*).

**Algebra,** a branch of mathematics in which symbols are used in place of numbers. Sir Isaac Newton styled it the "universal arithmetic." The Chinese were able to solve the quadratic equation before the Christian era but it was Al-Khowarizmi, an Arab mathematician of the early 9th century, who introduced algebra to Europe.

**Alhambra,** the ancient palace of the Moorish kings at Granada in Spain, built in the 13th and 14th centuries. Though part of the castle was turned into a modern palace under Charles V., the most beautiful parts of the interior are still preserved—the graceful halls and dwelling-rooms grouped round the Court of Alberca and the Court of Lions, with their fountains, arcades, and lovely gardens.

**Alibi,** signifying "elsewhere", is the plea of a person who desires to prove presence elsewhere at the time the alleged act took place.

**Alimony** is an allowance made to a wife out of her husband's estate for her maintenance either during a matrimonial suit or at its termination. If she elopes with an adulterer or wilfully leaves her husband without just cause she is entitled to no allowance.

**Alkali,** the general name given to a number of substances which are the opposite to acids in their chemical action. The term is commonly applied to soluble alkaline bodies, the principal of which are potash, soda, lithia, aqueous ammonia, lime, baryta and strontia. The action of the solutions of these bodies is caustic on animal and vegetable substances, and they are extensively used in industrial processes.

**Allegiance** is the tie which binds the subject to his sovereign for the protection that the sovereign affords to the subject.

**Allegory,** a narrative or discourse couched in figurative language and intended to point a moral. A leading example is Bunyan's *Pilgrim's Progress*.

**Alligator,** the crocodile of America, common in the lower Mississippi and adjacent lakes and marshes, varying in length from two to twenty feet.

**Alloys** are combinations of metals. Silver coins contained pre-war about 7 per cent. of copper. The alloys best known are brass, composed of copper and zinc; German silver, of copper, zinc, and nickel; pewter, of tin and lead; bell-metal, of copper and tin. When mercury forms part of an alloy, it is termed an amalgam.

**All Saints' Day** (Nov. 1) is common to both the English and Roman Catholic Churches, and is in commemoration of the saints generally, or

such as have no special day set apart for them. Instituted by Pope Boniface IV, early in the 7th century, this ecclesiastical festival was formerly called "All Hallows."

**All Souls' Day** (Nov. 2) is a festival of the Roman Church, intended for the mitigation by prayer of the sufferings of souls in purgatory. The commemoration was enjoined by Abbot Odilo of Cluny during the 11th century upon the monastic order over which he presided, and was afterwards adopted generally throughout the Roman Communion.

**Allspice,** a flavouring obtained from a West Indian tree of the myrtle order, *Pimenta officinalis*. The essential oil of its unripe fruit is a powerful irritant, and the bruised berries are carminative.

**All the Talents Administration** was a coalition of the best men of the two political parties, formed on the death of Pitt, in the year 1806 by Lord Grenville. It abolished the slave trade.

**Alluvium,** accumulations of sand, mud, gravel, etc., washed down by rivers and forming distinct deposits.

**Almack's,** a fashionable room of assembly in St. James's, built in 1765, and for many years the scene of balls and society functions.

**Almanac,** a calendar of the year, with particulars of days, weeks, and months, the position of the sun and moon, tidal information, records of festivals, etc. The earliest mention of a calendar is in 1150. The earliest almanac printed in England was *The Calendar of Shephardes*, printed by Rice and Pynson about 1497. *Old Moore's Almanac*, a popular penny issue, had a huge circulation for many years. *Whitaker's Almanac* was first published in 1868.

**Almond,** the fruit of the *Amygdalus communis*, originally indigenous to Persia, Asia Minor, and N. Africa; now cultivated in Italy, Spain, and France. It yields both bitter and sweet oil. Bitter almond oil is obtained by macerating and distilling the ripe seeds; it is used for flavouring and scenting purposes, its fragrant odour being due to the presence of benzaldehyde. When the seeds are pressed, sweet almond oil results; this is used in perfumery, and also as a lubricant for very delicate machinery.

**Almoner** was a monastery official charged with the distribution of alms. There was also the King's Almoner, and the title of Hereditary Grand Almoner still survives, though the office is now a sinecure. The Lord High Almoner is usually a bishop who, in the absence of the sovereign, distributes the royal bounty once a year on Maundy Thursday. Since 1895 the name almoner has been given to the skilled medical social workers on the staffs of hospitals.

**Almuce,** a fur stole worn by certain canons.

**Aloe,** large plants of the lily family. There are about eighty-five species, most of them in Cape Colony, especially in the Karroo desert. The bitter purgative drug (aloes) is prepared by evaporating the plants' sap. (See *Agave*.)

**Alpaca,** a South American ruminant allied to the llama whose long, fine wool is woven into a soft dress fabric known by the same name. Sir Titus Salt first manufactured alpaca cloth (1836). Saltaire, near Bradford, remains to evidence the success which for many years attended the enterprise.

**Alpha Particle,** helium nucleus, composed of 2 neutrons and 2 protons; identified and used by Rutherford as a projectile to bombard other atoms.

**Alphabet** (so called from the first two letters of the Greek alphabet—alpha, beta) is the term applied to the collection of letters from which the words of a language are made up. It grew out of the knowledge that all words can be expressed by a limited number of sounds arranged in various combinations. The Phenicians were the first to use an alphabetic script (earliest known inscriptions c. 1500-950 B.C.), from which all other alphabets have sprung. The stages in the development of the alphabet were mnemonic (memory aids), pictorial (actual pictures), ideographic (symbols), and lastly phonetic. All the ideographic systems died out, with the exception of the Chinese.

**Alsatia,** a district of Whitefriars, London, which was for a long period a recognised sanctuary for debtors and criminals, where they could not be captured. It was abolished in 1697.



**Altar**, originally a table or elevated place upon which sacrifices were offered up, and in the Christian Church applied to the table on which the eucharist is celebrated. In some Protestant denominations the communion table takes the place of the altar.

**Altimeter**, an instrument used in aircraft to estimate altitude; its essential feature is an aneroid barometer which registers the decrease of pressure with height. Roughly 1 millibar corresponds to 30 ft. To read an aircraft altimeter correct for its destination, the zero setting must be adjusted for difference of ground height and difference of surface pressure, especially when pressure is falling or when flying towards low pressure.

**Altitude**, an astronomical term used to signify the angular elevation of a heavenly body; this is measured with a quadrant or sextant. In aeronautics it is the height (in feet or metres) above sea-level.

**Alto**, the second voice of a male-voice church choir, i.e., below treble and above tenor. The term may also be applied to an instrument to distinguish it from others of similar design but different register: e.g., alto saxophone.

**Alto-Relievo**, a term applied to sculptured designs which are depicted in prominent relief on a flat surface, technically signifying that the projection exceeds one-half the true proportions of the objects represented. Basso-relievo is carving kept lower than one-half such proportionate projection.

**Altruism**, a term invented by Comte to denote devotion to the welfare of others, the opposite of Egoism.

**Alum** is a compound salt used in various industrial processes, especially dyeing, its constituents being the sulphate of one univalent metal or radical (e.g., potassium, sodium, ammonium, rubidium, caesium, silver, thallium) and the sulphate of a trivalent metal (e.g., aluminium, iron, chromium, manganese), and water of crystallisation.

**Alumina** is the oxide of aluminium. The ruby is almost 100 per cent. alumina; so also are the emerald, oriental amethyst, etc. Hydrated aluminium oxide is bauxite, chief ore of aluminium, from which the metal is extracted electrolytically.

**Aluminium** is a light metal which conducts electricity well. Its specific gravity at 20° C. is 2.705. Melting point of aluminium is 660.2° C. It is made commercially by electrolyzing bauxite dissolved in cryolite (double fluoride of aluminium and sodium). Aluminium alloys because of their strength and lightness are being increasingly used for the construction of railway coaches, automobiles, aeroplanes, etc.

**Amadavat**, a popular cage bird of the weaver family, mainly crimson with white spots, so named because the first specimens came from Ahmadabad in India about 1700.

**Amalgam** is the term applied to any alloy of which mercury forms a part.

**Amber**, a brittle resinous substance; in origin, fossilised resin. Obtained mostly from the Baltic coasts, and used for ornaments, pipe mouth-pieces, etc.

**Ambergris** is a waxy substance produced in the intestines of the sperm whale, and generally found floating on the sea. Is a valuable perfumery material.

**Amblycephalus**, a genus of homoptera including the froth-fly, which is destructive in many hop gardens in July and August, sucking the sap from the vine.

**Amblyopsis**, a species of fish, practically sightless, and with inoperative organs of hearing and feeling, that inhabit the Mammoth Cave of Kentucky. A remarkable illustration of the failure of senses not brought into use.

**American Loan**. Under an agreement in December, 1945, a loan of over £1,000 million was made to Britain. At the end of 1945 the war had left Britain in a difficult financial position. The whole of her foreign investments had been sold and their proceeds spent as well as Britain's reserves of gold and foreign currency. Moreover, her export trade had diminished owing to military requirements. After the first 2 years of the war Britain's foreign expenditure had been largely financed by a system called Lend

Lease, whereby U.S.A. supplied the needs of Britain, terms of settlement being reserved to the end of the war. Lend Lease, however, came to an end after the war. After much discussion a loan was proposed to meet Britain's needs in the post-war years. Congress approved after a long debate and the House of Commons agreed, but with a large number of abstentions.

**America's Cup**, a prize trophy first offered in 1851 by the Royal Yacht Squadron and open to yachts of all nations. It was won in the first year by the "America," a New York yacht, and has remained on that side of the ocean ever since, despite attempts to recapture it by Lord Dunraven, Sir Thomas Lipton, Mr. T. O. M. Sopwith, and others.

**Amethyst**, the violet variety of quartz, used as a precious stone, containing traces of manganese, titanium, and iron. The finest coloured specimens come from Brazil and the Urals.

**Amice**, a linen vestment worn about the neck by Roman and many Anglican priests under the alb when officiating at Mass or Holy Eucharist. Formerly worn on the head by priests and pilgrims.

**Amiens, Treaty of**, signed by England, France, Spain, and Holland in 1802, brought the War of the French Revolution to an end. Fresh cause of quarrel was soon found, however, and Napoleon resumed the warfare, which only ended with Waterloo.

**Amir**, sometimes spelled **Ameer** or **Emir**, is a title signifying head or chief, applied in Mahomedan countries to princes, chiefs, or rulers. The direct descendants of Mahomet's daughter Fatima were called Emirs. Chiefs of various tribes in Africa and the East have also assumed the title.

**Ammeter**, an instrument for measuring the current flowing in an electric circuit. A contraction of ampere-meter. (See Ampere.)

**Ammonia**, a colourless gaseous compound comprising three atoms of hydrogen to one of nitrogen. Formerly it was made by heating the horns and hoofs of deer, acquiring the names of spirits of hartshorn. The ammonia of commerce is now procured by coal decomposition in the course of gas-making and by direct synthesis. In the very important Haber process of ammonia production by fixation of atmospheric nitrogen, the nitrogen is made to combine with hydrogen and the ammonia so prepared is converted into nitric acid, ammonium nitrate or ammonium sulphate. The Haber process made Germany self-sufficient in nitrates in the first world war, and was afterwards exploited all over the world.

**Ammonites**, extinct animals related to the squid and the octopus. Many had beautiful coiled shells, and these fossils are found in the Mesozoic rocks, particularly the Lias.

**Ammonium**, the basic radical of ammonium salts. Composed of one atom of nitrogen and four of hydrogen, it behaves chemically like an atom of a monovalent alkali metal. Ammonium chloride is known as "sal ammoniac." "Sal volatile" is ammonium carbonate.

**Amnesty**, an act of grace by which a ruler or governing power pardons any body of political offenders. It is usually absolute; but it may be partial, as when it excepts certain specified persons from its operation.

**Amoeba**, a minute animal consisting of a single gelatinous cell. Some species occur in fresh and stagnant water; others in soil.

**Amorphous**, a term used to indicate the absence of crystalline form in any body or substance.

**Ampere**, the most commonly used unit of electric current; often abbreviated to "amp." The international ampere is defined as that current which deposits silver at the rate of 0.001118 gram a second when passed through silver nitrate solution. (See also p. 742.)

**Amphibia**, a class of vertebrate animals divided into four orders: *Caudata*, newts and salamanders; *Salientia*, frogs and toads; *Apoda*, the coecilians which superficially resemble blue-grey earthworms; *Stegocephalia*, fossil amphibians whose skeletons occur chiefly in the Carboniferous and Permian rocks. Most amphibians begin life as aquatic tadpole breathing by gills, later metamorphose into four-legged, lung-breathing animal living on

land. Other characteristics of amphibia are: cold blood, skin without visible scales, skull articulates with the backbone by two knobs. In evolution the amphibia are intermediate between fish and reptiles.

**Amphioxus or Lancelet**, a primitive vertebrate occurring in sand-banks around British shores and elsewhere.

**Amphitheatre**, a term first used by the Romans to denote the buildings set apart for gladiatorial and wild beast exhibitions. The most notable was the Colosseum at Rome, part of the remains of which are still standing. There were numerous other amphitheatres in different parts of the Roman Empire, including two or three in Britain.

**Amphora** was a large clay vessel used by the Romans for preserving wine, fruit, oil, etc.

**Amulet**, a necklet or other ornament worn as a charm against evil and much used in former times in England. Still common in the East.

**Ana**, a collection of criticisms, observations, or opinions about a particular person, place or subject. Used as a suffix especially applies to a person's memorable sayings, anecdotes about or publications bearing on, as in *Johnsoniana*, *Alexandriana*, *Victoriana*.

**Anabaptists**, the name given to various Christian sects that came into prominence in Germany, Switzerland, and Holland during the Reformation. They rejected the baptism of infants as unscriptural and insisted on baptising afresh. They practised a primitive communism and regarded true religious reform as involving social reform. Their chief prophet, Thomas Münzer, was executed in 1525, and many of his followers were burnt at the stake. The later Anabaptists, persecuted by both Roman Catholics and Protestants, committed many acts of violence under the cloak of religious zeal, bringing discredit on the whole movement, which was gradually suppressed. The Mennonites (*q.v.*) were an offshoot of the Anabaptists.

**Anabasis**, Xenophon's narrative of the exploits of Cyrus the Younger against his brother Artaxerxes of Persia, 401 B.C. The title also of Arrian's history of Alexander the Great's expedition to Asia.

**Anachronism**, an erroneous reference to an event in respect of time, *e.g.*, the description of a railway train journey, say, in the 17th century.

**Anacoluthon** is lack of grammatical sequence in speaking or writing.

**Anaconda**, a large South American snake, powerful, finely marked, and much feared by man and animals of its habitat.

**Anagram** is a literary exercise which consists in using the letters in a given word or phrase to form a different word or phrase.

**Analogy**, a method of argument whereby an inference is drawn from one set of facts and applied to another to which it has some resemblance.

**Analysis** is the process by which a complex thing is reduced or broken up into its original elements. Qualitative analysis reveals the presence of certain substances, quantitative analysis shows those substances in their respective proportions. Analysis as applied to Grammar, Mathematics, and Logic resolves phrases, propositions, and arguments into their separate parts.

**Analysts, Public**, are chemists appointed by local authorities under the Public Health Acts to analyse all such food and drugs as are submitted to them by inspectors within their own area. Every town of importance has its public analyst, whose work is to protect the public against food adulteration.

**Anarchism** is a revolutionary doctrine in opposition to all law and order as enforced by a government. The Greek word anarchy means no government, but in modern times it is regarded as a movement towards destroying the tyranny of the State and giving fuller play to natural economic forces and the principle of mutual aid. Proudhon (French) and Bakunin (Russian) were exponents of the philosophy.

**Anathema** was the Greek term for things dedicated to the gods, and in its modern religious use indicates unreserved offerings to God and sacrifice. The idea of destruction and perdition is a secondary meaning, and anathematisation in

the Roman Church is the extreme form of excommunication.

**Anchor**, an instrument used for keeping ships stationary. Great improvements have been introduced in recent years, stockless anchors being now chiefly used, consisting of a shank and a loose fluke. Lloyds' rules prescribe the number and weight of anchors which must be carried by merchant ships.

**Anchorite** is a religious person who retires into solitude to employ himself with holy thoughts. Among the early Christians, anchorites were numerous, but in the Western Church they have been few. Their reputation for wisdom and prescience was high, and kings and rulers in old days would visit their cells for counsel. An anchorite or "ankret" was in mediæval times a source of fame and profit to the monastic house within which he was voluntarily immured.

**Anchovy**, a fish of the herring family, distinguished by its large mouth and projecting snout, plentiful in the Mediterranean and much esteemed when cured.

**Anemometer**, an instrument for measuring the strength of the wind. In the most widely used pattern the rotation, about a vertical axis, of a group of hemispherical or conical cups gives a measure of the total flow of air past the cups, various registering devices being employed. The Dines anemograph provides a continuous record of the variation in both velocity and direction; changes of pressure produced in a horizontal tube, kept pointing into the wind by a vane, cause a float, to which a pen is attached, to rise and fall in sympathy with the gusts and lulls. The recently devised hot-wire anemometer, depending upon the change of electrical resistance experienced by a heated wire when cooled, enables very gentle air currents to be investigated.

**Aneroid** is the kind of barometer which does not depend upon atmospheric support of a mercury (or other liquid) column. It consists of a metallic box, partially exhausted of air, with a corrugated lid which moves with atmospheric changes. A lever system magnifies the lid movements about 200 times and atmospheric pressure is read from a dial. The construction of the vacuum chamber provides automatic compensation for temperature changes. An aneroid barometer is the basic component of an altimeter.

**Angel**, or angel-noble, an English gold coin which bore a representation of the Archangel Michael in conflict with a dragon. The last English noble was coined in the reign of Charles I.

**Angelica**, an aromatic plant of the Umbelliferae order, *Angelica officinalis*, valuable as a flavouring and possessing medicinal properties. In olden times supposed to ward off evil fortune.

**Angels**, divine messengers or agents communicating with or guarding human beings, a conception which is included in the Christian and other doctrines; and in former times, particularly in Western Christendom, special functions were accorded to certain angels and archangels, and their intercession was constantly appealed to.

**Angelus**, a church bell rung in Roman Catholic countries, at morn, noon, and sunset, to remind the faithful to say their Angelic Salutation.

**Angevin Dynasty** includes the Plantagenet kings from Henry II. to Richard II. The name was derived from Henry II.'s father, Geoffrey, Count of Anjou.

**Angiosperms** are plants whose seeds are contained in an ovary, as distinct from Gymnosperms, the seeds of which are naked. These two divisions make up the Phanerogams or Spermatophytes ("seed-bearing plants"). The Angiosperms are the true flowering plants, which number over 200,000 species.

**Angle**, a term used to denote the inclination to each other of two straight or curvilinear lines. Angles are measured by the degrees of the circumference of a circle, which is divided into 360 equal parts, the angles formed by the lines radiating from the centre being proportioned to the area of the circumference which the lines intercept. A right angle is one of 90°.

**Angles**, a northern tribe originally settled in Schleswig, who with the Saxons and Jutes invaded Britain in the 5th century.

**Anglican Communion** comprises all the Churches in communion with the Church of England (*i.e.*,



the ecclesiastical Provinces of Canterbury and York), including the Protestant Episcopal Church in the United States of America (8 Provinces). The Anglican Communion includes also the Church of Ireland (2 Provinces); the Church in Wales; the Episcopal Church in Scotland; the Church of India, Pakistan, Burma, and Ceylon; the Church of the Province of South Africa; the Church of England in Canada (4 Provinces); the Church of England in Australia and Tasmania (4 Provinces and 3 extra-Provincial Dioceses); the Church of the Province of New Zealand; the Church of the Province of the West Indies; the Chung Hua Sheng Kung Hui (Holy Catholic Church in China); the Nippon Sei Ko Kai (Japan Holy Catholic Church); and the Church of the Prov. of W. Africa. All these Churches are completely autonomous save for the special provisions of the Establishment in England. In addition, there are some 21 separate dioceses scattered through the world, which are directly under the Archbishop of Canterbury. All the bishops of the Anglican Communion meet every ten years in the Lambeth Conference, over which the Archbishop of Canterbury by custom presides as *primus inter pares*. The Conference has no legislative power, but in practice exercises enormous influence. In between these Conferences it is proposed to hold an Anglican Congress (including clergy and laity as well as bishops) and the first of these met in Minneapolis, Minnesota, in Aug. 1954.

**Angling** is not the simple sport it was in the days of Isaak Walton, when the capture of fish with a hook was a fairly complete description of the sport. Now rod, line, and hook come into play in a variety of ways, and scientific methods are adopted. Salmon-fishing is the angling pastime of the rich, and English and Scottish waters afford plenty of good sport of this kind. Salmon are usually caught with the fly, but many artificial lures are also adopted. Trout are angled for much in the same way. Pike, grayling, chub, roach, perch, and other fresh-water denizens also provide good sport for all, and Waltonians are to-day more numerous than ever. Many books have been written about the subject and Isaak Walton's *Complete Angler* is one of the classics of English literature.

**Angora goats** are famous for their fine, long silky hair, from which mohair fabrics are made.

**Angstrom unit.** Unit of length used for measuring wavelengths of light, ultra-violet rays and X-rays. It is equal to one-hundredth of a millionth of a centimetre.

**Aniline**, a well-known product derived from coal tar. The name recalls the fact that it was first prepared by distilling indigo (*anil* is Portuguese for indigo). In 1858 Sir W. H. Perkin succeeded in producing from aniline a dyestuff to which the name of mauve was given. This was the first of a long line of *aniline dyes*.

**Animalcule** is a rather archaic term used to designate the minute creatures which are too small to be seen except by the aid of the microscope.

**Animal Kingdom.** The realm of living things is divided into the plant and animal kingdoms, whose members obtain energy by fundamentally different methods, although it is often difficult to say to which kingdom certain lowly organisms belong. The animal kingdom is itself divided into a number of major groups (phyla), the largest of which are: *Protozoa*, minute organisms with cellular organisation such as amoeba; *Coelenterata*, including sea-anemones, jelly-fish, and corals; *Annelida*, of which the best-known example is the earthworm; *Arthropoda*, a very large group comprising insects, lobsters, spiders, etc.; *Mollusca*, including the snail, the oyster, the octopus, etc.; *Echinodermata*, starfish and sea-urchins; *Chordata*, animals possessing at some stage an organ called a notochord. The Chordata are further divided into two unequal groups: *Acraniata*, comprising such animals as the lancelet and the sea-squirt; *Craniata*, including all the animals usually known as "vertebrates" because they possess a backbone. All the other phyla, and the acraniata, may be grouped under the title "invertebrates." There are five classes of vertebrate animals: *Pisces*, fish; *Amphibia*, animals which, while breathing air, are not entirely independent of

water—such as the frog; *Reptilia*, snakes, lizards, tortoises, etc.; *Aves*, birds; *Mammalia*, vertebrates which suckle their young. (See "The World of Science.")

**Animism**, a term formerly applied to the doctrine of vitalism as propounded by the German chemist G. E. Stahl (early 18th century). More commonly applied to the belief in the existence of a soul and spirit as distinct from matter.

**Anise**, an umbelliferous plant growing mostly in warm climates, and valued for its fruit, aniseed, possessing certain medicinal properties and yielding a volatile oil. Highly aromatic and used as a condiment for pickles and soups.

**Anna**, an Indian coin, one-sixteenth of a rupee.

**Annals**, or historical records, were kept by the Roman from an early period. In modern times the term is used to designate any general record of events arranged according to years.

**Annates** were acknowledgments formerly paid to the Pope by way of fee or tax in respect of ecclesiastical preferment, and consisted usually of a proportion of the income ("first-fruits") of the office. Introduced into England in the 13th century; annexed to the Crown under Henry VIII.; transferred to a perpetual fund for the benefit of the poorer clergy in 1704. (See *Queen Anne's Bounty*.)

**"Annual Register,"** a yearly record of political and literary events, founded by Edmund Burke (as editor) in 1759 and Robert Dorsley, the bookseller.

**Annunciation, Feast of the** (March 25), is a church festival commemorating the message of the incarnation of Christ brought by the angel Gabriel to the Virgin Mary, hence the title *Lady Day*.

**Anodyne** is a term covering any application for the relief of pain, and includes the various opiates, quinine, salicylate of soda, and such familiar applications as poultices, fomentations, besides counter irritants like mustard plasters, aconite, chloroform, etc.

**Anointing** is the pouring of consecrated oil upon the body as a mark of supreme honour. In England it is restricted chiefly to the ceremony of the monarch's coronation, and the spoon with which the oil is applied forms part of the English regalia. In the Roman Catholic Church anointing represents the sacrament of extreme unction. (See *Coronation*.)

**Ant.** There are about 6,000 species of ants, which belong to the same order (Hymenoptera) as the bees, wasps, and ichneumon flies. They are social in habit, living in communities of varying size and development. There are three basic castes in ants—the females or *queens*, the *males*, and the *workers* (the last-named being neuter), although specialised forms of workers are sometimes found, e.g., the *soldiers* of the harvesting ants. In the communities of those species of ants which evolved most recently there is a highly complex social life and well-developed division of labour. Some species of these ants make slaves of other species, stealing the cocoons before the adult forms emerge. Many ants "milk" greenflies, which they protect for their honey-like secretion, and most ants' nests contain many "guests," such as beetles and silver fish. Some ants harvest grains of corn, and others, from S. America, live on fungi which they cultivate in underground "mushroom beds."

**Antarctic Exploration.** In earlier centuries it was thought that a great continent must exist in the southern hemisphere, around the South Pole, to balance the known land masses in the north. Its supposed extent was greatly reduced in the 18th century, particularly when Capt. Cook sailed for the first time south of the Antarctic Circle and reached the edge of the ice pack. A portion of the ice-covered continent—the coast of Graham Land—was first sighted by Lieut. Edward Bransfield in 1820. Explorers of several other nations sighted portions of the coast-line in other quarters, but the first extensive exploration was made by Capt. James Clarke Ross, who with the  *Erebus*  and  *Terror*  penetrated into the Ross Sea in 1841, and discovered the great Ross Ice Barrier in 78° South lat. Interest in the Antarctic did not revive until after 1890, when an international scheme of research was drawn up. A Norwegian, C. E. Borchgrevink, in 1898-1900, was the first to

winter in the Antarctic and to travel on the ice barrier. The British share in this work was carried out by Capt. R. F. Scott's expedition in the *Discovery*, 1901-4. Scott's party sledged across the barrier to 82° 17' South, then a record "farthest south." A little later, Ernest Shackleton beat this by travelling to within 100 miles of the South Pole. In 1910 Scott organised his second expedition of the *Terra Nova*, and became engaged against his will in a "race for the Pole," when, after his departure, the Norwegian Arctic explorer, Roald Amundsen, suddenly announced that he was sailing for the Antarctic. Amundsen set up his base at the eastern end of the Barrier, and, relying on dog teams for hauling his sledges, reached the Pole on December 14, 1911. Meanwhile Scott and his party, their start delayed by adverse weather, were marching southwards, man-hauling their sledges, for Scott was against the use of dogs. After an arduous journey they reached the Pole one month after Amundsen. The return was a struggle against the weather and increasing weakness, probably due to scurvy, until at last they perished within a few miles of their base. After the First World War the development of the whaling industry greatly stimulated further exploration. Outstanding expeditions included that of Admiral R. E. Byrd, 1929, when he flew over the South Pole; the British Graham Land expedition, 1934, which carried out the first extensive mapping of any part of the Antarctic continent; and the U.S. Navy's Antarctic Expedition of 1940, when the whole continent was circumnavigated and great areas photographed from the air. In recent years valuable work has been done by the first international expedition, the Norwegian-British-Swedish Expedition to Queen Maud Land, and by the French in Adélie Land. The Falkland Island Dependencies Survey, set up during the war, has continued the scientific exploration of Graham Land. High adventure is planned for Antarctica in 1957-58; not only is it the Third International Geophysical Year when scientists from many countries will participate in the explorations, but the combined Commonwealth expedition, setting out from opposite sides of the continent, will meet on the polar plateau, the U.K. party led by Dr. V. E. Fuchs from the Falklands, and Sir Edmund Hillary and his party from New Zealand. Since the Antarctic is becoming important for many reasons, in weather forecasting, in the whaling industry, and as a possible centre for world air routes, the tempo of exploration and research will become even faster in the future.

**Anteater.** There are two families of anteaters, the Myrmecophagidae and the Manidae. Among the former the Great Anteater (*Myrmecophaga jubita*) is the largest species, about 18 ft. in length, occurring in Central and S. America. Only half its size is the lesser Anteater (*Tamandua tetradactyla*); this is found in forests of tropical America and Trinidad. The Two-toed Anteater (*Cyclopes didactylus*) belongs to northern, South and Central America, and Trinidad. These three animals live almost entirely on ants; they are adapted to this diet, having large claws for digging out ants, and a tubular mouth with a long sticky tongue. The Manidae are the Scaly Anteaters or Pangolins, widely distributed over Africa and the Orient. The difference between the two families is that the first has hair covering the body, the latter has horny scales instead.

**Antelope,** a large zoological genus of mammalia, mainly deer-like and elegant animals, with lustrous eyes; fleet of foot, and widely distributed.

**Antennae,** paired feelers of insects and crustaceans. In radio, the term "antenna" is equivalent to "aerial."

**Anthem,** a choral composition, with or without instrumental accompaniment, usually sung after the third collect in the Church of England service. The words are from the Scriptures, and the composition may be for solo voices only, for full choir, or for both. Among the chief British composers of anthems are Tallis, Purcell, Croft, Boyce, Goss, and Stainer.

**Anthraxite** is the hardest kind of coal which burns with little smoke and is used for steam-raising

as a domestic fuel; contains 90-94 per cent. carbon as against 75-90 per cent. in bituminous coals. Pennsylvania and S. Wales are the largest anthracite coal regions of the world.

**Anthropoid,** meaning "resembling man," is the term applied to apes whose structure has most similarity to that of man, in particular the apes belonging to the family Simiidae, which includes the gibbon, chimpanzee, orang-utan, and gorilla.

**Anthropology** is the science of man in general, a science which owes much to the researches and exposition of Sir E. B. Tylor (1832-1917), J. F. Blumenbach (1752-1840), Paul Broca (1824-80), Sir Arthur Keith (1866-1955), and W. E. Le Gros Clark. The Royal Anthropological Institute is at 21 Bedford Square, London, W.C.1.

**Anthropometry** is the system of human measurement invented by M. Bertillon, of the French Criminal Department, for purposes of establishing identity. One of its important techniques, the establishing of identity by means of finger-prints, is now universally used in criminal investigations and for other purposes.

**Antibiotics.** (See Medical Section.)

**Antiburghers,** a Scottish sect which declined to take the oath required of burghesses in several towns. The Secession Church was split in 1747 and the Antiburghers formed the "General Associate Synod," commonly called the Antiburgher Kirk. The abolition of the burghess oath led to a reunion in 1820 under the name of the "United Secession Church."

**Anti-Christ,** the enemy of Christ, by whom he is finally to be slain. Many legends connected with Anti-Christ were popular in the Middle Ages.

**Anticlimax** is the reverse of climax, introducing the strong point of a story or argument before the close instead of reserving it for the end.

**Anticyclone,** a region where barometric pressure is greater than that of its surroundings. Such a system is distinguished on weather charts by a pattern of isobars, usually circular or oval-shaped, enclosing the centre of high pressure where the air is calm. In the remaining areas light or moderately strong winds blow spirally outwards, in a clockwise direction in the Northern Hemisphere (and in the reverse direction in the Southern Hemisphere), in accordance with Buys Ballot's law (an observer with back to wind in Northern Hemisphere has lower pressure to left; in Southern to right). Over the British Isles anticyclonic weather is generally quiet and settled, being fair, warm, and sunny in summer and either very cold and often foggy or overcast and gloomy in winter. These systems move slowly and sometimes remain practically stationary for days at a time, that over Siberia being particularly well defined. Extensive belts of almost permanent anticyclones occur in latitudes 30° N. and 30° S.

**Antilegomena,** the books of the New Testament which were not accepted as canonical by the early Christian churches, though afterwards admitted to equal authority with the rest. These were: The Epistle to the Hebrews, the Epistle of St. James, the Second Epistle of St. Peter, the Second and Third Epistles of John, the Epistle of St. Jude, and the Apocalypse or Revelation of St. John.

**Antimony,** a crystalline metal of great brittleness. On being burned, it gives off dense fumes of oxide of antimony. By itself it is not of special utility; but as an alloy for hardening other metals, it is much used. As an alloy with lead for type-metal, and with tin and copper or zinc for Britannia-metal, it is of great value. Most important antimony ore is stibnite (antimony sulphide).

**Antinomian,** name applied to one who believes that Christians are not bound to observe the "law of God" on the pretext that faith alone is sufficient to secure salvation. The term was first used during the Reformation by Luther.

**Anti-Pope,** one chosen by temporal authority in opposition to one canonically elected by the cardinals; commonly applied to the popes Urban VI. and Clement VII., who resided at Avignon during the Great Schism (1378-1417).

**Anti-proton,** the "negative proton," an atomic particle created in high energy collisions of nuclear particles. Its existence was confirmed in October, 1955.



**Anti-Semitism.** The persecution of the Jews had its origin at the beginning of the Christian era, and was, until the 19th century, largely conditioned by religious hatred. With the rise of Liberalism in Europe, however, the emergence of the so-called "Jewish Problem" became a political weapon in the hands of reactionary groups and heads of States. Bismarck admitted he found it "a most useful means of attacking the progressives", and the pogroms under the Czars afforded means of diverting attention from State reforms. In France in the '90s a Jew gave his name to one of the most bitter political feuds that has occurred in any country (Dreyfus case), but the Germany of Hitler saw the transformation of racial prejudice into a main policy of State, with its attendant unprecedented persecutions.

**Antisepsis.** (See Medical Section.)

**Antithesis** is a form of expression which deals in opposites—as contrasting the light with the dark, good with evil, and so on—and is often resorted to by eminent writers with effect.

**Antlers** are the branched horns of deer, the branches being called tines. Antlers originate as outgrowths of the frontal bone, and are usually shed once a year. Except in the reindeer and caribou they are restricted to the male.

**Apartheid**, an Afrikaans word meaning "a state of separateness," the policy of racial segregation pursued and implemented by legislation by the United Party under Generals Hertzog and Smuts from 1934 onwards and more intensively since 1948 by the Nationalist Party under Dr. Malan and Mr. Strydom. In practice, it seems to mean the supremacy of the white man and the denial of democratic rights to the non-whites.

**Ape**, a term applied to the gorilla, chimpanzee, orang-utan, and gibbon—the anthropoid apes.

**Aphelion**, the point in the orbit of a planet farthest from the sun; the opposite of perihelion.

**Aphids**, green-flies or plant lice, a numerous species of destructive insects living on roots, leaves, and plants. Parthenogenesis (virgin reproduction) is common among them.

**Apis**, the sacred bull worshipped by the ancient Egyptians; also the scientific name for the bee.

**Apocalyptic writings** are those which deal with revelation and prophecy, more especially the Revelation of St. John.

**Apocrypha** (hidden writings), the books which were included in the Septuagint (Greek) and Vulgate (Latin) versions of the Old Testament but excluded from the sacred canon at the Reformation by the Protestants on the grounds that they were not originally written in Hebrew nor regarded as genuine by the Jews. The books include: 1 and 2 Esdras, Tobit, Judith, additions to Esther, Wisdom of Solomon, Ecclesiasticus, Baruch, Song of the Three Holy Children, History of Susannah, Bel and the Dragon, Prayer of Manasses, 1 and 2 Maccabees. The term is usually applied to the additions to the Old Testament, but there are also numerous Christian writings of the same character.

**Apogee**, meaning the greatest distance of the earth from any heavenly body, but restricted to the sun and moon. The sun's apogee corresponds to the earth's aphelion, and the moon's apogee is the point in its orbit most remote from the earth. See Perigee.

**Apollinarians**, followers of Apollinaris, Bishop of Laodicea, who lived in the 4th century, and denied the humanity of Christ. In opposition to Arianism. Condemned as heretics.

**Apostasy** is a revolt, by an individual or party, from one form of opinions or doctrine to another. Julian, the Roman Emperor (331-363), brought up as a Christian, became converted to paganism, and on coming to the throne (361) proclaimed religious toleration. Hence his name, Julian the Apostate.

**Apostles.** The twelve apostles who were disciples of Jesus were: Simon Peter, Andrew (his brother), James and John (sons of Zebedee), Philip, Bartholomew, Thomas, Matthew, James, Thaddaeus, Simon, and Judas Iscariot. After the Ascension Matthias was chosen to take the place of Judas. St. Paul is always referred to as the chief apostle, though he is not one of the twelve. St. Barnabas has also been called an apostle.

**Apostles' Creed**, applied to the most ancient of the

Church's statements of its belief: "I believe in God the Father Almighty; and in Jesus Christ his only Son our Lord, who was born of the Holy Ghost and the Virgin Mary..." A later version is used in the Church of England at morning and evening prayer.

**Apostolic Council**, held at Jerusalem, about A.D. 50, presided over by James, to decide what the obligations of Christians were to the Mosaic law.

**Apostolic Fathers** were the immediate disciples or followers of the Apostles, especially such as have left writings behind them, including Barnabas, Clement, Hermas, Ignatius, Polycarp, etc.

**Apostolic Succession** is the derivation of holy orders by an unbroken chain from the Apostles, and the succession of the ministry to the powers and privileges of the Apostles.

**Apotheosis** was the Greek term for the inclusion of a mortal among the Gods. Divine honours were accorded to Julius Cæsar and Augustus.

**Apparitions**, ghosts, phantoms, spectres, regarded by modern authorities as hallucinations of telepathic origin. (See Telepathy.)

**Appeasement Policy.** The name of the policy during 1937 and 1938 of yielding to the demands of Hitler and Mussolini in the hope that a point would be reached when the dictators would co-operate in the maintenance of peace. The policy culminated in the Munich Agreement (which was the subject of much criticism) after a series of concessions including the recognition of the Italian conquest of Abyssinia and the German annexation of Austria. The policy was finally demonstrated as futile when Hitler seized Czechoslovakia in March, 1939.

**Appian Way**, the oldest and finest of the Roman roads originally laid by Appius Claudius (312 B.C.) from Rome to Capua and thence to Brundisium (Brindisi).

**Approved Schools or Home Office Schools** are residential schools for the training of children and young persons who, because of bad environment or parental neglect, are guilty of offences or in need of care and protection and have been sent to them by magistrates from juvenile or other courts. A pupil who refuses to submit to discipline may be sent to a Borstal institution.

**April**, the fourth month of the year, from the Roman *Aprilis* derived from *aperire* "to open"—the period when the buds begin to open.

**Apse** is a semicircular recess at the east end of the choir or chancel of early churches, and vaulted over.

**Aquatint** is a method of etching on copper, by which imitations of drawings in water-colours, Indian ink, bistre, and sepia are produced.

**Aqueducts** are conduits in which water flows or is conveyed from its source to the place where it is to be used. Most famous builders were the Romans and the oldest Roman aqueduct was the Aqua Appia, which dates from about 310 B.C. Among modern aqueducts may be mentioned that of Glasgow, which brings water to that city from Loch Katrine; that of Manchester which taps Thirlmere; that of Liverpool, with Lake Vrnwy in North Wales as its source, and the Fron Aqueduct, Radnorshire, which carries water from the Elan Valley to Birmingham.

**Arabesque**, the term applied to the elaborate decorations introduced into Europe by the Spanish Moors. The arabesques of the Vatican galleries, by Raphael, form a splendid example.

**Arabian Nights**, a collection of fascinating tales of the Orient, of mixed Indian, Persian, Arabic, and Egyptian origination, and first made known in Europe by Antoine Galland, a French Oriental scholar whose original translation was called *The Thousand and One Nights*.

**Arabic Numerals**, consisting of the characters, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, had their roots in India, whence they passed to Baghdad in the second half of the 8th century and were introduced by way of Spain to Europe in the 12th century, taking the place of the Roman numerals.

**Aragonite**, a mineral consisting of carbonate of lime in a crystalline form, sometimes found pure and sometimes mixed with other metals in minute quantities. Crumbles to powder under heat.

**Aramaic Languages**, the Semitic dialects current in Mesopotamia and the regions extending south-

west from the Euphrates to Palestine from about the 12th century B.C. until after the rise of Islam, when Aramaic was superseded by Arabic. Both Aramaic and Greek were spoken in Palestine during the time of Christ.

**Arbalast**, a steel crossbow set in a shaft of wood and worked with a trigger, introduced by the Normans.

**Arbor Day**, a day devoted to promoting the growth of trees. First adopted in Nebraska, but now the movement has spread to all parts of the American Continent, Canada, New Zealand, and to South Australia.

**Arbor Vitæ** is the name given to the tree-like appearance of the cerebellum when it is cut through, due to the arrangement of the white and grey nerve matter. Also the name of a cone-bearing plant of the cypress order possessing medicinal virtues.

**Arcadia**, a district of Peloponnesus (Morea) whose inhabitants in the days of the Pelagians were of extreme simplicity, and the term has ever since been used to denote an idealised country of happy, natural beings.

**Arch** in architecture was known to the ancient Egyptians, Assyrians, and Greeks, but it was the Romans who appreciated its utility and magnificence and used it to effect a complete revolution in architectural form.

**Archæology** is the scientific study of the material remains of past human life and human activities.

**Archæopteryx**, a fossil bird providing a connecting link between reptiles and birds. Reptilian features are: teeth on the jaws, a long lizard-like tail and claws to the fingers. The beast was clad in feathers, not scales. The first specimen, found in 1861 in the Solenhofen limestone of Bavaria, is in London's Natural History Museum.

**Archbishop**, the chief of the bishops of an ecclesiastical province in the Greek, Roman, and Anglican churches. In the Church of England there are two archbishops, the Archbishop of Canterbury, called the Primate of all England, and the Archbishop of York, styled the Primate of England.

**Archimedes' Principle**. When a body is weighed in air and then in any fluid, the apparent loss in weight is equal to the weight of fluid displaced. This scientific fact was noted by the Syracusan philosopher Archimedes (287-212 B.C.).

**Architecture**, or the art of building, is of three main classes—military, naval, and civil—the general application of the term being to the last named. The five leading orders of architecture are the *Doric*, the oldest, of which the best examples were shown in the Greek temples; the *Ionic*, another Greek variety, lighter and more decorative, as shown in the Erechtheum at Athens; the *Corinthian*, introduced in the time of Alexander the Great, well known by its graceful columns and enrichments; the *Tuscan*, which the Romans invented—a solidified *Doric*; and the *Composite*, which combined the leading features of the *Ionic* and *Corinthian*. As exemplified in modern times, more especially in England, architecture is exceedingly varied in form, but between the 6th and 17th centuries we get at least six distinctive styles. First, the Saxon and Norman; next the Semi-Norman; then the Early English or Gothic (of which Westminster Abbey and York Minster furnish prominent examples); the Decorated English; the Perpendicular English (15th century); and the Debased English (1509 to 1640). During the early Stuart period there was the Renaissance style, which obtained a strong footing. Then we come to the Queen Anne style, which is of a more domestic order; and in later times there has been a revival of nearly all styles, sometimes in their pure form, but more often presenting an adaptation or combination of styles. We have more primitive examples in the architecture of the earlier nations—Egyptian, Assyrian, Etruscan, Persian, Chinese, and Jewish—all possessing more or less individuality of feature, the result partly of local, climatic, and other requirements, and also of some special artistic evolution.

**Arctic Exploration**. Modern exploration of the Arctic begins in the 16th century, when men sought to reach the East Indies by sailing through the Arctic to the Pacific Ocean. The

North-east Passage, via the shores of northern Asia, was the first attempted. In 1553 and 1554 the English navigators Sir Richard Chancellor and Stephen Burrough sailed into the White Sea, but were prevented by storms and ice from advancing farther eastwards. The project was later revived by the Dutch; Bar-entius in 1594 discovered Spitsbergen, but also failed to get beyond Novaya Zemlya. It was not, in fact, until 1879 that the Swede, A. E. Nordenskiöld, in the *Vega*, succeeded in reaching the Pacific. The attempts to find a North-west Passage were more numerous and determined. In 1585 John Davis penetrated Davis Strait and coasted along Baffin Island. Hopes ran high when Henry Hudson discovered Hudson Bay in 1610, but a practicable passage continued to elude explorers. The problem was to find a navigable route through the maze of channels in the short summer season, and to avoid being frozen in with supplies exhausted. After the Napoleonic Wars the Admiralty sent out many naval expeditions, which culminated in Sir John Franklin's expedition with the *Erebus* and *Terror* in 1845. The ships were beset by ice in Victoria Channel and, after Franklin's death, were abandoned by their crews, who perished from scurvy and starvation on their march southwards. To ascertain their fate, several further expeditions were despatched, and the crew of the *Investigator*, commanded by R. J. McClure, sailing eastwards from Bering Strait, were the first to make the Passage, though in doing so they were obliged to abandon their ship. It was fifty years before the Norwegian, Roald Amundsen, succeeded in sailing the *Gjøa* from east to west. In the meantime, the North Pole had become the goal of explorers. Nansen, in 1893, put the *Fram* into the ice-pack to drift across the Polar basin, and himself made an unsuccessful attempt on the Pole across the pack. This was eventually achieved by the American explorer Robert E. Peary, who, after several expeditions in the North Greenland region, sledged to the Pole with Eskimo companions in 1909. The next phase was the employment of airships and aeroplanes in Arctic exploration. In 1926 Admiral Byrd made the first flight over the Pole, and in the same year Amundsen and Lincoln Ellsworth flew the airship *Norge* from Spitsbergen to Point Barrow, Alaska. Two years later, the *Italia*, commanded by the Italian, Nobile, was wrecked on a return flight from the Pole, and Amundsen lost his life in an attempt to rescue the survivors. With modern developments in aircraft and navigation, flights over the Polar basin are almost a routine matter, and passenger flights between Europe and America via northern Greenland are being pioneered.

**Arenaceous Rocks**, the rocks composed of grains of sand, chiefly sandstones; quartz and felspar being the most abundant minerals in these rocks.

**Argillaceous Rocks** are a sedimentary group, including the shales and clays.

**Argon**, a chemical element discovered by Rayleigh and Ramsay in 1894 in air. Argon is used for filling gas-filled metal filament electric lamps. In gas discharge tube it glows brightly, as does neon, but the colour of the discharge is blue instead of red.

**Aria**, a song consisting of a first part, a second part, and a repetition of the first part. Songs of this type commonly occur in 18th-century operas and oratorios. The term has been loosely extended to cover airs rendered solo by principal characters in opera.

**Arianism**, so called after Arius of Alexandria, who denied Christ's divinity. The doctrine was condemned at the Councils of Nicæa (325) and Constantinople (381).

**Aries**, the Ram, the first of the signs of the Zodiac.

**Arithmetic**, the branch of mathematics that deals with numerical calculation as in counting, measuring, weighing. The early civilisations used simple arithmetic for commercial purposes, employing symbols and later letters of the alphabet as numerals. When Hindu-Arabic numerals replaced Roman numerals in the Middle Ages it meant a great step forward and led to rapid developments—the invention of logarithms, slide-rule, calculating machines.



**Ark of the Covenant** was the sacred chest, overlaid with gold, which occupied the inner sanctum of the Temple, and symbolised God's covenant with his people.

**Armada**, Spanish, the naval expedition fitted out by Phillip II. of Spain in 1588 against England, commanded by the Duke of Medina Sidonia. It comprised 129 ships, was manned by 8,000 sailors and carried 19,000 soldiers and more than 2,000 cannon. Against this formidable force Elizabeth had only 80 ships, manned by 9,000 sailors, under Lord Howard of Effingham, under whom served Drake, Hawkins, and Frobisher. The British Fleet awaited the Armada off Plymouth, and at Tilbury there was a considerable defensive land force under the command of the Earl of Leicester. On July 19 the ships of the Armada were sighted off the Lizard, disposed in a crescent seven miles long from horn to horn. The excellent manoeuvring of the English, their fire-ships, and a gale from the N.W. combined so effectively to cripple the Spanish ships that the Armada was scattered in confusion, a very small remnant contriving to reach home via the North of Scotland. It was impossible to embark the army of Parma waiting in the Netherlands. Elizabeth had a medal struck bearing in Latin the inscription, "God blew, and they were scattered."

**Armado**, a genus of animals related to the sloths and anteaters, belonging to South America, and carrying a hard bony covering over the back, under which the animal can completely conceal itself when attacked, rolling itself up like a hedgehog.

**Armageddon**, according to the Revelation of St. John, the great battle in which the last conflict between good and evil is to be fought.

**Armature**, the portion of an electrical dynamo or motor consisting of wire coils so wound as to give in the former a current when rotated; in the latter to give torque when current passes through the armature winding.

**Armillary Sphere**, an early form of astronomical apparatus with a number of circles representing equator, meridian, ecliptic, etc. Used by Hipparchus and Ptolemy and up to the time of Tycho Brahe for determining the position of the stars.

**Arminianism**, the doctrine of Arminius, originally Jakob Harmensen (1560-1609) of Holland, a devout Christian who opposed Calvinism and the doctrine of predestination. In England a modified Arminianism became the theology of Wesleyan Methodism.

**Armour**, protective covering worn by those engaged in military pursuits, and consisting of a great variety of pieces and material, from hauberts of mail to a complete panoply of plate.

**Army**. A considerable force, armed and organised for war. The first English soldiers were feudal levies: these, under Alfred the Great, repulsed the Danes. Following the Norman conquest, the mailed horseman became the chief factor in war, but during the Hundred Years' War with France, especially at Crécy, Poitiers, and Agincourt, the British bowmen and men-at-arms re-established the prestige of the foot soldier. These forerunners of our modern infantry were either mercenaries, paid by the King, or served in free companies, raised and commanded by wealthy knights. Compared with the Royal Navy, the British Army has been a Cinderella service, neglected except when needed to fight. After winning the Civil War and fighting well on the Continent, Cromwell's New Model Army was disbanded, but from it sprang a small regular force. In 1689 the Army was put under the control of Parliament and became a constitutional force. Its role in war has been either to fight, with allies, against the armies of Continental powers or to undertake campaigns within the Empire. Of the latter, the conquests of India and Canada were bright chapters in the Army's history, the defeats in America a dark one. Under Marlborough, the British Army made a European reputation in the wars of Queen Anne's reign. After the Peninsular and Waterloo campaigns, under Wellington, the regular army's strength was raised from 20,000 to 80,000, but the outbreak of the Crimea War, in 1854, found it ill-equipped. Notable reforms introduced by Cardwell (Secretary of State

for War, 1869-74) included the linking of regiments, generally in two battalions, one to serve abroad and one at home. Nevertheless, the Boer War (1899-1902) was only won with difficulty after severe early reverses. In the first world war, thanks mainly to the reforms of Haldane (appointed Secretary of State in 1906), the British Expeditionary Force held its own against far better armed German forces until the Territorials came into action, followed by two million volunteers of Kitchener's new armies. The cost was heavy: out of 100,000 men who went to France in August, 1914, 90,000 became casualties. For most of this war the Western front was locked in a stalemate of trench warfare, interrupted by battles in which the appallingly high casualties were out of all proportion to the results achieved. After Loos, 1915, French was replaced as Commander-in-Chief by Haig, who remained in command of the B.E.F. until victory was achieved by the British, French, and American armies, under the supreme command of Foch. In between the world wars the Army was once again neglected, and in 1940 the B.E.F., under Gort, had not the numbers, weapons, or training to withstand the *Blitzkrieg* thrusts of the German *panzer* columns. After most of the B.E.F. had been miraculously rescued from Dunkirk, new armies were equipped and trained in Britain. The Royal Armoured Corps was greatly enlarged and the Army Air Corps formed, with parachute and glider pilot regiments. This took time, and the year 1942 was a disastrous one. The Japanese overran Malaya, capturing 80,000 British and Indian troops at Singapore and Burma. In the Western Desert the army which, under both Wavell and Auchinleck, had advanced into Libya and then retired, was beaten back by Rommel and Egypt was threatened. The tide turned with the appointments of Alexander as C-in-C, and Montgomery as commander of the Eighth Army. After the great victory at El Alamein, in October, 1942, the army swept on to Tunis, and joined with the Americans in the capture of Sicily and the invasion of Italy. Under the supreme command of Eisenhower, the British 21st Army Group (Montgomery), landed in Normandy in June, 1944, held the main German armour in fierce fighting at Caen, helped the Americans to break Rundstedt's Ardennes offensive and in March, 1945, crossed the Rhine, to join up with the Russians two months later. First saving India from invasion, the Fourteenth Army (Slim) defeated the Japanese in Burma. Conscription was continued for the post-war regular army and volunteers were also sought. Pay was increased and general conditions of service improved. The Cardwell system of linked battalions having proved too rigid for modern requirements, infantry regiments were organised in fifteen groups, based on territorial or traditional affinities. On January 1, 1947, the Territorial army was reconstituted so as to provide this country's anti-aircraft artillery, furnish various units not essential to the regular army in peacetime but immediately required in war, and form the basis on which our armies would expand in war. Men called up for two years' service in the regular army are subsequently posted to the Territorial Army or Supplementary Reserve for 3½ years' Reserve Service.

**Arpeggio**, a chord whose notes are not played together but in ascending or descending sequence, as on a harp.

**Arrowroot**, obtained from the rhizomes of the tropical maranta. It provides a pure starch food, suitable for invalids.

**Arsenic**, a metallic element, of a crystalline and brittle nature, usually met with as a constituent of other minerals, sometimes by itself. Its compounds are very poisonous. Lead arsenate is a powerful insecticide used for spraying fruit trees.

**Artesian Wells** take their name from Artois in France, where the first wells of this kind were constructed in 1126. They are to be found only when a water-bearing bed is sandwiched between two impervious beds. When a boring is made to the lower part of the bed, the pressure of water is sufficient to cause the water to overflow at the surface. Artesian wells were known to ancient Egypt and China, and have existed

in the Sahara since the earliest times. The fountains in Trafalgar Square are fed by artesian wells sunk through the London clay into the chalk about 400 ft.

**Arthur's Seat**, a hill of volcanic origin, 823 ft. high, dominating Holyrood Park, to the south-east of Edinburgh.

**Articles**. The *Six Articles* are those contained in an Act of Henry VIII. and were of Roman Catholic origin. The *Thirty-Nine Articles* drawn up in 1563 comprise the doctrines of the Anglican Established Church, and must be subscribed to by all taking holy orders therein.

**Artillery**, the science and art of gunnery; the implements of war employed therein; and the men constituting the military corps in charge of the artillery equipments of an army and trained to their use. In the British Army the Royal Regiment of Artillery is divided into the three branches of Field, which includes field, mountain, anti-tank, medium and heavy artillery, anti-aircraft, and coast artillery. The traditional headquarters of the Regiment is at Woolwich. The weapons of Artillery during the second world war showed great development, particularly in high-velocity anti-tank guns. Rockets were introduced as an artillery weapon both for anti-aircraft defence and in the ground to ground role. The importance of massed artillery fire as a battle-winning factor was demonstrated on many occasions. With the exception of a few mountain artillery regiments all artillery units are now fully mechanised.

**Arts Council of Great Britain**. Founded during the war to assist in maintaining the art of the theatre. With a sum allotted by the Treasury, the Council supported small companies which would have been forced to close by war conditions. As a result companies presented plays by Shakespeare, Ibsen and Shaw in rural and industrial areas which had never been visited by actors. Moreover, the Theatre Royal, Bristol, one of the oldest and most beautiful playhouses in the country, was saved. About £500,000 is spent annually on subsidising opera, ballet, music, drama, painting and poetry.

**Arum**, a genus of plants of the Araceae order, of which there is but one British species, the wake-robin or cuckoo-pint, sometimes also styled "Lords and Ladies." Its pointed leaves and spikes of scarlet berries are familiar hedgerow objects. The latter are poisonous. The starch in the tuber was formerly used as food under the name "Portland arrowroot."

**Arundel Marbles**, a collection of ancient Greek sculptures formed by Thomas Howard, Earl of Arundel, in the 17th century and presented to Oxford University by his grandson, Henry Howard, who became Duke of Norfolk.

**Aryan** is a term used to denote the lingual and ethnological groups otherwise known as Indo-European or Indo-Germanic. Comprises two branches, Western or European, and Eastern or Armenian. The Aryan languages show common origin by their vocabulary, syntax, and inflexions. The word *Aryan*, derived from the Sanskrit, means an "honourable lord of the soil": the nearest to the parent tongue is Sanskrit, and the chief divisions in Europe are the Teutonic, Romance, Slav, and Celtic. The Turks, Magyars, Basques, and Finns are non-Aryan. The common ancestors of the Aryan groups dwelt among the Pamirs at a period of remote antiquity.

**Asafetida**, an evil-smelling gum resin exuded from the stem and roots of the *Ferula* genus found in Persia and Afghanistan. As a drug formerly used by doctors to help cure hysteria.

**Asbestos**, a fibrous mineral which is fireproof. Mined in Canada, S. Africa, S. Rhodesia, U.S.A., Swaziland, U.S.S.R., Cyprus, France, Italy. Woven into fireproof garments for firemen, gloves for furnacemen. Used for lagging steam pipes and boilers. Asbestos board is used in the building trade.

**Ascension Day**, or Holy Thursday, is the 40th day after Easter.

**Asceticism** was originally the term applied to the training by Greek athletes. The Stoics and others used it to express the mastering of the passions. The idea passed into Christianity, and from celibacy and abstinence was carried to great lengths in the way of self-mutilation

and even torture. Monasticism was one of its manifestations.

**Ascot Races** are an annual fashionable function dating from 1711 and taking place on Ascot Heath, only six miles from Windsor, in June. Have always had royal patronage. The course is nearly two miles long.

**Asdic**, echo-sounding instrument, used in ships to detect underwater objects, for instance, U-boats, wrecks, shoals of fish, etc.

**Ash**, a familiar tree of the olive family, remarkable for its thick foliage and height of growth: height, 50-80 ft. Is a valuable timber tree, tough and elastic, and largely used for wheels. The flowers appear before the leaves, pollination being by wind. The seeds are winged and wind-distributed. The weeping ash trees have all been propagated through cuttings from a single tree that appeared as a sport at Wimpole in Cambridgeshire.

**Ashburton Treaty** was signed between Great Britain and the United States in 1842 and settled the north-east boundary dispute by a compromise line between Maine and Canada.

**Ashes**, The, the symbol which distinguishes the winning cricket team in the Australian Test Matches. In 1882 the Australians won at the Oval by 7 runs. After the match the following epitaph appeared in the *Sporting Times*: "In affectionate remembrance of English Cricket which died at the Oval on 29th August 1882, deeply lamented by a large circle of sorrowing friends and acquaintances. R.I.P. N.B. The body will be cremated and the ashes taken to Australia." When the English Eleven went to Australia the same winter it was said that they had come to recover the "ashes." England won two out of three matches, and after the third match the ashes of what is now generally believed to have been a stump were presented in an urn to Ivo Bligh, later Lord Darnley. He bequeathed the urn to the M.C.C., and it now stands in the Memorial Gallery at Lord's.

**Ash Wednesday**, first day of Lent, on which ashes are sprinkled on the head as sign of penitence under an injunction of Pope Gregory the Great in the 6th century.

**Asmodeus**, a demon whose story appears in the apocryphal book of Tobit, and figures frequently in Jewish traditions. Asmodeus is the supernatural figure in Le Sage's *Le Diable boiteux*.

**Asp**, a small poisonous snake, often mentioned in ancient literature and traditionally supposed to have been used by Cleopatra in killing herself. Probably the Egyptian Horned Viper (*Cerastes*).

**Asphalt** is the name given to a variety of bituminous substances that (1) occur naturally or (2) from the residue after petroleum distillation. Is largely used, mixed with sand, granite chips, etc., for making road surfaces. It was used in Mesopotamia some 5,000 years ago as a mortar for brickwork and for damp-courses to baths. Rock asphalt is obtained from mines in Switzerland, France, Sicily, and Germany, and lake asphalt is obtained commercially from the famous lake in Trinidad.

**Assassination**, treacherous murder for political ends, usually of a ruler or distinguished person. Among the most famous assassinations of history were: Julius Caesar, 44 B.C.; Thomas à Becket, 1170; David Rizzio, 1566; William the Silent, 1584; Henry IV. of France, 1610; Jean Paul Marat, 1793; Abraham Lincoln, 1865; Alexander II. of Russia, 1881; Archduke Francis Ferdinand of Austria, 1914; Dr. Dollfuss, 1934; King Alexander of Yugoslavia, 1934; Mahatma Gandhi, 1948; King Abdullah of Jordan, 1951; Liaquat Ali Khan, 1951.

**Assumption of the Virgin**. The Roman Catholic belief, that the Blessed Virgin ascended bodily to heaven after her death, was proclaimed by the Pope towards the end of 1950. It is now, therefore, binding on all Catholics under pain of anathema and the guilt of mortal sin. Protestants are liable to make the mistake of supposing that such dogmas are new additions to the faith invented by the Pope of the moment. According to Catholic doctrine, no addition can be made to the "faith once delivered to the saints," and every dogma is justified by reference to Bible texts and the traditions of the Church. Both Eastern and



Western Churches have been permitted to believe in the Assumption of the Virgin for over a thousand years, and the new dogma merely clarifies the old belief and makes it binding on the faithful.

**Asteroids** were unknown until the discovery of Ceres by Piazzi in 1801; at present about 1,500 are catalogued, the application of photography since 1891 being responsible for the great majority. Most of these planetoids or minor planets are mere celestial footballs, most having a diameter of well under 50 miles. The four largest asteroids are Ceres, Pallas, Vesta, and Juno; respectively 480, 306, 241, and 121 miles in diameter.

**Astrolabe**, a mediæval scientific instrument for taking altitudes, observing the sun by day and the stars by night, and used for telling the time and finding the latitude. Used by the ancient Greeks, later by the Arabs and Persians, and introduced into Europe by way of Spain in the 14th century. Chaucer is said to have sent his son Lois, a ten-year-old student at Oxford, an astrolabe with a treatise on its use in 1391.

**Astrology**, an ancient superstition which prevailed among the Chaldeans, Egyptians, and Etruscans and had a powerful influence in Europe of the Middle Ages, though not so much upon the Greeks. Professes to foretell events from the position of the stars and planets and studies the occult influence on human affairs. Formerly astrology had two branches—judicial astrology, the study of the supposed influence of the stars on human destiny, and natural astrology, dealing with calculation of movements of heavenly bodies, time, tides, eclipses, etc., out of which grew the science of astronomy.

**Astronomy**, the oldest and one of the most fascinating of sciences, was in early times associated with astrology, but by a long series of observations and mathematical calculations a gradual knowledge of the movements of the heavenly bodies grew up. Pythagoras (520 B.C.) understood the revolution of the earth upon its axis, but it was not until two thousand years later that his theory gained general acceptance, when the keen and spacious minds, first of Copernicus, and then of Tycho Brahe and Galileo, demonstrated the truth of the Pythagorean theory. With the setting forth of the Copernican system, astronomy was placed on a sure foundation, and the movements of the planets began to be more clearly comprehended. The studies of Kepler and Galileo, making their observations with the telescope, resulted in an immense increase of astronomical knowledge. Newton, to whom we owe the discovery of the law of gravitation, the improvement of the telescope, and many other discoveries, placed physical astronomy on well-defined lines. Two great landmarks in more recent times were the discovery of Uranus by Herschel in 1781 which extended the solar system as then recognised and the estimation by Hubble in 1924 of the distance of Andromeda of nearly a million light years which showed that our Galaxy was just one of many. Today radio-astronomy is advancing astronomical knowledge and making it possible to explore regions beyond the scope of optical telescopes. (See "The World of Science," also Telescopes, Observatories, Galaxy.)

**Astrophysics**, a branch of astronomy concerned with the physical nature and constitution of celestial bodies. Since the second half of the 19th century the application of spectroscopy and photometry has been responsible for the great advance in this branch of science.

**Atavism**, the "throw back" to remote ancestral characteristics, observed in all forms of animal life.

**Athanasian Creed**, one of the three ancient creeds of the Christian Church, often referred to as the *Quicumque Vult*, is a statement of the doctrine of the Trinity and the Incarnation, and though named after St. Athanasius, the view is now widely held that it is the work of St. Ambrose (339-97). (See also Apostles' Creed and Nicene Creed.)

**Atheism** is the denial of the divine, and it assumes three forms—denial of the existence of God, denial that God has been proved to exist, and denial of the possibility of knowing of divine existence.

**Athletics** are such sports as running, walking, jumping, wrestling, boxing, weight-putting, and hammer-, javelin-, and discus-throwing, most of these forms of physical exercise being popular in ancient Greece and Rome and indulged in at the Olympic Games in Athens from early times. They were revived in 1896, when an International Championship was held at Athens, and except during the periods of the first and second world wars, have been held in different countries every four years. In co-operation with the Universities and Schools, championship meetings are organised by the Amateur Athletic Association.

**Athodyd**, also called "Ramjet" or "Propulsive Duct." This can be considered as an extremely simple gas-turbine engine, without any rotating parts. A power plant with great possibilities for high-speed aerial flight, it consists of a diffuser, combustion chamber, and exhaust chamber and its thrust results from the fact that the gases leaving the athodyd have a higher velocity than the gases entering it.

**Atlantic Charter**. A document of eight points drawn up by Mr. Winston Churchill and President Roosevelt on a man-o'-war in the Atlantic in August, 1941. Although a very important document, since it declared the intentions of Britain and U.S.A., it remained informal and was not in fact signed (to obviate necessity for approval by the U.S.A. Senate). The eight points were briefly on the following subjects: (1) No aggrandisement; (2) No territorial changes without wishes of the people; (3) Restoration of self-government to those deprived of it; (4) Access to trade and raw material by all peoples; (5) Improvement of labour standards and social security; (6) Freedom from fear and want; (7) Right to traverse high seas without hindrance; (8) Disarmament of aggressor nations pending a permanent system of general security.

**Atlantio Pact**. See "A Citizen's Guide."

**Atlantic Records**. The first crossing of the Atlantic by Columbus in 1492 took 70 days, while the first crossing by steam-boat in 1838 was made in 17 days. The Atlantic Blue Riband is now held by the American liner *United States*, which in July 1952 completed the 2,942 sea miles from Ambrose light-vessel to Bishop Rock in 3 days 10 hours 40 minutes (35.59 knots), beating the Queen Mary's 1938 record time of 3 days 20 hours 42 minutes (31.69 knots). The first flight was made in 1919 by Sir John Alcock and Sir A. W. Brown in a Vickers-Vimy biplane from Newfoundland to Ireland (1,890 miles) in 16 hours. The first solo flight was made in 1927 by Charles A. Lindbergh from New York to Paris. The first airship to cross from Scotland to New York was the British R.34. The first regular passenger flight was made by the *Dixie Clipper* in 1939.

**Atmosphere** is the gaseous envelope of the earth, and consists of a mixture of gases (see Air) and water vapour, the variability of the latter being of great importance meteorologically. At levels accessible to measurement there is no appreciable change in the relative proportions of the gases, but the greatest part of the ozone would seem to occur in a layer 15-25 miles above the earth's surface. The lower level of the atmosphere up to a height of about 7 miles (8 miles at the Poles and 10 miles at the Equator) is known as the *troposphere*, and it is in this region that nearly all weather phenomena occur. This is the region of most interest to the forecaster studying temperature, humidity, wind-speeds, and the movement of air masses. Temperature falls with height by about 3° F. per 1,000 ft. The *tropopause* is the boundary between the troposphere and the *stratosphere*. Temperature varies little in the lower levels of this region; it is mainly cloudless, and has no vertical currents. Strangely enough, the lowest temperatures of the atmosphere are to be found not at the Poles, but at about 11 miles above the Equator, where a temperature as low as -110° F. has been recorded! The thickness of the stratosphere is not known exactly, but temperatures begin to rise at about 20-25 miles from the earth's surface at about the same rate as they fall in the troposphere, owing, it is thought, to the absorption of solar radiation by the con-

- centration of ozone. Recent war-time researches in England have shown that stratospheric air is extremely dry. The uppermost region of the atmosphere is the *ionosphere*, extending to 300 miles from the earth's surface, and containing the Heaviside layer (at about 60-70 miles) and the Appleton layer (at about 120-200 miles); it is in this region that the aurorae normally occur. (See pp. 156-57.)
- Atmospherics** are electrical impulses which are believed to originate in atmospheric electrical discharges such as lightning. They give rise to crashing background noises in the loudspeakers of radio sets, interfering with reception at distances of up to 4,000 miles from the centre of the disturbance. The location of atmospherics with the aid of radio direction-finding methods gives warning of the approach of thunderstorms.
- Atom**, the smallest unit of an element which can take part in a chemical reaction. Prior to the discovery of radioactivity by Becquerel in 1896 the atom was looked upon as something hard and solid like a billiard ball. It was also thought to be indivisible. This concept was replaced by the Rutherford-Bohr atom (1913). According to this hypothesis the atom resembles a miniature solar system, with the nucleus as the sun, the electrons the planets, and the rest empty space. If the nucleus were enlarged a million million times it would be no greater than a pea but the atom itself would fill the Albert Hall. The nucleus itself has a composite structure, being built of protons and neutrons. The simplest atom is that of hydrogen, with a single electron and a nucleus consisting of a single proton. Biggest naturally-occurring atom is uranium atom with 92 protons in the nucleus. (See pp. 161-62.)
- Atomic Bomb**, this weapon was the result of the concerted efforts of a team of scientists during the impelling urgency of the second world war. They succeeded in releasing an explosive discharge of atomic energy by the fission process. The vast sums and resources necessary for the production of the bomb determined the U.S.A. as the country of its origin. The first bomb was discharged on test in New Mexico (16.7.45), when the effects of blast, heat, and radiation were measured. Its use on Hiroshima (5.8.45) and Nagasaki (9.8.45) was a main cause of the collapse of Japanese opposition in the Far East. In an atomic bomb pieces of uranium 235 or plutonium 239 are brought together until a critical size is exceeded, when an uncontrollable chain reaction is set up. The energy released in the fission of 1 kg. of uranium is about equivalent to that involved in the explosion of 20,000 tons of T.N.T. A development of the atom bomb is the thermonuclear or hydrogen bomb which is a weapon not only a thousand times more powerful than a fission bomb but different in kind. Atomic and hydrogen bombs not only unleash energy but give rise to radioactivity which can induce hereditary changes in plants and animals. It is to be hoped enough bombs have already been exploded to convince mankind that the only alternative to total annihilation is to live together in the world as good neighbours.
- Atomic Number**. The number of protons in the nucleus of the atom, positively charged, equaling and balancing the number of surrounding electrons, negatively charged, is called the atomic number. (See p. 762.)
- Atomic Pile**, an apparatus containing a fissionable element and a moderator, such as heavy water or graphite, in which a self-sustaining fission process proceeds at a controllable rate. The first atomic pile, constructed on a squash court at Chicago, was operated for the first time on December 2, 1942, under the direction of Dr. Enrico Fermi. The pile contained 12,400 lb. of uranium. The object of the bigger piles run in America during the war was to make plutonium for atomic bombs. In the future the greatest use for atomic piles will probably be in connection with electric power-stations, the piles producing power formerly derived from burning coal or tapping the energy of falling water.
- Atomic Weight**, the weight of an atom of an element relative to the weight of an atom of hydrogen. More recently oxygen = 16 has been taken as the standard, and on this scale hydrogen = 1.008. (See p. 762.)
- Atrium** was the central court of a Roman house, uncovered in the centre, usually with a marble tank (*impluvium*) beneath the opening into which rain could fall.
- Attainder** is a term for the taint that attaches to a person or to his estate after he has been convicted of treason or felony and sentenced to death or outlawed. Since 1870 no forfeiture results from conviction for treason or felony. A bill of attainder is a legislative act which inflicts the consequences of attainder upon a person without a judicial trial.
- Attar of Roses**, an essential oil used in perfumery and obtained from the fresh flowers of *Rosa damascena* grown in Bulgaria, Anatolia, France, and Kashmir.
- August**, named after the Emperor Augustus, because it was his "lucky" month.
- Auks**, duck-like sea-birds, black and white, with short narrow wings, compact bodies, and legs set well back. Breed in colonies on rocky coasts of N. Europe (incl. British Isles) and spend most time in coastal waters. Migrate south in winter. The Auk family includes the Razorbill, Little Auk, Guillemot, and Puffin. The Great Auk became extinct in the 19th century after ruthless hunting for the sake of its feathers. Except for the Black Guillemot, they lay only one egg a year.
- Aulic Council**, a supreme court of the Holy Roman Empire, established by Maximilian I., in 1501.
- Aurora Borealis or Northern Lights**, visible in London on seven nights a year on the average, but increasingly so farther north, e.g., observed in the Shetlands about one night in every four. The zone of maximum frequency surrounds the north magnetic pole and includes Greenland, northern Canada, and the north coast of Alaska. Auroral displays may take several forms (dawn-like glow, often with rays streaming upward, curtain, and corona of rays radiating from a point high in the sky), sometimes changing rapidly with pulsating effects. The aurora is an electrical discharge at great heights, the agent responsible arising in the sun, and is generally accompanied by magnetic storms.
- Austerlitz, Battle of**, was fought near Brünn, in Moravia, on December 2, 1805, when Napoleon defeated the Russians and Austrians under Kutuzov.
- Auto-da-Fé**, or Act of Faith, was the ceremony connected with the execution of heretics under the Inquisition of Spain and Portugal, the persons condemned being burned alive. The king and court generally attended in state.
- Automation**, a word coined by an American for automatic operation and control in industry by the application of electronic methods. The new technique has been defined as "the accomplishment of a job by an integrated mechanism with a minimum of assistance of any kind." Electronic machines are capable not only of reporting defects but correcting them by the application of information stored in them. Just as mechanisation replaced human labour in the industrial revolution of the 19th century, so today automation is replacing mechanisation.
- Autonomy** denotes the right of self-government, and was first used in reference to the municipalities of ancient Greece, where the right of separate government was allowed.
- Autumn**, the third season of the year, begins with the autumnal equinox about September 22, and ends on December 21, but the term is generally understood as covering the period between the middle of August and the middle of November.
- Auxins**, substances which regulate the growth of plants; also called "plant hormones." Auxin preparations are finding practical use: e.g., to promote root formation in cuttings, to prevent premature dropping of apples and pears.
- Avalanches** are of four kinds. (1) Powdery avalanches consisting of snow which has become loose and dry from long frost. (2) Creeping avalanches, which are loosened by Spring, but being on a gentle slope, creep down slowly by the force of their own weight. (3) Glacier avalanches, masses of ice which split off in summer with a great noise, and go tearing down a precipice to be smashed to pieces at the bottom.



(4) The real avalanches of huge accumulations of snow, which are hurled over almost perpendicular walls of rock into the valleys beneath. **Avalon** is the earthly paradise of Celtic mythology. **Aventine**, one of the seven hills of Rome. **Avesta**, the title of the sacred books of the Parsees. **Axe**, one of the first tools devised by primitive man in all parts of the world. Axes of stone, bronze, and rough iron have been found in the geological strata.

**Avocet**, a graceful wading bird related to the stilts, of black-and-white plumage, bluish legs, and slender upturned bill. There are four species. The only colony breeding in the British Isles is that in the sanctuary on Havergate Island, Suffolk.

**Azrael**, the angel of death of the Turks and Arabs. **Aztecs**, the name of a native and powerful race found in Mexico when the Spaniards first discovered that country, and with difficulty subdued.

## B

**Baal**, the god of the sun, and meaning lord, or master, was worshipped by the ancient Chaldeans, Phœnicians, and Assyrians, and enters into the composition of many Semitic names: Jezebel, Hannibal, Beelzebub, Baalbek.

**Babel**, Tower of, described in Gen. xi. 9, the erection of which led to the confusion of tongues.

**Babiroussa**, a ferocious wild pig, native of the Celebes, sometimes called the horned-hog, from the fact that the long upper tusks, growing upwards, pierce the upper lip and curve backwards like the horns of some of the ruminants. It is longer-legged than ordinary swine.

**Baboon**, monkeys belonging to the African genus *Papio*. They are considered the lowest of the Old World (Catarrhine) monkeys, and walk on all fours. In the main terrestrial, but take to trees after food. The mandrill is closely related.

**Babylonian Captivity**, the period spent by the Jews in Babylon after Jerusalem was captured by Nebuchadnezzar, the Babylonian emperor, in 586 B.C. Traditionally the captivity lasted 70 years, but when Babylon was in turn taken by Cyrus in 538 B.C., the exiles were permitted to return to Jerusalem. The term is also applied in church history to the period 1309-77 when the popes were exiled to Avignon.

**Baccarat**, a French card game played by any number of bettors and a banker.

**Bachelor**, an ancient word of obscure origin and varied meaning. Was early in use in connection with University degrees. Pope Gregory IX. introduced the term to denote the passing of the first grade in the academic course in the University of Paris in the 13th century. Later it was applied to single men generally, and in some countries taxes have been imposed on men who remained bachelors.

**Bacillus**, a rod-shaped bacterium.

**Bacteriology** is the science of bacteria, founded by Pasteur, who established what is called the "germ theory" of disease. Dr. Koch has been another eminent worker in the same field, and the discoveries resulting from scientific effort in this direction are of the utmost importance. Bacteria are the causes of fermentation and putrefaction. To experiments in the science we owe our fuller knowledge of sanitary principles and preventive hygiene, as well as principles important to agriculture, brewing, etc.

**Badger**, a carnivorous mammal related to the weasel, of nocturnal and burrowing habits, inoffensive, subsisting chiefly on roots and insects, though sometimes mice, young rabbits, and eggs form part of its diet. Badger-baiting was a favourite sport in Britain until it was prohibited in the middle of the 19th century.

**Badges** are part of heraldry, and in early times usually bore some allusion to the wearer's name or office, or some incident in his career, and were worn by retainers as a kind of livery. Distinctive badges are worn by officers of every rank in the services.

**Bagamond's Roll** was the record by which the Scottish clergy were taxed prior to the Reformation.

**Bagpipe**. Once popular all over Europe, this instrument is still played in Scotland, Ireland, Brittany, and elsewhere. The bag acts as a reservoir of air and, when squeezed by the

player's arm, forces air through the pipes. One of these, the Chanter pipe, provides the tune and is played by the fingers as in a flageolet. The remainder, the Drone pipes, give a continuous, unvarying note.

**Bailey**, comprised all the space within the outer walls of a castle or fortress.

**Bailey Bridge**, invented by Sir Donald Bailey and first used in N. African campaign 1942-3. Built up of pre-fabricated girders, it can be easily transported and erected.

**Baillie**, is a Scottish term for the magistrate of a municipal corporation or royal burgh.

**Bailiwick**, an ancient legal term denoting the limits of a bailiff's jurisdiction.

**Bairam**, a festival in Mohammedan countries.

**Balance**, a form of lever supported in the centre, and having scales at each end for ascertaining the weight of a substance or goods. Stability and sensibility are the two chief requisites of a true balance; the first characteristic returning the balance to its original position after a weighing has occurred, the second showing a response to the slightest action.

**Balance of Power** is the doctrine in British policy whereby European groups should be so balanced as to prevent the emergence of a dominating Power. Thus the balance was maintained between the Triple Alliance (Germany, Austria and Italy) and the Triple Entente (Great Britain, France and Russia) and preserved peace from 1871 to 1914. After the first world war there was tentative support of Germany's recovery to counterweight a possible French hegemony; but when Germany's power grew under Hitler culminating in the second world war, Britain, France and Russia again became allies. With the growing power of Russia, a new system of alliances is being attempted.

**Baldachin** (It. *Baldachino*), a canopy usually supported by four pillars over throne, altar, or other sacred object. The name is also applied to the silken canopy used in processions and borne by the priest who carries the Host.

**Baldrick**, an ornamental belt worn across the shoulder or round the waist, to support bugle or sword.

**Balearic Crane**, the crowned crane of the Balearic Islands in the Mediterranean and the North African mainland, distinguished by its yellowish, black-tipped occipital tuft and by its trumpet note.

**Baleen** or "whalebone," the name given to a series of horny plates growing from the roof of the mouth in those whales classified as Whalebone or Baleen Whales (*Mystacoceti*). There are 250-300 or so plates on each side, and their inner edges are frayed, the whole system constituting a filter for collecting minute organisms used for food. The Baleen Whales include the Right-Whales, the Pacific Grey-Whale, and the Rorquals. (See Whales.)

**Ballista**, a large military engine, of crude contrivance but considerable effectuality, anciently used for hurling missiles in war by the Romans and others.

**Ballad**, a popular song of adventure or romance such as a minstrel might sing. The term is now broadly applied to any popular song of simple theme and construction suitable for amateur performance. In literature the term signifies a narrative poem, especially one whose theme is based on folk-lore.

**Ballade**, a piece of piano music which may fancifully be regarded as the musical equivalent of the poetic ballad: e.g., the Ballades of Chopin.

**Ballast**, is weighty matter placed in the bottom of a ship for balancing purposes, and varies in amount with the build, the size, and the cargo of a vessel. Water is now in general use for ballast.

**Ballet** is a combination of four arts; dancing, music, painting and drama, each of which is ideally of equal importance. The movement of the individual dancers and the "orchestration" of the whole group is in the hands of the choreographer. The dancer's training follows certain basic rules but save in classical ballet there is considerable freedom of movement. Ballet as we know it today developed professionally at the Court of King Louis XIV of France, though it owes its origins to Italy and in the earliest times to Greece and Rome. Its movements were made up from the dances of courtiers, country

folk and tumblers. Technique grew more complex as costume became modified, the body gaining complete freedom with the invention of tights. A succession of great dancers—French, Italian and latterly Russian left their imprint on the art. Contemporary ballet reflects the aesthetic of the Russian, Sergei Diaghilev. In England Dame Ninette de Valois has laid the foundation of a national ballet, at Sadlers Wells and Covent Garden, with a personality that reflects the national character.

**Ballistics**, the science dealing with the motion of projectiles, especially shells, bombs, and rockets. Great advances have been made in this science in recent years.

**Ballistraria**, a cruciform aperture in the walls of a fortress, through which the archers fired arrows.

**Balloon**, the modern balloon consists of a bag of varnished cloth or gold-beater's skin inflated with a gas lighter than air. The first ascent by man in a hot-air balloon was made on Nov. 21, 1783, and in a hydrogen balloon on Dec. 1, 1783. The most famous of the early scientific flights by manned balloons were those of the Englishmen Coxwell and Glaisher, in 1862, when a height of 7 miles was reached. Piccard's ascent to 10 miles, in 1931, marked the conquest of the stratosphere. Four years later the huge American balloon Explorer II, inflated with nearly 4 million cubic feet of helium, carried a team of scientists with their floating laboratory to an altitude of 14 miles, the greatest height attained by man. Captive kite-balloons were widely used in the recent war as defensive measures against air attack. To collect data about the upper atmosphere, meteorologists send up balloons which can be followed and their observations recorded by radio or radar. (See Radio and Radar Sonde.)

**Ballot**, or secret voting, has been adopted in ancient and modern times in all important states at the election of representatives to serve on public bodies, in order to prevent intimidation and bribery. Vote by ballot was first employed in England when the London School Board was elected in 1870. Since Mr. Forster's Ballot Act of 1872 all Parliamentary and municipal elections have been by ballot.

**Balsam**, a big genus (140 species) of flowering plants. Many species are cultivated for their showy flowers, e.g., *Impatiens noli-me-tangere*, the yellow balsam or "touch-me-not," so called because the fruit explodes when touched, slinging out the seeds. Balsam fir is a conifer (*Abies balsamea*) from which Canada balsam gum is obtained.

**Baltimore Bird**, a lively black-and-orange-plumaged starling of the oriole sub-family extending from Brazil to Canada; builds a well-constructed hanging-nest.

**Balusters** are small pillars, short distances apart, made of metal, stone, or wood, used as supports for cornices, etc., or for enclosing stairs. A range of balusters and that which they support are called a balustrade.

**Bambino**, an image of the Infant Christ in the church of the Ara Coeli at Rome, and supposed to possess miraculous powers; is also a term applied in Italian art to images of the Infant Christ.

**Bamboo**, a genus of strong grasses, some species growing to over 120 ft. in height; much used by oriental peoples for all kinds of purposes. The young shoots of some species are tender and esculent.

**Banana** (family *Musaceae*), a large herbaceous plant cultivated in moist regions of the tropics, and one of the most productive plants known. Main producing areas: Brazil, India, Tanganyika, Philippines, Honduras, Colombia, Mexico, Canary Is. Average annual world-production, 11 million tons.

**Banco**, sittings in, those of a Superior Court of Common Law in full session, as distinguished from the proceedings of the judges at *Nisi Prius*, or on circuit. Now business is done by the Divisional Court of the High Court.

**Bandana**, the name given to a red spotted handkerchief usually made of cotton, but formerly only applied to silk handkerchiefs of that colour and design.

**Bandicoots**, Australasian marsupial mammals, of

about the size of a large rat or rabbit. They are burrowing animals living largely on insects. The rabbit-eared bandicoot, restricted to Australia, has shrew-like snout, long ears like a rabbit, and long crested tail. The long-nosed bandicoot has a spiny coat, unlike long silky coat of rabbit-eared bandicoot; it comes from E. Australia. The pig-footed bandicoot has two functional toes on the foot, like a pig.

**Bannock** is cake made of barley meal, much favoured in Scotland, and distinct from the cake of oatmeal.

**Banns of Marriage** are public proclamations of intention of marriage, and must be announced in church on three successive Sundays; then, if no just cause or impediment be advanced against the union proposed, it can take place at any time within three months. This may be dispensed with by licence of any Bishop or Archbishop or by special licence of the Archbishop of Canterbury.

**Banshee** is a figure in Irish superstitions supposed to give warning of death.

**Bantu**, ethnic and linguistic group of African Negro peoples, widely spread over Africa south of the Congo. There are an enormous number of Bantu languages and dialects, including Swahili, Zulu, Luba, Kongo, and Ganda. The Bantu tribal groups, of which there are many, include the Zulu, the Matabele, the Basuto, and the Mashona.

**Baobab**, a tropical African tree. The species *Adansonia digitata* is one of the largest trees known, though not the tallest; the trunk can reach 30 ft. in thickness. The fruit is wood, but its juice provides a cooling beverage. The bark yields a fibre used for making rope and cloth.

**Baptism** is a rite practised, either with infants or adults, by almost all Christian sects except Quakers. In the Church of England the baptism of infants is regarded as the act by which they are admitted "into the visible Church of Christ." The Baptists perform the rite only with adults and by the immersion of the entire body.

**Baptistry**, a building or portion of building devoted to the rite of baptism.

**Baptists** came into notice at the Reformation. For a time they suffered much persecution, but gradually made headway by their zeal and sincerity. Their distinctive tenet is that every member must make his own profession of personal faith and allegiance to Christ before Baptism. To-day this sect is spread over all parts of the Protestant world, though not always in large communities. They are strong in the United States.

**Barbary Ape** is a small species of monkey belonging to the genus *Macaca*. It is the only monkey occurring wild in Europe, being found on the Rock of Gibraltar, as well as in Spain, Morocco, and Algeria. It has no tail.

**Barbel**, a European river fish, deriving its name from a sort of beard hanging from its jaw.

**Barber**, one whose occupation is to shave or trim beards, a hairdresser. In former times the barber's craft was dignified under the title of a profession, being conjoined with the art of surgery. Barbers first received incorporation from Edward IV. in 1461. In Henry VIII.'s reign they were united with the company of surgeons, it being enacted that the barbers should confine themselves to the minor operations of blood-letting and drawing teeth, while the surgeons were prohibited from "barbery or shaving." In 1745 barbers and surgeons were separated into distinct corporations by George II. The barber's sign consisted of a striped pole, from which was suspended a basin. The use of these symbols is still preserved.

**Barberry**, a genus of berry-producing shrubs containing a hundred species. Several species are cultivated for their flowers and bright berries. Has an interesting pollination mechanism; the base of each stamen is sensitive to touch, and insects probing for nectar cause top of stamen to spring inwards, so dusting visitor's head with pollen which is in position for pollinating next flower that is visited. The common barberry (*Berberis communis*) harbours one stage of the fungus that causes rust of wheat.

**Barbican**, a fortified entrance to a castle or city, with projecting towers. In the London street



called Barbican there was formerly a barbican in front of the city gates.

**Barcarolle**, a Venetian gondolier's song applied to instrumental as well as vocal compositions.

**Bard**, among the ancient Celts a poet or minstrel whose mission was to sing of heroic deeds. He was supposed to have the gift of prophecy, and was exempt from taxes and military service.

**Barebones'** Parliament, so called from the nickname of one of its members, "Praise-God Barebones." It was specially selected by Cromwell, and sat from July 4 to Dec. 12, 1653.

**Barges** are generally flat-bottomed boats, but the term is applied to most slow-moving river-boats, from royal state barges to house-boats, and sometimes to "lighters" and "keels" employed in canal and other waterway goods traffic.

**Barilla**, soda carbonate or soda ash obtained by burning certain salt-marsh plants (e.g., the saltwort, *Salsola kali*). It used to be in great demand, until the product of the Leblanc and then the Solvay ammonia-soda process was made available by the chemical industry.

**Baritone**, a male voice whose pitch lies between those of a tenor and a bass.

**Barium**, a soft, white metallic element usually occurring as sulphate of barium and carbonate of barium. It was first prepared by Sir Humphry Davy in 1808, as an amalgam, by electrolysis of barium chloride. The pure metal was not isolated until 1901.

**Barium meal**. Barium sulphate is opaque to X-rays, and before taking X-ray pictures of the alimentary canal radiologists give a "barium meal" to the patients so that the alimentary canal shows up more clearly.

**Bark**, the external covering of trees. It is applied to many uses, and numerous kinds, rich in tannin, are utilised for tanning purposes. Various species of oak bark are used in Europe; in North America, the hemlock spruce. The bark of the mangrove and the Australian wattles are also important sources of tannin.

**Barley**, a cereal plant whose grain is chiefly used for animal feeding and in the malting industry. Chief producing areas: U.S.S.R., China, U.S.A., Canada, Europe. World production, 57 million tons a year.

**Barnacles** constitute a sub-class of the Crustacea. The barnacle fouling the bottom of ships is the Goose Barnacle, which has a long muscular stalk and a shell composed of five plates. The Acorn Barnacles, which cover rocks, breakwaters, etc., just below high-water mark are similarly constructed, but they have no stalk. The manner of feeding of barnacles was vividly described by T. H. Huxley, who said the barnacle is "a crustacean fixed by its head and kicking the food into its mouth with its legs." It was a naval surgeon, J. Vaughan Thompson, who discovered in 1830 that barnacles have a free-swimming larva (or nauplius). In the Middle Ages a curious myth grew up to the effect that the Barnacle changed into a sea-bird called, for that reason, the Barnacle Goose.

**Barometer** is an instrument for measuring atmospheric pressure, invented at Florence by Torricelli, pupil of Galileo, in 1644. The standard method consists of balancing the air column against a column of mercury, used on account of its high density. The mercury is contained in a long glass tube, closed at one end, and inverted in a cistern also containing mercury. The height of the mercury column, supporting the air column, is taken as the pressure at the time, and can be read off very accurately by means of a vernier scale. Present-day tendency is to express the readings in units of pressure instead of length, the millibar being adopted (1 mb = 1000 dynes per sq. cm.; 1000 mb = 29.53 inches of mercury approx.). The standard instrument is correct for pressures at 0° C. in Lat. 45°, so that corrections have to be applied for temperatures and latitudes other than these. Also a correction has to be made for reducing the pressure to mean sea level. (See Aneroid.)

**Baron**, title given in 18th-century England to the highest class of King's tenants-in-chief. The first baron created by letters patent was John Beauchamp de Holt, Baron of Kidderminster, on October 10, 1387. The title derives from the Latin "baro" meaning "a

man." In old legal diction "baron et feme" meant "man and wife." To-day a baron is a member of the fifth and last grade of the peerage and is addressed as "Lord."

**Baronet**, a title instituted by James I. The first baronet was Sir Nicholas Bacon, but numerous others were made about the same time, the fee charged for the honour in each case being about £1,000. It is the lowest hereditary title, and is freely dispersed among those who distinguish themselves in trade, industry, politics, or special civic service. James I. limited the number of baronets to 200, but to-day no number is specified. A royal warrant in 1910 commanded an official list of baronets to be prepared.

**Baron of Beef**, a double sirloin, not often seen in these days, but common in olden times at court and civic feasts.

**Barque**, a three-masted vessel without a mizzen top-sail. The term, however, is often applied to almost any small ship.

**Barrel Organ**, a musical instrument in which the music is made by a barrel or cylinder, set with pins and staples, which rotate so as to open the valves for admitting the wind to the pipes. Now almost, if not entirely, superseded by other musical instruments.

**Barricades** are temporary street fortifications usually erected by insurgents at times of revolution, and the most notable have been those of Paris. In 1830, 1848, and during the Commune disturbances of 1871 they were resorted to, and were the scenes of many sanguinary conflicts.

**Barrister** is a person qualified to practise at the English or Irish Bar. A barrister in practice in England must be a member of one of the four Inns of Court—Lincoln's Inn, the Inner Temple, the Middle Temple, or Gray's Inn. Admission is obtained by passing certain examinations, keeping twelve terms (extending over 3 years), and paying certain fees. The ranks and degrees of barristers are (1) Barristers ordinary, who wear stuff gowns; (2) Queen's Counsel, who wear silk gowns, and are admitted within the Bar; and (3) Serjeants-at-law, all extinct, no fresh appointments having been made since 1868. The term "Common Serjeant" is still employed in the City of London.

**Barrow** is an ancient artificial mound of earth or stone raised over the site of a burial. In Britain barrows were built from 2500 B.C. until the late Saxon period, but the Egyptian are the earliest barrows known, the great pyramids being a spectacular development of the custom of ceremonial burial.

**Bar sinister**, a term often improperly used to describe the two diagonal lines drawn from left to right, from the sinister chief to the dexter base of an heraldic shield, and supposed to be a mark of illegitimacy. The right term is "bend sinister," and it is not absolutely certain that the illegitimacy interpretation is the correct one.

**Bartholomew, Massacre of St.**, occurred in Paris on the night of Aug. 24th, 1572, when over two thousand Huguenots were massacred by order of the Catholic French Court.

**Bartizan** is a small battlemented turret at the top of a tower.

**Basalt Rocks** are fine-grained, dark coloured, of igneous origin and occur either as lava currents, as in Mull and Staffa, or as intrusive sheets, like the Edinburgh Castle Rock and Salisbury Craig. One of the most noted examples of basaltic columns is that of the Giant's Causeway in Ireland.

**Basanite**, a smooth black siliceous mineral, or flinty jasper; a crypto-crystalline quartz, sometimes styled the Lydian Stone. An alloyed metal being rubbed across basanite, the mark of colour left will indicate the nature and depth of the alloy, hence it obtains its name, which signifies, in Greek, "a touchstone."

**Base**, is a substance which neutralises an acid to form a salt with the formation of water also, but without evolution of hydrogen. A more scientific definition is a substance which dissolves in water to form hydroxyl ions.

**Basel, Council of**, was the last of the three great Reformation Councils held in 1431-43.

**Bashi-Bazouks**, name formerly given to irregular troops in the pay of the Turkish sultans. They were a rough but brave class of men.

**Basilisk**, is a lizard of aquatic habits, with an elevated crest (which it can erect or depress at will) down the centre of its back.

**Basques** are an old race living in the Pyrenees, with a language of their own, different from all other languages, and enjoying ancient privileges of a curious kind.

**Bas-Relief** ("low relief"), a term used in sculpture to denote a class of sculptures the figures of which are only slightly raised from the surface of the stone or clay upon which the design is wrought.

**Bass**, the fourth or lowest voice in a male voice church choir and therefore the lowest voice in a mixed choir. The term may also be applied to instruments having a lower register than others of their class: e.g., bass clarinet.

**Bass**, a genus of fish with spiny fins, of the Perch family, found in the sea only in Europe, but inhabiting fresh waters in America.

**Basset horn** (= corno di bassetto). An alto form of the clarinet. This instrument is rarely used in modern orchestras.

**Bassoon**, a bass version of the oboe in which the tube, being 9 ft. long, is bent back on itself for convenience. There is also a double-bass oboe which is called the contra-bassoon.

**Bastille**, a castle or fortress in Paris, built in the 14th century, and used as a state prison, especially for political offenders. Its bad repute as an instrument of despotism excited the hatred of the populace, who stormed on July 14, 1789, at the beginning of the Revolution, and demolished it.

**Bastinado**, an oriental punishment, by beating with a pliable rod or cane on the soles of the feet.

**Bastion**, an earthwork standing out from a rampart, of which it forms a principal part. Usually five-sided, the fifth side opening into the interior of the fortifications. The front face of an ancient Roman bastion was generally convex and semicircular.

**Bats**. These mammals fly by means of a membrane stretched between each of the long fingers of the hand and between the fifth finger and the body. Another membrane stretches between the legs and the tail. There are twelve British species: namely, the Noctule, Leisler's B., Serotine, Pipistrelle, Long-eared B., Daubenton's B., Natterer's B., Whiskered B., Bechstein's B., Barbastelle, Greater Horseshoe, and Lesser Horseshoe Bats. An interesting and recent discovery is that bats "echo-locate" obstacles by means of supersonic sound waves; this explains their long-admired ability to fly perfectly at night and in dark woods and caves. Bats are mostly insectivorous, catching the insects in their open mouths while flying. The Vampire Bats, feeding exclusively on blood, are confined to tropical America.

**Bath, Order of**, believed to have been established by Henry IV. in 1399 and formally instituted in 1815. At first it was a military order only, but since 1847 has had a civil division also. In the Order are three classes: G.C.B., or Knight Grand Cross of the Bath; K.C.B., or Knight Commander of the Bath; C.B., or Companion of the Bath. Companionship of the Bath does not carry knighthood nor entitle the holder to the prefix "Sir." The motto of the order is *Tria juncta in uno* (Three joined in one). The insignia for civil and military and the three classes vary. (See Knighthood.)

**Bathos** is an unconscious lapse from the sublime to the trivial, and is often the result of over-eagerness to be impressive.

**Battalion**, in the British Army an infantry unit of approximately 850 war strength. Three battalions constitute an infantry brigade, and three brigades a British infantry division. Commanded by a lieutenant-colonel.

**Battering Ram**, a military apparatus, used in ancient times, mounted on wheels, and composed of a heavy, iron-bound beam, which was impelled with great force upon the walls of a besieged place.

**Battery**, an artillery unit, together with gun carriages, ammunition, stores, horses, and motors, the unit being commanded by a major,

with a captain second in command. Also the name for a chemical generator of electricity.

**Battlement**, a raised wall running along the top of a building, with embrasures through which an enemy could be fired upon. At first solely military, later it was frequently used as an architectural ornamentation.

**Battue** is the term applied to the practice of employing beaters to force game to a certain point where sportsmen are in waiting with guns.

**Bauble**, a short stick or wand, surmounted by a representation of a human head, ass-eared, carried by the fools and jesters of olden days.

**Bauxite**, the chief ore of aluminium. Chemically it is aluminium oxide. Aluminium metal is made industrially by electrolysis purified bauxite dissolved in fused cryolite. Chief producing areas: Surinam, Br. Guiana, U.S.A., France, Hungary, Indonesia, U.S.S.R., Yugoslavia, Italy.

**Bawbee**, an old Scots copper coin.

**Bayeux Tapestry**, a famous tapestry representing the conquest of England by William the Conqueror. It is embroidered on a band of linen 281 ft. long and 20 in. wide in blue, green, red, and yellow, divided into 72 scenes ranging over the whole story of the conquest. Tradition attributed it to William's Queen, Matilda, but it is now believed to be of later origin executed for Bayeux Cathedral.

**Bayonet**, a dagger or small spear fixed at the end of a musket. It takes its name from Bayonne, where it was first made about 1650. In 1689 General Mackay invented the socket-bayonet, which allows the gun to be fired with the bayonet fixed.

**Bay-salt**, a coarse kind of salt obtained from the salt marshes of certain parts of the English and other coasts, and drawn from sea-water allowed to settle in salterns or salt ponds.

**Beacon**, a fire-signal, given from the tops of hills, was much in use in early times. According to Aeschylus, Agamemnon thus signalled the fall of Troy to Mycenae; and the English signalled the approach of the Spanish Armada.

**Beagle**, a small hound that tracks by scent, and formerly used for hare hunting.

**Bears** belong to the Ursidae family of the Carnivora. They are plantigrade mammals, walking (like man) on the soles of their feet. Found in most parts of the world except Australia. The Common Brown Bear was once spread over the whole of Europe; it became extinct in England about the 11th century; 7-8 ft. in length, and stands 3 ft. or more at the shoulder. The Grizzly Bear of N. America is larger, and the coat is shorter and greyer. The Polar Bear is remarkable in having a white coat all the year round; it spends much time in water, and unlike the other bears it is entirely carnivorous. Bear-baiting was made illegal in England in 1835.

**Bearbine**, -bind, the the Lesser Field Convolvulus called also "hooded bindweed."

**Beard** is one of the distinctive signs of manhood, and was regarded as a sacred possession by ancient races. The Jews were proud of their beards and wore them through the days of their Egyptian bondage, though the Egyptians shaved. The Greeks and Romans of the ancient days mostly shaved, and the term barbarous (beard-wearing) was applied for a long period to people who were considered out of the pale of polite society. Still, beards were largely worn even then, and came to be associated with wisdom. Alexander the Great prohibited beards among the soldiery, and soldiers in all countries have since been generally beardless. Beards have been taxed occasionally, as in Russia by Peter the Great, and at an earlier date in England. In modern times beards have been worn or unworn as a monarch or male leader has, for no particular reason, set the example. Shaving of the beard continues to be largely practised in all ranks of life in this country, though the moustache, having been in vogue for many years, is now less common than formerly.

**Beating the Bounds**. (See Bounds.)

**Beaufort Scale** of wind force is used to specify numerically the strength of the wind. Since the introduction of anemometers to measure the actual velocity, equivalent values of the



ranges in miles per hour at a standard height in the open have been assigned to the Beaufort numbers. (See p. 752.)

**Beau-ideal** is a conception of the mind of some perfect object free from all shortcomings.

**Beaver**, a genus of mammals of the Rodentia order, with short, scaly ears, and webbed hind feet. Attains a length of from 2½ to 3 ft., and lives in communities where possible, as in North America, constructing dams and habitations. Beavers are found in Russia and Poland. Beaver skins are of considerable commercial value.

**Bed of Justice**, the cushioned seat occupied by the Kings of France in the parliament chamber, but not used later than 1787, by Louis XVI. at Versailles.

**Bedford Level** comprises parts of Norfolk, Suffolk, Huntingdon, Northampton, Lincoln, and Cambridgeshire, generally called the Fens, 70 miles long and 20 to 40 miles broad. It was waste until reclaimed and drained by two Dukes of Bedford in the 17th century, but now is for the most part fertile agricultural land.

**Bedlam** (a corruption of Bethlehem) was a priory in Bishopsgate, afterwards converted into a hospital for lunatics. The asylum was transferred to St. George's Fields, Lambeth, in 1815. The term "bedlamite" came to be applied to any person behaving like a madman.

**Bed-mouldings**, the mouldings of a cornice in Roman and Grecian architecture occurring immediately beneath the corona.

**Bedouins** are Arabs who live in tents and are spread over the whole of Northern Africa and Western Asia. They are divided into independent tribes, each governed by its own sheikh. They live on their flocks and herds, rice, etc., and are prone to robbery. Supposed to be the descendants of Ishmael.

**Bedrepe**, an ancient term signifying the day's work in harvest-time exacted from tenants by their over-lord in the feudal period.

**Beech**. The common beech is one of the finest of our trees, with massive trunk and smooth, shiny bark. Its horizontal branches, covered with close foliage, make a deep shade. Its wood is rather brittle, but capable of being utilised in the manufacture of many industrial articles.

**Bee-eater**, name of a family of brilliantly coloured birds closely related to the rollers and kingfishers inhabiting the tropical and sub-tropical parts of Africa, Asia and Europe. The European species successfully nested in Britain for the first time in 1955. With their long curved beaks they catch insects on the wing, especially bees and butterflies.

**Bee-feater**. (See Yeomen of the Guard.)

**Beele**, a tool of the pick order used by miners.

**Beelzebub**, corruption of Baal or Bel, whom the Philistines worshipped at Ekron. To the Jews he came to be chief of the false gods.

**Beer**, a liquor made by fermentation from malted barley and hops. A similar drink was known in Egypt long before the Christian era, and was probably introduced into Great Britain by the Romans. Ale, small beer, and bitter beer are varieties depending on strength and proportion of hops. Porter and stout are prepared like beer, but owe their peculiar flavour to the use of a proportion of malt heated so as to convert part of the sugar to caramel.

**Beeswax**, the secretion of the bee, used for the formation of the cells or honeycomb of the hive; when melted it is what is commercially known as yellow wax, white wax being made by bleaching. Being impervious to water, it acts as a good resistant and is an article of much utility.

**Beeswing**, is a fine filmy tartar formed by age in port and other wines, so called from the fanciful resemblance of the deposit to a bee's wing.

**Beet**, a genus of plants of the Chenopodiaceae order. From the sea-beet (*Beta maritima*) have been derived the red garden beetroot, the sugar beet and the mangold wurzel. First sugar-beet factory was erected near Breslau in 1799. Napoleon encouraged this industry in France when cane sugar supplies were cut by British blockade. Intensive breeding has brought sugar content up to about 20 per cent. Britain during World War II obtained large proportion of sugar from this source; one European country, Sweden, is practically self-sufficient

because it grows high-yielding sugar beet on large scale.

**Beetles** (Coleoptera) constitute one of the biggest orders of insects, numbering over 200,000 species. There are two pairs of wings; the hind pair are used for flight, while the front pair are hardened to form a pair of protective covers (elytra). Some beetles have lost the power of flight and then the elytra are joined together.

**Beg or Bey** is a Tartar and Turkish title (equivalent to prince, or chief) given to superior military officers and distinguished foreigners. In Tunis "Bey" is the hereditary title of the reigning sovereigns. In Egypt the titles "Pasha" and "Bey" were abolished following the *coup d'état* and abdication of the King in 1952.

**Behemoth**, the name of a semi-mythical spirit in the shape of a large four-footed creature, referred to in the Book of Job.

**Bel** and the Dragon is the title of certain supplementary chapters to the "Book of Daniel" of an apocryphal character. First appeared in the Septuagint, but the Jewish Church did not accept it as inspired. In 1546 the Council of Trent declared it to be canonical.

**Belfry** was in early times a movable tower used in sieges for defence. Gradually the term was applied to any watch-tower or alarm-bell tower, and finally to any tower where a bell was hung.

**Belgæ**, certain German and Celtic tribes inhabiting Gaul and Britain up to the time of Julius Cæsar.

**Bell**, a hollow body of metal used for making sounds. Bells are usually made from bell-metal, an alloy of copper and tin. Small bells used for interior functions are often made of silver, gold, or brass. Ordinary hand-bells are of brass. From the 7th century large bells have been used in England in cathedrals, churches, and monasteries. The greatest bell in the world is the "King of Bells" in the Kremlin at Moscow, which weighs about 198 tons, is 20 ft. 7 in. high and 22 ft. 8 in. in diameter. It was cast in 1733, but cracked in the furnace (the broken part weighed 11 tons) and is now preserved as a national treasure. Other large bells in Russia include the 171-ton one at Krasnogvar'dersk, near Leningrad, and the one of 110 tons at Moscow. The Great Bell (Great Paul) at St. Paul's, cast in 1881, weighs 16½ tons, and is the largest in the United Kingdom. Other gigantic bells are the Great Bell at Peking (53 tons); Nanking (22 tons); Cologne Cathedral (25 tons); Big Ben, Westminster (13½ tons); Great Peter, York Minster (10 tons). The Curfew bell is rung in some parts of England to this day, notably at Ripon. The number of changes that can be rung on a peal of bells is the factorial of the number of bells. Thus four bells allow 24 and eight bells 40,320.

**Belladonna** or **Deadly Nightshade**, a well-known poisonous wild plant found in Southern Europe and Western Asia. The alkaloid atropine it contains is valuable in medicine, although a large dose is poisonous.

**Bell, Book, and Candle**. To curse by "bell, book, and candle" was a form of excommunication in the Roman Church ending with the words: "Do to the book, quench the candle, ring the bell."

**Ben or Benn**, a Gaelic word signifying mountain or "mountain head." It occurs in many places in the British Isles, as Ben Nevis, Ben Lomond. Takes the form of Pen in Wales and Cornwall.

**Benedicite** or "Song of the Three Holy Children" from the *Apocrypha*, sung in the Anglican Church at Morning Prayer.

**Benedictines** are monks and nuns of the Benedictine Order who live under the rule of St. Benedict. They are known as Black Monks because of the colour of their dress. They were introduced into England in the 7th century. The rule is marked by an absence of extravagant asceticism. The order has always been famous for its learning and its promotion of education. At the dissolution of the monasteries in the reign of Henry VIII. the order had 300 houses.

**Benedictus**, a canticle used in the morning service of the English Church, and deriving its name from the first word of the Latin verse, *Benedictus*, blessed.

**Benefit of Clergy**, a privilege allowed to clergymen offenders, exempting them from punishment by the ordinary courts and leaving the bishop's court to deal with them. In 1650 the privilege was extended to all who could prove their ability to read. The system was abolished in 1827.

**Benelux**. Name given to the economic alliance between Belgium, Holland and Luxemburg. The word is made up from the three names.

**Benevolence**, a name given to demands made by certain English kings for loans from subjects or corporations. Abolished in 1688.

**Benewith Tree**, the old name of the honeysuckle on both sides of the Scottish Border.

**Bengal Light**, a kind of firework composed of nitre, sulphur, and the black sulphide of antimony, in proportions of six, two, and one respectively, giving a blue light.

**Benthamism**, the philosophy of Jeremy Bentham, the essential principles of which were that the end and aim of human life is happiness, as exemplified in the presence of enjoyment and the absence of pain. Communities and individuals, it taught, should strive after the greatest happiness of the greatest number, the effort to achieve the greatest good for all being accounted in itself the highest morality.

**Benzene**, a compound of carbon and hydrogen, discovered by Faraday, and the starting-point in the production of aniline dyes and a host of other important organic chemical compounds.

**Berbers** are the inhabitants of the mountainous parts of Barbary and the northern portion of the Sahara, who are supposed to be the descendants of the aborigines of North Africa. They live mostly in the fastnesses of the Atlas Mountains and number about 4,000,000.

**Bergamot**, an essential oil obtained from the rind of a species of citrus grown chiefly in Calabria, and largely used in perfumery.

**Berlin Congress**, held at the conclusion of the Russo-Turkish War of 1878. All the European Powers were represented, and the Treaty of Berlin was the result.

**Berlin Decree** and the **Milan Decree**, issued by Napoleon I. in 1806 and 1807, with the avowed object of destroying the commerce of Great Britain, by setting up a state of blockade against this country. Often called the continental system. England responded by Orders in Council which subjected all countries in alliance with Napoleon to a counter-blockade.

**Beryl**, a mineral, of which the emerald is a grass-green variety. Composed of beryllium and aluminium silicates. The pure mineral is colourless; the colour of most beryl comes from traces of impurities, notably iron and chromium. Otherwise it is yellowish, greenish-yellow, or blue, and is found in veins which traverse granite or gneiss, or embedded in granite, and sometimes in alluvial soil formed from such rocks.

**Beryllium or Glucinium**, is a white metal prepared from beryl, and found also in the emerald and other rare minerals. Discovered by Vauquelin in 1797. Copper containing 2 per cent. of beryllium is used for making springs.

**Bessemer Process**, for making steel depends on the forcing of atmospheric air into molten pig iron to burn out the impurities. (See Steel.)

**Betel**, the leaf of an Indian climbing plant, of pungent, narcotic properties; much used by the natives of India, who chew it. It is destructive to the teeth, and reddens the gums and lips.

**Bethlehem**, the traditional birthplace of Jesus and of King David, is now an inviolable village of white stone houses, about six miles south of Jerusalem. Famous for its Church of the Nativity, built like a cross, and below which is a crypt where the Saviour is said to have been born.

**Beveridge Plan**. A report drawn up by Sir William Beveridge in 1942 at the request of the Government giving a comprehensive plan of "social security" against want due to the common chances of life. It was a challenging report and it declared that it was the State's business to give all its citizens a high degree of security. His plan of "social security" was to be an attack on the five Giants blocking the road to reconstruction, Want, Disease, Ignor-

ance, Squalor and Idleness. The Report formed the basis for the subsequent social-security legislation enacted in Great Britain in 1946.

**Bhang**, the Indian name for the hemp plant (*Cannabis indica*), containing highly narcotic and intoxicating properties. The natives of India chew its leaves and seeds, and the drug called *hashish* is yielded by the plant.

**Bible**—The Old Testament and the New Testament. The Old Testament—the prehistoric portion—consists of 39 books, and is divided into three parts: (1) the Law, (2) the Prophets, (3) Miscellaneous Writings. The Hebrew text as now printed is called the Massoretic. What is called the Queen's Bible, on which the Coronation oath is taken, includes the Apocrypha. (See Apocrypha.) The books of the New Testament were written in Greek, and are believed to be the work of the Apostles, or contemporaries, but there is no definite knowledge on the subject. The whole Bible was translated into Latin (*Vulgate* version) about A.D. 400. Portions were translated into the Anglo-Saxon in the 8th century, and the Venerable Bede put the greater part of St. John's gospel into English, but it was not until 1535 that a complete printed English version appeared—the Coverdale Translation. The Authorised Version dates from 1611 in the reign of James I., and because of its beautiful phraseology it has had a lasting appeal. The Revised Version dates from 1885. A translation of the Bible into modern English is in progress, and the New Testament is expected to be ready by 1958.

**Bibles with Nicknames**. Among the earlier versions of the Bible were many instances of curious misprints, and for the more scarce of these Bibles, nicknamed from their errors, a large price is realised whenever one is offered for sale. The *Geneva Bible* (1560), popularly known as the "Breeches Bible," was a revision of the Great Bible (1539) and the work of Calvinists who had fled to Geneva from the persecution of Mary's reign. It owed its name to the mention of a garment not usually associated, out of Scotland, with women—a garment now known as "apron." (Gen. iii, 7 is rendered "They sewed fig leaves together and made themselves breeches.") Mr. Gladstone is said to have had a copy of the "Treachle Bible," the popular name for the Bishops' Bible (1568), in his library at Hawarden. Jer. viii, 22 reads "Is there no tryacle in Gilead, is there no phistion there?" And this volume has the variorum rendering, Judges ix, 53, of "All to break his head" as "All to break his brayne panne." In another edition the rendering is, "But a certaine woman cast a piece of millstone upon Abimelech's head and brake his brayne pan." Coverdale's Bible (1535) is sometimes called the "Bug Bible" because Ps. xci, 5, is translated "Thou shalt not nede to be afayred for eny bugges by night." The same rendering occurs in Matthew's Bible (1537); the Authorised and Revised Versions both read "terror." In 1632 what has been styled the "Wicked Bible" was published, receiving its name from the word "not" having been omitted from the seventh commandment. A similar error occurs in a small pearl Bible of 1653, in which St. Paul is represented as asking "Know ye not that the unrighteous shall inherit the Kingdom of God?" The "Vinegar Bible," an edition printed at Oxford in 1717, renders the chapter heading to Luke xx as "The parable of the vinegar" instead of the "vineyard." In one Bible the word "rosine" was used where "balm" now occurs, with a note "For at Gilead did grow most souverain balme for wounds." The "Printers Bible," an edition of 1702, substitutes the word "printers" for "princes" and makes David complain "printers have persecuted me without a cause" (Ps. cxix, 161).

**Bibliomancy**, divination by certain references at hazard to pages, lines, or verses of the Bible, and frequently resorted to in olden times.

**Bicycle**, a two-wheeled machine (successor to the velocipede or "boneshaker") which came into vogue about 1880. It consisted of one high wheel driven by pedals, and a small connecting wheel behind. In its present form, with two wheels of even circumference, pneumatic tyres



and effective gearing, it has been widely adopted by men and women of all classes. The motor-bicycle is the latest form of this road machine.

**Big Five.** The term applied to the five permanent members of the Security Council of the United Nations: China, France, Soviet Russia, the United Kingdom, and the United States.

**Bilboes,** a word derived from Bilbao, in Spain, are long bars of iron, secured by a lock, and used for imprisoning offending sailors on board ship. The bars clasp the feet. The punishment is styled "putting in irons."

**Bill of Rights, or Declaration of Rights,** was the document setting forth the conditions upon which the British throne was offered to William and Mary in 1688. This was accepted and ultimately became an Act of Parliament.

**Billeting** is a system of boarding and lodging members of the armed forces and civilians in times of emergency by quartering them on the inhabitants of town or village. It is a privilege that can be compelled to be granted.

**Billiards,** a game played with cue and three composition balls on a cloth-covered, slate table (12 ft. by 6 ft. 1½ in.) with raised cushioned edges and six pockets. Louis XIV made it fashionable. The earliest English description of the game is in Cotton's *Complete Gamester* (1674), and it is referred to by Shakespeare in "Antony and Cleopatra." Snooker, a development of billiards, has become very popular of recent years. Among the great players of billiards and snooker have been Edwin Kentfield, John Roberts, Senr., Joe Davis, Tom Newman, and Walter Lindrum.

**Biochemistry,** the scientific study of all the chemical processes involved in life.

**Biology** is the scientific study of living organisms.

**Birch,** a genus of forest trees of the alder order, and found only in northern regions. In Britain the birch grows to goodly proportions, and forms one of the most graceful of our trees, with its drooping branches and egg-shaped leaves. It has a white bark, which is used for tanning, steeping nets, sails, etc. The Red Indians make canoes of it.

**Birds, or Aves,** are, next to mammals, the highest class of animal life. They are vertebrate, warm-blooded, oviparous, are covered with feathers, and possess wings. In construction they vary greatly, according to their classification and their conditions of life. Birds are of three distinct classifications—*Carnivore*, possessing keeled breast-bones and having power of flight; *Raptor*, having raft-like breast-bones, and incapable of flight; and *Archæornithes*, a lizard-tailed sub-class, of which only one species has been known, the extinct *Archæopteryx*, recognised as a "missing link" connecting the birds and reptiles. It is estimated that there are about 120 million land birds breeding in Great Britain, including 10 million each of the chaffinch and blackbird, 7 million each of the starling and robin and about 2 million sparrows. **Bird Arrivals.** The wheatear is usually the first of the migratory birds to return, often reaching Britain at the end of February and always before the middle of March; the sand martin is the first of the "early swallows" to return, followed by the house martin. The first cuckoo arrives about the middle of April, and the whinchat, garden warbler, and sedge warbler during the last week in April. The nightjar, spotted flycatcher, and red-backed shrike are not seen until the first week in May. The swift is among the last to return from Africa and the earliest to depart. (See pp. 1000-04.)

**Birds of Paradise,** several species of tropical birds inhabiting the dense forests of New Guinea and neighbouring islands. The male birds are remarkable for their brilliant plumage, long tail feathers, and ruffs on wings and neck, which are displayed to advantage during courtship. Related to the Bower Birds of Australia.

**Biretta,** a four-cornered head-covering worn by ecclesiastics of the Roman Church and varying in colour according to the rank of the wearer. A cardinal's biretta is red, a bishop's purple, a priest's black.

**Bise,** a keen dry north wind prevalent in Switzerland and South France.

**Bishop** is a Christian ecclesiastic, a person consecrated for the spiritual government of an area,

a diocese or province, to the spiritual oversight of which he has been appointed (diocesan bishops), or to aid a bishop so appointed (suffragan bishops). In the Church of England there are forty-three diocesan bishops, all nominated by the Crown. Two, Canterbury and York, are archbishops having primacy in the respective provinces. The archbishops of Canterbury and York and the bishops of London, Durham, and Winchester and twenty-one other diocesan bishops in the order of seniority are spiritual peers, and sit in the House of Lords. The (Disestablished) Church of Ireland has two archbishops and bishops; the (Disestablished) Church of Wales an archbishop and five bishops and the Episcopal Church in Scotland six bishops. There are over 120 Anglican bishops of dioceses overseas, including Africa, Australia, Canada, India, New Zealand, the West Indies, and elsewhere.

**Bismuth,** a brittle grey-white metal with a pink tinge. It is readily fusible, melting at 264° C. and boiling at about 1420° C. Wood's metal, an alloy with one of the lowest melting points (under 150° F., so that a spoon made of it will melt when placed in a cup of hot tea), contains four parts bismuth, two parts lead, one part tin, one part cadmium.

**Bison,** a genus of wild cattle, distinguished from the ox by its shorter, wider skull, beard under the chin, high forequarters, and, in winter, a great mane of woolly hair covering head and forequarters. There are two species, the European and the American bison, both now protected in game preserves.

**Bittern,** a bird of the heron genus, with long; loose plumage on the front and sides of the neck. It is a solitary bird inhabiting marshes, but rare in Britain.

**Bivalves,** a term applied to shell-fish whose shell consists of two valves, lying one on each side of the body, such as mussels, oysters, and cockles.

**Blackbird,** or Merle, a member of the Thrush family, a familiar song bird in Britain. Male is all-black with orange bill; female is mottled brown with brown bill.

**Blackcock and Greyhen** (as the female is called) are closely related to the Capercaillies but smaller. They nest on the ground and prefer wooded country to open moors. Found in northern half of northern hemisphere. Perform excited courtship dances; the male is a handsome blue-black bird with white undertail, the female dark brown mottled.

**Black Death,** a fierce epidemic of plague, which carried off thousands all over Europe in the 14th century. It raged in England and wiped out whole villages. The English Statute of Labourers (see under Labourers, Statute) was a measure to direct labour and regulate wages in an attempt to deal with the situation.

**Black Hole of Calcutta** was the place where a number of English were confined in 1756 by order of Suraj-ud-daula. Into a noisome space, about 20 ft. square, 146 persons were driven, and only 23 were found alive the next morning.

**Blacking,** a mixture of powdered boneblack, wax, sugar or molasses, with sometimes a trace of vinegar or sulphuric acid added. Used as a leather polish.

**Black-lead,** graphite or plumbago, a mineral found in Norway, Siberia, Canada, the United States, Ceylon, etc.

**Black-letter,** the Old English or Gothic type first used in printing blocks.

**Black Watch,** the popular name of the 42nd and 73rd Highlanders, so called because the companies out of which they were formed in 1739 had been employed to watch the Highlanders.

**Bladderwort,** a submerged water plant which traps water-fleas and other small animals in bladders borne upon the finely-divided leaves.

**Blast-furnaces** were invented by Darby early in the 18th century, and had the effect of bringing coal into general use as a furnace fuel. Wood had been previously used. The hot blast introduced by Neilson in 1828 was a still further improvement.

**Bleaching,** the art of whitening textiles. The old method was to bleach by exposure to the sun; but chemical bleaching is now general, bleaching powder being commonly used for the purpose. Other chemical bleaching agents

- are sulphur dioxide, sodium percarbonate, and hydrogen peroxide.
- Bleaching Powder or Chloride of Lime** is made by absorbing chlorine in slaked lime.
- Blende or Zinc Blende** is zinc sulphide, the principal zinc ore. Pitchblende is an important ore for its uranium and radium content.
- Blenny**, a group of marine fishes with spiny rays, part of the fin running along the back. Several species are found around the British coast.
- Blind-worm or Slow-worm**, is a limbless lizard. Found in most parts of Europe, non-venomous.
- Blockade**, an operation for capturing a town or fortress, preventing the besieged from receiving supplies. A naval blockade hinders the entrance or egress of the enemy's ships from a port.
- Blockhouses** form an important feature of guerilla warfare. The houses are of concrete and are fire- and bomb-proof with loopholes rendered for firing through. Arranged in lines, and surrounded by barbed-wire fences, with a line of troops aiming at trapping the enemy, effective captures are often made.
- Block-system**, on railways, establishes a method of signalling whereby the distance between two signal-boxes can never be occupied on the same line of rails by more than one train at a time.
- Bloodhound**, a dog celebrated for its keen scent, and deriving its name from its power of following a trail of blood.
- Bloody Assizes**, the assizes, conducted in 1685 by George Jeffreys, Lord Chief Justice, at which participants in the Duke of Monmouth's rebellion against King James II. were tried. They were marked by relentless cruelty.
- Blowpipe**, a laboratory instrument used for driving a blast of air or gas into a flame to get a higher temperature locally. It is used for laboratory glass blowing and bending; also for analytical purposes in chemistry and mineralogy, in connection with fusion tests on charcoal block and borax-bead tests. In the glass industry it is the metal tube used to withdraw a quantity of molten glass, manipulate it and then blow it into the shape required.
- Bluebird**, a migratory bird of North America, deriving its name from its deep blue plumage. It is one of the few song birds of America, and familiar in the woods from early spring to November. The bluebird was used as the symbol of happiness by Maeterlinck in his play *The Blue Bird*.
- Blue Monday**, the Monday immediately preceding Lent, when in the 16th century many churches were bedecked internally with hangings of blue.
- Blue Peter**, a blue flag with a white square in the centre, is hoisted 24 hours before a ship leaves harbour (the letter P in the alphabet of the International Code of Signals).
- Blue Ribbon**, a term in general use to denote the highest honour or prize attainable in any field or competition. Thus the Derby is the blue ribbon of the turf. The expression is derived from the highest Order of Knighthood in the gift of the British Crown, the insignia of which is a garter of blue velvet.
- Blue Stocking**, a term used to describe a learned or literary woman, particularly if pedantic and undomesticated. It is said that the term derives from the Bas-Bleu club of Paris, which was attended by the literary savantes of the 17th century. In England a similar literary club was formed about 1780, whose members were distinguished by their blue stockings.
- "**Blue**" Sun, Moon, etc., a phenomenon caused by the scattering of sunlight by transparent particles suspended in the atmosphere, the effect being that blue light is transmitted and red light extinguished to direct vision. The dust from the Krakatoa eruption in 1883 and the drifting layer of smoke from the forest fires in Alberta, Canada, in September 1950 gave rise to "blue" moons and suns, phenomena sufficiently rare to be described as occurring "once in a blue moon." In the cold climatic conditions of the Pamirs and the far north, vegetation is said to look "blue" on account of the rays of high calorific value (red, yellow, green) being absorbed, while only the blue and violet are transmitted.
- Blue Vitriol**, sulphate of copper, used for dyeing purposes, principally for after-treating certain dyed colours to render them fast.
- Blunderbuss**, a short, bell-mouthed musket with wide bore, capable of firing many balls at once, and much used in the 17th century.
- Boa**, a term applied to a family of snakes of large size, some attaining a length of 80 ft. They are not poisonous, but kill their prey by crushing—constriction—hence the name "boa constrictor." They occur both in the Old World and the New, but are more abundant in the latter. Most Boas retain the eggs within the body until young are fully developed, whereas the Pythons almost all lay leather-shelled eggs.
- Boar**, or Wild Hog, an animal largely distributed over the forest regions of Europe, Asia, Africa, and South America. It has a longer snout and shorter ears than its descendant the domestic hog, and is provided with tusks. Having to forage for itself, it is a more active and intelligent animal than the pig of the sty, and offers good sport to the hunter.
- Boat**, an open vessel, propelled by oars or sails, or both. The boats of a ship of war are the launch, barge, pinnace, yawl, cutters, jolly boat, and gig; of a merchant vessel, the launch, skiff, jolly boat or yawl, stern boat, quarter-boat, and captain's gig. Every British passenger ship is compelled to carry a launch and proper equipment of lifeboats.
- Bode's Law**, a numerical relationship formulated by Bode in 1772, which states that the relative mean distances of the planets from the sun are found by adding 4 to each of the terms 0, 3, 6, 12, 24, 48, 96. The actual mean distances (in millions of miles) are: Mercury, 36; Venus, 67.2; Earth, 92.9; Mars, 141.6; Jupiter, 483.3; Saturn, 886.0; Uranus, 1782.8. The gap between Mars and Jupiter caused Bode to predict the existence of a planet there, which was later confirmed by the discovery of Ceres and other minor planets. The law breaks down, however, for Neptune and Pluto.
- Bodleian Library**, the official library of Oxford University, named after Sir Thomas Bodley, who began in 1598 to restore and add to its treasures. Other notable donors have been Archbishop Laud, John Selden, and Edward Malone. In the 19th century the Ratcliffe Library became its reading-room. It has been enlarged from time to time and in 1947 a new wing was opened by the King and Queen. Under the Copyright Act of 1911 it is entitled to a copy of every book published in the United Kingdom.
- Boer War**, lasted from Oct. 11, 1899, when the Boers invaded Natal, to May 31, 1902, when the Peace Treaty was signed at Vereeniging. At first the operations of the British troops in Cape Colony were unsuccessful and disastrous reverses were sustained. Lord Roberts was then sent out as Commander-in-Chief, with Lord Kitchener as Chief-of-Staff, and from February, 1900, when Kimberley was relieved and Cronje was compelled to surrender and Ladysmith and Mafeking were relieved, the struggle was practically over.
- Bog Iron-ore**, name given to various natural hydrated oxides of iron, found in marshy places.
- Boiling-point** is the temperature at which a liquid boils. At that point the pressure of the vapour is equal to the pressure of the atmosphere. Under increased pressure the b. p. rises and under less pressure, as on the top of a mountain, it is lower. As represented on the Centigrade scale the b. p. of water is 100°; alcohol, 78.4°; and ether, 35.6°. On the Fahrenheit scale, the b. p. of distilled water is 212°. Boiling points are given for a standard pressure (760 millimetres of mercury). (See pp. 754 and 760.)
- Bolshevism**, the doctrine professed by the left wing of the old Russian Social Democratic Party. The name is derived from the fact that at a conference of the Party held in London in 1903, a majority ("Bolshevik") secured the acceptance of views urged by their leader Nicolai Lenin. The minority ("Menshevik") practically withdrew from control of the Party's operations. It was the Revolutionary majority which under Lenin took over the government of Russia in 1917, establishing a communistic centralised control of economic production and distribution, based on the Soviets—the social institutions evolved by the workmen, soldiers, and peasants.



**Book of Common Prayer** contains the services of the Church of England, and is in the main the same as that of Edward VI., with modifications introduced at later dates.

**Book of the Dead**, a collection of ancient Egyptian spells for recitation in tombs, containing reference to judgment after death.

**Books** were originally formed, it is supposed, from beech-bark. At first, collected writings were produced in the form of rolls; then in volumes; and when the art of printing spread, they began to be issued in bindings upon the principle still in vogue. The earlier books were massively bound, with metal clasps and bands, and samples centuries old survive to show the durability of their workmanship. Books are technically described, according to their sizes, as 4to, 8vo, 16mo (*quarto, octavo, duodecimo*), the names indicating the number of folds in a sheet. For Standard Sizes of British Books see p. 742.

**Boomerang**, a weapon used by the Australian aborigines, made of wood, in the form of a parabola, one side flat, the other round. When thrown forward into the air, it whirls round and rebounds behind the point from which it was projected. Used both as a missile of war and for killing game.

**Borax** (Sodium Pyroborate) is a white, soluble, crystalline salt. It is widely and diversely used, e.g., as a mild antiseptic, in glazing pottery, in soldering, in the making of pyrex glass, as a cleansing agent and sometimes as a food preservative. Borax occurs naturally in the salt lakes of Tibet, where it is called tincal, in California (Borax Lake, Death Valley), and elsewhere.

**Borough English**, an English custom still obtaining in a few places, whereby, in default of a testamentary disposition to the contrary, landed property descends to the youngest son in exclusion of elder brothers. The term is obsolete since Jan. 1, 1926.

**Borstal**, an institution where young delinquents between 16 and 23 on conviction may be sent for detention and reform by a court of quarter sessions or assize. The first was opened in 1902 at the village of Borstal, near Rochester in Kent. Administered by the Prison Commission.

**Boston Tea Party**, an incident which occurred on Dec. 16, 1773, on board some tea-ships in Boston Harbour. High taxation imposed by the British Parliament under George III. had caused bitter feelings, and instigated by popular meetings, a party of citizens, disguised as Indians, boarded the tea-ships and threw the tea overboard. This incident was a prelude to the American War of Independence (1775-83).

**Botany** is the scientific study of plants.

**Boulevard**, a French term given originally to the ramparts of a fortified city but now applied generally to any wide and busy thoroughfare planted with trees. Particularly famous, of course, are the boulevards of Paris.

**Bounds Beating**, an old Anglo-Saxon custom. The parish clergyman and officials go round the parish boundaries accompanied by boys, who beat the boundary stones with long sticks of willow. The ceremony takes place on the Rogation days preceding Ascension Day.

**Bounty** is an extra recompense given as an inducement to the performance of any special service or work.

**Bow**, an instrument for propelling arrows, and, in the days when it was a weapon of war, was usually made of yew or ash, and was about 6 ft. long, with an arrow 3 ft. long. It was the weapon with which Crécy, Poitiers, and Agincourt were won. The cross-bow was Italian and was adopted in France, but did not become popular in Britain.

**Bow Bells** is the peal of the London church of St. Mary-le-Bow, Cheapside, within sound of which one must be born to be entitled to be called a "cockney."

**Bowlerize**, to expurgate a book. Derived from Thomas Bowdler (1754-1825), the editor of the Family Shakespeare, in which "those words and expressions are omitted which cannot with propriety be read aloud in a family." He treated Gibbon's *History of the Decline and Fall of the Roman Empire* in the same way, omitting "all passages of an irreligious and immoral tendency." Such prudery met with

ridicule and hence the words "bowdlerism," "bowdlerist," etc.

**Bower Bird**, native to Australia and New Guinea and related to the Bird of Paradise, though less remarkable in appearance. In the mating season the male builds a "bower" of sticks and grasses for courtship displays and as a playground. The Gardener Bower Bird of Papua makes a lawn in front of his bower and adorns it with bright coloured pebbles and flowers which are replaced as they wither. The female builds her nest away from the bower.

**Bowie-knife** is a long one-edged knife of great strength, invented by Col. Bowie, and much used in America at one time.

**Box**, a plant bearing a very hard and fine wood, and common to both Europe and Asia. It is of two varieties—a shrub that grows 8 or 10 ft. high, and a dwarf variety used for garden edging that only grows to a height of a few inches. Box is the best medium for wood engraving, and in the North of England is used for knurrs (wooden balls) for the game of "knurr and spell."

**Boxers**, a section of Chinese who in 1896 rose against foreigners and were guilty of many massacres and atrocities, the movement being especially directed against missionaries. A combined European force was sent out against the Boxers in 1900, and not only was the rising suppressed, but large indemnities were demanded and conceded.

**Boycott**, a term used in connection with a person that the general body of people, or a party or society, refuse to have dealings with. Originally used when Captain Boycott (1832-97) was made the victim of a conspiracy by the Irish Land League which prevented him making any purchases or holding any social intercourse in his district. He had incurred the League's hostility by a number of evictions.

**Boy Scouts.** (See Scouts.)

**Bracelets** have been in use as personal ornaments from the most remote times. They are frequently referred to in the Bible, and were worn by men as well as women in ancient Egypt. In modern times they have attained great beauty and variety of form and setting, and, decked with gems, constitute a rich adornment to a well-shaped wrist.

**Brammin**, member of the highest Hindu caste. See Caste and Hinduism.

**Braille**, an alphabet for the blind, a raised dot system of notation applied equally to music; invented by a Frenchman called Braille in about 1830, and now in world-wide use by the blind. The National Library for the Blind in Great Smith Street, London, is a free lending library of c. 178 thousand volumes of Braille books and music.

**Brains Trust.** The original term was the name of a group of experts appointed by President Roosevelt to advise him upon measures embodied in the "New Deal" programme, 1933) to foster the industrial recovery of the United States after the economic crisis of 1929 and the following years. Also the name given to the B.B.C. programme introduced in 1941.

**Bramble** is another name for the blackberry, of which there are some 120 species.

**Branding** by means of a hot iron for crimes was common in some countries. It was abolished in England in 1829, except in the case of deserters from the army and soldiers of bad character, who were tattooed with the letters D and BC as late as 1879.

**Brandy**, obtained by distilling, is chiefly prepared in France, the Cognac variety being the best.

**Brandywine**, Battle of, fought between the British and the Americans in 1777 during the American War of Independence, resulting in victory for the former.

**Brank**, a sort of bridle, with gag, which in olden times used to be fastened to the head and mouth of scolds as a punishment, the offender being compelled to parade the streets and stand at the market cross.

**Brass** is a compound metal containing two-thirds of copper to one-third of zinc, and while being harder than copper, is more easily worked.

**Brass-Wind**, a collective term for those instruments in an orchestra which are made of brass (or other metal) and which are sounded by blowing in a special way into a bell-shaped

mouth-piece, e.g., cornet, trumpet, horn, trombone, tuba.

**Brazil Nut**, the seed of a large myrtle common in Brazil and grown in clusters of from fifteen to fifty nuts, enclosed in huge woody coverings.

**Breadfruit Tree** (*Artocarpus altilis*), a native of the South Sea Islands; the fruits are a brownish green, about the size of a melon, and contain a white pulpy substance which is roasted before being eaten. The tree grows 40 ft. or more. Captain Bligh's ship *Bounty* was on a voyage to Jamaica carrying a cargo of 1,000 breadfruit trees when the mutiny occurred.

**Breakwaters** are artificial structures of stone or concrete built across the entrances to harbours to stay the force of the sea and leave the inner portion calm and safe for ships. There are fine breakwaters at Plymouth, Dover, Aberdeen, etc.

**Bretton Woods**. In order to achieve co-operation on money matters, stable exchanges and expansion of international trade, forty-four nations met in July, 1944, at Bretton Woods, U.S.A. They recommended the setting up of an International Monetary Fund and an International Bank to assist reconstruction, especially in countries devastated by war. Under the American Loan Agreement, Britain was bound to participate, but Russia did not sign.

**Brevet** is a special commission entitling an officer to a rank in the army higher than that which he really holds in his own regiment, without increase of pay.

**Breviary** (meaning abridgment) the short service book of the Roman Catholic Church; in its present form was fixed by Pope Pius V. in 1568.

**Brewing** is the art of preparing a fermented beverage, chiefly beer and ale, from an infusion of grain. Intoxicating drinks have been brewed in all ages and countries from the most remote times.

**Brick**, a moulded block of clay, either burnt in a kiln or sun-dried, used for building. All the ancient nations made bricks, at first only baking them in the sun, and afterwards by means of fire. The Israelites were employed in brick-making during their captivity in Egypt. The Romans used bricks for all ordinary purposes, and introduced them into England. In these days brick-making is mainly done by machinery—digging the clay, grinding, screening, tempering (pugging), moulding, drying, burning (firing). The standard size, proved by centuries of experience to be the easiest to handle and the most economical, is approx. 9 in.  $\times$  4½ in.  $\times$  3 in. The processes of tile-making are similar. A plain tile is 10½ in.  $\times$  6½ in.  $\times$  ½ in. Many varieties of bricks and tiles are produced for different purposes.

**Bridal**, a nuptial feast, properly "bride ale," "ale" being formerly the term indicating a festival of any kind in this country.

**Bridewell**, a house of correction standing till 1864 in London near Blackfriars Bridge. Originally a palace built by Henry VIII. So called from St. Bride's (or Bridget's) Well near by.

**Bridges** are structures for continuing roads across streams, rivers, ravines, or roads at a lower level, and until the adoption of the arch by the Romans were of rude construction. Until the 18th century the art of bridge-building was in its infancy; it has only been since road traffic assumed large proportions, by the development of industries and increase of population, that the art has come to be practised on a great scale on scientific lines. Wood was the first material used for bridge-ways; then came stone; towards the end of the 18th century iron was brought into use; and now steel has largely superseded iron. Among the most famous of ancient bridges is that of St. Angelo at Rome, built by Hadrian, A.D. 13. The first stone bridge across the Thames was completed in 1209, and upon it were a number of timber houses. This old London Bridge, as it was called, stood until the 18th century. The Bridge of the Rialto at Venice dates from 1588. Old Westminster Bridge and old Blackfriars Bridge were built about the middle of the 18th century. Waterloo Bridge was opened in 1815, rebuilt and opened 1945. Suspension bridges of the modern type were introduced about 1820. Telford's Menai suspension bridge, begun in 1819, had a catenary span of 570 ft. The first

tubular form of bridge was the Britannia, across the Menai Straits, designed by Robert Stephenson and built by Sir William Fairbairn. The Victoria Jubilee bridge across the St. Lawrence at Montreal is an open steel structure 9,144 ft. long (including approaches). Other famous bridges are the Niagara (suspension); the Forth Bridge (cantilever); the London Tower Bridge (suspension). Other large bridges in the world are the Tay bridge in Scotland, 10,300 ft. long; the Zambesi bridge, 12,064 ft. long; the Sydney Harbour bridge, 3,770 ft. long; the Triborough bridge, New York, U.S.A., costing \$60,000,000; the San Francisco Bay bridge, U.S.A., costing \$77,000,000; and the Golden Gate suspension bridge, San Francisco, U.S.A., the world's longest single-span bridge; it is 8,940 ft. long, with a central span of 4,200 ft., and cost \$35,000,000. (See also Bailey Bridges.)

**Bridgewater Treatise**, a series of eight theological treatises written by eminent divines in accordance with a bequest of the Earl of Bridgewater, who left a sum of £8,000 for this purpose at his death in 1829.

**British Association for the Advancement of Science**, The, was founded in 1831 by a group of British scientists under the leadership of Charles Babbage (1792–1871) to stimulate scientific inquiry and promote research in the interest of the nation. Its meetings are held annually in different cities of the United Kingdom. It is divided into sections which include the chief physical and biological sciences, economics, anthropology and archeology, psychology and education, engineering, forestry, agriculture, and there is also a division for the social and international relations of science. The President each year is one of the most eminent scientists or public men of the time. Sir Raymond Priestley succeeded Sir Robert Robinson in 1956. Membership is open to laymen as well as scientists, and particulars can be obtained from the Secretary, Burlington House, Piccadilly, W.1.

**British Broadcasting Corporation** is a public corporation, acting as trustee for the nation, under Government control and responsible to Parliament. Its object is to disseminate information, to educate and entertain the fourteen million persons holding licences for sound and television broadcasting. The Home Service, organised on a regional basis, broadcasts on 330 metres (London), the alternative Light Programme on 1,500 and 247 metres, and the Third Programme, introduced in 1946, on 464 and 194 metres. The European Services broadcast news bulletins and programmes in foreign languages to continental audiences, and the Overseas Services cater for listeners in all parts of the world. The present charter came into force in 1952 and expires in 1962. Nine governors are responsible for policy; Sir Alexander Cadogan is Chairman, and Sir Ian Jacob Director-General.

**British Council**, The, founded in 1934 and granted a Royal Charter in 1940, exists to promote a wider knowledge overseas of the United Kingdom and the English language and to develop closer cultural relations with other countries. Its funds are voted by Parliament. It has staff in many Commonwealth and foreign countries. In the U.K. it arranges study programmes for visitors from overseas and services for overseas students, particularly those from the Colonies. Headquarters: 65 Davies Street, London, W.1.

**British Legion**, founded by Earl Haig in 1921, is an organisation to serve the interests of ex-Service men. There are 3,564 branches in Great Britain, also many overseas branches and many local benevolent committees. The funds are mainly obtained from the sale of poppies on "Poppy Day." There is also a women's section of the B.L. H.Q., Pall Mall, S.W.1.

**British Museum**, was created by an Act of Parliament in 1753, when the Sir Hans Sloane collection, which the British Government had acquired for £20,000, was added to the Cottonian Library and the Harleian Manuscripts. It was opened to the public in 1759 at Montagu House, Bloomsbury. The acquisition of the library of George III (now known as the King's Library) in 1823 made larger premises necessary, and the present building in Great Russell Street was completed in 1847 from designs by Sir Robert



**Smirke.** The great domed reading-room was opened in 1857, and the Natural History Department was transferred to South Kensington in the eighties. As a museum it is perhaps the most famous in the world, since, apart from its colossal library of books and manuscripts, it has many priceless collections of sculptures, antiquities, prints and drawings, coins and medals. Under the Copyright Acts the British Museum has the right to receive *gratis* a copy of every book published in the United Kingdom. Admission to the reading-room is free, by ticket. (See also Libraries, "A Citizen's Guide.")

**British Railways.** The name under which the railways of Britain were unified on January 1, 1948. Instead of the former four main railway systems six regions were formed: London Midland region (former L.M.S.R.), Western (former G.W.R.), Southern (former S.R.), Eastern (southern area of former L.N.E.R.), N.E. region (N.E. of former L.N.E.R.), Scottish region (Scottish system of the former L.M.S.R. and L.N.E.R.).

**Brocken-spectre.** (See Glory.)

**Bronze** is primarily an alloy of copper and tin, and was one of the earliest alloys known, the Bronze Age in the evolution of tool-using man coming between the Stone Age and the Iron Age. Some modern bronzes contain zinc or lead also, and a trace of phosphorus is present in "phosphor-bronze."

**Bucephalus,** Alexander the Great's celebrated war-horse, whose memory his owner perpetuated by building the town Bucephala.

**Buckingham Palace,** London residence of British sovereigns since 1837. Originally built for the Duke of Buckingham (1703); bought by George III. in 1762 and remodelled by Nash, 1825-36. Considerable extensions have since been made.

**Buddhism,** one of the great Oriental religions which arose in India in the 6th and 5th centuries B.C. as a development of, and also as a protest against, the prevailing Hindu religion. Buddha (Sanskrit=enlightened one) was the name given to Siddharta Gautama (b. c. 560 B.C.), whose people were rulers of a territory in N.E. India. Buddhism lost its hold in India but spread to other parts of Asia—to Ceylon, Nepal, Tibet, Mongolia, Indo-China, Siam, China, Korea, and Japan. The teaching of Buddha accepts unhappiness as the lot of man. Only by renunciation of all desire can tension be released and suffering ended. *Nirvana*—the aspiration of all Buddhists—is the state of mind reached when the self ceases to matter and becomes absorbed in the Great Self (left undefined by Buddha); a state which has been described as "bliss unspeakable." The goal is reached by way of meditation and self-discipline. This teaching is known as the Four Noble Truths. There is no caste in Buddhism. Researches of recent years have brought to light much that has been obscure and, in its more modern phases, Buddhism has been freed of much of its superstitions, its idolatrous practices and its Vedic gods. It remains in its purity a gentle creed in which renunciation and kindness are leading elements. Today Buddhism is showing itself as a great unifying force between peoples of different races and cultures.

**Buffalo,** a species of wild ox, of stronger build than the domestic variety, and still existing in large numbers in the wilds of Africa.

**Buntings,** name of a group of finches, seed-eating birds, usually found in open country. The Yellowhammer, Reed Bunting, Corn Bunting, and Chir Bunting are resident in Britain; the Snow Bunting and Lapland Bunting are regular winter visitors, and the Oortolan is among the rare visitors.

**Busby,** a military head-dress of fur. In Great Britain busbies are of two kinds: the fur *busby* worn by the Hussars and the *bearskin* busby, introduced in 1832 and properly called "bearskin", worn by the Guards. The fur of the bearskin comes from the belly of the bear, formerly Russian, now Canadian.

## C

**Caaba.** (See Kaaba.)

**Cabal,** the name given to the unpopular Ministry

of Charles II.'s time. The initials of the ministers—Clifford, Ashley, Buckingham, Arlington, and Lauderdale—composed the word.

**Cabinet.** See pp. 127 and 150.

**Cable** is the rope or chain that is attached to a ship's anchor. Chain cables are now in general use except for very deep waters. A cable's length is 100 fathoms (200 yards). Submarine telegraph cables are composed of copper wires.

**Cacao** is an evergreen tree, from 15 to 20 ft. high, growing abundantly in tropical America, West Africa, the West Indies, Ceylon, etc., yielding seeds, called cocoa beans, from which cocoa and chocolate are manufactured. The specific name of the cacao tree of commerce is *Theobroma Cacao*, whose original home was tropical America. The fruit is 7-10 in. long, hard and ridged; inside are the beans, which are covered with a reddish-brown skin. The trees mature at five to eight years and produce two crops a year.

**Cachalot,** or sperm-whale, is a cetacean which lives in warmer waters, migrating to colder regions in the summer months. Can reach length of 60 ft., female is only half the size of male. Usually found in schools, often several hundred strong.

**Cachet,** *Lettre de*, was a private letter of State, signed by the King, much in use in France up to the time of the Revolution, for consigning obnoxious or troublesome people to prison without trial.

**Cactus,** a family of flowering plants numbering about a thousand species adapted to living in very dry situations. The stem is usually fleshy, being composed of succulent tissue, remarkably retentive of water; commonly equipped with sharp thorns which deter animals from eating them. The roots are generally very long, tapping soil water over large area; a "prickly pear" cactus may have roots covering a circular area 25 ft. or more in diameter. Very often the leaves fall off very early in life, and then the stem takes over the photosynthetic leaf function and becomes accordingly flattened to expose greater area to sunlight and air. In some kinds of cactus (e.g., *Echinocactus*) the stem is shaped almost like a sea-urchin. Gardeners propagate cacti largely by cuttings.

**Cadenza,** originally a passage in which the singer or solo instrumentalist was free to display his virtuosity as he thought fit. This led to such abuse that composers began writing their own cadenzas, thus ensuring continuity and coherence while still permitting the soloist to exhibit his skill.

**Caffeine,** a highly stimulative alkaloid found in coffee (1½ per cent.) and tea (3 per cent.). Pure caffeine crystallises in yellow silky crystals; can be prepared by extracting tea dust, or synthesized from uric acid.

**Cainozoic,** a geological term used to indicate all the strata which lie above the Cretaceous ("The Chalk"). It comprises the most recent strata, and includes gravel beds and London Clay. Its two main divisions are: Neogene and Palaeogene. The former is sub-divided into: Holocene, Pleistocene, Pliocene, Miocene. The latter comprises Oligocene and Eocene.

**Caique,** a long narrow boat peculiar to the Bosporus, and usually propelled by oars (from two to sixteen in number), and sometimes with sail.

**Cairngorm,** an hexagonal crystal of yellow-brown hue found on the Cairngorms in Scotland and elsewhere, and used in jewellery ornamentation. It is a form of quartz.

**Calcium,** a silvery-white metallic element. It melts at 810° C. and is very reactive. It was discovered by Sir Humphry Davy in 1808, but not until 1898 was it obtained pure, by Moissan. Does not occur as metal in nature, but calcium compounds make up a large part of earth's crust. Most important calcium minerals are marble, limestone, chalk (all three are, chemically, calcium carbonate); dolomite, which is the double carbonate of calcium and magnesium; gypsum, a hydrated calcium sulphate; calcium phosphate and calcium fluoride. Igneous rocks contain much calcium silicate.

**Calculating Machines** are inventions to relieve men and women of the tedium of long routine or involved computations. The calculating machine

seems to date from 1642, when Pascal constructed one which could be used for addition and subtraction. General interest was lacking, however, and almost two hundred and fifty years elapsed before Ohdner in Sweden produced the first numerical arithmetical machines of the type now in general use. Before very long the electric motor replaced the hand in providing the motive power, and so the electric calculating machine was invented. But at all stages of any calculation on hand-operated or electric machines human operators have to supply them with numbers. The principal feature of the more modern machines is that they are automatic; that is, once a sequence of an arithmetical operation has been decided, and instructions given to the machine in suitable form, such as holes punched into cards or tape, or in some other way, the machine carries out its work without further human intervention. In some calculations these machines frequently give the impression that they are "thinking," or "choosing" a way to carry out the calculations as quickly as possible. But even in such cases the criteria for judgment are actually contained in the initial instructions. The idea of automatic computation by machinery is due to the English mathematician Charles Babbage (1792-1871). He made a small machine of this type, based on the idea of the Jacquard loom for lace-making. He next planned, but never completed, two separate automatic machines, a "difference engine" to help in making mathematical tables, and an "analytical engine," which was to be a general-purpose, programme-controlled, machine possessing all the features of modern calculating machines. But Babbage's inventions were designed to be operated mechanically; it was left to the electronic engineers of the 20th century to bring Babbage's ideas to full fruition. The next important step was taken in 1937, when Aiken of Harvard started to construct, and subsequently completed, the first of the electronic machines. In these electricity is conducted either through an evacuated space, or a gas, or a semi-conductor. All calculating machines are of the "Analogue" or "Digital" types. In the analogue type, numbers are represented by physical quantities, for example, electric currents, of which the numbers themselves are the measures. The most important of this class is the Differential Analyser invented by Vannevar Bush of America. In the digital machines the numbers are stored in it, and are represented by discrete objects, such as the teeth of a gear-wheel. Most of the important modern machines are of the digital variety. Almost all the ideas underlying the more advanced of these machines can be found in a remarkable mathematical paper published in 1936 by Turing of Manchester. Scientists, engineers, businessmen, administrators, and the fighting services need, and are making considerable use of, these machines. Problems hitherto considered intractable are starting to receive renewed consideration in view of the possibility of using machines for the numerical calculations which are required. The electronic computer marks a great advance, and the world is, perhaps, at the threshold of a new era of science, in connection with which the invention of the modern calculating machine may be as important to the world as was that of the Hindu-Arabic numerals to the Middle Ages.

**Calendar**, a collection of tables showing the days and months of the year, its astronomical occurrences, chronological references, etc. The Julian Calendar, with its leap year, introduced by Julius Caesar, fixed the average length of the year at 365½ days, which was about 11 minutes too long (the earth completes its orbit in 365 days 5 hours 48 minutes 46 seconds of mean solar time). The cumulative error was rectified by the Gregorian Calendar, introduced in Italy in 1582, whereby century years do not count as leap years unless divisible by 400. This is the rule we now follow. England did not adopt the reformed calendar until 1752, when she found herself 11 days behind the Continent. In the world calendar, advocated by the World Calendar Association, the year is divided into four equal quarters of 91 days, leaving one day over in normal years and two

days in leap years. Each quarter is divided into three months of 31, 30, and 30 days respectively and therefore contains exactly 13 weeks, beginning with a Sunday and ending with a Saturday. The days left over are extra-calendar days. For instance, the extra day at the end of each year would be known as World-day and the extra day in leap years, coming between the first and second halves of the year, would be known as Leapyear Day. Both these extra days would be world holidays.

**Calendering**, a mechanical process by which materials (e.g., textiles, rubber, plastics) are rolled and pressed to a smooth and even surface.

**Calends**, the first day of the month in the Roman calendar, when interest fell due, and proclamations as to the order of days were made.

**Calorie**. Unit of quantity of heat. The "small" or fundamental calorie is the amount of heat required to raise the temperature of 1 gram of water from 15° to 16° C. This is the gram-calorie used in physics and chemistry. The large Calorie (written with a capital C), commonly used in nutritional connotations, is equal to 1000 small calories and is defined as  $\frac{1}{860}$  of the heat required to raise the temperature of one pound of water from 32° to 212° F. The daily energy output of an active man is said to be equivalent to about 3000 Calories. See pp. 168 and 783.

**Calotype**, a wet-plate photographic process invented by H. Fox Talbot about 1840.

**Calumet**, a sacred decorated reed tobacco pipe used as a symbol of peace or war by the Indians of North America, the bowl being composed of soap stone, and the tube, which is long, being decked with feathers. To accept the calumet when offered is to be friendly, to reject it is to proclaim enmity. There is also a distinctive calumet of war used only on a declaration of war between tribes.

**Calypso**, West Indian song in the form of a doggerel lampoon composed spontaneously and sung to a guitar.

**Cambrian Group of strata** belongs to the Silurian series, and was so named by Professor Sedgwick because of its abundant development in Wales. It is the lowest and oldest division of the fossil-bearing rocks; fossils in them include brachiopods and trilobites.

**Cambridge University** had a sufficiently good teaching reputation to attract Oxford students in 1209, when lectures at their own university were suspended. In 1226 it had a Chancellor who was recognised by King and Pope. The first college to be founded was Peterhouse in 1284. The university was reorganised and granted a Charter of Incorporation by an act of Elizabeth in 1571. Other colleges with their dates of foundation are Christ's (1505), Clare (1326), Corpus Christi (1352), Downing (1800), Emmanuel (1584), Gonville and Caius (1548), Jesus (1496), King's (1441), Magdalene (1542), Pembroke (1347), Queens' (1448), St. Catherine's (1473), St. John's (1511), Sidney Sussex (1596), Trinity (1546), Trinity Hall (1850), Selwyn College (1882), Fitzwilliam House (non-collegiated students) (1869) and three women's colleges. Girton (1869), Newnham (1875), New Hall (1954).

**Camel**, a large ruminant quadruped, inhabiting Asia and Africa, where it is largely used as a beast of burden. There are two species—the Arabian camel or dromedary, with only one hump; and the Bactrian, or double-humped camel. There are no wild dromedaries, and the only wild bactrians occur in the Gobi Desert. The camel is able to go for long periods without water, not, as was formerly believed, because it stored water in its hump, but because of the unique mechanism of its physiology which enables it to conserve water at the expense of not sweating until 104° F. is reached.

**Camisards**, a French Protestant party of the early 18th century which originated in the Cevennes and resorted to arms in support of its faith.

**Camomile** (*Chamomile*), a small composite plant, cultivated for its flowers, which are white with a yellow centre. Its specific name is *Anthemis nobilis*. Camomile flowers are of an exceedingly bitter taste, but an infusion of them is valued as a remedy for biliousness and as a tonic.

**Campaniles**, or bell-towers are usually detached from their parent church, but not always. The most famous are in Italy, and are lofty and elab-



orate structures. Giotto's tower at Florence, adjoining the cathedral of Santa Maria del Fiore, is architecturally the finest in the world. Other famous campaniles of Italy are those of Cremona (395 ft. high) and Pisa (the Leaning Tower). The magnificent pointed campanile of St. Mark's, Venice, which collapsed in 1902 and has since been rebuilt in its original form, was begun in 902. Campaniles as separate structures are seldom found in Great Britain: the finest is that of the Westminster Roman Catholic Cathedral. The bell-turrets of St. Paul's in London and St. Peter's at Rome are only a form of campanile.

**Campus Martius** was a large plain used by the ancient Romans as a military camping ground. It was situated between the Quirinal and Capitoline hills, and is to-day entirely built over and forms the heart of modern Rome.

**Canal**, an artificial watercourse used for navigation which changes its level by means of locks. Some 2,400 m. are in use in Gt. Britain, the English network being based on the four great estuaries Mersey, Humber, Severn, and Thames.

**Canary**, a light, sweet wine from the Canaries and chief export until the grape blight of 1853. Much consumed in Britain from Tudor to Georgian times.

**Candela**, unit of luminous intensity, replacing the former *international candle* as standard. So defined that the brightness of a total radiator, or black body, at the temperature of solidification of molten platinum is 60 candles per sq. cm.

**Candlemas**, an English and Roman Church festival in celebration of the Purification of the Virgin when she presented the infant Jesus in the Temple, and deriving its name from the great show of candles made on the day (February 2) in the Roman celebrations.

**Canon**, a term applied to signify a recognised rule for the guide of conduct in matters legal, ecclesiastical, and artistic, or an authoritative ordinance; thus we have Canonical Scriptures, Canon Law, etc. A Canon is also a dignitary of the Church, usually a member of a cathedral chapter in the Anglican communion, or in the Roman Church a member of an order standing between regular monks and secular clergy.

**Canonical Hours** were seven in number in the Western Church; Matins and Lauds, before dawn; Prime, early morning service; Terce, 9 a.m.; Sext, noon; Nones, 3 p.m.; Vespers, 4 p.m.; Compline, bed-time.

**Canonisation**, the entering of a person who has been dead over fifty years on the list of saints of the Roman Catholic Church, after proof of purity and distinction of life has been accepted. This having been done, a day is named for the future keeping of the anniversary of the saint's death, and thenceforward appears in the Church Calendar.

**Cantata**, originally a long piece for solo voice, i.e., the vocal counterpart of a sonata. The term is now used to cover a small oratorio.

**Canticles**, the name given to the scriptural passages from the Bible sung by the congregation in the various Christian liturgies. They are the *Benedicite*, *Benedictus*, *Magnificat*, *Nunc Dimittis*.

**Cap**, literally any head-covering article of dress. The "Cap of Maintenance" is carried before the Sovereign at the Coronation, and is used symbolically in heraldry.

**Capercaillie**, the largest and most handsome of the grouse family, found in the Scottish highlands and the pine forests and mountainous regions of Northern and Central Europe and Asia.

**Capet**, the family name of a race of French kings, founded by Hugh Capet in 987 with its collateral branches. Reigned until 1848, except for the period of the French Revolution and Napoleon.

**Capitol**, a term that was first applied to the Temple of Jupiter on the Capitoline Hill, Rome, completed in 507 B.C. It was several times destroyed by fire and rebuilt. The existing Capitol, a large portion of which serves the purpose of a museum, was erected from designs by Michelangelo. In all the chief cities of the ancient Roman Empire there was a capitol or town-hall. In the United States the building occupied by Congress at Washington bears the name of the Capitol, and the halls of the legislative assemblies of the different States are so named.

**Capricorn**, a zodiacal constellation between Sagittarius and Aquarius, figured out in ancient times as having the head of the goat and the hind part shaped like a fish.

**Capuchins** are members of a mendicant order of Franciscans, founded in the 16th century with the aim of restoring the primitive and stricter observance of the rule of St. Francis, so called from the capuce or pointed cowl worn by them.

**Caravan**, a band of travellers or traders journeying together for safety across the Eastern deserts, sometimes numbering many hundreds. There are several allusions to caravans in the Old Testament. The great caravan routes of this period from Egypt to Babylon and from Palestine to Yemen linked up with the Syrian ports and so with western sea commerce. Many wars have been fought in the past over their control.

**Carbohydrates**, the name of a group of organic compounds containing carbon, hydrogen, and oxygen; the atoms of the latter are present in the ratio of 2:1, the same ratio as in water. Starch, cane sugar, glucose, cellulose are examples of carbohydrates.

**Carbolic Acid** or **Phenol** is obtained commercially by distillation of coal-tar, and is also made synthetically.

**Carbon**, a non-metallic chemical element which occurs in crystalline form as diamonds and graphite; amorphous forms of carbon include charcoal and soot, while coke consists mainly of elementary carbon. The biochemistry of plants and animals largely hinges upon carbon compounds. The study of carbon compounds is called "Organic Chemistry," as opposed to "Inorganic Chemistry."

**Carbonari**, members of a secret political society originated in Naples, and at one time very numerous. Their chief aim was to free Italy from foreign rule, and they exerted considerable influence in the various revolutionary movements in the first half of the 19th century. Their name was adopted from the charcoal-burners (*carbonari*), and their passwords, signs, etc., were all in the phraseology of the fraternity.

**Carbon dioxide**. Commonest of the five oxides of carbon. It is formed when carbon and its compounds are burnt with abundant supply of air, and when carbon compounds are oxidised in the respiration process of animals. The atmosphere contains carbon dioxide to the extent of about three parts in 10,000; this figure remains more or less constant because, while carbon dioxide is always being added by animal respiration and the burning of fuels, such as coal and oil, by man, plants are constantly removing it in the process known as photosynthesis or carbon assimilation. A heavy gas and obviously not one capable of supporting respiration, it can accumulate in caves, etc., and cause asphyxiation; for instance, in the Grotto del Cane, near Naples, a dog entering the cave is suffocated, whereas a man whose head is above the carbon dioxide level can walk through it unharmed. Solid carbon dioxide is called "dry ice." The gas in aerated drinks and soda water is carbon dioxide.

**Carbon monoxide** is a colourless gas with no taste or smell. It is formed when coal and coke are burnt with a restricted supply of air; the blue flame to be seen in a coke brazier, for instance, is the flame of carbon monoxide. This gas is very poisonous, forming with the hæmoglobin of the blood a compound which is useless for respiration and cherry red in colour, which gives a visible symptom of poisoning by carbon monoxide. With nickel it forms a volatile compound, called nickel carbonyl, and this reaction is the basis of the Mond process for extracting nickel.

**Carboniferous System**, in geology, is the term used to designate the strata from which coal is obtained. The system lies between the Permian and the Devonian, the latter being the oldest of the three sets of strata. In Britain the Carboniferous Limestone, Millstone Grit, and Coal Measures constitute the Carboniferous strata.

**Carbuncle**, the name of a deep-red stone of the garnet order, the finest examples occurring in Brazil, Madagascar, S. Africa, India, and Ceylon.

**Cardamom**, the seeds of various zingiberaceous

plants, mainly indigenous to Malabar, aromatic and tonic and useful medicinally in purgative compounds and carminatives.

**Cardinal**, a Roman Catholic ecclesiastical dignitary of the highest rank. Cardinals are divided into three classes, consisting of 6 cardinal bishops, 50 cardinal priests, and 14 cardinal deacons—70 in all. They are appointed by the Pope, and are associated with him in the government of the Church. A cardinal's dress consists of red cassock, a rochet, a short purple mantle, and a low-crowned red hat with cords and tassels.

**Cardinal Virtues**, according to Plato these were justice, prudence, temperance, fortitude—natural virtues as distinct from the theological virtues of the Roman Catholic Church, faith, hope, charity. The phrase "seven cardinal virtues," combining the two, figures in medieval literature. (See Sins, Seven Deadly.)

**Caricature** has for its object the exaggeration of the defects or peculiarities of persons or things so as to render them ridiculous. It is an art that was practised by the ancients, but did not attain real power and force until after the invention of printing. The development of caricature since the end of the Middle Ages has been greatly influenced by the political history of Europe. *Punch* has been the chief medium of English political and social caricatures since 1842. Among famous caricaturists have been Hieronymus Bosch (c. 1450-1516), Pieter Brueghel (c. 1525-69), Hogarth, Gillray, Rowlandson, Honoré Daumier, Tenniel, Keane, du Maurier, Phil May, Sir B. Partridge, F. H. Shepard, Sir F. Carruthers Gould, Sir Max Beerbohm, and David Low.

**Carlists**, a Spanish political party espousing the claim of the descendants of Don Carlos, brother of Ferdinand VII., to the throne of Spain. On the death of the latter in 1833, Isabella, his three-year old daughter, was proclaimed Queen owing to the abolition of the Salic law. There were several Carlist insurrections until the party was finally crushed in 1876.

**Carlovingians**, the second dynasty of the French kings (established 751), included such notable rulers as Charles Martel and Charlemagne. In 987 the Capet dynasty succeeded.

**Carmelites**, a body of mendicant friars taking their name from Mount Carmel, where the order was first established in the 12th century. The original rule of the order required absolute poverty, abstinence from meat and a hermit life. The rigidity of the rule of the order was mitigated by Innocent IV. The habit of the order was changed from the original stripe to brown with a white cloak and scapular, which gave the name of White Friars to its members. Carmelite nuns were instituted in the 15th century.

**Carnallite**. An important potash mineral; chemically it is the hydrated chloride of potassium and magnesium.

**Carnival**, the great festival which takes place in Roman Catholic countries on the last three days before Lent, when people give themselves up to the wildest revelry, buffoonery, and masquerading. It is only in the chief cities of Italy, however, that the custom is kept up with anything of the old spirit. At Nice a modernised form of it is given, of which the "battle of flowers" is a feature.

**Carnivora**, a large group of animals forming an order of the Mammalia, including cats, dogs, wolves, foxes, civets, bears, otters, seals, sea-lions, walrus, and others.

**Carob**, a wild plant growing abundantly on the Mediterranean coast and yielding a bean or pod that forms nutritious food for cattle and horses.

**Carolite**, an English gold coin of the Stuart period at first of the value of 20 shillings, and subsequently worth 23 shillings.

**Carp**, a well-known fresh-water fish, found in plenty in most European and Asiatic still waters, reaches a length of about 2 ft., and under favourable conditions lives for about 40 years. Familiar British members of the family are the roach, rudd, dace, chub, gudgeon, tench, minnow, barbel, bream, and bleak. The Goldfish, popular in ornamental ponds, is the domesticated variety of a Far Eastern member of the carp family.

**Carpets** are thick fabrics used for covering floors,

and were first made in Eastern countries—Egypt, Persia, India—finding their way to Europe in the Middle Ages. A carpet factory was established in France in the time of Henry IV., and one was set up at Mortlake, in England, in the reign of James I. The carpets of 16th-century Persia are celebrated for their artistic workmanship, examples having been preserved in the great museums of Europe. The best-known English carpets are the Axminster, Kidderminster, and Wilton. In modern times the production of carpets has been greatly improved and extended by the aid of steam-power and ingenious machinery.

**Carronade**, a short piece of ordnance of large calibre, with a powder-chamber similar to that of a mortar. It was first made at the Carron Ironworks, Scotland, hence its name. Much used in the Navy from 1779, but now superseded by improved guns.

**Carthusians**, an order of monks founded in 1084 by St. Bruno at the Grande Chartreuse, near Grenoble and introduced into England about a century later. They built the Charterhouse (corruption of Chartreuse) in London in 1371. The chief characteristics of the order are a separate dwelling-house in the precincts of the charterhouse for each monk, and the general assembly in the Church twice in the day and once at night. They wear a white habit, with white scapular and hood. The liqueur *Chartreuse* was invented by the order and is still their secret. For many years they have derived large revenues from its sale.

**Cartoons** are properly designs of the actual size of an art work as it is intended to be completed, and made for frescoes, tapestries, or mosaics. The most celebrated cartoons are the seven painted by Raphael, now at the South Kensington Museum. The artist executed 25 in all, but only these seven, which Rubens obtained for Charles I., remain. A political pictorial caricature or symbolic design is also styled "cartoon." The strip-cartoon carried by most popular newspapers and the American strip-cartoon-novel are features of the present age.

**Casein**, the chief protein in milk and cheese. It is coagulated by the action of rennet or acid. An important class of plastics ("casein plastics") are produced from it, and these plastics are converted into buttons, knitting-needles, etc. 8000 gallons of milk yields about a ton of casein.

**Cassowary**, a large bird of the ostrich family, inhabiting the Molucca Islands, New Guinea, and North Australia. It is of black plumage, with three toes, and has a horny crest upon its head. In fleetness it can outstrip the horse.

**Castanets**. Two small pieces of hard wood which are held in the hand and clicked together. The instrument is of Spanish origin and is commonly used to mark the rhythm of certain Spanish dance tunes.

**Caste**, a term used to specify the different hereditary social sections into which Indian Hindu society is divided. The four leading castes which are of ancient origin and go on from generation to generation, though they no longer fix the occupations of the people, are: (1) Brahmins or priests; (2) Kshatriyas or soldiers; (3) Vaisyas or merchants; (4) Sudras or labourers and artisans. Pariahs are considered outcastes and are sometimes called "untouchable." Many other divisions and subdivisions of caste have been developed from these four and each has its own customs. Wealth has no relation to caste as such and a servant may be of high caste and his master of low caste. The caste system in modern India is being modified.

**Castor-oil Plant** (*Ricinus communis*), an African shrub now cultivated in most tropical countries. It has broad palmate leaves and bears a spiny fruit containing seeds which when pressed yield the well-known oil.

**Cat**, the general name for all quadrupeds of the *Digitigrade* section of the carnivorous order, from the lion down to the domestic cat. The latter is supposed to be descended from the Wild Cat once so common in Britain and other parts of Europe. Egypt is credited with having been the first country in which the cat was domesticated. Among the finest varieties are the



Persian and Siamese. (See Domestic Pets Section.)

**Catacombs** are subterranean or built-up places of interment. The most famous are those of Rome, constructed by the early Christians, where in times of persecution they concealed themselves. They are of great extent, consisting of a labyrinth of vaulted galleries, 4-5 ft. wide, at different levels. These Roman catacombs are said to have contained over 8,000,000 bodies and to have extended scores of miles in length, though not more than about six miles are now accessible. Catacombs have also been discovered in Naples, Cairo, Paris, etc. Attached to some modern cemeteries are catacombs of the built-up order, formed of chambers of stone or brick in the walls of churches or mausoleums.

**Catamaran**, a float or raft of three or more pieces of wood lashed together. Used mostly on the Coromandel coast.

**Catapult**, a military engine used in ancient times for throwing missiles of stones, spears, and arrows. The ballista of the Middle Ages was an adaptation of this.

**Cataracts** are gigantic waterfalls. The most famous are those of Niagara in North America, the Orinoco in South America, the Victoria Falls on the Zambesi in Africa, the Falls of the Rhine at Schaffhausen, and the Cascade of Gavarni in the Pyrenees. Cataract, surgically, signifies an affection of the sight.

**Catechism**, an elementary book of principles in any science or art, but more particularly in religion, in the form of questions and answers. There is a great variety of these, including the Lutheran, prepared by Luther in 1529, Calvin's Geneva (in 1536), and the Anglican, in the Book of Common Prayer.

**Catechumens**, a term applied in the primitive Church to children of Christian parents, who were admitted as neophytes, and occupied a place apart in the church.

**Caterpillar**, the larva of a butterfly or moth, worm-like in its segmented body, usually furnished with feet, often curiously marked and coloured, and frequently more or less hairy.

**Cathedral**, the chief church of a diocese, so called from its containing a Bishop's seat, or episcopal chair. The finest cathedral in the world is that of St. Peter's at Rome, founded in 1450. Other celebrated cathedrals are Notre Dame of Paris, the cathedrals of Cologne and Milan, St. Paul's in London, Canterbury Cathedral, York Minster, and the cathedrals of Durham, Bristol, Gloucester, Peterborough, Exeter, Liverpool and Coventry.

**Cat's-eye**, a kind of quartz, much valued as a gem, opalescent, and of various shades.

**Caucus**, an American term designating a private authoritative body of politicians whose duty it is to select candidates for office and deal generally with party business. It was first used in this country at Birmingham in connection with what was called the "Liberal Six Hundred." Lord Beaconsfield employed the term satirically. The word has since come into common use, although generally in an uncomplimentary way.

**Cavalier**, a name adopted during the troubles of the Civil War to designate the Royalist party; it is also used generally in reference to a knightly, gallant, or imperious personage.

**Cavalry** is the part of an army consisting of troops that serve on horseback, and now less used than in former times. The cavalry of the Greeks and Romans were generally members of noble families, and down to the Middle Ages something of this distinction was continued. After the invention of gunpowder, this branch of the military service underwent great changes; and in more recent times, with the development of heavy artillery, armour, and air power, has almost disappeared from the field of battle. British Cavalry will be remembered for the rôle it played in the Crimea and Boer Wars. In the first world war it carried out distinguished services in many theatres, but none more so than in the operations in Palestine under Field-Marshal—then General—Allenby. In the Regular British Army, cavalry has now been fully mechanised and forms part of the Royal Armoured Corps together with the Royal Tank Regiment. This Corps now consists of five

regiments of Dragoon Guards, two Dragoons, four Lancers, nine Hussars, and eight Royal Tank Regiments. The Royal Armoured Corps, which is the descendant of both the Royal Tank Corps of the first world war and of the Cavalry, played a leading part in all the operations of the second world war. The armoured fighting vehicles have ranged from armoured cars weighing 7 tons and mounting 37 mm. guns to heavy tanks weighing 35 tons and mounting 17 pounder and 105 mm. guns. The various rôles of the Corps are armoured car regiments, divisional regiments for close reconnaissance in Infantry Divisions—the equivalent of the old Divisional Cavalry Regiment—and armoured regiments in armoured divisions and armoured brigades. It also provides regiments of specialised armour using armoured flame-throwers and minefield clearing tanks. The two Household Cavalry Regiments have also been mechanised as armoured car regiments, but each retains a mounted squadron for state and ceremonial duties.

**Caves** are natural hollow places in the earth, largely met with in limestone or volcanic rocks. Fingal's Cave in Staffa is noted for its splendid range of basalt columns, and at Malham and Kirkdale in Yorkshire, and Kent's Hole near Torquay, are far-extending caves. The mammoth cave of Kentucky extends through many miles of labyrinthine windings.

**Caviare** is a Russian preparation made from the salted roe of certain fish, such as sturgeon, sterlet, and sevruga, and much appreciated by epicures.

**Cayenne Pepper** is made from the dried and baked pods of various kinds of tropical capsicum.

**Cedar**, a dark-leaved, cone-bearing, horizontal-branched evergreen tree that grows to a considerable height and girth, the best known species in this country being the Lebanon Cedar, which was introduced into England in the 17th century, and is now of frequent occurrence here. Cultivated in tropical countries.

**Cello**. (See Violoncello.)

**Celluloid**, one of the first synthetic thermoplastic materials, discovered by Alexander Parkes in 1865 when he was attempting to produce synthetic horn. It is made by treating cellulose nitrate with camphor and alcohol. The non-flam character of photographic film is conferred by the substitution of a cellulose acetate or other material as base, for the dangerously inflammable celluloid otherwise used.

**Cellulose**, a carbohydrate, and a constituent of nearly all plants. Cellulose occurs in an almost pure state in the fibres of linen and cotton.

**Celts**, an ancient race of Western Europe, originally settled in Gallia, and afterwards spread over other parts of Europe, including Britain. The two chief divisions of Celtic Britons were the Gaels of Ireland and the North of Scotland, and the Cymri of Wales. The descendants of these races still retain many of their ancient characteristics, and considerable interest is manifested in their language and literature.

**Cement** means, in general technical parlance, an adhesive. Building cements are calcium silicate-aluminate mixtures made by heating lime with clay; the most widely used kind is Portland cement, invented in 1824 by Joseph Aspdin of Leeds.

**Cenotaph** (Greek = empty tomb), a monument erected in Whitehall, London, to commemorate all those who gave their lives in the service of the British Empire during the first world war. The permanent structure was unveiled by George V. on Armistice Day, 1920.

**Censors** were Roman magistrates vested with the power of keeping a record of all citizens, and of controlling the manners, morals, and duties of the peoples. In more recent times in England censors have been appointed by the Government in connection with publications of the Press or for the stage. During the First and Second World Wars there was a very strict censorship of news.

**Census** was the title given in ancient Rome to a register of citizens, with full particulars as to their family, children, slaves, and so forth. The term is now used to denote the periodical survey of the number and condition of the people. In Great Britain it takes place every ten years.

The first official census in this country was that of 1801; the last was taken in 1951.

**Centre of Gravity** of a body is the fixed point through which the resultant force due to the Earth's attraction upon it always passes, irrespective of the position of the body.

**Ceorl**, the name given to an Anglo-Saxon freeman in bond-service to a landed proprietor.

**Cerium**, a scarce metallic element discovered by Berzelius in 1803. It is capable of precipitation to powder, and only exists in combination in the minerals cerite, allanite, and a few others. A mixture of cerium and thorium nitrates is used in the manufacture of gas mantles, which owe their incandescent property to the deposit of cerium and thorium oxide with which they are coated.

**Cestus**, the name given to a girdle worn by Greek and Roman women around their waists, and generally decorated. It was also the name of the loaded gauntlet worn by boxers in the Roman arena.

**Cetacea**, the order of mammals including the whales, dolphins, and porpoises, which, though strictly aquatic, breathe air, suckle their young, and are warm-blooded.

**Chain reaction**, the term introduced to describe the self-maintaining processes exhibited in the atomic bomb and the atomic pile. One of the products of uranium fission, the neutrons, assist in promoting the process of fission itself. By analogy, a fire is a self-propagating chain reaction; the heat generated by burning one portion of fuel is sufficient to start adjacent fuel burning, thereby releasing still more heat and igniting still more fuel. Thus a steadily burning fire that is always under control is like an atomic pile; the fire that is out of control resembles the expanding chain reaction of the atomic bomb.

**Chalcedony**, a fine quartz with a waxy lustre, and much used by jewellers for necklaces, bracelets, etc. Commonly it is white or creamy. Its bright orange-red variety is called carnelian; its brown variety, sard. Chrysoprase, plasma, bloodstone are varieties which are respectively pale apple-green, dark leek-green, green with red spots.

**Chalk**, a white limestone, calcium carbonate, found in the Upper Cretaceous deposits (formed from the shells of minute marine organisms). In southern England the chalk is a soft rock, but in Yorkshire, Scotland, and Ireland it is solid limestone. French chalk is hydrated magnesium silicate, a variety of talc.

**Chalybeate Waters** are waters impregnated with iron, or containing iron in solution. Chalybeate springs are numerous in England and other parts of the world, and are valuable in restoring strength after illnesses and improving the blood.

**Chama**, a genus of large bivalves of the mollusc family, found in tropic waters, especially amongst coral reefs. *Chama gigas* weigh sometimes as much as 300 lb., and one valve has been employed as the basin of baptismal fonts in various churches.

**Chamberlain**, Lord, the senior officer of The Royal Household who is responsible for all ceremonial within the palace (levees, courts, garden parties, entertainment of foreign royalties and heads of state) but not the coronation or state opening of parliament. He is also in charge of appointments to The Royal Household and is examiner and licenser of plays.

**Chamberlain, Lord Great**, one of the great officers of state whose duties are now mainly ceremonial. He attends the monarch at the state opening of parliament and at the coronation and is custodian of the Palace of Westminster (Houses of Parliament). The office is hereditary, dating from Norman times and is held for one reign in turn by the descendants of the De Veres, Earls of Oxford.

**Chamber Music**, strictly signifies music suitable for playing in a small room, but is used to cover music specially composed for small combinations of instruments; e.g., string quartets, etc.

**Chambertin**, a well-known brand of red Burgundy from the vineyards of the Côte d'Or, France.

**Chameleon**, a family of lizards of which there are numerous species. The common chameleon is a native of Africa, and is about 12 inches long, including tail. It is remarkable for its power of

changing colour to resemble its surroundings when surprised, a power that is due to the presence of pigment-bearing cells beneath the skin. It is slow in movement, and insectivorous.

**Chamois**, a species of antelope, and a native of Western Europe and Asia. It is not much larger than a goat, lives in mountainous regions, and possesses wonderful leaping power, so that it is very difficult to capture. Its flesh is much esteemed, and from its skin chamois leather is made. The mating season is Oct.-Nov., and the fawns are born in May or June. They can follow their dam when only a day old. Live to be 20-25 years old.

**Champagne**, the celebrated sparkling wine made from the grapes of the vineyards of the district of France, of which Rheims is the headquarters.

**Chancellor** was the title of a chief officer of the Roman Empire, but at the present day is used to designate in England the leading dignitary of the law and Parliament. In former times the Lord Chancellor of England was the King's most trusted adviser, and exerted immense influence. Before the Reformation he was generally an ecclesiastic. The Lord Chancellor is the Keeper of the Great Seal, a Privy Councillor, and Speaker of the House of Lords. His salary is £10,000 a year, and he receives a pension of half that sum. The term is also used of the Exchequer, Duchy of Lancaster, of Dioceses, Universities, and of the Garter.

**Channel Tunnel**, a scheme to bore a tunnel through 20-30 miles of chalk under the sea between Dover and Calais was proposed in the second half of the 19th century. The bill authorising the work was rejected in 1883. In 1980 the scheme was again proposed by many enthusiastic supporters. The tunnel would be the longest ever made and an engineering wonder of the world. It would consist of two tubes with frequent connections. Electric trains would run through, taking only 1 hour and reducing the journey between London and Paris by about 2 hours. The estimated cost, however, being more than 35 million pounds, the attendant military risks, and doubt as to feasibility of construction led the Government in June 1930 to reject the proposal. Tunnelling was actually begun some years ago on the British side and the project never fails to be a fascinating subject for discussion.

**Chantry**, a private church or chapel established and endowed for the maintenance of priests to perform daily Mass for the souls of certain specified persons. Chantries were numerous in England up to the Reformation, and some few still remain.

**Chapel Royal**, the church dedicated to the use of the Sovereign and Court, and at present situated in St. James's Palace.

**Charcoal**, a term applied to wood that has been subjected to a process of slow smothered combustion. More generally it refers to the carbonaceous remains of vegetable, animal, or combustible mineral substances submitted to a similar process. Charcoal from special woods (in particular buckthorn) is used in making gunpowder. Bone charcoal finds use in sugar refining, as it removes dark colouring matter present in the crude syrup.

**Charterhouse**, a famous school that was in Aldersgate Street, London, but removed to Godalming. In connection with the school is an almshouse on the old London site, endowed by Thomas Sutton in 1611. Thackeray, as well as Addison, Grote, and other eminent men, were Charterhouse scholars.

**Chartism**, the principles or practices of a body of political reformers who (1837-48) conducted a movement for amelioration of social and industrial conditions of the working classes. Their platform was stated in the National or People's Charter, drafted by Francis Place in the form of a charter or act of Parliament, and published May 8, 1838. Reform was demanded under six heads: universal adult male suffrage, vote by ballot, annual parliaments, payment of members, equal electoral districts, and abolition of the property qualification.

**Chasuble**, a sleeveless vestment worn by ecclesiastics over the alb during the celebration of Mass. It is supposed to symbolise the seamless



coat of Christ. Its use in English churches was prohibited in 1552, but again permitted after 1559. It gradually fell into disrepute, however, but some fifty years ago was resumed in the High Church services.

**Chauvinism** is a term applied to any exaggerated devotion to a cause, more particularly to excess of public or military enthusiasm. The word springs from Nicholas Chauvin, whose extravagant devotion to Napoleon I. made him a laughing-stock.

**Cheese**, an article of food made from the curd of milk, which is separated from the whey and pressed in moulds and gradually dried. There are about 500 varieties differing with method of preparation and quality of milk. They used to be made in the regions after which they are named but nowadays many of them are mass-produced, e.g., Cheddar is made not only in all parts of Britain but in Canada, New Zealand, Australia, Holland, and the U.S.A. Cheeses may be divided into 3 main classes: (1) soft, e.g., Camembert, Cambridge, Port l'Eveque; (2) blue-veined, e.g., Stilton, Gorgonzola, Wensleydale, Roquefort; (3) hard-pressed, e.g., Cheddar, Cheshire, Gruyere, Parmesan, Gouda.

**Cheetah**, the large spotted cat of Africa and Southern Asia, often called the "hunting leopard" because of its employment in the chase.

**Chemistry** is the science which analyses and describes the properties and composition of various natural substances. It had its rise in alchemy and has gradually developed into a science of vast magnitude and importance.

**Chenille**, a soft cord material of silk or worsted used in embroidery and lace-making.

**Cherokees**, a North American tribe of Indians, once a powerful and warlike nation occupying a large portion of the Allegheny range, but now residing within the Indian Territory under civilised rule of law and very prosperous.

**Chestnut**, the fruit of the chestnut tree; those of the Spanish chestnut, *Castanea vesca*, furnish a favourite esculent. The wood is used in carpentry; while the horse-chestnut (*Æsculus hippocastanum*) is much employed in brush-mounting and in cabinet work.

**Chiaroscuro**, a term used in painting to denote the arrangement of light and shade in a picture. On the proper handling of chiaroscuro depends the fidelity of depiction of objects and distances.

**Chicory**, a plant largely used for mixing with coffee and not regarded altogether as an adulterant, being credited with certain dietetic virtues. In England, however, where chicory is added, the fact must be stated on the package sold to the public. The dried roots of the plant only are used, being ground into powder before mixing.

**Chief of Imperial General Staff**, the present title of the Supreme Commander of the British Army.

**Chiltern Hundreds**, three hundreds—Stoke, Burnham, and Desborough—the stewardship of which is now a nominal office under the Chancellor of the Exchequer. Since about 1751 the nomination to it has been used as a method of enabling a member of Parliament to resign his seat on the plea that he holds an office of honour and profit under the crown. (This has been a disqualification for Parliament since 1707.) (See "A Citizen's Guide.")

**Chimpanzee**, a large anthropoid ape, a native of tropical West Africa, of a dark brown colour, with arms reaching to the knee, large ears, and a general organisation resembling that of man. It possesses considerable intelligence, can walk erect with ease, and when full grown is about four feet high.

**Chinchilla**, a South American rodent. Grey in colour, and black and white underneath. It is greatly esteemed for its beautiful fur.

**Chintz**, a cotton cloth, generally glazed and covered with floral or other designs. It is largely used for furniture coverings.

**Chipmunk**, a squirrel-like animal of the *Tamias* genus, common in the United States.

**Chippendale Furniture** was introduced in the reign of George I. by Thomas Chippendale, a Worcestershire cabinet-maker who migrated to London and set up for himself in St. Martin's Lane, Charing Cross. He was fonder of inventing designs for furniture than of making it, and in

1752 published a book of patterns; the London furniture-makers of the day soon began to model their work upon it.

**Chirograph**, an indenture drawn in evidence of title to property, landed or otherwise, and prepared (usually on parchment) in a special manner of engrossing.

**Chromancy** is the old name for palmistry of divination by the hand. It was greatly practised in olden times.

**Chiropody**, the treatment of the hands and feet for the cure or prevention of disease, especially applied to the removal of corns, warts, etc.

**Chlamys**, a loose military cloak or mantle, worn formerly chiefly by horsemen, and permitting the free use of the arms.

**Chloral**, a colourless mobile compound discovered by Liebig, and obtained from chlorine and alcohol, or chlorine and starch.

**Chlorine**, a gaseous element of the halogen family, first isolated in 1774 by Scheele by the action of manganese dioxide on hydrochloric acid. It unites easily with many other elements, the compounds resulting being termed chlorides. The gaseous element is greenish-yellow, with a pungent odour. It is a suffocating gas, injuring the lungs at a concentration as low as 1 part in 50,000. Was used during World War I as a poison gas. Has a powerful bleaching action, usually being used in form of bleaching powder, made by combining lime and chlorine. Also a valuable disinfectant; used, for instance, in rendering water of swimming baths sterile.

**Chlorites**, green mica-like minerals. They arise by metamorphosis of such minerals as biotite, pyroxene, etc.

**Chlorodyne**, an anodyne remedy containing morphine, chloroform, prussic acid, and extract of Indian hemp, flavoured with sugar and peppermint. It is often administered to children to induce sleep, and, when unskillfully given, sometimes leads to unfortunate results.

**Chloroform**, a volatile colourless liquid, is prepared for commercial purposes by distilling a mixture of chloride of lime, alcohol (or acetone), and water; but for medical use it is made from chloral hydrate, which yields a purer distillate. When the vapour is inhaled it produces unconsciousness and insensibility to pain. It owes its discovery to Liebig, and its first application for medical purposes to Sir James Young Simpson.

**Chlorophyll**, the green pigment contained in the leaves of plants, first discovered by Pelletier and Caventou in 1818. Enables the plant to absorb sunlight and so to build up sugar. (See Photosynthesis and pp. 171-2.)

**Chocolate**, a paste made from the kernels of the cacao tree, flavoured with sugar, vanilla, or other substance, and used as a beverage or sweet. It was consumed by the Mexicans as far back as the time of Montezuma.

**Chorale**. Originally a Lutheran hymn-tune, but used, especially by J. S. Bach, as a basis for instrumental or choral pieces, e.g., Chorales and Choral Preludes.

**Chord**. A number of notes played simultaneously. **Chouans**, the name given to the bands of peasants, mainly smugglers and dealers in contraband salt, who rose in revolt in the west of France in 1793 and joined the royalists of La Vendée. Balzac gives a picture of the people and the country in which they operated in his novel *Les Chouans*.

**Chough**, a member of the crow family, of glossy blue-green-black plumage, whose long curved bill and legs are coral red. It used to be abundant on the cliffs of Cornwall, but its haunts are now restricted to the rocky outcrops of the western coasts and in the mountains near by. It nests in cleft rocks and caves. The Alpine chough has a yellow bill and is found in the mountains. (See p. 1004.)

**Chrim**, the sacred ointment consecrated by a Bishop, and used in the rites of baptism, confirmation, ordination, etc. It is now only employed sacerdotally in Roman Catholic and Greek churches.

**Christadelphians**, members of a religious sect, founded in the 1840's by John Thomas, an Englishman who settled in America, who held that immortality can be obtained by believers only.

**Christianity**, the religion proclaimed by Jesus Christ. Its principles are set forth in the New Testament, and its churches abound all over the world. Although Christianity has had a great influence on Western civilization, the West is finding it increasingly difficult to live up to her own Christian principles.

**Christian Science**, the religion, or interpretation of the Christian religion, discovered and founded by Mary Baker Eddy. It is defined by Mrs. Eddy as "The law of God, the law of good, interpreting and demonstrating the divine principle and rule of universal harmony." The prevention and cure of disease is within the mission of Christian Science for the same reasons that it was within the mission of original Christianity.

**Christmas** means "mass of Christ" from the old English *Crīstes mæsse*, which is celebrated by the western church on December 25. The actual day on which Christ was born has never been decided and there is some uncertainty about the year. December 25 as the day of Nativity was not generally observed until the 5th century, A.D., though, as the winter solstice, it had long been observed as a pagan festival of *sol invictus* (unconquered sun). The first Christmas card dates from about 1843 and the Christmas tree, of pagan origin, was introduced into England from Germany under the influence of Prince Albert. Santa Claus is a corruption of Saint Nicolas, patron saint of children, whose feast day properly falls on December 6.

**Christ's Hospital** (sometimes called the Blue Coat School), founded by Edward VI. in 1552 on the site of an old Greyfriars monastery in Newgate Street, London. Removed in 1902 to West Horsham, when the site was divided between St. Bartholomew's Hospital and the General Post Office. Charles Lamb and Samuel Coleridge were educated at this school. The Girls' School is at Hertford.

**Chromatics**, the science which investigates and explains the properties of the colours of light, and of natural bodies, forming a chief branch of optics.

**Chromatic Scale**, a scale proceeding in intervals of one semitone. *E.g.*, chromatic scale in C C-D♭-D-E♭-E-F-G♭-G-A♭-A-B♭-B-C.

**Chromium**, a very hard, bluish-white metal, melting at a very high temperature (above 1900° C.). Its chief ore is chromite or chrome iron-ore (ferrous chromite). "Ferro-chrome" is produced by heating chromite and anthracite in an electric furnace, and chrome steels are prepared by adding the pre-calculated amount of ferro-chrome to melted steel. Best known chrome steel is stainless steel first made by Brearley in 1912 and since then developed greatly at Sheffield. A typical formula is 18 per cent. chromium, 8 per cent. nickel, 74 per cent. iron. Equally important are Stellite alloys, containing chromium, cobalt, tungsten (or molybdenum), which have made possible modern high-speed cutting tools. Dies used in manufacture of plastics are commonly of chrome steel. The elementary metal finds little use alone except in chromium plating for motor cars, etc.

**Chromosomes**, the bodies contained within the nucleus of every animal or plant cell, each containing several hundreds of the hereditary factors called *genes*. When the cell divides, each chromosome splits, so that every cell contains an identical complement of genes.

**Church Army**. The Church Army is essentially a working people's Mission to working people. This Society carries on Training Colleges for evangelists, social workers, sisters, etc., of whom hundreds are at work at home and overseas. There are Mission Vans, Marching Crusaders, News Teams, and many forms of mission work in prisons, etc. The Society has many classified Hostels, Homes, Clubs, and Shelters for men, lads, women, girls, and children. Address: 55, Bryanston St., London, W.1.

**Church Commissioners**. The Church Commissioners were established in 1948 by the amalgamation of Queen Anne's Bounty (established 1704) and the Ecclesiastical Commissioners (established 1836) to administer Church revenues and to manage Church property generally. The Commissioners own in investments and real

estate a total of over £200 million. The gross income from the general fund in 1958-59 was £8,537,000, over £7 million of which went in payments towards the stipends of clergy, incumbents, and assistant curates.

**Church of England** ante-dates the Norman conquest of England by centuries. There is some evidence of possible continuity with the Christianity of Roman Britain, but in the main the Church derives from the fusion of the ancient Celtic Church with the missionary Church of St. Augustine, who founded the See of Canterbury in A.D. 597. To Archbishop Theodore in 673 is ascribed its organisation in dioceses with settled boundaries, and in parishes. St. Augustine's Church was in communion with Rome from the first, but the Church of England was not brought within Papal jurisdiction until after the Norman conquest, and was at no time under the complete domination of Rome. It remains the Catholic Church of England without break of continuity, but during the Reformation the Royal supremacy was accepted and that of the Pope repudiated. It is the Established Church (i.e., the official Church of the realm), crowns the Sovereign, and its Archbishops and Bishops in the House of Lords can act as a kind of "conscience of the state" at every stage of legislation. The policy of religious toleration has been accepted since the 16th century. Two-thirds of the children born in England are baptised in the Church of England. The Church is organised in two Provinces and 43 dioceses. The Archbishop of Canterbury is Primate of All England. The Archbishop of York is Primate of England. Each Province has its ancient Convocation comprising an Upper House (of Bishops) and a Lower House (of Clergy), dealing especially with doctrinal matters; and there is a Church Assembly (with Houses of Bishops, Clergy, and Laity), whose Measures if approved by Parliament, which cannot alter them, go to the Queen for Royal Assent and are then law as if they had been Acts of Parliament.

**Church of Scotland** was constituted at the Reformation. The union of the C. of S. with the United Free Church was effected in October 1929, after 86 years of separation. The chief official is the Moderator, chosen annually, who ranks next after the Lord Chancellor in Scotland; the Sovereign herself is represented by a Lord High Commissioner. The Church is governed by Kirk Sessions, Presbyteries, Synods, and the General Assembly.

**Cid**, The, a famous Spanish hero of the 11th century. Don Rodrigo Diaz de Vivar, who, before he was twenty, led a Spanish force against the Moors, and drove them out of Spain. He is celebrated in poem, play, and romance.

**Cider**, a fermented liquor made from the juice of apples by crushing the fruit to pulp when ripe. The cider of Devonshire, Somersetshire, Worcestershire, and Herefordshire is the best.

**Cinchona**, the tree native to the Andes which is famous for its bark, source of the drug quinine. It was introduced into Ceylon, India, and Java, the latter becoming the main supplier of quinine.

**Cinnabar**, an ore which yields mercury by heating. **Cinnamon**, the dried bark of a tree common in the East Indies, and forms a valuable spice.

**Cinque Ports**, a number of seaport towns on the coast of Kent and Sussex, originally five: Hastings, Romney, Hythe, Dover, and Sandwich. Winchelsea and Rye were added later. These ports were required to furnish a certain number of ships, ready for service, and in return they were granted many privileges. The official residence of the Lord Warden is Walmer Castle. Mr. Winston Churchill is the present Lord Warden and Admiral of the Cinque Ports.

**Cistercians**, an order of monks and nuns taking their names from Cîteaux, near Dijon, where their first monastery was established in 1098. The order was noted for the severity of its rule. They were famous agriculturists. The habit is white, with a black cowl or hood. The order declined, and in the 17th century there was a reform movement instituted by the Trappists, who were later organised into a separate order.

**Citric Acid** is an organic acid present in lemon juice to the extent of 6-7 per cent. Used in confec-



tionery, beverages, medicine; some finds its way into the plastics industry. Main source used to be lemon juice; in Italy this was converted into citrates which were exported. After 1927, when Italy placed an embargo on export of citrates, production of citric acid by fermentation of sugar with moulds was developed in several countries, including Britain.

**Citron**, the fruit of a tree of the lemon order (*Citrus medica*) with thick rind, much used for candied peel.

**Civet**, a carnivorous quadruped from which civet perfume is obtained.

**Civil List** is the annual sum payable to the Sovereign to maintain the Royal Household and to uphold the dignity of the Crown. The amount is granted by Parliament upon the recommendation of a Select Committee and has to be settled afresh in the first six months of a new reign. The Civil List of Queen Victoria was £385,000; Edward VII and George V, £470,000; Edward VIII and George VI, £410,000; Elizabeth II, £475,000. The annuities payable to members of the Royal Family do not form part of the Civil List but are a charge on the Consolidated Fund; Queen Mother, £70,000; Duke of Edinburgh, £40,000; Duke of Gloucester £35,000; Princess Royal, £8,000; Princess Margaret and Princess Anne, £6,000 (£15,000 on marriage). Prince Charles has his own income from the Duchy of Cornwall.

**Clarinet**, a wood-wind instrument with a single reed which gives forth a rich, smooth tone. The reed is "tongued" and the note selected by operating keys which open or close holes in the wooden tube. A larger instrument of lower pitch is known as the bass clarinet.

**Clay**, a term used to designate certain plastic, earthy compounds composed of hydrated silicates of alumina. China clay, from which porcelain is made, is the purest clay, and is obtained by the natural crumbling of felspar, which is found in Devon and Cornwall in this country, and is well distributed in China, Japan, and the United States.

**Cleopatra's Needle** on the Thames Embankment is of the time of Tuthmosis III. (1500-1450 B.C.). Presented to the British Government by Mehmet Ali in 1819, but not brought to this country until 1878. Its weight is 180 tons and it is 68½ ft. in height.

**Climate** is a generalised representation of the day-to-day weather conditions throughout the year, the combination of all weathers thus determining the climate of a place. Averages and extremes of temperature, variation of humidity, duration of sunshine and cloud cover, amount of rainfall and frequency of snow, frost, gales, etc., are amongst the data normally investigated. The interiors of great land masses are characterised by large ranges of temperature and low rainfall (continental climate), while proximity to oceans has an ameliorating effect with increase in rainfall (oceanic climate). Presence of mountain ranges and lakes and configuration generally produce local modifications of climate, also apparent between the centre and the outlying suburbs of a city. There is evidence that vast changes of climate have occurred during geological time. In recent decades the winters in western Europe have shown a tendency to be less cold and the summers less warm, but the series of severe winters which commenced in 1940 and the hot summers of 1947 and 1949 suggest the possibility of yet another climatic change. Latitude introduces zones of climate, e.g., tropical rain, subtropical steppe and desert, temperate rain and polar.

**Cloaca Maxima**, the name of the great underground sewer of Rome, constructed in the reign of Tarquinius Priscus (circa 588 B.C.) and still extant in its chief structural features.

**Clock**, a device for measuring the passage of time, usually having a motive spring or weight, and geared train, with a pulsative device to govern the rate at which the mechanism shall move; also commonly having a figured dial and index hands. The shadow clock was used by the ancients, a primitive form of sun-dial, and when the sun and stars were invisible, the water clock, the clepsydra. The sand glass is not

mentioned before A.D. 1400, but it is known that a mechanical clock was put up at Westminster in 1288. The earliest surviving clock in England is the Dover Clock, which dates from 1348 and is at the Science Museum, and the one in Salisbury Cathedral dates from 1386. The first watches were made in Nuremberg shortly after 1500. The marine chronometer is a high-precision timepiece used at sea for giving Greenwich mean time. The quartz-crystal clocks at Greenwich are accurate to one thousandth of a second a day, and the atom clock, recently developed at the British National Physical Laboratory, is governed by the natural vibrations of the caesium atom, and is said to be an almost absolute measure of time. This standard is now being used to calibrate the quartz clocks to an accuracy greater than that given by astronomical time.

**Cloisonné**, a kind of fine pottery with enamelled surface, decorated with elaborate designs, the outlines of which are formed by small bands or fillets of metal. The Byzantines excelled in this work, but in the 20th century Japan and China led in Cloisonné-ware.

**Cloisters** are covered walks or vaulted arcades attached to monastic and ecclesiastical buildings, usually surrounding a quadrangle and serving for exercise and relaxation.

**Cloud chamber**, an apparatus invented by C. T. R. Wilson in which the tracks of electrical particles, including beta rays, electrons, alpha particles, protons, and X-rays can be made visible. Just as the vapour trails tell of the track of an invisible aircraft high up in the air, so the vapour trails of an unseeable electrically charged particle can tell of its behaviour. The rays under investigation pass through a chamber containing air, thoroughly cleansed of dust, supersaturated with water vapour. As the particle passes through it forms a track of tiny water droplets which can be photographed.

**Clouds** are formed by the ascent of moist air, the type depending on the way the air ascends and the height at which condensation occurs. There are three main classes: High cloud (above 20,000 ft.).—Cirrus (delicate and fibrous). Cirrostratus (thin white veil), and Cirrocumulus (delicately rippled) consisting of ice crystals. Medium cloud (above 7,000 ft.).—Altostratus (dense, greyish veil) and Altocumulus (broken flattened cloudlets)—chiefly water particles, often supercooled. Low cloud (from near ground to 7,000 ft.).—Cumulus (fair weather, broken, dome-topped), Cumulonimbus (heavy, towering to great heights). Stratocumulus (layer of globular masses or rolls), Stratus (like fog but off the ground), Nimbostratus (low, rainy cloud).

**Clover**, plants of the *Trifolium* genus, of which there are about 300 species. The best known kinds are *White Clover*, a common pasture product in nearly all parts of the world; and *Red Clover*, the most widely cultivated of all, much esteemed as fodder for cattle. The nectar of white clover is an important source of honey; the tongue of the hive bee is too short to tap nectar from the red clover, which is pollinated instead by bumble bees. *The Subterranean Clover* has two kinds of inflorescence; one is normal but the other buries itself underground, where the fruits ripen, a habit reminiscent of the ground- or monkey-nut.

**Cloves** are the dried flower-buds of a species of myrtle (*Eugenia aromatica*) grown principally in the East Indies.

**Club Mosses** or *Lycopods*, also called "ground pines." These relatively primitive land plants (in the evolutionary scale they are placed below the ferns) are usually found in dry open spaces in temperate countries. These plants have long creeping stems covered with numerous small pointed leaves. Five species occur in Britain. Huge lycopods existed in the Carboniferous period, and their bodies have decomposed to produce a large fraction of our coal seams.

**Coal** is a carbonaceous mineral substance, commonly black and easily breakable, and may be either dull or shiny. It is very inflammable, and has formed for a long period the most important substance for fuel in employment in most civilised lands. It is composed of

chemically altered vegetable matter, chiefly the timber of long extinct lycopodiaceous trees (see Club Mosses) and is found as a sort of stratified rock in the coal measures. Anthracite coal has lost nearly all its hydrocarbon by change or by pressure, and this and the more highly bituminous coals are greatly employed in manufacturing industries the world over, while those less so are used for household purposes. A ton of coal will yield by high temperature carbonisation from 10,000 to 15,000 cu. ft. of gas, 8 to 12 galls. of tar, 13½ cwt. of coke and about 20 galls. of ammoniacal liquor, varying according to the class of coal used. It is calculated that in seams of one foot thickness or more to a depth of 4,000 ft., the proved resources of coal in Great Britain amount to 120,000,000,000 tons and the probable total resources to 170,000,000,000 tons. Production in Great Britain is over 200 million tons a year and most of it is for home use. In 1947 the British coal industry was transferred to the National Coal Board.

**Coal Tar.** (See Aniline.)

**Coat of Arms, in heraldry,** is a device containing a family's armorial bearings. In mediæval times it was an actual coat upon which such device was embroidered, and knights wore it over their armour.

**Cobalt,** a white metal melting at 1490° C. Two main ores are *cobalt glance* (in which the element is combined with arsenic and sulphur) and *smaltite* (cobalt arsenide). The principal sources are Ontario and the Belgian Congo. Various cobalt alloys are important, e.g., Stellite, Ferro-cobalt, and Carboloy. Its monoxide is an important colouring medium, and is used for colouring glass and porcelain.

**Cobra,** hooded and very venomous snakes. The best known species are the Indian Cobra, the Egyptian Cobra and the Black-necked Cobra. Their food consists chiefly of small rodents. The King Cobra is almost exclusively a snake-eater. "Spitting" Cobras (or Ringhals) of S. Africa are a related genus, capable of spitting their venom several yards.

**Coca,** a South American shrub, *Erythroxylon coca*, which yields three crops a year of leaves and flowers. The leaves are chewed by the natives and act as a strong stimulant, enabling them to withstand hunger and fatigue to an astonishing degree. It is used in medicine as a tonic, and yields the alkaloid cocaine. Over 50,000,000 pounds of coca leaves are gathered yearly.

**Cochineal or Carmine,** a dyestuff consisting of the dried bodies of the female scale insect (*Coccus Cacti*). The dye is of ancient origin, was well known to the Aztecs, and was used widely in the Middle Ages. The famous scarlet tunics worn by the English during the Napoleonic wars owed their colour to carmine. The German microscopist Ehrenberg is credited with being the first to apply carmine as a biological stain in 1838.

**Cock-a-Bendy,** a contrivance for twisting ropes, consisting of a hollow piece of wood through which a pin runs. By reason of the rotation of this pin when the cock-a-bendy is held in the hand, twist is imparted to the rope.

**Cockatoo,** a member of the parrot family, bearing a crest of feathers on the head, native to Australia and adjacent regions. Predominant colour is white tinged with yellow or scarlet while some species have dark plumage. The great black cockatoo of New Guinea is slaty black with pale red cheeks and can crack Canary nuts which usually require a hammer to break them open. (See p. 1002.)

**Cockatrice,** a basilisk or fabulous serpent supposed by an exploded tradition to have been hatched from a supposititious egg of a cockatrice by a serpent. Its glance or breath was, according to legend, fatal.

**Cockchafer** (*Melolontha*), one of the most destructive of beetles, the larvæ feeding on roots. It is about 1 inch in length, of a brownish colour, and emits a loud whirling sound when flying.

**Cockle,** the popular name of the shell-fish of the genus *Cardium*, found plentifully in sandy bays near low-water line; there are numerous British species.

**Cockroach,** popularly called the black-beetle, though it is neither black nor beetle. A great pest of bakeries, kitchens, etc. In Britain there are two species commonly found: the *Common*

or *Oriental Cockroach* (*Blatta orientalis*) and the *German Cockroach* (*Blattella germanica*). The former is twice as large as the latter, and dark brown as against light brown or dark yellow; it used to be our commonest species, but is now outnumbered by the German Cockroach. Both are natives of Africa; Common Cockroach reached England about Queen Elizabeth's time; German Cockroach was a later arrival.

**Cocktail,** an iced drink, much in fashion since the first world war as an aperitif, is prepared by mixing spirits with bitters, sugar, and some flavouring. The varieties are innumerable.

**Cocoa.** (See Cacao.)

**Coconut Palm** (*cocos nucifera*), a tropical tree which grows to a height of from 60 to 100 ft., and has its tops surmounted by feather-like curving leaves. The fruit of this tree is the ordinary coconut, which is one of the most important sources of food and raw material for people living in tropical regions. The fibre of the husk is used for a variety of purposes, such as making drinking-cups, spoons, brushes, matting, and cordage. Copra, the dried kernel of the coconut, yields oil used in the manufacture of soap, margarine, cosmetics, and chocolate. The cake provides animal feeding-stuffs. Main producing areas: Indonesia, Philippines, Malay, Ceylon.

**Cod** are well-known food-fish, found in abundance upon the British coasts and upon the banks lying off Newfoundland, their capture and preparation for market, and the extraction of the oil they yield, forming important industries.

**Codes,** a term used to designate a system of laws properly classified. The Code of Hammurabi, king of Babylon, c. 1700 B.C., had extensive influence over a long period. The Romans formulated several codes of historic importance including the Theodosian Code which summarised the Roman laws from the time of Constantine to 438 A.D. The final codification was made under order of the Emperor Justinian by his chief minister Tribonian and published in 529 with a new edition in 534. The most important of modern codes is the *Code Napoleon*, compiled between 1803 and 1810 and still in force. It has been used as an example for the codification of the laws of a number of countries from America to Japan. Under Frederick the Great the law of Prussia was codified. English law has never been codified, although the law on certain subjects has been gathered up into a single statute, which practically amounts to its codification.

**Codex,** a name referring to the manuscripts of Scripture, and comprising the Sinaitic codex of the 4th century, the Vatican codex of the same period, the Alexandrin codex of the 5th century, and others. The British Museum, in 1933, purchased the "Codex Sinaiticus" from the Soviet Government for £100,000.

**Cœlacanth** (= "hollow spine", pronounced seelacanth), is the name of one of the oldest fishes, a sub-order of the Order Crossopterygii, with large armoured head, which lived some 300 million years ago (Middle Devonian). It was first freshwater in habit, but later became marine. Fossil records ceased 60 million years ago (Cretaceous), and it was believed to have become extinct. In 1938, however, a living cœlacanth was caught off the coast of S. Africa, and another off Madagascar in December 1952 which stimulated world-wide interest.

**Coffee,** a shrub found originally in Arabia and Abyssinia, but now extensively grown in the West Indies, Brazil, India, and Central America. It yields a seed or berry which, after undergoing the necessary preparation, is ground and largely used in most countries as a popular breakfast beverage. The best coffee is the Mocha, an Arabian variety. The stimulating effect of coffee is due to the caffeine, which is also present in tea. The beverage was introduced into Europe in the 16th century, and the first London coffee shop was opened in 1632.

**Cognac.** (See Brandy.)

**Coke** is the solid residue remaining when coal is carbonised and nearly all the volatile constituents have been driven off. Used as fuel, and as an agent for reducing metallic oxides to metals.

**Cold War.** Hostility fanned between two coun-



tries nominally at peace by propaganda of various kinds.

**Colonel**, the title of a military officer, and ranking next above a lieutenant-colonel.

**Colonies**. The Phœnicians, Greeks and Romans, were all colonists. Colonisation in its more modern significance was the result of important geographical discoveries made in the Western World in the 14th century, and later by the Spaniards, Portuguese, Dutch, and French. From about the beginning of the 17th century Britain developed a colonising spirit, and her Colonial Empire grew as her sea power grew. The 13 American colonies were lost to England during the American War of Independence (1775-83). The oldest colony is Bermuda, settled by the Virginia Company in 1612; the youngest is Sarawak (1946), which had been a protectorate since 1888. The largest colony is Nigeria, and the smallest is Gibraltar, which was captured from the Spanish in 1704. The longest river in the Colonies is the Niger, and the highest mountain is Kilimanjaro in Tanganyika. Ceylon was the first British Colony with indigenous civilisation to achieve Dominion status (1948). The "colonies" of the British Commonwealth are not colonies in the strict sense (see *Outline of the British Commonwealth* in "A Citizen's Guide," and pp. 380-1).

**Colorado Beetle**, a leaf-eating beetle which is a serious pest of potato crops. The adults somewhat resemble a lady-bird, with alternate stripes of black and yellow. The grub is a reddish insect with two rows of small black spots on each side. The orange eggs are laid on potato leaves. The beetle is avoided by birds because it has a nasty taste.

**Colosseum**, the name of the Flavian amphitheatre at Rome, begun by Vespasian and finished by Titus A.D. 80. In general outline it still remains one of the most magnificent ruins in the world. It is 607 ft. long, 512 ft. broad, and 159 ft. high. On the ground storey there are 80 vaulted openings. In the arena of this great building the famous gladiatorial displays and mimic naval battles used to be given, and 87,000 spectators could be accommodated.

**Colossus** is the name which the ancients gave to any statue of gigantic size. The Colossus at Rhodes, which was a bronze statue of Apollo, was the most famous, and reckoned among the seven wonders of the world. It was 70 cubits high, and stood astride of the mouth of the harbour, so that ships could sail between its legs. It was destroyed by an earthquake in 224 B.C.

**Columbia University**, New York, was founded as King's College by a charter from George II. It now has about 27,000 students. The University celebrates the two hundredth anniversary of its founding in 1954.

**Columbium**, an uncommon metal found in columbite and tantalite. Discovered by Hatchett in 1801.

**Column**, in architecture, is an upright solid body serving as a support or decoration to a building. Columns consist of a pedestal, a shaft, and a capital, over which the supported entablature rises. They are named according to the styles of architecture of which they form part, being Doric, Tuscan, Ionic, Corinthian, or Composite as the case may be.

**Colza Oil** is obtained from crushed rape-seed, used as a lubricant and an illuminant.

**Comets** are celestial bodies which move about the solar system in elliptical or parabolic orbits. Usually these star-like bodies are accompanied by a long shining tail. The parabolic comets are seen once only, and do not reappear; the elliptical comets are periodic, and their recurrence can be calculated with accuracy. Comets are of enormous magnitude, sometimes covering millions of leagues, but their light is feeble in comparison with that of a star. Chief among the periodic comets is Edmund Halley's, the first to return as predicted in 1757. It reappears about every 76 years and is next due in 1985. The most spectacular comet of the 19th century was that found by Donati in 1858.

**Comitia** were gatherings of the Roman people for the purpose of voting on public affairs. They were of three kinds; the *comitia curiata*, composed of representatives of the patrician families; the *comitia centuriata*, which voted on

laws, capital crimes, and imperial affairs; and the *comitia tributa*, a plebeian assembly which elected the lower magistrates of the people and which was the usual organ for laws passed by the whole people.

**Comitium**, the place at the foot of the Capitol in ancient Rome, between the Rostra and the Senate House, where the comitia and the law courts were convened. Assemblies of the people also met there.

**Common Law**, in England, is the unwritten law established by custom, usage, and precedent, and not by statute. Both statute law and equity overrule common law when courts are called upon to decide between them. (See p. 129.)

**Commons** are unenclosed tracts of land sometimes dedicated to the use in common of the inhabitants of the township in which they lie. Many of these common lands were enclosed during the agrarian revolution in the Tudor period. The four chief rights of common are: (1) estovers—the right of taking wood for house building or firewood; (2) pasture, or right of grazing beasts; (3) turbary, or right of digging turf; (4) piscary, or the right to fish.

**Commons, House of**, the Lower House of the British Parliament. It is the symbol of democracy and is the Mother of Parliaments. Its 630 (1955) members are elected by the suffrage of men and women voting in constituencies. It is elected for a maximum duration of 5 years. (See also "A Citizen's Guide.")

**Commune**, smallest French administrative division, generally presided over by a mayor and municipal council.

**Commune of Paris** has twice played a dramatic part in the national history. In 1792 it was able, through its control of the administrative organisation of Paris, to override the National Assembly. In 1871, after the withdrawal of the Prussian troops, it tried to assert its authority. Public buildings were destroyed by members of the Commune and civil war raged during April and half May, but Government troops suppressed the rising.

**Communism** is an advanced form of socialism, having as its aim an internationally planned society where the exploitation of any section of the community no longer exists. Under communism the State belongs to the people, whose energies are directed towards shaping it for the common good. Ownership of property, apart from personal needs, is not allowed and the aim is to establish a classless society.

**Compass or Mariner's Compass** is an instrument by which the magnetic meridian is indicated, and comprises a horizontal bowl containing alcohol and water, a card upon which the thirty-two points of the compass are marked, and the steel needle which always points to the meridian. Although the discovery of the directive property of a magnet is credited to the Chinese, the first practical use of this property in a compass was made in western Europe in the 12th century. Aircraft and ships now largely employ gyrostatic compasses which are not affected by electrical and magnetic disturbances. Sperry, Brown, and Anschütz are three important types of gyroscopic compass.

**Compurgation** was a method of defence common in early English times. If a defendant could get a certain number of persons (compurgators) to support his denial on oath of the charge, he won his case. The number of compurgators gradually became fixed at twelve. It may have had some connection with the origin of the modern jury.

**Concerto**, a kind of hybrid between the Symphony and the Sonata. It may be regarded as a Symphony in which one instrument has a preponderance of solo passages or as a Sonata in which the solo instrument is accompanied by full orchestra.

**Conclave**, an assembly of Roman Catholic Cardinals met together to elect a Pope.

**Concordat**, an agreement or convention between the Pope and a secular government regarding ecclesiastical matters. The Concordat of Worms in 1122 between Calixtus II. and the Emperor Henry V. was famous as deciding a long struggle in regard to investiture. In 1801, Napoleon concluded a concordat with Pius VII. defining

the restored relations between the head of the Church and the French Roman Catholics.

**Concrete.** (*See Gardening Section, p. 889.*)

**Condor,** a large vulture of brilliant black plumage and having a circle of white feathers round its neck. It is a native of the Andes.

**Condottieri** were mercenary soldiers engaged in the wars of the Italian States in the Middle Ages.

**Confederation** is a free association of sovereign states united for some common purpose. It is to be distinguished from a Federation, which is a union of states with one central government, each state relinquishing its sovereignty, though retaining some independence in internal affairs.

**Conger-Eel,** a marine eel sometimes found of the length of 10 ft. and weighing 100 lb.

**Congregationalists or Independents,** the oldest sect of Nonconformists and hold that each Church should be independent of external ecclesiastical authority. They sprang from the Brownists, who arose in Elizabeth's days, but were compelled to take refuge in Holland. Under Cromwell they were able to extend their ministrations and became a powerful body. Charles II.'s Act of Uniformity drove them forth again, but they regained full liberty of worship under William III.

**Coniferae** are cone-bearing trees, including firs, pines, cedars, cypresses, junipers, yews, etc., and are widely distributed.

**Conscience Money** is money paid to the Chancellor of the Exchequer by persons who have previously omitted payment and are prompted to do so by their conscience.

**Conservatism** unites three component elements: a distrust of the unknown and an inclination we all share towards the familiar; a respect for authority; and a feeling for the greatness of the country which has been called imperialism. Conservatives thus stress the importance of adopting existing institutions, including property, and are opposed to Socialism and radical change. The name "Conservative" came into general use after 1834 in place of the older name of "Tory," although "Tory democracy" is now widely used to describe Conservative social reform policy. Conservative doctrine is based upon the teachings of Burke and Disraeli, and the Party has always been associated with agricultural interest and has also been supported, since the latter part of the 19th century, by commercial and financial interests. Defeated in 1945, the Party adopted two years later its "Industrial Charter" envisaging a system of free enterprise which is on terms with authority and which reconciles the need for central direction with the encouragement of individual effort. In 1948 the Party's Agricultural Charter advocated the continued encouragement of British agriculture and the retention of the marketing boards. The Party is committed to general planning, but there is a difference of view as to interpretation. The central policy of the Party was defined in the 1951 manifesto "Britain Strong and Free." The Party was returned to power in 1951.

**Conservative and Unionist Party** (called before 1832, the Tory Party and still popularly known as such) is based on independent voluntary associations in each Parliamentary constituency. It has no indirect group membership through affiliated organisations, but has the largest individual membership (2½ millions) of any political party. The Young Conservatives, founded in 1945, now have 150,000 members. The party (1955-56) is represented by 345 members in the House of Commons, led by Sir Anthony Eden. The party in the House of Lords is led by the Marquess of Salisbury. Mr. Oliver Poole is Chairman and Sir Stephen Piersen General Director of the party organisation, headquarters at Abbey House, Westminster.

**Consistory,** a term applied to the private council or state under the Roman Empire, but in later times used to designate the higher ecclesiastical courts and senates of the Anglican and Roman Churches.

**Constable,** an office of high rank in mediæval times, and still, in some few offices, representing considerable dignity. The office of Lord High Constable of England existed until 1521, since when it has been revived temporarily for special occasions such as Coronations. Before the

introduction of the police system in England, every hundred and parish had its constables upon whom devolved the duty of keeping the peace. The official designation of a policeman is police constable.

**Constitution,** the fundamental organic law or principles of government of a nation, state, society, or other organised body, embodied in written documents, or implied in the institutions and customs of the country or society; also a written instrument embodying such organic law, and laying down fundamental rules and principles for the conduct of affairs. The British constitution is "customary" or "unwritten," and may be modified by an ordinary act of Parliament. (*See also "A Citizen's Guide."*)

**Constitution of the United States.** A written constitution of 1778 which, with amendments, is the basis of the federal Government of the United States. Its text is interpreted by the *Supreme Court*, which decides whether legislation is constitutional. *Congress* or *Parliament* consists of the lower house (House of Representatives) and the upper house (Senate). The lower house has a two years' term of office and has a large membership. The Senate retires in thirds every two years and has only ninety-six members (two for each State whatever its size). Congress meets in the Capitol, Washington. Distinguishing feature of the American constitution is the separation of powers as between executive authority (the President) and the legislature (Congress). Laws can only be made by the agreement of the lower and the upper house. The President, who enjoys a four-year term of office, is the formal head of the nation and the head of the executive. In the latter role he can veto any Bill which cannot muster the support of two-thirds of each house of Congress. The Supreme Court has no connection with the legislature or the executive and the judges hold office during good behaviour. (*See also "A Citizen's Guide."*)

**Consul,** the title borne by the two chief magistrates of the Roman Republic. Three consuls were appointed for France after the dissolution of the Directory in 1799, Napoleon becoming First Consul and holding the office until 1804, when he was made Emperor. Today diplomatic and commercial representatives abroad of sovereign states styled consuls.

**Continent,** a word used in physical geography to denote the larger continuous land masses in contrast to the great oceans of the earth. They are: Eurasia (conventionally regarded as 2 continents, Europe and Asia), Africa, North America, South America, Australia, and Antarctica.

**Contrabass.** (*See Double Bass.*)

**Contralto,** the feminine equivalent of the male alto. Where altos and contraltos are present in the same choir they sing the same part. But, whereas the alto is the highest adult male voice, the contralto is the lowest female voice.

**Conurbation,** a term which has been defined as "an area occupied by a continuous series of dwellings, factories, and other buildings, harbours, and docks, urban parks and playing fields, etc., which are not separated from each other by rural land; though in many cases in this country such an urban area includes enclaves of rural land which is still in agricultural occupation." The term has been widely adopted for the contiguous densely populated areas which form continuous urban areas. The seven officially recognised in Britain are: Greater London, Greater Manchester, Greater Birmingham, West Yorkshire, Merseyside, Tyneside.

**Convention** is an assembly of delegates, representatives, members of a party met to accomplish some specific civil, social, political, ecclesiastical or other important object.

**Convocation,** an assembly called together to deliberate ecclesiastical affairs. In the Church of England the provinces of Canterbury and York each have their convocation.

**Copper,** one of the most familiar of metals, used in ancient times as an alloy with tin in producing bronze, and preceding iron as an industrial material. Copper ores are most abundant in the U.S.A., Chile, Canada, Northern Rhodesia and the Belgian Congo. All copper compounds are poisonous. Copper sulphate is largely used in calico-printing and in the pro-



duction of blue and green pigments. World production of copper before the war was over 2 million tons.

**Copts**, descendants of the ancient Egyptians, professing a modified Christianity, the head of their system being a Patriarch. They do not marry out of their own race.

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**Coral**, a small marine animal closely related to the sea-anemone, but differing from it in two ways: corals move about when fully grown and develop a limy skeleton. They multiply chiefly by budding. The structure of the coral sections assumes a variety of forms, fan-like, tree-like, mushroom shape, and so forth. Red coral (the skeleton of *Corallium rubrum*) is mainly obtained from the Mediterranean. The coral reefs of the Pacific and Indian Oceans are often many miles in extent.

**Cor Anglais** (English horn = corno inglese). A tenor version of the oboe.

**Cordite**, a smokeless explosive adopted for small arms and heavy artillery by the British Government in the naval and military services in 1889, and composed of 58 parts of nitro-glycerine, 37 of gun-cotton, and 5 of vaseline. It is a jelly or plastic dough, and used in the form of sticks.

**Cork**, the bark of a species of oak grown largely in the South of Europe and North America. The cork tree is said to yield bark every six to ten years for 150 years, and grows to a height of from 20 to 40 ft. Its lightness and elasticity enable it to be used for a variety of commercial purposes, especially for stoppers of bottles.

**Cormorant**, a large, long-billed water-bird which captures fish by diving. It has bronze-black plumage with white cheeks and sides and is found around the sea coasts of most parts of the world, including the British Isles. It nests in colonies on sea cliffs and rocky ledges. The Shag or Green Cormorant is a smaller bird with green-black plumage and a crest.

**Cornet**, an instrument which is fundamentally a small trumpet. Its tone is neither so bold nor so powerful as that of the trumpet, and it is therefore of use in small orchestras whose balance would be upset by the inclusion of trumpets.

**Corn Laws** were statutes intended for the benefit of British agriculture, and generally prohibited export and imposed a duty on imported corn. From 1436 to the middle of the 19th century such laws were in force, and were often of a stringent nature. They became so oppressive and caused corn to reach so high a price that the poorer classes were plunged into distress. A powerful anti-corn law agitation was organised, of which Cobden, Bright, and Villiers were the leaders, and Sir Robert Peel, in 1846, passed an Act lowering the corn duty to 1s. per quarter. In 1869 this nominal duty was abolished by Robert Lowe in a Customs Duty Act. Since the second world war an effort is being made to control the acreage, purchase and distribution of crops on a world-wide scale.

**Coronae**, series of luminous rings surrounding sun or moon, produced by the diffraction of light by water droplets in the atmosphere. Usually seen when sun shines through altostratus cloud. The outside of the ring is red and the inside bluish. (See Halo.)

**Coronation**, the ceremony of crowning a monarch at the beginning of a new reign. The crowning takes place at Westminster Abbey and has been performed by the Archbishop of Canterbury since pre-conquest times. The ceremony takes place in three stages. First comes the Recognition and the taking of Oaths. The ancient right of acceptance of the sovereign by the people goes back to Saxon times, and though the succession from father to son or daughter has been secured since the reign of Edward IV, the inclusion of the Recognition scene in the Corona-

tion ceremony is a reminder of the people's right to accept their monarch. The sovereign in turn swears to reign in accordance with the law and to uphold the Protestant Faith. The Oath has varied down the centuries; the promise to maintain the Protestant Religion was added at the coronation of William and Mary in 1689, but the Oath itself goes back to remote antiquity, and has always been regarded as a safeguard of the liberties of the people. Then comes the religious ceremony of anointing the sovereign with holy oil on hands, breast, and head, a practice dating from Saxon times. The monarch sits in St. Edward's chair (made for Edward I), beneath which is the Stone of Scone on which the Scots were crowned. The Spurs and Sword are presented as emblems of knighthood, and the Sword is girt on to symbolise justice and strength; next comes the Investiture with the Kingly garment and the delivery of the Orb. Ring and Sceptre are presented and then comes the supreme moment of crowning. After that all the peers put on their coronets, the sovereign is presented with the Bible, blessed and lifted to the Throne, to receive the homage of the princes and peers present. The Coronation regalia nearly all date from the reign of Charles II., when they had to be remade because Cromwell had had the old regalia melted down and sold. The only relics of the former regalia are the gold Anointing Spoon, the Ampulla (or gold eagle to hold the anointing oil) and Queen Elizabeth's salt cellar. St. Edward's Crown is used only for the actual Coronation and is not worn afterwards owing to its weight (5 lb.). It is replaced by the Imperial State Crown, worn also at the Opening of Parliament. All arrangements for the ordering of the Coronation are made by the Earl Marshal of England, an office hereditary in the family of the Dukes of Norfolk since 1677. He takes charge of the Abbey from the Dean and Chapter some months before the event. One of his duties is to assist at the Court of Claims over which the Lord Chancellor presides. This Court, whose history goes back 600 years, decides on the claims of those who are to perform the ancient services at the Coronation, e.g., the right of the Lord Great Chamberlain to carry the monarch his (or her) clothes; the right to carry the Standard of England or Scotland, or to present a glove for the Sovereign's right hand.

**Coroner**, an officer whose duty it is to hold inquests on the bodies of people who are suspected of having died from other than natural causes. He is usually both a lawyer and a doctor; an inquest takes the form of a legal inquiry, a court being constituted, with a jury, the coroner being the presiding officer. Fire inquests are held only in the City of London under a special Act of Parliament.

**Corpus Christi Festival** is one of the great celebrations of the Roman Catholic Church, and takes place on the Thursday after Trinity. It was instituted by Pope Urban IV. in 1264.

**Cortes**, the name of the Parliamentary assemblies of Spain and Portugal.

**Cosmic Rays**, a form of radiation coming from outer space, of deep penetrating power and of great scientific interest. The rays are believed to consist chiefly or particles endowed with positive electric charges, but nothing is known as to how they are produced. The balloons which are sent into the upper atmosphere to collect data about cosmic-ray bombardment have been referred to in the Press as "flying saucers."

**Cotton**, the name of a plant of several species, bearing large yellow flowers with purple centres. These centres expand into pods, which at maturity burst and yield the white fibrous substance known as cotton. The raw cotton contains a large proportion of seeds which are removed by "ginning." Long before the Christian era, cotton had been grown and used with great skill in India to make fabrics. The industry was not introduced into England until the middle of the 17th century when Protestant refugees from Flanders came to settle in the wool textile districts of East Anglia and Lancashire. With improvements in machinery and expansion of overseas trade in the 18th and 19th centuries, Lancashire became the centre of the world's cotton industry. Since the First

- World War there has been a marked decline in Britain's cotton industry; cotton manufactures representing 7.3 per cent. of the total value of U.K. exports in 1950 compared with 25.6 per cent. in 1913.
- Cotton Seed Oil** is an oil extracted from the seed of the cotton plant, and is of considerable commercial value; used as a substitute for olive oil.
- Council of Foreign Ministers.** A Council of the Foreign Ministers of the United Kingdom, U.S.A., U.S.S.R., and France, set up after the second world war to prepare the peace treaties. (See also "A Citizens' Guide.")
- Counterpoint** (adj. contrapuntal). The weaving together of two or more distinct melodies to create harmony.
- County.** The geographical counties of England are of very early origin and the word "county" was first introduced after the Norman conquest as an equivalent of the old English "shire". The 52 ancient or geographical counties of England and Wales should not be confused with the 62 administrative counties (created by the Local Government Act of 1888 when several of the geographical counties were subdivided) which themselves exclude the 83 county boroughs or towns with the status of a county. Scotland has 33 and Ireland 32 counties.
- Coup d'Etat.** Is applied to a violent change in the constitution of a State. There was the overthrow of the French Republic in 1851 by Louis Napoleon, who then became Emperor, and more recently in 1952 the military *coup* in Egypt which led to the abdication of King Farouk.
- Court Leet,** a court of record held annually before the steward of any particular manor or lordship; originally there was only one court for a manor, but in the time of Edward I. it branched into two, the court baron and the court leet.
- Covenanters** were a body of Scottish Presbyterians who in 1638, and again in 1643, pledged themselves to uphold the Presbyterian faith, as against both prelacy and popery.
- Covent Garden,** in London, now a great flower and fruit market, was once a convent garden owned by the abbot and monks of Westminster.
- Crabs** are familiar crustaceans, carrying a shell, breathing through gills, and are provided with ten external limbs or claws, the side and smaller limbs being used for walking, and the two front claws for grasping purposes.
- Crane,** a large, graceful wading-bird with elegant long legs and neck, greyish plumage, superficially resembling the heron and related to the bustard. They migrate in V or W formation and have trumpet-like voices. There are several species, found in all continents except S. America, including the Crowned Crane with golden coronet and the Demoiselle with tuff-like crest of white feathers. The Common Crane nested in East Anglia in medieval times but now comes only as a rare visitor from the Continent.
- Creed,** a brief enumeration of a particular belief or religion. The three important Christian creeds are the Apostles' Creed, the Nicene Creed, and the Athanasian Creed.
- Cremation,** the ancient custom, revived in modern times, of burning the dead. Many scientific men commend the practice on hygienic grounds, particularly in densely populated countries. Cremation was first legalised in Great Britain in 1885 and the first crematorium opened at Woking in that year. Application for cremation must be accompanied by two medical certificates.
- Creole,** a West Indian and Spanish American term applied to a person born in the country but of a foreign race. It is also used for a negro born in the country, not brought from Africa.
- Cretaceous System** is the term given to the uppermost strata of rocks of the Mesozoic period. It has the following subdivisions: Maestricht beds, chalk with flints, chalk devoid of flints, chalk marl, upper greensand, and gault.
- Cricketer,** a genus of insects of the grasshopper order which move by leaps. The male produces a chirping noise by rubbing its wing-covers together.
- Crimean War (1853-56).** This war between Russia and the allied powers of Turkey, England, France, and Sardinia, was connected with the Eastern Question (*q.v.*) and the desire of Russia for a port on the Mediterranean. Chief engagements were the Alma, Balaklava, and Inkerman. Fighting virtually ceased with fall of Sevastopol in September 1855. Treaty of Paris signed March 30, 1856.
- Crinoids (Crinoidea).** (See Sea Lily.)
- Crinoline** was the name given to a stiff material, originally of horse-hair, worn by ladies as a skirt-expander from about 1855 to 1860. (See Farthingales.)
- Crocodile,** the name of the largest existing reptile, and classed with the alligator and the gavia. The crocodile inhabits the Nile region, the alligator the lower Mississippi, and the gavia is found in the waters of the Ganges.
- Cromlech,** the name given to an ancient monumental erection consisting of a large rough stone placed on three or more upright stones and found in various parts of Great Britain and the Continent.
- Crore (Hind. *kror*),** an Anglo-Indian word meaning ten millions, used commercially to signify that number of rupees (100 lakhs).
- Crosier,** the staff, or crook, of a bishop carried before him on special episcopal occasions. It is generally richly decorated in gilt at the top.
- Crow,** a family of birds including many well-known species such as the rook, raven, jackdaw, carrion crow, hooded crow, magpie, nut cracker, jay, and chough. (See *p. 1004*.)
- Crusades** were military expeditions undertaken by some of the Christian nations of Europe with the object of ensuring the safety of pilgrims visiting the Holy Sepulchre and to retain in Christian hands the Holy Places. For two centuries between 1095 and 1271, various crusades were undertaken. There were eight crusades in all: 1st, 1096-9, under Godfrey of Bouillon, which succeeded in capturing Jerusalem; 2nd, 1147-9, led by Louis VII., and unsuccessful; 3rd, 1189-92, in which Richard I. took part, against Saladin, also unsuccessful; 4th, 1202-4, led by Count Baldwin of Flanders, and resulting in the founding of a Latin empire in Constantinople; 5th, 1217, led by John Buene; 6th, 1228-9, under the Emperor Frederick II.; 7th 1248-50, led by St. Louis (Louis IX. of France); and 8th, and last, 1270-71, under the same leadership, but resulting in failure. Millions of lives and an enormous amount of treasure were sacrificed in these enterprises, and when all was done Jerusalem remained in the possession of the "infidels."
- Cryolite,** a mineral, sodium aluminium fluoride, found in extensive beds in Greenland. It is used in the electrolytic process for extracting aluminium, and small amounts go into the manufacture of opalescent glass.
- Crypt,** a vaulted subterranean portion of an abbey, cathedral, or church, now generally used for burials or monumental purposes.
- Cryptogam.** A plant without flowers, as opposed to the *phanerogams*. The cryptogamic plants include the seaweeds, fungi, mosses, liverworts, ferns, and sclaginellas.
- Cuckoo,** a well-known migratory bird which is found in Great Britain from April to July, and has a very characteristic note, uttered during the mating season only by the male. The hen has a soft bubbling call. It lays its eggs in the nests of other birds (the Meadow Pipit being the commonest foster-parent), but only one egg in each nest. Feeds entirely on insects, particularly hair caterpillars.
- Cuidees,** one of a class of religious recluses, existing in Ireland and Scotland from the 7th to the 12th century.
- Cuneiform,** the term applied to the written arrow-headed characters found in Assyria, Persia, and Mesopotamia. Good examples may be seen in the British Museum, some of them several thousand years old.
- Cupola,** the inner portion of a dome. Famous cupolas are those in the Roman Pantheon, the Mosque of St. Sophia at Constantinople, St. Peter's at Rome, and St. Paul's in London.
- Curfew,** the bell which William the Conqueror ordered to be rung at eight o'clock each night in the towns and villages of Britain, as a signal to the inhabitants to extinguish lights and go to bed. It originated in the fear of fire when most cities were built of timber. It was abolished in



1100, but at Ripon, Sandbach, Chesham, Penrith, Ibberton, Wokingham, it is still rung as a matter of custom.

**Curlew**, a wading bird of which there are several species. It frequents marshy places, feeds on worms and insects, and possesses a very long curved bill.

**Cybernetics** (derived from the Greek word meaning "governor") is the American term for the science of automatic control by machines. The work of the American scientist, Dr. Norbert Wiener, has led to great advances in the construction of electronic computers and to interesting speculations in the field of sociology. (See *Calculating Machines*.)

**Cyclone**, a term usually applied to a tropical revolving storm. Cyclones often occur towards the end of the hot seasons and are mainly confined to tracks in the western areas of the oceans, being known as hurricanes (Caribbean and Pacific), cyclones (Indian Ocean), and typhoons (China Seas). The circulation of air in a cyclone is similar to that in the depression of temperate latitudes, but the region of low pressure is much more localised and the pressure gradients steeper. Winds of hurricane strength and torrential rain occur generally, although at the centre of the storm there is a small area, known as the "eye," where fair, calm weather prevails.

**Cyclotron**, or atom-smasher, invented by Prof. E. O. Lawrence at Berkeley, California, in 1930, is one of the new devices for fundamental work in atomic physics, designed to accelerate electrically-charged particles to energies corresponding to several million electron-volts. Other high-voltage accelerators are the synchrotrons, cosmotrons, betatrons and bevatrons. Great Britain has recently constructed particle accelerators on a major scale, which will be of value not only in the field of nuclear research but in curative medicine. (See also *Meson* and *p. 186*.)

**Cymbals**. Two plates of brass which, when brought sharply together, produce a clashing sound. In a large orchestra this task falls to the player of the bass drum.

**Cynics** were a set of Greek philosophers, founded by Antisthenes, the pupil of Socrates. They held that virtue was the only good, and condemned arts, sciences, pleasures, and riches. Diogenes was the most famed of the cynics.

**Cyrenaics**, a school of Greek philosophy, said to be founded about 400 B.C. by Aristippus of Cyrene, who held that pleasure was the most worthwhile thing in life but that it was necessary to use good sense in choosing the pleasures likely to avoid future pain and make for a pleasant life.

**Czar** was the title of the Emperor of Russia, and is derived from Caesar. The first Czar was Ivan IV., crowned in 1547. The Czar's wife was styled Czarina, and his eldest son Czarevitch. The last Czar was Nicholas II., killed (July 1918) during the revolution.

## D

**Dab**, a species of flat fish, common round the British coast, and a better table fish than the flounder.

**Daboya**, an Indian viperine serpent, venomous, and of nocturnal habits, of the genus *Daboia*.

**Dace**, a small fresh-water fish of the carp family, of elegant shape and silvery appearance.

**Dacelo**, a quaint-looking bird of the kingfisher order, common to Australia, one variety of which is known as the "laughing-jackass."

**Dachshund**, a German badger-hound, remarkable for its short legs and long body.

**Dacite** consists of plagioclase and quartz, together with minerals of the hornblende and pyroxene families. Occurs mostly in Transylvania and the Cordilleran districts of America.

**Dacoits**, Indian brigands, or professional robbers, who were formerly very numerous and terrorised the districts they infested, especially Lower Bengal. Mansingh, "the greatest dacoit of all time," was killed by the Uttar Pradesh police in 1955 after a manhunt lasting many years.

**Dacrydium**, a genus of plants of the yew family,

native of New Zealand and the East Indies, the young branches of which are used in the making of a beverage not unlike spruce beer.

**Dactyl**, a measure in versification, consisting of a foot of three syllables, the first long, and the second and third short, as *lovingly, verily*.

**Dactylomys**, a South American rodent of the size of a rat, possessing a long scaly tail.

**Dactylopterus**, a fish of the gurnard family, with wing-like pectoral fins; sometimes known as the flying fish, though that appellation is more generally given to *Exocoetus exilis*.

**Dado**, a term denoting the portion of a pedestal between the base and the cornice; also applied to the lower part of the walls of a room when decorated differently from the upper part.

**Dafila**, a kind of fresh-water duck, with long supple tail, found in Europe, Asia, and America. The pintail duck belongs to this genus.

**Dagger-ale**, a kind of liquor often referred to in 16th-century English literature, and sold at the sign of the Dagger in Holborn, a London house much frequented by the gallants of the time.

**Dagoba**, an edifice dedicated to the custody of relics of Buddha, and numerous in the temples of Ceylon and other Buddhist countries.

**Dagonal**, the feast of the Philistines in honour of Dagon, their god, which was depicted with the head of a man and the lower part of the body like a fish.

**Daguerreotype**, a first practical photographic process, invented in Paris by M. Daguerre during the years 1824-39. The light-sensitive plate was prepared by bringing iodine in contact with a plate of silver. After exposure a positive image came by development of the plate in mercury vapour. Even for open-air scenes the first daguerreotypes involved exposure of 5-10 minutes. The wet collodion process (1851) rendered the technique obsolete.

**Dahabiyeh**, a kind of boat much used on the Nile, broad at the stern and tapering off gracefully at the prow. It carries one or two masts and lateen sails.

**Dail Eireann**, the name of the national parliament of the Irish Republic.

**Dais**, an elevated part of a floor or a platform, in a large room or hall. It usually has a seat or seats upon it, and is covered with a canopy. It is the place of honour occupied by the most distinguished personages, as the King, a bishop, etc.

**Dalmatian Dog**, the old-fashioned coach dog, white, spotted with black.

**Dalmatic**, a wide-sleeved ecclesiastical vestment, reaching below the knee. Worn by bishops and deacons over the alb or stole.

**Dama**, the scientific name of the fallow deer, which is fawn coloured or brown, with white spots.

**Damask**, a textile figured fabric, made in various forms, with silk threads of many colours, as originally woven in the city of Damascus; in a combination of silk and wool or cotton; in linen only for table-cloths, etc.; or in cotton.

**Damaskeening**, the art of inlaying one metal upon another, largely practised in the East in medieval times, especially in the decoration of sword blades. In its modern form it has been greatly developed.

**Damp**, humidity, moisture, assumes numerous forms. Fire-damp, however, has nothing to do with humidity or moisture but consists of methane, a poisonous vapour met with in mines and often the cause of explosions; choke-damp is mainly composed of carbon dioxide and causes suffocation.

**Dan**, a mining term applied to a vessel in which water is conveyed to the surface.

**Danburite**, a substance found in crystals in various regions of America, and in Switzerland, and of a yellowish-white colour. A borosilicate of calcium.

**Dancette** is an architectural term, applied to a form of zigzag moulding often found in ancient buildings.

**Dandies**, the name given to a class of exquisites prominent in early Victorian days, and who attracted attention by excessive regard for dress.

**Danegeld**, a tax imposed in England in Anglo-Saxon times to raise funds for resisting the Danes or to buy them off. Edward the Confessor abolished the tax, but it was revived by the Conqueror and subsequently retained, under another name, after the danger from the Danes

was past. It is the basis of all taxation in this country. Domesday Book was originally drawn up for the purpose of teaching the State how to levy the tax.

**Danelaw**, the law enforced by the Danes in the kingdoms of Northumbria, East Anglia, and in the districts of the five (Danish) boroughs—lands grouped round Leicester, Nottingham, Derby, Stamford, and Lincoln—which they occupied during the Viking invasions of the 9th and 10th centuries. The country occupied was also called the Danelaw or Danelagh.

**Danes' Blood**, a common plant of the elder family, deriving its name from the tradition that it originally grew from the blood of Danes killed in battle.

**Darien Project** was an unsuccessful scheme entered upon at the close of the 17th century by Pater-son, the Scottish financier, for colonising the Isthmus of Darien and thereby diverting trade from the East in the direction of Scotland.

**Darter**, 1. A genus of birds of the pelican family, with long pointed bill and serpent-like neck and resembling cormorants in appearance. 2. A family of small fishes.

**Dartsnake**, the name of a serpentine lizard of the Aconitas family, noted for the darting manner in which it attacks its prey.

**Datary**, a Roman ecclesiastical functionary, who acted for the Pope in all matters relating to the issuing of grants and dispensations; the dater or dispatcher of the Papal bulls.

**Date Palm**, a native of Northern Africa, where it is grown in great profusion. It is also known in Southern Europe and Western Asia to some small extent. It grows to 100 ft. and continues to bear for 2 or 3 centuries, its fruit being of great value as a food. From the leaves the Africans make roofs for their huts; ropes are made from the fibrous parts of the stalks; and the sap furnishes a stimulating beverage.

**Dauphin**, the title borne by the eldest sons of the Kings of France from 1349 to the Revolution of 1830.

**"Davy Jones,"** a nautical term of a humorous turn supposed to apply to the spirit of the sea; it is said among sailors, when a person dies at sea, that he is committed to "Davy Jones's locker."

**Day** is the most natural unit of time and may be defined as the period of rotation of the earth relative to any selected heavenly body. Relative to the sun it is called the *solar day*. Relative to a fixed star it is called the *sidereal day*. Owing to irregularities in the earth's movements, the time taken for the earth to rotate through 360° relative to the sun is variable, and so the *mean solar day* of 24 hours has been introduced, which is the average throughout the year. The *mean solar day* is our standard, used for purposes of the calendar, and astronomers use *sidereal* clocks to check mean solar time. In practice, for convenience, the *sidereal day* is determined by the earth's rotation relative to the vernal equinox or first point of Aries, and is equal to 23 hours 56 minutes and 4.091 seconds of mean solar time (i.e., about 4 minutes shorter than a solar day).

**Day Nurseries** are modern institutions, the result of a movement for the protection of the young children of working people, and consist of *crèches* where infants are nursed and cared for while their mothers are at work. The first infant open-air nursery schools in Britain were opened by Margaret McMillan at Deptford in 1914.

**D.D.T.** (dichloro-diphenyl-trichloroethane). One of the most powerful synthetic insecticides. Mosquito-breeding areas are now sprayed from the air. (See also p. 910.)

**Deacon**, an ecclesiastical official, who assists in some of the smaller ministerial duties in church or chapel; in the Anglican Church he ranks below a priest.

**Dead Languages** are such as the ancient Greek and Roman tongues, which are no longer spoken but are preserved in literature.

**Dead Sea Scrolls**, a group of documents, consisting of scrolls and fragments, which have been recovered in the vicinity of Qumran near the Dead Sea and which represent one of the most important finds ever made in the field of Biblical archaeology. The scrolls were found

in 3 different localities, the first by chance in 1947 by an Arab shepherd. They were written in Hebrew or Aramaic on leather and consist of Biblical texts which antedate by almost a thousand years the earliest Hebrew manuscript of the Old Testament. The second find were documents relating to the Second Jewish Revolt against Rome in A.D. 132 and the third are fragments from 25 caves consisting largely of Biblical texts comprising the whole of the Old Testament with the exception of Esther. Subsequent excavations at Khirbet Qumran have uncovered a complete Jewish "monastery". All the new material is being studied by scholars in the Palestine Museum and it is too early yet to say who the religious sect was to whom the literature belonged. Some believe it to have been the Essenes.

**Deal**, the name given to planks of fir-tree wood of Northern Europe, 9 inches wide and 3 inches thick, 50 cubic feet of which form a load, and 100 superficial feet a square. An American deal, it should be noted, is 12 inches broad and 2½ inches thick and of the uniform length of 12 feet.

**Dean**, a Church of England dignitary, ranking next below a bishop, and the head of the chapter of a cathedral. A rural Dean supervises a *deanery* or group of parishes. There are also Deans of Faculties in some universities, and at Oxford and Cambridge the *Dean* is in charge of chapel services and disciplinary arrangements.

**Death's Head Moth**, a large insect, not uncommon in England, and remarkable because of its having on its thorax the outlined semblance of a human skull. It emits a peculiar, mournful sound when startled.

**Death-watch**. The so-called death-watch, with its mysterious ticking in the night-time, is due to nothing more serious than the furniture-beetle. The larva of this insect burrows in the furniture, making the pinholes which are often to be seen in old furniture. It is three years in its pupa condition, and at last becomes a little brown insect with a great talent for shamming dead, so that it is not very much observed. These beetles often strike the wood of their galleries with their heads, and so produce a ticking sound which is a call to the mate. The ticking is most frequent in the summer months, but in warmed rooms it may be heard at any time.

**Decade**, the number 10, or a period of 10 years.

**Decalogue**, the Ten Commandments, which, as related in Exodus, were given by God to Moses on Mount Sinai, and contained on two stone tablets.

**Decapods**. Crustacea with ten (five pairs of) appendages: include lobsters, crabs, shrimps, and prawns.

**Deceased Wife's Sister's Marriage Act** was passed in 1907. This measure was put before Parliament for many years; it usually passed the Commons, but was rejected by the Lords, the bishops being its real stumbling-block. Marriages with sister of deceased wives are legal in many countries, including Canada, Australia, New Zealand, and Ceylon.

**December**, the twelfth month of the year, and the tenth of the old Latin calendar. The Anglo-Saxons called it Mid-winter monath and Yule monath.

**Deciduous Trees** are such as shed their leaves, or "fall" at maturity, or at certain seasons, as distinguished from evergreens or permanent foliaged trees or shrubs.

**Decimal System** is based on the unit of 10. Fractional numbers are expressed as divisions of 10; thus the number 3.458 means  $3 + \frac{4}{10} + \frac{5}{100} + \frac{8}{1000}$ . (See Metric System.) The decimal system is used to classify books in libraries (see p. 143).

**Declaration of Independence** was an Act by which the American Congress, on July 4th, 1776, declared the American colonies to be independent of Great Britain. "Independence Day" is a holiday in all the States and territories of the United States.

**Decollation** is the act of beheading or decapitation as a form of punishment. Decollation was very generally resorted to in mediæval times, but it is confined mainly to France at the present day, the guillotine being the beheading instrument.

**Decomposition** is the act of disintegrating the



- elements of any compound substance. Oxygen and hydrogen are obtained by the decomposition of water.
- Decree** is a special edict or regulation issued by a supreme or governing power. The judgment of a superior court is also called a decree.
- Decree Nisi**, a law term used in regard to a Divorce Court decree which dissolves a marriage, if at the end of six weeks nothing arises to interfere with the decision, whereupon it is made absolute and the parties are free.
- Deemster** is the title of the two judges in the Isle of Man.
- Defender of the Faith**, a title conferred by Pope Leo X. upon Henry VIII. of England for his tract "Assertion of the Seven Sacraments" against Luther. Later it was withdrawn, but in 1544 was confirmed to him by Parliament and has since been used by English sovereigns.
- Deficiency Disease**. Disease due to deficiency of dietary factors, which though essential are required only in minute amounts—these factors include vitamins, and certain minerals. Examples of vitamin-deficiency diseases are scurvy (vitamin C), rickets (vitamin D).
- Delft ware**, a kind of enamelled pottery first made at Delft in Holland in the 14th century.
- Deliquescence**, the process of liquefaction or dissolving by the absorption of moisture from the atmosphere. For instance, chromic acid crystals on exposure to the air quickly deliquesce.
- Delta**, a triangular tract of land between diverging branches of a river at its mouth, and so called from its general resemblance to the Greek letter  $\Delta$  *delta*. The best-known examples are the deltas of the Nile, the Ganges, the Niger, and the Mississippi.
- Deluge**, a flood, a term commonly applied to the story of the Deluge contained in the Bible, in which Noah and the Ark figure. A similar tradition lingers in the mythologies of all the ancient nations.
- De Lunatico Inquirendo**, the name for a writ sanctioning an inquiry into the condition of mind of a supposed insane person, with powers to secure a due administration of his affairs if shown to be insane.
- Democracy** is the condition of direct popular government—"by the people for the people"—the executive powers being vested in representatives elected by the people. A republic is in theory the most perfect form of democracy. It is the rule of the majority of the free and equal citizens, as opposed to monarchy, aristocracy, and dictatorship.
- Democratic Party of the United States** is one of the two major parties, the other being the Republican Party. The party is sometimes regarded as the more liberal party in the U.S.A., but the difference is not a clear cut left-and-right difference. The Democratic Party was the party of low tariffs and of the rights of the states (in opposition to the federalists). It was very strong in the Southern states which contained the slavery states and thus called "the solid South." The 20-year Democratic era of Roosevelt, who stood for the *New Deal*, and Truman, who stood for the *Fair Deal*, came to an end in 1952 when Gen. Eisenhower won the Presidential election for the Republican Party.
- Demoiselle**, the Numidian crane, a wading bird.
- Denarius**, a Roman coin, originally of silver, first coined in 288 B.C. It is the penny of the New Testament.
- Denticulus**, a member of the moulding ornamentation of Ionic and also Corinthian entablatures, over the frieze and under the corona, but, properly speaking, because of its projection, part of the latter. It consists of a row of rectangular blocks, at regular intervals, resembling teeth; hence the name.
- Dendrite**, any stone or mineral on which appears natural tracery resembling trees, leaves, or flowers, the result of the action of the hydrous oxide of manganese.
- Denier**, an old French coin, and the chief silver coin of Europe during the mediæval period.
- Density**, a measure of the mass per unit volume of a material, usually expressed in grams per cubic centimetre. *Specific gravity* is the ratio of the density of a material at the temperature under consideration to that of water at the temperature of its maximum density (4° C.). In grams per cubic centimetre the density of gold is 19.3, silver 10.5, lead 11.3, water 0.99997, air 0.00129.
- Deodand**, the name given in old English law to a personal chattel which had been the cause of an individual's death. This chattel—it might be a cart that had run over and killed a man—was declared a deodand and forfeited to the king to be applied to religious uses. Deodands were abolished in 1846.
- Deodar**, a coniferous tree of the cedar order.
- Department**, a division of a country or province, applied in France to the chief administrative territories (*départements*), which again are subdivided into *arrondissements*.
- Depas**, a double-handled drinking-cup used in ancient Greece, and referred to by Homer.
- Depression**, a region where barometric pressure is lower than that of its surroundings. These areas of low pressure enclosed by the isobars are usually less extensive than anticyclones and may vary from 100 to 1,000 miles in diameter. The winds, often of gale force when the depression is deep, blow round the system in an anticlockwise direction in the Northern Hemisphere (in the reverse direction in the Southern Hemisphere) and inwards across the isobars. The majority of depressions which cross the British Isles travel from the Atlantic, sometimes in series or families, at rates of between a few miles and 700 miles in a day, bringing their generally unsettled weather with them. (See p. 383.)
- De Profundis** (out of the depths), the first two words of the Latin version of the 130th Psalm, and commonly used to designate this psalm.
- Derby**, the leading English horse-race, run on the Epsom course usually in May but sometimes in June. Originated in 1780 by the twelfth Earl of Derby, carries with it a stake of £19,118 10s. (1953), and is competed for by the best three-year-old colts and fillies of the time who must be entered when they are yearlings. The distance of the course is 1½ miles.
- Derrick**, the name of a special jib crane, for lifting and moving heavy weights. It was originally applied to a kind of gallows built by a Tyburn hangman called Derrick in the 17th century.
- Dervish**, a Mahomedan mendicant monk. There are many orders, including the "howling," "wandering," and "whirling" dervishes. Also one of the fanatical followers of the Sudan Mahdi.
- Descant**. An additional contrapuntal part, often much ornamented, woven in with an existing part. The vocal descant is one of the earliest uses of counterpoint.
- Deserts**, vast, barren, stone or sandy wastes where there is almost no rainfall and little or no vegetation. These regions are found in the interior of the continents Africa, Asia, and America between 20° and 30° north and south of the equator. Europe is the only continent without deserts. The most famous are the Sahara, the largest in the world, the Gobi desert of central Asia, the Kalahari desert of south-west Africa, and the great Australian desert.
- Destiny**, a supposed foreordained end, an overmastering force that impels the current of events to a final climax. In ancient times, fate, or destiny, was a common belief.
- Detectives** are secret police employed in collecting evidence or effecting the capture of offenders in cases of more than ordinary difficulty.
- Detergents**. (See Soapless Detergents.)
- Determinism**, the doctrine that behaviour is determined by natural laws and that nothing happens by chance.
- Detonator**. Substance for initiating an explosion. Most important detonators are mercury fulminate and lead azide.
- Deuterium** or "heavy hydrogen." The second isotope of hydrogen; the third is called tritium. Deuterium atoms have in their nuclei a neutron as well as a proton; tritium nuclei have two neutrons and one proton. In ordinary hydrogen gas about one out of every 5,000 atoms is a deuterium atom. Deuterium was discovered in 1932 by Professor Harold Urey. The oxide of deuterium corresponding to water is called "heavy water."
- Deuteronomy**, the fifth book of the Pentateuch, purported to have been written by Moses, and

containing the statement of the law, but regarded by many modern critics as of a much later period.

**Deviation of the Compass**, caused by the counter-attraction of the iron of a ship, is generally corrected by putting magnets near the compass, and by careful watching and calculation.

**Devil**, the spirit of evil, *Sātan*, *Beelzebub*, "the tempter," the enemy of God and of good, to whom a varied personality has been given by different religious systems in different ages.

**Devil-fish**, a strange marine animal of large size and of several species. As it is met with in European waters it is called the fishing frog, and the chief American species is the giant ray.

**Devil-worship** consists in a belief in, and of incantations to propitiate, evil spirits. This kind of worship is confined to certain primitive races of Asia and Africa, and a few Red Indians of North America.

**Devonian System** in geology refers to the strata between the Silurian and the Carboniferous Formations. It includes the Old Red Sandstone Formation. The fauna of the Devonian include the group of fishes known as the Rhipidistia (on the evolutionary route towards the amphibians), *Actinistia* (coelocanth), and the Dipnoi or lung fishes.

**Dew**, moisture deposited by condensation of water vapour on exposed objects especially during calm, cloudless nights. The loss of heat from the ground after sunset, by radiation, causes the layer of atmosphere close to the surface to be chilled below the temperature, known as the dew-point, at which the air is saturated with vapour. Part of the vapour condensed may be transpired from blades of grass and foliage of plants.

**Dew Pond** is a shallow artificial pond which is on high ground and rarely dries up, even during prolonged droughts, despite being used by cattle and sheep as a drinking source. The name arose from the belief that dew deposits at night provided the moisture for replenishment. Drainage of rain-water and mist condensed on neighbouring trees and shrubs are probably more important factors.

**Dextrin**, a white, odourless, viscid substance of the same composition as starch, from which it is obtained. It is used as gum, being the material put on the backs of postage stamps and other articles which are required to be made adhesive. It also is utilised in calico printing.

**Dhole**, the wild dog of the Deccan, of a bright bay colour, and living on game, which it hunts in packs.

**Dhow**, a one-masted trading vessel, much in evidence on the east coast of Africa and the Red Sea, and formerly employed in the transportation of slaves.

**Diadem** was originally a head ornament or fillet worn only by royal personages and from being of plain white material came to be of rich gold embroiderings, and set with precious stones. Now the term is applied to a crown or other head-badge worn by royalty, or the head ornament of a peeress, which, however, is more frequently styled a tiara.

**Dieresis**, the sign (·) placed over the second of two vowels coming together, and indicating that each is to be pronounced distinct from the other, as *de·rated*; also employed to indicate that a vowel, ordinarily silent, must in this case receive pronunciation, as "Oh, curs'd spite," "My be·loved," etc.

**Dial or Sun Dial**, an instrument for telling the time of day by a shadow thrown on a marked surface. This was the first form of outdoor clock, and was introduced into Europe from the East. It is made in various forms—horizontal, upright, or inclined.

**Dialect** is a form of speech special to a locality or district, and differing from the general literary language of the country. In England these dialects are numerous, but in all of them some survivals from what was once good old English speech are to be found. From the works of Chaucer, Spenser, Shakespeare, and from even later writers, many words are to be read that are obsolete as regards modern literary expression, but are still familiar in dialect idioms.

The dialect that has forced itself most into modern literature is the Scottish, a fact largely due to the compositions in dialect of Burns and other Scottish poets. For the full understanding of the force and meaning of English dialects, Professor Wright's monumental *Dictionary of Dialects* is to be commended.

**Diallage**, a kind of pyroxene mineral, containing calcium and iron; green in colour, and of foliated structure; common in serpentine rocks.

**Diamagnetism**, the phenomena revealed by certain substances which, under magnetic influence and suspended, assume a position showing the longer axis at right angles to the magnetic lines of force.

**Diameter**, a straight line passing through the centre of a circle or other figure, terminated at both ends by the circumference. In architecture, the diameter of the lower bed of a column, divided into 60 parts, constitutes the scale whereby all the parts of a classical order are measured.

**Diamond-beetle**, a South American beetle of very brilliant, luminous, spotted marking.

**Diana Monkey**, a large African monkey that derives its name from the supposed resemblance of its white frill to the crescent bow of the goddess Diana. The Palatine monkey of Pennant, *Cercopithecus Diana*.

**Diana's Temple at Ephesus**. The temple of Ephesus, built after the model of Karnak, was looked upon as the greatest of the "seven wonders of the world." Its interior length was 425 ft., its breadth 290 ft.; its roof was supported by 127 richly sculptured pillars, each the life-work of a king. Originally erected by Ctesiphon, it was enlarged and enriched by every succeeding prince. On the day that Alexander the Great was born, Erostratus tried to destroy it by fire, and partly succeeded; the Ephesians rebuilt it, and the world at large contributed to its restoration. Some years later Alexander the Great commanded his engineers to improve and beautify it. At the entrance to this famous temple was placed the "Altar of Sacrifice." In the Adytum was a second altar, the "Altar of sweet herbs." At the entrance to the Penetralia was a third, the "Altar of sweet incense," on which only the richest and most costly perfumes were placed. The statue of Diana was behind purple curtains.

**Diapason**. The concord of the first and last tones of an octave and the fixed rule by which organ pipes are arranged to proper pitch. The open metal flue pipes which form the basis of an organ are called the diapason "stops." Their pitch is expressed in terms of length, e.g., 4-ft. diapason, 8-ft. diapason, 16-ft. diapason. The pitch of other pipes is related to that of the diapason: e.g., a trumpet, which is a reed stop, may be said to have an 8-ft. tone, i.e., its pitch is the equivalent of an 8-ft. diapason.

**Diaper**, a figured textile fabric, the pattern of which is small and is shown in the material, without resorting to colour or difference of fibre. Many kinds of decorative products, treated in the same style, are termed diaper work.

**Diaspore**, an infusible hydrate of aluminium, almost colourless, and occurring in crystals and foliated masses. A small portion placed in a flame instantly disperses.

**Diathermy**, application of electrical heat to the treatment of various diseases. The cautery knife for the removal of tonsils, etc., is now sometimes used instead of the scalpel and promotes better healing of tissues.

**Diatrie**, a hard cement, compounded of shellac and silica.

**Diatoms**. One-celled algæ, common in fresh and salt water. Distinctive feature is the siliceous wall which is in two halves, one fitting over the other like the lid of a box. These walls are often very finely and beautifully sculptured. The diatoms constitute the division of the plant kingdom known as the Bacillariophyta. *Diatom ooze* is a deep-sea deposit made up of diatom shells. *Diatomite* or *diatomaceous earth* is the mineral form that such diatom oozes assume; also known as kieselguhr—mixed with nitro-glycerine yields dynamite.

**Diatonic Scale**. The ordinary major and minor



scales on which most European music is built, *e.g.*,

C major C-D-E-F-G-A-B-C  
Tone intervals 1-1- $\frac{1}{2}$ -1-1-1- $\frac{1}{2}$

C minor C-D-E $\flat$ -F-G-A $\flat$ -B-C  
Tone intervals 1- $\frac{1}{2}$ -1-1- $\frac{1}{2}$ -1- $\frac{1}{2}$

Dice, an ancient game played with small ivory cubes, each face of which is spotted with black marks like domino pieces, and thrown from a box held in the hand, the one who throws the highest number of spots being the winner. The Lydians played dice.

Dictaphone, a dictating machine used in offices. It records the dictator's voice on to a wax cylinder, which when full the typist, wearing earphones, places into a transcribing machine. The voice is then reproduced, and the typist types the words as she hears them. This eliminates stenography. The wax cylinder can be shaved and used repeatedly.

Dictator, the title given by the ancient Romans to their supreme magistrates under the republic, in times of great exigency. The term was limited to six months, but while it lasted the Dictator's rule was absolute. Another class of dictator was the Greek Tyrant, and many despotic rulers of more recent times, like Hitler and Mussolini, have been dictators. (See Fascism.)

Dictionary, a book containing the words of a language, alphabetically arranged, giving their definitions, and in many cases their pronunciation and etymological significance. The Greek word for dictionary was *lexicon*, hence lexicographer, someone who compiles a dictionary. Samuel Johnson (1709-84), known as the "Great Lexicographer," published his famous dictionary in 1755. The most elaborate of English dictionaries is the *New English Dictionary* (or the *Oxford Dictionary*), edited by Sir J. A. H. Murray, Henry Bradley, Sir W. A. Craigie, and C. T. Onions. This is the accepted authority for English spelling and pronunciation, and is a large work of many volumes. The small *Concise Oxford Dictionary* is derived from it. The standard dictionary of America is *Webster's International Dictionary* (20th century), derived from Noah Webster's *American Dictionary of the English Language* (1828). There are also special dictionaries dealing with music, biography, etc.

Dies Iræ (the Day of Wrath), a famous 13th-century Latin hymn, sung at burial services, and taking its place in translated form in the English hymnology.

Diesel Engine. A compression-ignition engine. The air in the cylinder is compressed to over 500 lb. per sq. in. and its temperature is about 800° F.; oil injected into the hot compressed air ignites immediately. The modern oil engine has been evolved mainly from the principles enunciated by Herbert Akroyd-Stuart in his patent of 1890 and, like the steam and other inventions, represents the improvements achieved by many men, including those by Rudolf Diesel of Germany, in respect of high compression pressures and greater fuel economy.

Diet, an assembly of dignitaries or delegates called together to debate upon and decide important political or ecclesiastical questions. The most famous Diets in history were those of Worms in 1495 and 1521, and the Diet of Augsburg of 1530, all of which dealt with matters of religious controversy awakened by the Reformation movement.

Diffusion is the process of mixing which occurs when two liquids or gases are in contact. It is most rapid between gases, and, as laid down by Graham's law, "the rates of diffusion of different gases are in the inverse proportion to the square roots of their relative densities."

Digit, a finger or toe. In arithmetic any number of one figure is a digit, the nine Arabic numerals being indicated by the fingers in counting on them, as one, two, three, four, five, six, seven, eight, nine.

Dika Bread, a West African vegetable substance, prepared from the fruit kernel of the *Magnifera Gabonensis*, and somewhat resembling cocoa. It furnishes a nutritive food to the natives.

Dilemma in logic is an argument which resolves

itself into two alternative conclusions, each of which amounts to a denial of the proposition maintained. Hence the term the "horns of a dilemma." The often-quoted example of a dilemma from Gellinus may be repeated:—"Every woman is fair or ugly; it is not good to marry a fair wife, because she will flirt; it is not good to marry an ugly wife, because she will not be attractive; therefore, it is not good to marry at all."

Dilettante, a term applied to amateurs in any of the arts or sciences.

Dimensions are measured magnitudes and involve the qualities of length, breadth, and thickness. A line has only one dimension: length; a plane surface two; length and breadth; and a solid three; length, breadth, and thickness. (See p. 761.)

Diminutives are grammatical expressions denoting smallness or littleness, as illustrated in the suffixes "kin," "ler," "ling."

Dimorphism, the quality of assuming two distinct forms. For instance, carbon, which is graphite in one form, is the diamond in another.

Dinar, a gold coin of the ancient Arab dynasties, usually of the weight of 65 grams troy. In the British Museum there is an example of a dinar struck in the time of Haroun-al-Raschid. In modern times the standard unit of Yugoslav currency. See p. 753.

Dingo, the wild dog of Australia, which is very like a wolf. It is of a reddish colour with a bushy tail and is very destructive to sheep.

Dinner, the chief meal of the day, was in olden times partaken of about midday, but the fashionable hour for dinner has undergone many changes, eight o'clock being now the formal dinner hour in Court circles. In the time of George III. it was four o'clock; under George IV. it was six o'clock; then it came to be seven; but Queen Victoria set the example of eight o'clock dinners.

Dinosaur, the name given to a group of extinct reptiles of the Mesozoic period, some of which were of immense size—much larger than crocodiles. (See Diplodocus.)

Diocese, a territory under the pastoral authority of a bishop. The term originated in the time of the Roman Empire, and represented then rather an administrative territory than an ecclesiastical one.

Diopside, a variety of pyroxene occurring in prismatic crystals, chemically calcium magnesium silicate. Two light-green varieties, malacolite and alalite, are gemstones.

Diopside, or emerald copper, a scarce copper ore occurring in prismatic emerald green crystals, and composed of silicate of copper.

Diorama, a series of spectacular paintings exhibited in a darkened room with the light thrown on to the pictures in such a manner as to produce optical effects that give the appearance of reality. These effects can be varied so as to represent night or day scenes, or scenes of cloud or sunshine, as may be desired. The diorama was the invention of Daguerre and Bouton in 1822, and was first shown in London in 1823.

Diorite, an igneous rock of crystalline structure composed of felspar and hornblende. It used to be classed as greenstone.

Dip Needle. Instrument for measuring the dip or inclination of the earth's magnetic field.

Diplodocus, one of the best known of the extinct mammoth dinosaurs, belonging to Mesozoic times. Fossil remains have been discovered in Colorado and Wyoming, and in 1905 a cast of one of these huge monsters, taken from the original in the Pittsburg Museum, was presented to the British Museum by Mr. Andrew Carnegie and is now at the Natural History Museum, South Kensington. It has been named the Diplodocus Carnegii, and is 84 ft. in length, having been reconstructed out of four defective skeletons all found in Wyoming. The height to the top of the spines of the dorsal vertebrae is nearly 14 ft.

Diplomacy, the practice of official intercourse between nations as carried on by ambassadors and other agents of states and governments.

Diplomatics, the science of diplomas, or ancient writings, and the deciphering of them. It is also (and now more commonly) called palaeography.

**Dipnoi or Lung Fishes.** These have the air bladder adapted to function as a lung, and they can remain alive when the stream or marsh in which they live dries up. Species of lung fish occur in Australia, Africa, and S. America. (See *Devonian System*.)

**Diptera**, an order of insects. Their main characteristic is that they are two-winged, and the common house-fly is the best-known example. There are at least 50,000 species of these insects, including gnats, blow-flies, mosquitoes, tsetses.

**Diphthong**, the conjunction of two vowels pronounced in one syllable. What is called a proper diphthong combines the sound of both vowels, as in "boy," "noise," "out," etc., while the improper diphthong only represents the sound of one of the vowels, as in "pail," "breach," "juice," etc. Belonging to the latter class are the diphthongs "æ" and "œ," but these are confined to words from the Latin or Greek.

**Diptych** was a folding two-leaved tablet of wood, ivory, or metal, with polished inner surfaces, utilised for writing with the style by the ancient Greeks and Romans. The same term was applied to the tablets on which the names of the persons to be commemorated were inscribed in the early Church. In art any pair of pictures hinged together is styled a diptych.

**Directory**, a term applied to the executive of the later French Revolution period, from Oct., 1795, to Nov. 9th, 1799, when Napoleon overthrew it and established the Consulate. The term, as in general use, signifies a book in which names of residents, traders, etc., in any particular locality or sphere are recorded, such as the London Post Office Directory, the Directory of Directors, etc.

**Dirge**, a hymn or song of mourning and lamentation, which may be music only, or a song only, but is usually a combination of music and words.

**Dirk**, an ancient Scottish stabbing weapon, dagger-shaped but much longer and heavier. It was usually worn in a scabbard.

**Discipline**, a specific training in accordance with strict regulations, and applying to religious, military, and civil guidance.

**Discus**, a circular piece of metal or stone about 12 in. in diameter, used in athletic contests by the ancient Greeks and Romans. Throwing the discus was a very favourite game, which was deemed worthy of celebration in the famous statue of a Discobolus of the 5th century B.C., now preserved amongst the Townley marbles in the British Museum.

**Disestablishment** is the withdrawing of State support from Church organisation. The agitation for the disestablishment of the Church of England has slumbered for some years past. The Irish Protestant Church was disestablished in 1869. An agitation for the disestablishment of the Church in Wales, carried on for many years, led to the passing of a Bill, and the Church was finally disestablished in 1919.

**Disk**, an astronomical term denoting the seemingly flat surface of celestial bodies as seen by the eye.

**Dispensing Power** was a right claimed by English kings of releasing any of their subjects from oaths and vows on payment of certain indulgence fees, but the Bill of Rights of 1689 abolished this privilege, and since then the Pope has been the only authority claiming to exercise such rights. The gross abuse of the dispensing power was one of the causes of the Reformation.

**Displaced Person**, a person uprooted from his home and living in a country foreign to that person. Before VE day it was estimated that there were in Europe 12 million D.P.s belonging to the United Nations. The numbers of D.P.s whose fate awaits solution are variously estimated and may be as high as 3 million.

**Dissenters** are those who decline to conform to the usages of the Established Church. All Nonconformist bodies, whether Protestant or Papist, are included in the term Dissenters.

**Distaff**, the staff of a spinning wheel, being a cleft stick on which wool, cotton, or flax was wound for spinning on the spindle. It was held between the left arm and the side. In olden times there was a "Distaff Day," which fell on the day after "Twelfth Day," so named because women were then supposed to resume their distaffs.

**Distal**, applied to the end of a limb or bone in

anatomy, or to an organ in botany, farthest removed from the point of attachment.

**Distance** is the space between two objects, or between two points of time, and is calculated by various methods. What is called an accessible distance can be measured by an ordinary linear measure; inaccessible distances are calculated by triangulation. The line of distance is a straight line between the eye and the chief point of the plane; the mean distance of a planet from the sun is an arithmetical mean between its greatest and least distances.

**Distemper**, a pigment prepared for a special method of painting, and consisting of colours mixed with a binding medium soluble in water.

**Distich**, a term used in poetry to indicate a couple of lines or verses constituting a complete idea, and, according to modern usage, rhyming.

**Distillation**, a process used to separate liquids of different boiling points. This is effected by placing the mixture in a distillation apparatus and heating. The liquid with the lower boiling point distils over first, the vapour being condensed and collected, forming the first *fraction*. With continued heating the second liquid reaches its boiling point, distils over and the mixture is said to be *fractionated*. Mixtures of liquids with close very high boiling points require more elaborate apparatus. Fractional distillation is a common process in the chemical industry, particularly in the refining of petroleum.

**Distinguished Service Order** was instituted by Queen Victoria in 1886 for rewarding exceptional service in the Army and Navy. Its badge is a gold cross, with a crown on one side and the royal cypher on the other, each enclosed in a laurel wreath.

**Dithyrambus**, a Greek lyric composition originally written in honour of Bacchus, but afterwards developed in celebration of other gods and heroes, and generally couched in excessive strains of laudation.

**Diuretics** are drugs or agents for aiding the secretion of urine.

**Divertissement**, a short musical entertainment which is usually accompanied by dancing.

**Divorce** is a legal dissolution of the marriage tie, and in England may be either complete or limited—in the old legal term—a *mensa et thoro* (from board and bed). In the latter category may be included what is termed judicial separation, which does not allow of the separated persons remarrying. Under the Matrimonial Causes Act of Jan. 1st, 1938, a marriage is voidable on the following grounds: (a) the wilful refusal of the respondent to consummate the marriage, (b) that either party was at the time of the marriage of unsound mind or a mental defective, or subject to recurrent fits of insanity or epilepsy, (c) that the respondent was at the time of marriage suffering from venereal disease in a communicable form, (d) adultery since marriage, (e) desertion for three years before petition, (f) cruelty to petitioner. (See p. 728.)

**Docket**, a summary copy of any decree; a brief list, or label; derived from dock, to curtail.

**Docks** are enclosed water spaces wherein ships rest while being loaded or unloaded, or waiting for cargo. The wet dock is simply for loading and unloading; the dry dock, or graving dock, is for overhauling and repairing vessels, and is so constructed that, after a ship has been docked, the water can be drawn off; the floating dock is a rectangular structure which is sunk beneath a ship and raises it. The largest series of docks in the world are those on the Thames, extending many miles. (Tilbury has one of the most up-to-date docks.) Those of Liverpool are the next largest. The launching of big vessels of the *Queen Elizabeth* and *Queen Mary* type renders a large increase of dock accommodation necessary. In July 1933 the world's largest dry dock at Southampton was opened by King George V. This dock is large enough to accommodate any ship afloat and is 1,200 ft. long, 135 ft. wide and 50 ft. deep.

**Dodo**, an extinct bird, giant and flightless, which lived on the island of Mauritius up until 250 years ago. Another species, the white dodo, lived on Réunion. Some reached exceptional sizes. By the end of the 17th century Mauritius, Rodriguez, and Réunion had all been colonised,



and the dodo along with many other birds vanished forever because of their inability to stand up to man and the animals imported into the islands.

**Dog-days** date from July 3rd to Aug. 11th, covering a period of 40 days, when Sirius, or the dog-star, rises and sets with the sun. The ancient superstition was that this star exercised direct influence over the canine race.

**Doge**, the chief magistrate in the former republics of Venice (697-1797) and Genoa (1339-1797, 1802-1805).

**Dogfish**, a well-known genus of fishes of the shark family, of small size, seldom more than 3 ft. in length. The flesh is sold as "rock salmon." The eggs are contained in horny cases called "mermaid's purses."

**Dog Licences** are necessary for household dogs of six months of age or over. The cost per dog is 7s. 6d., and the licence can be obtained at any Post Office. Dogs for tending sheep or cattle, or for leading blind persons, are exempt.

**Dogmatics**, the science which seeks to describe the various Christian doctrines. The term is also applied to the medical theories propounded by Hippocrates.

**Dogs** belong to the genus *Canis*, and descend probably from one or more wild species, such as the wolf, fox, jackal, etc. The domestic dog is usually grouped in six classifications: wolf-dogs—including the Borzoi, Eskimo, Newfoundland, St. Bernard, sheep-dog, etc.; cattle and watch-dogs—comprising the German boarhound, the deerhound, the Danish dog, etc.; the greyhounds; the hounds—such as the staghound, bloodhound, foxhound, pointer, etc.; the curs—terriers, etc.; and the mastiff breeds—including the various mastiffs, the bulldog, pug, etc. The subdivisions of these classifications—which are by no means arbitrary—are numerous and fanciful, especially when what are called "toy-dogs" come under consideration. The dog does not reach full growth until two years old. It does not perspire, but expels heat through the tongue, which it hangs out when hot. A litter of puppies is usually from six to eight, and the period of gestation is 63 days. (See Domestic Pets Section.)

**Dolly**, a small napkin or table mat, used to place glasses or earthenware on; also the name of a species of woollen fabric.

**Doit**, an old Dutch copper coin worth about a farthing; also the name of an old Scotch coin once current, worth from one-eighth to one-twelfth of a penny.

**Dolce**, a musical term indicating that the music has to be rendered softly and sweetly.

**Doldrums**, a nautical term applied to those areas of the Atlantic and Pacific towards which the trade winds blow and where the weather is calm, hot, and sultry but liable to change suddenly to squall, rendering navigation difficult. To be "in the doldrums" is to be "down in the dumps."

**Dole**, an apportionment of money, food, or other charitable gifts, distributed according to the terms of the charity. In olden times doles were often associated with monasteries and churches, and some still survive. There was dole-bread and dole-beer. The "benefit" received under the old Unemployment Insurance Act used commonly to be referred to as "the dole."

**Dollar**, unit of the monetary systems of the United States and Canada, and coined in gold and silver. Dollars are in use in many other countries, especially in the Republics of South America, and the word is derived from the German thaler. The U.S. dollar is worth about seven shillings English money compared with five shillings before sterling devaluation in 1949.

**Dolomite**, the name given magnesium-limestone, the double carbonate of calcium and magnesium.

**Doloroso**, a musical term denoting a sorrowful or plaintive style of playing.

**Dolphin**, an ocean mammal of the whale family, from 6 to 8 ft. long, with a long, sharp snout, and of an active disposition. They abound in most temperate seas and swim in shoals. A few species live in large rivers (Ganges and Amazon). They can cruise for long periods at around 15 knots and produce bursts of speed in the region of 20 knots, the water apparently flowing smoothly past their bodies.

**Dome**, a large cupola, hemispherical in form, rising over the main building of a cathedral or other prominent structure. The finest existing dome, that of the Pantheon at Rome, is also the oldest, dating from the time of the Emperor Augustus. It is 142 ft. in diameter and about the same in height. The dome of St. Peter's, in the same city, has a double shell, is 330 ft. high and 140 ft. in diameter. The dome of the cathedral at Florence is 139 ft. in diameter and 310 ft. high, and that of St. Paul's, London, has 3 shells and is 112 ft. in diameter and 215 ft. high. The circular reading-room of the British Museum has a dome 140 ft. in diameter and is 106 ft. high. The largest of its kind in the world was the aluminium dome of the Dome of Discovery on the Festival of Britain South Bank site (1951), 365 ft. in diameter and 93 ft. high.

**Dome Cover**, the copper or brass cover to the dome of a locomotive engine, to prevent heat radiation.

**Domesday Book** is the famous register of the lands of England framed by order of William the Conqueror. According to Stowe, the name was derived from *Domus dei*, the name of the place where the book was deposited in Winchester Cathedral; though by others it is connected with doom in the sense of judgment. Its compilation was determined upon in 1084, in order that William might compute what he considered to be due to him in the way of tax from his subjects. William sent into each county commissioners to make survey. They were to inquire the name of each place, the possessor, how many hides of land were in the manor, how many ploughs were in demesne, how many homagers, villeins, cottars, serving men, free tenants, and tenants in soccage; how much wood, meadow, and pasture; the number of mills and fish ponds; what had been added to or taken away from the place; what was the gross value at the time of Edward the Confessor. So minute was the survey that the Saxon chronicler of the time reports "there was not a single hide, nor one vintage of land, nor even, it is shame to tell, though it seemed no shame to do, an ox, nor a cow, nor a swine was left that was not set down." The record, which did not take in Northumberland, Cumberland, Durham, and parts of Lancashire and Westmorland, was completed on Nov. 15th, 1085, and was comprised in two volumes—one a large folio, sometimes called the Little Domesday, which deals with Essex, Norfolk, and Suffolk, the other a quarto, sometimes called the Great Domesday. The first is written on 384 double pages of vellum in one and the same hand, and in a small but plain character, each page having a double column. The quarto is written on 450 pages of vellum, but in a single column and in a large, fair character. The original is preserved in the Public Record Office. (See also Danegeld.)

**Dominant**, in music, the fifth tone of the modern scale, and the reciting tone in the Gregorian scale.

**Dominicans**, an order of mendicant preaching friars founded by St. Dominic in Languedoc in 1215 and confirmed by the Pope in 1216. The rule of the order was rigorous. The dress was a white habit and scapular with a long black mantle. This gave them the name of Black Friars. Their official name is Friars Preachers.

**Dominion**, a title formerly used to describe the self-governing countries (other than the United Kingdom) of the British Empire. The term has now given place to "Member of the Commonwealth." See pp. 134, 380.

**Don**, originally a Spanish title of nobility, but now accorded as a courtesy title. Also applied to a person with an academic appointment at the Universities of Oxford and Cambridge.

**Donatists**, an early Christian sect formed in Africa in the 4th century as a protest against the election of Cæcilianus as Bishop of Carthage. They were headed by Donatus, and held that they only represented the true Church. Subjected to many persecutions and repressive acts, they continued to exist up to the 7th century, though the conciliatory measures of St. Augustine in 411 won many back to the orthodox fold.

**Donative**, a term in ecclesiastical law signifying a benefice given to a person without formal induction.

**Donjon**, the keep, or inner tower of a castle, and the strongest and most secure portion of the structure. This was the last refuge of the garrison, and there was usually a prison on the lower floor, hence the name *dungeon*.

**Don Juan**, the legendary hero of many famous works, supposedly based on the life and character of the unscrupulous gallant Don Juan Tenorio of 14th-century Seville. The first dramatisation of the legend and the most famous is Tirso de Molina's *El Burlador de Sevilla*. Don Juan was also the subject of Molière's *Le Festin de Pierre*, Mozart's *Don Giovanni*, Byron's *Don Juan*, and José Zorrilla's *Don Juan Tenorio*. The latter is played on All Saints' Day throughout Spanish-speaking countries.

**Don Quixote**, the "knight of the doleful countenance," the hero and title of Cervantes' classic novel of 16th-century Spain. Don Quijote de la Mancha, a gentle country gentleman of lofty but unpractical ideals, having read many chivalric romances, believes he is called upon to redress the wrongs of the world. Mounted on his nag Rosinante and accompanied by his companion Sancho Panza, a hard-headed and practical peasant, he sets out on his journeys of knight-errantry.

**Doonga**, a rough kind of East Indian canoe, constructed from a single piece of wood, and carrying a square sail. Used chiefly in salt-collecting around the shallow waters of the Ganges.

**Dorians**, the name given to an early Greek race who traced their origin to Dorus, father of Æolus. They were at one time very powerful, and held the southern and western parts of Peloponnesus.

**Dormer**, the name of a special kind of window projecting from a sloping roof, and of vertical form. Such windows were common to the architecture of the Netherlands, northern France, and Belgium from the 14th century, and form picturesque features of general architecture.

**Dormouse**, a small, squirrel-like rodent widely distributed throughout Europe and Asia, and living mainly on fruit and nuts. It is of nocturnal habits and sleeps through the winter.

**Dort**, Synod of, Assembly of the Dutch Reformed Church, convened in 1618-19, resulted in the adoption of Calvinism as the Reformed religion, and the condemnation of the teachings of Arminius.

**Dory**, John, a species of mackerel found in European seas, and a good table fish. The name is from the French Doré, yellow and gold.

**Dot**, a French term indicating the property which a wife brings to her husband on marriage, and is usually settled on the woman, being her separate property, though the income from it may go towards the general household expenses.

**Dotterel**, a bird of the plover family, appearing in the spring and autumn in large numbers in the higher latitudes of Europe, and common in the mountain regions of Scotland.

**Double-Bass**. The largest and deepest-toned instrument of the Violin family. The Violoncello corresponds with the vocal bass so that the pitch of the Double Bass has no vocal counterpart—hence its name.

**Double-entendre**, a corruption of the French phrase "double entente," and used in English to indicate a word or sentence of indelicate double meaning.

**Double Star**. When two stars appear as one to the naked eye but can be distinguished by means of the telescope, one speaks of a "double star." First double star to be discovered (1650) was Zeta Ursæ Majoris.

**Doublet**, a body garment worn by men from the 15th to the 17th century; at some periods with skirts and belt, at others padded at the hips and in the sleeves. In their later form, under the Stuarts, doublets were made without sleeves and formed a sort of vest.

**Drachm (or Drachma)**, an ancient Greek silver coin and weight. One drachma was equivalent to six obols. The word has survived as the name of a weight: Avoirdupois, one-sixteenth part of an ounce; Apothecaries' Weight, one-eighth part of an ounce.

**Draco**, a northern constellation, the Dragon.

**Drag**. Term used in aerodynamics, for resistance offered by the air to the passage of a body

moving through it. When speed of sound is reached drag increases abruptly about tenfold.

**Dragoman**, an Oriental term used to designate a guide or interpreter. In some regions it is not considered safe to travel without an attendant of this kind. They often assume larger responsibilities, however, and contract for the organisation of caravans and the carrying out of tours.

**Dragon**, a fabulous monster common to folk-lore in most countries; generally represented as a winged reptile, with fiery eyes and breath of flame. A dragon guarded the garden of the Hesperides; in the New Testament there is mention of the "dragon, that old serpent, which is the devil"; St. George, England's patron saint, is supposed to have overcome the dragon; mediæval legend abounds in dragons. In heraldry it has also a conspicuous place; and in China was the imperial emblem.

**Dragonade**, the term given to the series of persecutions of Huguenots in France in the reign of Louis XIV., just before and after the revocation of the edict of Nantes, dragons being chiefly employed in the work. Since then the term has been used in reference to any onslaught on the people by soldiers.

**Dragonet**, the name of the fish of the *Callionymus* genus, beautifully coloured, and about a foot in length. They are common on the British coast and in the Mediterranean.

**Dragon Fly**, the common name of a well-known class of insects having two pairs of membranous wings, and often of very brilliant colours. They are swift of flight and may be seen hovering over sheets of water in the sunshine all through the summer.

**Dragon's Blood**, a dark-red resinous substance obtained from the fruit of a Malay palm, and possessing medicinal virtues. In a special technique used for making line blocks in printing, dragon's blood is used.

**Dragoons**, a mounted military force dating from the 17th century, and at first serving alternately as infantry and cavalry as needed. (Classed as heavy or light dragoons.)

**Drama**. The word *drama* comes from a Greek word meaning to do or to act, and it is from Greece that the play originates (at least, so far as the West is concerned). Plays have their origin in the long-ago past when players dressed up as various supernatural beings to perform rituals designed to make the gods carry out desired actions. Three or four hundred years B.C. such playwrights as Æschylus, Sophocles, and Euripides began to write plays partly religious and partly secular for the pleasure of their audiences: this was one of the greatest periods the theatre has seen, and such plays as *Edipus Rex* and *Antigone* still give pleasure in our own theatres. Roman drama was of little significance in general, and the next important stage in the history of the theatre is the Catholic mystery play of the Middle Ages, which, at the time of the Renaissance, developed into the play as we know it now. In England the great Elizabethan playwrights Webster, Ford, Shakespeare were in the forefront of this movement. Cromwell disapproved of the theatre, and the next important stage is the Restoration Drama following the Restoration of the monarchy in 1660. The only European achievement comparable to that of Britain in the history of the stage is that of France with such great playwrights as Molière and Racine. In the 19th and 20th centuries the great playwrights have been Oscar Wilde, Shaw, and others in Britain; Pirandello in Italy; Ibsen in Norway; Strindberg in Sweden; Hauptmann in Germany; Chekov and Turgenev in Russia. There are signs that the drama in verse is once more becoming popular in this country with such writers as T. S. Eliot and Christopher Fry. A summary such as the foregoing cannot include the great dramas stemming from another tradition in Asia—the plays of Japan, China, and India.

**Dramatic Unities**, as prescribed in ancient times, comprise Time, Place, and Action.

**Draughts**, a game played with dark and light pieces on a chequered board. (See "Sports and Pastimes.")

**Dravite**. A variety of tourmaline.

**Drawbridge**, a bridge that can be lifted up so that no passage can be made across it. It was a



usual feature of a fortified castle in the Middle Ages, and was raised or lowered by chains and levers. It spanned the fosse, and on the approach of an attacking party was raised and formed a special barricade to the gate. Modern drawbridges are such as are raised to allow of the passage of boats up and down a river or estuary. The Tower Bridge is a famous London bridge of this type.

**Dredging Machine**, an apparatus employed in collecting mud and silt from the bottoms of harbours, rivers, canals, etc. They are usually flat-bottomed, carrying a crane, and an endless chain of buckets, which descend into the water, collect the mud, etc., bring it up, and discharge it into the flat alongside the machine. Steam dredges, of which there are many forms, are now generally in use.

**Dripstone**, a projecting stone or moulding over a doorway, for carrying off dripping rain-water.

**Drongo**. The King Crow or Indian Black Drongo is frequently seen in India perched on branches or telegraph wires, darting suddenly to catch insects. Other members of the family are found in Asia, Africa, and Australia. Its plumage is black with steel-blue gloss.

**Drosophila or Fruit Flies**. More has been learnt by geneticists from breeding experiments with this insect than with any other.

**Dross**, the name generally applied to the refuse of molten metal, composed of slag, scales, and cinders.

**Drought**, a period of dry weather, is a normal and recurring condition in many warm climates, and is frequently provided against by irrigation. In the British Isles really long rainless spells are somewhat rare, and an "absolute drought" is defined officially as a period of at least fifteen days on each of which the rainfall is less than  $\frac{1}{160}$  inch. The summer of 1947 was exceptional over many parts of Europe, regarding lack of rainfall, abundant sunshine, and warm weather. In parts of N.E. England at the beginning of 1953 an absolute drought lasted 38 days.

**Druids**, priests and learned men of Celtic Britain and Gaul. Little is known for certain about them, and the chief records come from Roman authors, notably Pliny and Caesar. Worship of the sun, belief in special deities and in the immortality of the soul were the central features of their religion. The oak and mistletoe were sacred to them, and they are supposed to have offered human sacrifices. The Romans did much to stamp out Druidism in Gaul, but in Britain it yielded only to Christianity. The megalithic stones at Stonehenge were formerly ascribed to the Druids, but recent evidence suggests that the monument belongs to a Bronze Age culture (c. 1500 B.C.).

**Drum**. There are three main kinds of drum: the bass drum, the side drum, and the kettle drum.

**BASS DRUM**: a large shallow wooden cylinder whose ends are covered with skin or parchment rendered taut. It is used in a vertical position and beaten on both sides with padded leather hammers. Much used by military bands to beat out the rhythm of a march.

**SIDE DRUM**. A smaller version of the bass drum, sometimes with a metal body. It is used horizontally and played on the upper side with a pair of wooden drumsticks or, in dance bands, with a wire brush. Jazz-drummers use a combination of bass drum and several side drums on which complicated solo passages may be performed. To increase the rattle, strings of catgut may be strung across the lower parchment. The drum is then called a snare drum.

**KETTLE DRUM**: a large copper bowl whose mouth is covered with parchment. The tension of the parchment may be altered by means of hand-screws so that the drum may be tuned to a particular note. In a normal orchestra there are two kettle drums known collectively as the tympani.

**Drupe** is the scientific term for stone fruit. The stone forms the inner part (endocarp) of the fruit, and encloses a seed or kernel, the latter being liberated after setting in the ground by the decomposition of the shell.

**Drury Lane Theatre** is the oldest London playhouse. There was a theatre of the name in the Stuart period. It was destroyed by fire in 1671.

The next theatre on the site was built by Wren, and burned down in 1809. The present house dates from 1812. Sheridan was its manager for a long time.

**Dryocopus martius or Black Woodpecker**, a large, black bird about the size of a rook, with slightly crested scarlet crown, found in mountainous regions of N. Europe.

**Dry-rot** is caused in timber by a fungoid growth, and occurs chiefly in damp situations. The most effective cheap treatment is saturation with creosote. Dry wood always escapes dry-rot. Chief fungi causing dry-rot are *Merulius* and *Porcia*.

**Dualism** is a term used both in religion and in philosophy. In religion it involves the doctrine of two distinct principles, one good, the other evil, as the controlling influence; in philosophy it opposes materialism and idealism, and insists that spirit and matter are separate substances.

**Dublin University or Trinity College** was founded by Queen Elizabeth in 1591. Its library, built between 1712 and 1732, has over half a million books and a very fine manuscript collection.

**Ducat**, a coin formerly widely current on the Continent, first coined in Apulia in the 12th century. A gold ducat was worth about 9s. of our money, and a silver ducat half that sum.

**Ducatone**, a large silver coin once current in the republic of Venice, and worth about 6s. English.

**Duchess**, the wife or widow of a duke, or the lady who has in her own right control or sovereignty in a duchy.

**Duck**, water bird smaller than the related goose and swan, which together form the family Anatidae. Duck refers to the female, drake to the male. The duck family falls into two separate groups: the river or fresh-water (surface feeding) ducks, such as the mallard, pintail, wigeon, shoveler, mandarin, teal, garganey, and the sea (diving) ducks, such as the goldeneye, pochard, scoter, eider, and the fish-eating mergansers or "sawbills." The ancestor of all domestic breeds is the mallard. (See also Poultry section.)

**Duck-bill or Ornithorhynchus**, a fur-covered mammal inhabiting Australia and Tasmania, possessing a bill like a duck and a body resembling that of a mole. Called also the duck-mole and the duck-billed platypus.

**Ducking-stool or Cucking-stool**, a stool in which common scolds, disorderly women and dishonest tradesmen were formerly tied and plunged into water as a punishment. Ducking prevailed from the later 15th century until the early 18th.

**Ductility** is a property possessed by most metals which renders them capable of being stretched without breaking. Gold is the most, and lead the least ductile of metals, the order being gold, silver, platinum, iron, copper, palladium, aluminium, zinc, tin, lead. In animated nature the spider and the silkworm, with their elastic secretions, are the most noted examples of ductility.

**Duelling** originated in France in the so-called days of chivalry. It is an encounter between two persons, with deadly weapons fought according to conventional rules and prearranged, with the object of settling a personal quarrel. There is no instance of a private duel in England before the 16th century. The Duke of Wellington fought a duel with Lord Winchelsea in 1829, and Castlereagh, Pitt, Fox, Sheridan, and Canning all took part in duels. Duels are frequently described in literature.

**Duet**. A musical composition for two voices or two instruments. A pianoforte duet may be performed by two players on the same instrument.

**Dugong**. A marine mammal, belonging to the order Sirenia (sea-cows). Inhabits Red Sea and Indian Ocean; also found as far East as the Philippines and Australia. Lives on seaweed. Related to the Manatee.

**Duke**, the highest rank in the British peerage next to that of a royal prince. Edward, the Black Prince, eldest son of Edward III., who died before his father, was the first English duke, being created Duke of Cornwall in 1337. Since that time all Princes of Wales have held that title.

**Dukeries**, a range of English woodland and park country, mainly in Nottinghamshire, comprising the adjacent demesnes of several English dukes

and nobles. The Dukeries include Sherwood Forest and the estates of Welbeck Abbey, Clumber Park, Worksop Manor, and Thoresby Hall.

**Dukhobars or Doukhobars** (Russian = spirit wrestlers), a Russian religious sect founded in the 18th century and numbering many thousands of followers. Their leader was Peter Veregin. They deny the divinity of Christ, interpret the gospels figuratively, believe in the equality of all men before God, and reject all authority, including that of the Government. They were severely persecuted in Russia and were befriended by Tolstoy. Many emigrated to Canada to settle in Saskatchewan and British Columbia in 1898-99, where they have become absorbed in the Canadian community and only occasionally get into trouble with authority over the education of their children and their ascetic practices (which include nudism).

**Dulcimer.** An instrument of stretched wires which are struck by hammers held in the hands. It is the logical precursor of the pianoforte.

**Duma,** the Russian Parliament established by an imperial ukase August 19th, 1905, and consisting of representatives elected on a restricted franchise. It was abolished by the Bolsheviks in 1917.

**Dunciad,** Pope's famous satire in verse, in which he replied to the attacks of his enemies and denounced the critics and postasters with scathing effect.

**Dunes.** Sand dunes are elliptical or crescent-shaped mounds of loose sand produced by wind action. The dune has a gentle slope on windward side; a steep slope on the leeward side.

**Dunlin.** Common British shore-birds of the Sandpiper family.

**Dunmow Flitch,** a custom which originated in the parish of Little Dunmow, Essex, in the reign of Henry III., which was that the husband who was prepared to swear before the prior, convent and townsfolk of Dunmow that he had not repented of marriage or quarrelled with his wife for a year and a day, should be rewarded with the gift of a flitch of bacon. The custom has frequently been abolished and revived.

**Dunnock** (*Prunella modularis*), a small bird of the countryside of rich brown and dark grey plumage. Sings a cheerful song all the year round. Called hedge-sparrow in southern England. Another member of the same family, the larger Alpine Accentor (*Prunella collaris*), is found on rocky mountain slopes of Europe and Asia.

**Duodecimo,** a sheet of paper folded into twelve leaves, written "12mo."

**Durbār,** a term used in India for a State reception, from the Persian word *darbār* meaning "court" or "audience". It may be either a council for administering affairs of state, or a purely ceremonial gathering. Native rulers of India received visitors and conducted business in *darbār*. The word was applied to great ceremonial gatherings like Lord Lytton's *darbār* for the proclamation of the Queen-Emress in 1877 and the Delhi *darbār* of 1911.

**Durham University,** founded in 1832, a federal university composed of two divisions, the Durham Colleges (5 men's and 3 women's colleges, 2 non-collegiate societies) and King's College, Newcastle upon Tyne.

**Dust,** solid particles of matter floating in the atmosphere, produced chiefly by volcanic eruptions, sand-storms in desert regions, and industrial and domestic smoke. When the island of Krakatoa erupted in 1883, more than 1 cubic mile of dust was thrown into the air and carried three times round the earth by the explosion wave. The particles in dust-storms are much finer than those in sand-storms and are swept up to far greater heights. The local whirlwinds which form over loose dry soils are termed dust-devils.

**Dyke,** the term applied to masses of igneous rock which have flowed into grooves of strata or become infused therewith; the word also signifies in alternative usage, a sea wall and an open drain.

**Dynagraph,** a machine for recording the condition of a railway line, the speed of a train, and the amount of coal and water used on a journey.

**Dynamics,** deals with natural forces either in motion or at rest, describing their positions, velocities, and constitution.

**Dynamism,** Leibnitz's doctrine that all substances in nature involve force.

**Dynamite,** a powerful explosive whose chief element is nitro-glycerine. It was discovered by Nobel in 1867, who absorbed nitro-glycerine in kieselguhr; has a disruptive force of about eight times that of gunpowder.

**Dynamo.** Machine for transforming mechanical energy into electrical energy. Depends on principle of electromagnetic induction whereby a current is produced in a conductor (e.g., copper wire) traversing a magnetic field. The two essential parts of a dynamo are the conductors or *armature* and the *field magnets*.

**Dynasty,** a succession of monarchs of the same family, as the Carolingian dynasty, the Bourbon dynasty, the Plantagenet dynasty, etc.

**Dysprosium.** Element discovered in 1886 by Boisbaudran: one of the rare-earth metals.

**Dytiscus,** the name of a large and common water-beetle, a voracious feeder on larva and tadpoles.

## E

**Eagle,** large bird of prey with huge hooked bill, related to the buzzard, kite, hawk, harrier, falcon, and vulture, together forming the family Falconidae. There are many species to be found throughout the world, the Golden, Imperial, Tawny, Spotted, and Lesser Spotted being found in Europe. The Golden Eagle, a magnificent-looking bird, nests in the Scottish Highlands, and the White-tailed Sea Eagle, which used to breed in Britain, is now only an occasional visitor. The eagle has been the symbol of royal power since the earliest times, and the American or Bald Eagle is the emblem of the United States.

**Eagle,** a ten-dollar gold coin of the United States. There is also a double-eagle of 20 dollars.

**Eaglewood,** a name given to aloeswood, the fragrant Asiatic wood yielding a resinous gum, derived from two species of the genera *Alseodylon* and *Aquilaria*. It is valued for medicinal purposes, as an incense, and for the beautiful grain of its wood.

**Ear,** the organ of hearing, comprises in mammals, the *external ear*, containing the pinna and auditory meatus; the *middle ear*, containing the drum or tympanum; and the *internal ear*, through which the sound vibrations are transmitted to the brain. (See Deafness, Medical Section.)

**Ear-ring,** a very ancient form of personal adornment worn by both sexes in Oriental nations. In Anglo-Saxon times ear-rings were worn in Britain, but from the 10th to the 15th century were out of fashion. Under Elizabeth they were again worn, also by men, and have continued to be worn by women since the days of Charles I.

**Earl,** a British title of nobility of the third rank, duke and marquis coming first and second. The title dates from Saxon times, and until 1837 ranked highest in our peerage.

**Earl-Marshall,** in England ranks as the eighth of the great officers of state, is head of the College of Arms, attends the sovereign in opening and closing the session of Parliament, arranges state processions (especially coronations) and assists in introducing newly created peers in the House of Lords. The office is hereditary in the family of the Dukes of Norfolk.

**Early English Architecture,** is the pointed style, with long lancet-headed windows, and came between the Norman and the Decorated periods. It continued through the 12th and 13th centuries.

**Earth,** our habitable globe, is the third of the planets of the solar system in order from the sun, and on an average throughout the year takes 24 hours to turn completely round relative to the sun, the whole earth revolving round the sun in a slightly elliptical orbit once in a year of 365-2564 days. The mean distance of the earth from the sun is 93,004,000 miles. The shape of the earth is that of an oblate spheroid, its equatorial and polar axes measuring 7,926 miles and 7,900 miles respectively. The crust consists of an outer layer of surface soil of varying thickness, beneath which there is a mass of hard rock several miles deep, the per-



centage (by weight) of the principal elements present being oxygen 47, silicon 28, aluminium 8, sodium and potassium 5, iron 4.5, calcium 3.5, magnesium 2.2, titanium 0.5, hydrogen 0.2, carbon 0.2, phosphorus and sulphur 0.2. Mass of the earth is estimated to be 6,000 million million tons. Two-thirds of the earth's surface is covered with water. It has only one satellite, the moon. The age of the earth is estimated to be between 2,000 and 3,500 million years. (See "The World of Science.")

**Earthenware.** The term comprises objects or utensils composed of non-translucent, baked or fired clay, and may be either unglazed or enamelled. The word is frequently employed to designate only the coarser kinds of pottery.

**Earth-Nut** is a term applied to tuberous roots of several plants belonging to the family *Umbelliferae*.

**Earthquake**, a sudden violent disturbance of the earth's crust; the region of the surface immediately above the "focus," or source where the earthquake originates, is termed the "epi-centre." On account of their destructive power earthquakes have attracted attention from the earliest times, but accurate study dates only from the last century and the development of a world-wide network of recording stations from the present one. The majority of severe earthquakes result from fractures, usually along existing faults, in underlying rock strata subjected to great strains, the shearing movement sometimes extending to the surface. These dislocations set up vibrations which are propagated as waves throughout the bulk of the earth or round the crust. Frequently the main shock is followed by a series of smaller after-shocks. Minor local earthquakes may be attributed to the effects of volcanic activity, but most of the larger ones originate in non-volcanic regions. Generally the ground is felt to tremble, undergoing oscillations which may gradually or suddenly increase to a maximum and accompanied by sounds. Each year there are about 100 destructive earthquakes, a large proportion occurring beneath the bed of the sea. One of the greatest of historic times was that which destroyed and flooded Lisbon in 1755, the reputed loss of life amounting to 50,000. Among the notable shocks of the present century rank those of San Francisco (1906), Messina, Italy (1908), Tokyo, Japan (1923), Napier, New Zealand (1931), N.E. Assam (1950), and South Ionian Is. (1953).

**Earthworm**, of which there are several species, has a cylindrical body, tapering at both ends, and segmented into rings. It moves by contraction of its rings, aided by retractive bristles; is eyeless, but has a mouth, gullet, and stomach. Earthworms exist in immense numbers, and perform an important part in the scheme of nature by loosening the soil and rendering it more amenable to tillage. They also form a valuable food for birds and many mammals, and are unequalled as bait for certain kinds of fish.

**Earwig**, a genus of insects of the cockroach family, possessing two pairs of wings and anal forceps. It is of nocturnal habits, lives on vegetable matter, and hides by day under stones or bark. The old belief that it deliberately creeps into people's ears is altogether unfounded.

**Easement**, a legal term applied to a privilege enjoyed by anyone over another's property, the most familiar examples being the right of way and ancient lights.

**Easter**, the annual Christian festival in commemoration of the resurrection of Christ, the English name being derived from Eostre, goddess of Spring. The date cannot fall earlier than March 22 nor later than April 25. Many disputes arose among the early Christians as to the proper time to celebrate this day which governs all other movable feasts. It was eventually ruled at the Council of Nicaea in 325 that Easter Day should be the first Sunday after the full moon following the vernal equinox. If this happens to be a Sunday, then Easter Day is the Sunday after. It should be remembered, however, that this moon is the paschal moon of the ecclesiastical calendar, quite imaginary, and generally one or two days ahead of the real moon we see in the heavens. In fact the reverend fathers at Nicaea did us a bad turn in

having anything to do with the moon but then they had no Astronomer Royal to advise them of the complications. (See p. 751.)

**Eastern Question**, a term formerly applied to the problems arising from the instability of the Mohammedan power of Turkey and its relations with the other nations of Europe. Later connected with other problems of the Near East, such as the possession of Constantinople and the position of the Balkan states.

**East India Company** was incorporated by Elizabeth in 1600. In 1613 the Company set up a factory at Surat, India, and in 1662 Bombay came under the Company's influence and developed into an important trading port. Dupleix wanted to establish French power in India and a struggle for supremacy took place. Clive gained the victory for England and thenceforward British dominion in India remained undisputed except by native princes. In 1772 Warren Hastings was appointed the first Governor-General and in 1784 Pitt's India Act established a Board of Control for the India Company. A great increase of trade resulted, and this rule continued down to 1858, when, as a result of the mutiny, the Crown assumed the sovereignty. With the passing of the Indian Independence Act of 1947, British dominion ended and India was handed back to the Indians.

**Eastward Position**, a position taken at the altar by the Celebrant or officiating Priest at the Holy Eucharist (or Communion) Service.

**Eau-de-Cologne**, a popular distilled perfume first manufactured at Cologne in the 18th century by Johann Maria Farina, an Italian, and since made in large quantities in Cologne and elsewhere.

**Ebionites** were a religious party of Judaizing Christians of some prominence from the 2nd to the 4th century. They contended for the authority of the Mosaic law, denied the divinity of Christ, and opposed the teachings of Paul.

**Eblanine**, a crystalline spirit procured from crude pyroxylic spirit.

**Ebony**, a name applied to various hard black woods, the best of which are grown in Mauritius and Ceylon. There are also Indian and American varieties. Only the inner portions, the heart-wood, of the trees are of the necessary hardness and blackness. Ebony is largely used in ornamental cabinet work for piano keys, canes, etc.

**Ecballium**, the scientific name of the squirting cucumber, so named from the fact that when ripe it breaks from the stalk and ejects its seeds and juice from the hole made by the breakage.

**Ecce Homo** ("Behold the Man!"), used in reference to the pictures and sculptures representing Christ crowned with thorns.

**Ecclesiastes**, a book of the Old Testament, the word signifying "the preacher." Supposed to contain the reflections of Solomon, though many critics dissent from this view.

**Ecclesiastical Commissioners.** By a measure which came into force on Apr. 1, 1948, the Ecclesiastical Commissioners and Queen Anne's Bounty were amalgamated as the Church Commissioners (which see).

**Ecclesiastical Courts**, dealing exclusively with Church affairs, are those of the Archdeacons, the Bishops, and the Metropolitan (York or Canterbury), with the Judicial Committee of the Privy Council as the final Court of Appeal.

**Ecclesiasticus**, the title of one of the books of the Apocrypha, dating from about 180 B.C. Its alternative title is "The Wisdom of Jesus, the Son of Sirach."

**Echidna.** The spiny ant-eaters of Australia and Tasmania. There are several species of these egg-laying mammals, which belong to the order Monotremata.

**Echinodermata.** The division of invertebrate animals which include star-fish, sea urchins, sea cucumbers, brittle stars, sea lilies (crinoids). The adults have a radial symmetry.

**Echo** is the reflection of a sound. Woods, rocky defiles, valleys, mountains, or walls all act as echo-producers under favourable conditions.

**Eclectics**, a philosophical system built up of selected parts of other philosophies.

**Eclipse**, an obscuration of the light of the sun, moon, or other heavenly body by the passing of another body either between it and the eye or between it and the source of its light. The sun

is eclipsed by the moon intervening between it and the earth; the moon by the earth passing between it and the sun. Total eclipses of the sun have occurred over parts of the British Isles in the years 1424, 1433, 1593, 1652, 1715, 1724, 1927, 1954, and the next will be seen only from near Land's End on August 11, 1999.

**Ecliptic** is the sun's apparent path in the sky; the great circle described by the sun from west to east in the course of a year. The sun is exactly on the equator on approx. Mar. 21st and Sept. 23rd, and the points where the celestial equator and ecliptic intersect on these days are called the *equinoctial points*. On approx. June 21st and Dec. 21st the sun reaches its greatest and least midday elevation and its greatest distance north and south of the equator, and the points on the ecliptic on these days are called the *solstices*. (See Seasons, "General Compendium.") These four points are equidistant from each other by 90°. The equinoctial points are not fixed. The angle of inclination of the ecliptic to the equator is called the obliquity of the ecliptic, which is also variable, being influenced by the gravitational action of the other planets on the earth. At present the angle is 23½°.

**Ecumenical Council.** (See **Œcumenical Council**.)

**Edda**, the name given to two important collections of early Icelandic literature—the *Elder* or *Poetic Edda*, poems handed down from the 9th and 10th centuries, probably Norwegian in origin, and the *Younger* or *Prose Edda* of Snorri Sturluson compiled about 1230. They treat of mythical and religious legends of an early Scandinavian civilisation.

**Edystone Lighthouse** stands on a group of rocks about nine miles from the Cornish coast and fourteen from Plymouth. The present structure is the fourth that has occupied this dangerous position. The first was of wood, completed by Winstanley in 1700, but three years later washed away, its architect with it. In 1709 a second and stronger wood lighthouse was built by Rudyard. This lasted until 1755, when it was destroyed by fire. Smeaton built the third lighthouse, of granite and Portland stone, on the model of an oak trunk, and this, which was finished in 1759, withstood the storm and tempest for over a hundred years, being superseded by the present building, erected in 1879–82 by Sir James Douglas. It is wholly of granite. Its light can be seen over seventeen miles, and in foggy weather it gives an explosive signal every 5 minutes.

**Edelweiss**, a white perennial flower of the daisy order, common in Alpine regions.

**Edentata**, the name given to an order of mammals which are without teeth in the front part of the jaws. Sloths, ant-eaters, and armadillos belong to this order.

"**Edinburgh Review**," the great Whig quarterly from 1802 until 1929, was edited by Jeffrey, and numbered among its contributors Lord Brougham, Sydney Smith, and Macaulay.

**Edinburgh University**, the youngest of the Scottish universities, was founded in 1582 by the town council and is now one of the leading medical centres of the kingdom. The present buildings were begun in 1789, and the library contains over 300,000 books and 8,000 MSS.

**Education.** In the United Kingdom schools for boys founded by private individuals and religious bodies, unaided by the state, were established even before the 16th century, and these, in course of time, developed into the grammar school and public school. Some are very old foundations, like Eton, Winchester, Harrow, Rugby. No serious attempt, however, was made to establish a system of elementary education until the beginning of the 19th century. The first parliamentary grant in aid of elementary education was made in 1833. In 1870 "Board Schools," as distinct from "Voluntary Schools," were established, and by the 1880 Act the framing of bye-laws on school attendance by school boards and attendance committees became obligatory. In 1899 the Board of Education was created "charged with the superintendence of matters relating to education in England and Wales." The Act of 1902 abolished the school boards, whose functions were transferred to county,

borough, county borough and urban district councils, known as local education authorities (L.E.As.). Under this Act secondary and technical schools were also rapidly developed and a number of training colleges for teachers established. The Education Acts of 1918 (the Fisher Act) and 1921, despite post-war setbacks and financial restrictions, paved the way for the comprehensive changes which become operative under the Education Act, 1944. By this Act the Board of Education has become the Ministry of Education, and while administration remains decentralised, the Minister has increased control over publicly aided education. Primary and secondary education becomes free to all children. The old elementary and higher education is gradually being replaced by a three-stage continuous process, a progressive system of primary education (nursery, infant and junior up to 12 years of age), secondary (12 and over), and further education (vocational and non-vocational training for young people over school age and for adults). School-leaving age was raised to 15 in 1947, and will later be raised to 16. The General Certificate of Education replaced the School and Higher School Certificates in 1951. Papers are offered at two levels, ordinary and advanced, and there are also Scholarship papers for the purpose of selecting pupils for university and other scholarship awards. With the establishment in 1954 of a new examining body, independent of the universities, the basis of the G.C.E. has been broadened to meet the special needs of secondary school pupils and technical college students taking technical or commercial subjects, arts and crafts, and intending to enter industry or commerce, rather than the universities and professions. (See also **Universities**.)

**Eels** are soft-finned, serpentine fishes, almost without scales, abundant in European waters, salt and fresh. Young female eels make their way from salt to fresh water, and when full-grown return to the sea for breeding purposes. The Conger (marine) eel grows to more than twice the size of the fresh-water eel. The Electric eel of South America is a variety of great interest, possessing the power of emitting electric shocks.

**Egg-plant** or **Aubergine**, a plant cultivated for its ovate fruit, varying in colour from dark purple to white.

**Egret**, a slender, graceful bird of the heron family of pure white plumage, famed for its beautiful silky plumes (aigrettes), which appear in the breeding season, and for which it was ruthlessly hunted and would have been exterminated had not international action been taken to protect it. The Little Egret with black bill, black legs, and yellow feet breeds in the Mediterranean countries.

**Egyptian Vulture** is smaller than other vultures. Found in S. Europe, frequents native villages and scavenges for offal.

**Elder**, a large diving duck, found along the rocky coasts of northern latitudes, well known for the beautifully warm soft down, called "elder down," which the female bird plucks from her breast to line her nest. In Norway and Iceland the haunts of the elder are preserved and the birds protected by law on account of the much prized "elder down," which is collected from the nests just before the breeding season. "Elder down" is so elastic that a pound or two of it will fill an ordinary bed covering.

**Eiffel Tower**, built by the French engineer Alexandre Gustave Eiffel (1832–1923) for the Paris Exhibition of 1889. The tower which is made of iron is 985 feet high and weighs about 7,000 tons.

**Elkon Basilike** (Royal Image), the title of a work issued in 1640, supposed to have been written by Charles I. in support of kingly divinity, and replied to by Milton in the same year with his *Eikonoklastes* (image breaker).

**Eire** (or **Eyre**), an old legal term still in use in Scotland in connection with the circuit of judges. Justices in eyre were judges journeying from assize to assize for the purpose of holding trials.

**Eisteddfod** (a sitting) was originally a congress of Welsh bards and minstrels, and dates from before the 12th century. These assemblies, discontinued for a long period, were resumed in



1819, and have been held yearly since, each lasting three or four days. Their object is to foster the Welsh patriotic spirit; they are devoted to orations and competitions in poetry, singing, and harp-playing, prizes being awarded to the successful contestants.

**Eland**, the largest species of antelope, a native of Africa; has large pointed horns, stands 5 feet high at the withers, and weighs several hundred pounds.

**Elasticity** is the power of a body to recover its original size or shape after it has been subjected to a stress. The greatest amount of elasticity is possessed by india-rubber, tempered steel, ivory, glass, etc., the least by lead, clay, and fats.

**Elatridæ**, a family of beetles of a numerous species with short legs and indented antennæ. Commonly known as Click-beetles or Shipclacks. Their larvae are the wireworms which cause so much damage to farm crops.

**Elder**, a genus of small trees of the *Sambucus* genus, with pinnate leaves, and bearing clusters of small purplish-black berries. The black elder, the best known, is common in most parts of Europe, and thrives in Britain. A wine is made from its berries, and the juice is used as an aperient.

**El Dorado**, a "golden land," was an idea much favoured in the days of the early Spanish explorers. It was believed that somewhere on the South American continent there was a country abounding in gold and precious stones. Many expeditions were fitted out to discover it. Sir Walter Raleigh also went forth on this illusive quest. The term is still used in regard to any place of rich promise.

**Eleatic Philosophy**, a school of philosophy founded by Xenophanes of Elea (6th century B.C.) which taught that there was no such thing as change.

**Elecampane**, a perennial plant found in damp meadows in England, and bearing a large yellow flower. The root possesses certain medicinal properties, and when dried is in popular repute as an aromatic and tonic.

**Election**, in theology, is the theory that God elects to grant eternal life and heavenly favour to a certain number of human beings, and passes over the rest. Calvinism supports the theory as absolute, Arminianism makes it conditional.

**Electra**, in astronomy, one of the Pleiades; also an asteroid, discovered in 1873 by Peters.

**Electric Light** is light produced by electricity, and is of three kinds, the arc-light, incandescent light, and fluorescent light. The first is produced when a strong current passes between two carbon electrodes, first brought together, then slightly separated, leaving the current to continue, but setting up a resistance that causes the carbon points and the air between them to assume a white heat which gives forth an intense light, thus completing what is called the electric arc. The incandescent light is obtained by passing the current through a thin metallic wire or other strong resisting substance until it heats to the point of incandescence. In fluorescent lamps electrical energy is transformed into ultra-violet light, and visible light is produced when this falls on the fluorescent substances with which the lamps are coated.

**Electric Telegraph** may be said to date from 1836, when Sir Charles Wheatstone and his co-inventor Cooke introduced their Single-Needle instrument, which was soon followed by the Double-Needle apparatus. Morse, in 1837, invented his famous recording instrument. The first electric cable was between Dover and France, and was laid in 1850. The first Atlantic cable was laid in 1858, and the second in 1866. It was in 1899 that the first Marconi wireless telegraph messages were sent between England and France.

**Electrolysis** is the condition established when an electric current passes through a conducting liquid, between electrodes, connected with the poles of a battery, resulting in the decomposition and separation of the liquid, if a compound. Water thus becomes decomposed into hydrogen and oxygen.

**Electrometer**, an instrument for measuring differences of electrical potential. Unlike the magnetic or heating effects of an electric current, the electrometer is operated by electrostatic

forces, there being no flow of current through the instrument. They are employed to make systematic measurements, near the earth's surface, of the potential gradient or strength of the atmospheric electric field.

**Electron**. All matter is pervaded by these tiny negatively-charged particles whose mass is about  $9 \times 10^{-28}$  gram. When current flows in a metal wire this represents a flow of electrons. All atoms contain electrons, but electrons can be isolated from atoms, as in cathode rays. The electron was discovered by Sir J. J. Thomson in 1897, which ushered in the era of modern physics. (See p. 161.)

**Electron Microscope**. A microscope in which beams of electrons are focused by magnetic lenses in a manner analogous to the focusing of light beams in the ordinary optical microscope. Direct magnification 10,000 times is practicable; indirectly (by enlargement of photographs taken through the electron microscope) magnifications of 100,000 have been obtained. The first electron microscope was German and dates back to the 1890s; since then American and British instruments have come on the market. Still higher magnification is expected from the proton microscope.

**Electronics**. The science which deals with the behaviour and control of free electrons. It started with the discovery of the electron by Sir J. J. Thomson in 1897. The practical applications, constituting electronic engineering, have given us radio, radar, photo-electric cells, cathode-ray oscillographs, electron microscopes, computing machines, etc.

**Electrophorus**, a simple device for producing static electricity, consisting of a smooth disc of resin or ebonite mounted on a metal base and with a metal cover carrying an insulated handle. The disc is first electrified (negatively) by rubbing it with a dry catskin or flannel and the cover replaced, the upper surface receiving a positive charge and the lower a negative. On lifting off the cover, after having touched it with the finger, the negative charge leaks away to earth and the positive charge is isolated on the cover. The action may be repeated a number of times before it is necessary to replenish the original charge on the disc.

**Electroplating** is the process of coating metals or other substances with a metallic film, applied in a bath of the solution of the coating material by the action of an electric current.

**Elegiacs**, a kind of verse originated by the ancient Greek poets, afterwards adopted by the Romans, and frequently used in modern times, for compositions of a mournful character. An elegiac consists of distiches, each of a dactylic hexameter followed by pentameter. Among the Roman elegiac poets, Catullus, Tibullus, and Ovid were noted.

**Elements**. In chemistry, an element is a substance in the simplest form to which it has been reduced. About eighty-eight elements exist in Nature, and as a result of experiments connected with atomic energy a number of artificial radioactive elements have been made in the laboratory. (See pp. 161 and 762.)

**Elemi**, the name given to a venous exudation obtained from various trees of the *Burseraceæ* order found in most tropical regions. Valuable in pharmacy, also for varnishes, and for chewing.

**Elephant**, a proboscidean mammal of which only two species survive—the Asiatic, in India, and the African elephant. No other animals possess a trunk. Both males and females have large ivory tusks, of considerable commercial value. The Indian elephant is usually about 9 ft. high and weighs about 3 tons; African elephants are larger, weigh about 6 tons, and are usually much fiercer. Several fossil elephants of still larger bulk have been discovered, including the mammoth and the mastodon. The Indian elephant is domesticated and used as a beast of burden.

**Eleusian Mysteries**, festivals common throughout Ancient Greece, agricultural in their symbolism.

**Elevation**, rising ground, as a hill; also a military expression, being the angle to which the barrel of a gun is raised to throw a projectile the required distance.

**Elf**, a fairy personage who is supposed to interfere in human affairs with mischievous intent.

**Elgin Marbles**, a great collection of sculptures, got together by the 7th Earl of Elgin, in Greece, and brought to England in 1812. These celebrated treasures had originally formed part of the Parthenon at Athens, and were the work of the sculptor Phidias. Lord Elgin expended over £70,000 upon them, and they were purchased for £35,000 for the British Museum, where they can now be seen displayed.

**Elixir**, a term derived from the alchemists, and referring to a substance or tincture which would make the old young again. The word is now applied to many essences and decoctions.

**Elk**, the largest animal of the deer family, possessing enormous antlers, and standing, when mature, about seven feet high. The American moose is of the same family.

**Ell**, an old English cloth measure, representing a length of 45 in. It varied in other countries, from 22 in. in Saxony to 47 in. in France.

**Ellipse**, in geometry, a compressed circle or oval, forming a curve so marked out that the sums of the distances of each point in its periphery from two fixed points are the same.

**Elm**, a large, wide-spreading tree having a dozen species, and common to Europe, India, China, and North America. It makes valuable timber, its wood being hard and durable, and for shade and ornament is unsurpassed.

**Elongation**, an astronomical term for the angular distance from the sun at which a planet is observed.

**Elopement**, a clandestine running away of a woman with a lover, rendering the man liable to punishment when the woman is under eighteen.

**Elzevir**, the name of a celebrated family of Dutch printers, who produced editions of Latin, French, and German classics, which were highly valued for their beauty of type and accuracy of printing. They flourished in the 17th century.

**Embalming**, the process by which dead bodies are preserved from decay by means of spices and drugs. The art reached perfection in ancient Egypt, as the mummies which still exist so powerfully testify. In modern times many experiments in embalming have been tried, with various degrees of success.

**Ember-days** are set apart for fast and prayer in the English and Romish churches, at the periods appointed for ordination, viz., the Wednesday, Friday, and Saturday after the first Sunday in Lent, the same days after Whist Sunday and after the festival of the Holy Cross in September, and St. Lucia in December.

**Emblem**, a symbolical figure or design referring to some person, power, or quality, divine or mortal. **Emblems** are land crops, or profits thereof, which belong to a tenant, or his executors, although the lease of the land may have expired before the crops matured.

**Embossing**, the art of stamping in relief letters or designs upon pliant substances.

**Embryology**, that branch of biology which deals with embryos, tracing their development from fertilisation of the germ or seed to maturity.

**Emerald**. The rich green variety of beryl (beryllium aluminium silicate). The colour is due to the presence of chromium oxide.

**Emery**, a granular substance of the corundum order, generally mixed with other metallic substances, and used in a powdered state for polishing and grinding purposes. Emery stone is chiefly found in Asia Minor and the Grecian Archipelago.

**Emetine**, an alkaloid forming the leading principle in *Ipecacuanha*, and largely used as an emetic; hence its name.

**Emigration** is the removal of a person or family from one country to another for the purpose of settlement, and has been a common practice from ancient times. The general stream of emigrants in modern times has been from Europe to America.

**Eminence**, a title of honour conferred on cardinals of the Church of Rome by Pope Urban VIII. in the year 1630.

**Emplectum**, a kind of masonry used by the Greeks and Romans, consisting of walls built with hollow spaces between, which were filled in with rubble. Much used in fortification construction.

**Empyrean**, the highest heaven of the Ptolemaic system, and the supposed abode of the Deity.

**Emu**. Flightless herbivorous birds of Australia. **Enamel**, a vitrified substance applied as a coating to pottery and porcelain. The art was practised by the Assyrians and Egyptians, and was introduced to Europe by way of Greece. Enamels are all either of the transparent or opaque kind, and are susceptible to an immense variety of colouring, according to the metallic oxides introduced.

**Encænia**, a festival commemorating a dedication; at Oxford University the annual commemoration of benefactors, accompanied by the conferring of honorary degrees, is held in June.

**Encarpus**, an architectural ornamentation consisting of sculptured representations of garlands or festoons of flowers or fruits, and generally wrought on friezes or capitals of columns.

**Encaustic Tiles** were much used in ancient times, as the evidences of ancient Rome and of the mediæval period in Europe generally clearly indicate. In modern times there has been a revival of this art, which has been very successful in many of the present-day examples of our own tile manufacturers, being more beautiful and durable than those of former times.

**Encyclical Letters**, a term used in reference to letters addressed by the Pope to his bishops upon matters of doctrine or discipline.

**Encyclopedists**, a term first applied to the eminent writers who collaborated in the French *Encyclopédie* (1751-65). These writers were Diderot, D'Alembert, Voltaire, Helvetius, and others, and their writings generally were sceptical as to religion, and destructive as to politics, and had great influence in popularising the social ideas which afterwards resulted in the French Revolution.

**Endive**, a plant of the chicory family grown as a hardy annual and yielding a profusion of leaves, is generally used for salad.

**Energy** may be recognised in many forms: kinetic, potential, electrical, heat, chemical, radiant, and atomic energy. When energy disappears in one form it appears in others, in each case according to a fixed rate of exchange. (*See Work*.) Atomic energy is quite different from other forms of energy and is released when matter is actually destroyed, a small amount of matter giving rise to a relatively enormous amount of energy. During the war atomic energy research developed at great speed and culminated in the production of the atom bomb (*q.v.*) when a few pounds of uranium released energy comparable to that of 20,000 tons of high explosive. Research is now being directed to the conversion of atomic energy into electric power, via heat. (*See also p. 187.*)

**English Language** is composed of many elements, Anglian, Saxon, Norman French, Scandinavian, Dutch, and the various underlying contributions from Latin and Celtic sources. The result is a strong, expressive, composite language, now spoken by all races of English descent, and is the mother tongue of over 200 million people living in Britain and the Commonwealth and the United States of America.

**Engraving** is the art of cutting or otherwise forming designs of pictures on wood, stone, or metal surfaces for reproduction by some method of printing. Wood-engraving was the earliest in the field, dating from the 15th century. Later, engraving on steel and copper plates was introduced, and mezzotint, lithography, stipple, aquatint, etc. With the development of photography, and an increased knowledge of the use of acids, many readier methods of engraving were adopted, and now wood-engraving, which was formerly resorted to for all general engraving purposes, is comparatively little used. What is styled "process" engraving is the most utilised.

**Ensign**, a former title given to a commissioned officer of the lowest rank in a foot regiment, and so called because he was entrusted with carrying the colours or ensign. The rank was abolished in 1871. Officers of like rank are now styled second-lieutenants.

**Ensilage**, a method of storing and preserving fodder, vegetables, etc., in pits dug in the ground and excluded from air or light. The system was practised in ancient Rome and revived in England in the 19th century.

**Entablature**, that portion of a building which



surmounts the columns and extends to the roof of the tympana of the pediments. It comprises three parts, the architrave, the frieze, and the cornice.

**Entasis**, the swell of the column in either of the orders of architecture.

**Entellus**, one of the common monkeys of India, with a ridged forehead, a long tail, and whiskers and beard. It is regarded by Hindus as sacred, and enjoys immunity from injury at their hands.

**Entomology** is the study of insects. (See *Insects*.)

**Entomotraca**, a Crustacean sub-class, known as water-beans, from their jerky method of progression.

**Entozoa** is a term used to designate generally internal parasites, such as intestinal worms.

**Envelopes**, as wrappers for enclosing letters, were not in ordinary use until after the introduction of the penny postage system in 1840. They were known in France, however, in the 17th century.

**Envoy**, a special diplomatic agent deputed to represent a government at a foreign court, or to perform a special service, such as the negotiation of a treaty.

**Enzyme**, Organic catalysts which accelerate chemical processes occurring in living organisms. Examples are: *lipase*, which speeds the hydrolysis of fats; *diastase*, which is involved in the conversion of starch to glucose. Fermentation of sugars to alcohol requires the presence of the enzyme *zymase*. (See p. 168.)

**Eocene**, a geological term applied to the lower division of Tertiary strata, and evidencing the beginnings of existing species.

**Epaulette**, a shoulder badge fringed with cord, worn by English army officers until 1855; now confined to naval officers, and varying in form and richness according to the rank of the wearers.

**Ephemoptera** or *May-flies*, an order of insects. In the larval condition they exist from two to three years, but no sooner do they arrive at maturity than their lives are hurried to a close. They rise up in pyramids on warm summer nights, take no food, propagate, and perish. The Latin name expresses the fact that the adults have an ephemeral existence.

**Ephesus**, Councils of, were held in A.D. 431 and 449 to deal with heretical doctrines.

**Ephod**, a vestment worn by a Jewish high priest, and sometimes by priests of lower rank. In olden times it was of rich texture and set with gems.

**Ephors** were the five annually elected magistrates who exercised almost supreme authority in ancient Sparta; and later the office was adopted by the Romans. The last of the Spartan ephors existed in 225 B.C. when Cleomenes III. exterminated the existing magistrates and abolished the office.

**Epic**, a heroic narrative poem dealing with important events and introducing supernatural features; the most famous examples are Homer's *Iliad* and *Odyssey*, Virgil's *Æneid*, Ariosto's *Orlando Furioso*, Tasso's *Jerusalem Delivered*, and Milton's *Paradise Lost*.

**Epiciene**, pertaining to both sexes, a term now usually applied, in grammar, to nouns which indicate indiscriminately male and female animals, as sheep.

**Epidemiology**, the science of epidemics, which in recent times has formed one of the most important branches of medical study.

**Epidiascope**, a modern magic-lantern which throws on to a screen images not only of transparencies such as lantern slides but also of any opaque object (book illustration, photograph, etc.). Is much in use in schools.

**Epidote**, a mineral occurring in green-black or yellowish-green crystals. Chemically it is a hydrated silicate of calcium, aluminium, and iron. Also known as *Pistachite*.

**Epiglottis**, a lamella or cartilage designed to cover and protect the entrance to the larynx during the process of food swallowing.

**Epigram**, a term originally used to indicate a monumental inscription; afterwards applied to any concise and pointed specimen of verse, but in later times is applied to short, witty expressions in prose as well as verse.

**Epilogue**, an address, in prose or verse, delivered at

the end of a play, and a usual accompaniment to the dramatic work of the 16th, 17th, and 18th centuries, but now fallen into desuetude.

**Epiphany**, a church festival celebrated on January 6, Twelfth Day.

**Epiphytes**, plants which grow on other plants, but do not derive nourishment from them, e.g., ferns, mosses, lichens, and numerous orchids.

**Epithalamium**, a nuptial hymn or song, originally sung by the ancient Greeks and Romans at the door of the bride-chamber. Many specimens of this class of composition by Sappho, Catullus, etc., have come down to us.

**Epithelium**, a tissue covering a surface or lining hollow organs.

**Epoch**, a period of time of such importance that succeeding years are numbered from it; an era is a succession of time, but an epoch is a point of time. Among the various epochs may be counted the birth of Christ and the Reformation. There are also the geological epochs, and epochs in arts, science, and invention, as well as in history generally.

**Equator**, the imaginary great circle of the earth, every point of which is 90 degrees from the earth's poles, and dividing the northern from the southern hemisphere. It is from this circle that the latitude of places north and south is reckoned. The celestial equator is the circle in which the plane of the earth's equator meets the celestial sphere.

**Equidae**, the zoological term for the family of hoofed quadrupeds comprising two genera—*Equus*, to which the horse belongs, and *Asinus*, comprising the ass and zebra. In the Tertiary period there were several other species of Equidae—*Hipparion*, *Protohippus*, etc.—of which fossil remains have been discovered.

**Equinox**, the time when the sun crosses the plane of the earth's equator, making day and night of equal length, occurring about the 21st March and the 22nd September, when the spring and autumn quarters are respectively entered upon.

**Equites**, a body of ancient Roman cavalry, recruited from citizens of rank.

**Equity**, a term used to express a modification of the severer form of law in order to insure equal justice. It is the principle of fairness applied to general rule, and in recent times all English courts administer equity as well as law. (See "A Citizen's Guide.")

**Eras** are distinctive periods of time associated with some remarkable historical event or personage. The *Christian era*, dating from the birth of Christ, adopted for the reckoning of the years about the 8th century, was invented by the Christian scholar Dionysius Exiguus in the 6th century. It is now generally understood that the year A.D. 1 is put too late by four years. The *Jewish era* dates from 3761 B.C.; the *Julian era* from the alteration of the calendar by Julius Caesar, 45 B.C.; the *Mahomedan era* from A.D. 622.

**Erastians**, followers of Erastus, who, in the 16th century, advocated the restriction of ecclesiastical power.

**Erbium**, Element discovered by Mosander in 1842. Belongs to the group of rare-earth metals.

**Ergot**, a fungoid growth, that affects the seeds of various grasses, causing them to blacken and lose their virtue. The ergot of rye has medicinal value, and is used to assist contraction in maternity cases.

**Eridanus**, the constellation of the winding river in ancient astronomy, situated south of the Taurus, and visible only in the southern celestial hemisphere. It contains one star of the first magnitude, Achemar.

**Erl-King**, a forest fiend of German mythology, who lured children from their homes and carried them off. In Goethe's ballad the "Erlkönig" it is a traveller's child who is lured to destruction.

**Ermine**, a small animal found in northern latitudes, and abundant in Arctic America. Its coat becomes a lovely white in winter, the tip of the tail only remaining black. Its fur is highly prized.

**Eros**. This asteroid is 15-20 miles in diameter. It comes closer to the earth than any other member of the solar system with the exception of the moon and several very small asteroids.

**Determination of solar parallax** based on observations of Eros in 1930-31 yielded the most accurate estimate of the distance of the sun from the earth (93,004,000 miles).

**Ere**, the old Gaelic dialect of Ireland, and afterwards of the Lowland Scots. Now revived as the Irish National Language since 1932.

**Escapement** is the contrivance by which the pressure of the wheels in a watch or other timepiece is accommodated to the vibratory action of the pendulum or balance-wheel, providing the regulating power which maintains an even impulse in spite of irregularities caused by friction or air resistance.

**Escarpment**, the face of an abrupt cliff or hill; also a portion of fortified ground whose edge is cut away almost vertically to prevent the enemy from climbing.

**Escurial** or **Escorial**, a magnificent palace built in the 16th century by Philip II. of Spain at a village 26 miles north-west of Madrid. In addition to a palatial residence it has a fine Doric church, a valuable library, and the royal mausoleum, the burial-place of the kings of Spain.

**Escutcheon**, a shield-shaped surface called a field, upon which a man's armorial bearings are represented. A woman's escutcheon is lozenge-shaped.

**Esoteric**, a term which had its origin in the teaching of Aristotle, but in later times has been applied to such doctrines as are intended only for privileged students or those of the inner circle.

**Espalier**, lattice work upon which to train fruiting or ornamental trees.

**Esparto** Grass grows in great abundance in Spain and North Africa, and the pulp is largely used for paper-making as well as for other purposes.

**Esperanto**, an artificial international language created by L. Zamenhoff of Warsaw and first published in 1887. It does not seek to replace national languages but to serve as a second language for international communication. It is based on the internationality of many words in the principal modern languages, and is entirely phonetic in spelling and pronunciation.

**Eskimos**, the people of the Arctic regions. They dwell in skin tents in summer and snow igloos in winter and live by hunting, fishing and trapping.

**Eskimo Dog**, a very hardy animal of great utility to the inhabitants of the Arctic regions as sledge-drawers. In appearance it suggests the Pomeranian, but is of a larger breed and has a wolf-like head.

**Esquire** was formerly something of a distinctive title applied to the otherwise untitled sons of nobles, also of knights, officers, officials and professional men; now used generally as a matter of courtesy in addressing people who are of good social standing.

**Essenes**, a Jewish sect established in the 2nd century B.C., aiming at a higher spirituality, and living an ascetic life. "The love of God, the love of virtue, and the love of man" was their motto. They were restricted to Palestine, and did not exist as a sect after the destruction of Jerusalem.

**Essential Oils** are oils derived from plants by distillation or expression, and much used in perfumery as well as to some extent in medicine.

**Estates of the Realm** in Great Britain are the Lords Spiritual, the Lords Temporal, and the Commons. They are the great classes invested with distinct political powers, and whose concurrence is necessary to legislation.

**Etching**, a process of engraving, on copper usually, the design being drawn with a steel needle, and the lines produced by the action of an acid or mordant.

**Ether**, a volatile liquid, consisting of carbon, oxygen, and hydrogen. It is a valuable anæsthetic obtained by heating alcohol with sulphuric acid.

**Ethics**, the science of moral conduct and duty. Aristotle, Plato, Kant, Bacon, Hobbes, Paley, Whewell, Hume, Bentham, Locke, Mill, and Herbert Spencer have all contributed to the development of Ethics, the last-named being the most illuminating of exponents of a clear ethical system.

**Ethide**, a compound formed by the union of an element with the monad radical ethyl.

**Eton College**, a famous school for boys, near Windsor, founded 1440.

**Etruscans**, people from Asia Minor who colonised Italy about 900 B.C., settled in what is now Tuscany and part of Umbria, reached the height of their civilisation about 500 B.C., and were ultimately absorbed by the Romans. They were skilled technicians in bronze, silver, and goldwork, and excelled in the art of granular decoration.

**Etude**. (See Study.)

**Etymology** treats of the science and structure of words, including classification and derivation.

**Eucalyptus**, an Australian tree that grows to a great height, and possesses remarkable properties. It exudes a valuable gum, has a fibrous bark, and yields an oil from its leaves which is of great use in bronchial affections.

**Eugenics**, the science of racial progress as affected by heredity and environment, first formulated by the late Sir Francis Galton, who in 1905, in this connection, endowed a Research Fellowship at the University of London, and at his death in 1911 bequeathed to the University £45,000 for the study of national eugenics. A Galton Professorship of Eugenics was established.

**Euomphalus**, a species of extinct snail whose fossil discoidal shell is frequently found in the rocks of the Palæozoic period.

**Eupatorium**, a genus of plants of the Compositæ order, with clustrous flowers, native of America. One species, hemp agrimony, is found in Britain.

**Euphonium**, alternative name for the Bass Saxhorn in B♭. A large brass instrument of the trumpet type played by operating three valves.

**Euphorbiaceæ**, an order of apetalous plants of wide distribution, comprising herbs, shrubs, and trees, bearing flowers and fruit. The latter sometimes yields an acid, more or less poisonous, juice, and in other kinds yields starch cassava, certain oils, and caoutchouc. The box-tree is of this order.

**Euphuism**, an affected literary style, originating in the 16th century, and deriving its name from Euphuus, the chief character in John Lyly's *Anatomy of Wit*, issued in 1579, a word of forced elegance and bombast. From these exaggerations, however, there sprang many acceptable embellishments to the English language.

**Eurasian**, a half-caste or person of mixed European and Asiatic parentage.

**Europium**, element discovered by Demarcay in 1906. A member of the rare-earth metal group.

**Euterpe**, an order of palms belonging to tropical America and the West Indies, with very long, slender stems, surmounted by a close cluster of leaves and an edible fruit.

**Evaporation** is the process by which a solid or liquid is resolved into vapour by heat. As it is rarely that the atmosphere is completely saturated, evaporation is nearly always going on at the surface of the earth, especially over the sea and other water surfaces, the vapour rising and, being lighter than the air, forming clouds which afterwards break, the vapour thereupon falling to earth again as rain. The same process occurs over smaller surfaces, the rate of evaporation being dependent on the general atmospheric conditions.

**Everest Expeditions**. For many years after Mt. Everest had been shown to be the highest mountain in the world, political conditions in Nepal, lying south of the summit, and in Tibet, to the north, prevented mountaineers from attempting an ascent. At last in 1921 the Tibetan authorities gave permission, and the first expedition, organised, as were all subsequent British expeditions, by a joint committee of the Royal Geographical Society and the Alpine Club, and led by Col. C. K. Howard-Bury, was sent out. This was primarily a reconnaissance; besides mapping the northern flanks, it found a practicable route up the mountain. By 1939, six further expeditions had climbed on the northern face. Some were balked by bad weather, others by problems previously little known, such as the effect of high altitudes on the human body and spirit. Nevertheless, notable climbs were accomplished. In 1924, for example, Col. E. F. Norton reached 28,163 ft., and it was on this expedition that G. L. Mallory and Andrew Irvine were seen



going well at about the same height. They never returned, however, and what disaster befell them is not known. After the war, political conditions again closed the Tibet route: permission was eventually obtained from the Nepalese Government to make the attempt from the south. In 1951 a reconnaissance expedition under Eric Shipton reached the ice-fall at the exit of the Western Cwm (a high valley lying south-west of the massif), and reported favourably on the prospects for an ascent. The first attempt from this side was made the following year by a Swiss expedition led by Dr. E. Wyss-Dunant, two members of which made an attempt on the summit, but were stopped at approx. 28,200 ft. by the intense cold and the very strong winds. When the British 1953 Expedition, led by Col. (now Brig. Sir) John Hunt, was being organised, stress was laid on three main points: proper acclimatisation of the climbers; use of oxygen for the final stages; and the establishment of very high altitude camps, so that the final assault parties would set out fresh and unencumbered. Great attention was also paid to recent developments in diet, clothing, and equipment. In all these matters the 1953 expedition was able to draw on the accumulated experience of their predecessors. By the end of April, a base camp had been established below the ice-fall, and with the aid of thirty-four Sherpa porters supplies had been carried up into the Western Cwm. The next critical stage was the ascent of the steep head of the cwm, the Lhotse face, with the threat of avalanches always present. By most strenuous efforts, a camp was established on the South Col (25,800 ft.) on May 21. From this camp on May 26, T. D. Bourdillon and R. C. Evans climbed the South Peak of Everest (28,720 ft.), then the highest altitude ever attained. On May 28, Edmund Hillary and the Sherpa leader, Tenzing Norkey, spent the night at the highest camp (27,900 ft.) and on the following day, May 29, climbed to the South Summit, negotiated the difficult final ridge, and reached the summit of Everest—the climax of a long, arduous, and stirring endeavour.

**Evolution**, in biology, is, in the words of Huxley, "a general name for the history of the steps by which any living being has acquired the morphological and the physiological characters which distinguish it." The theory, as laid down by Darwin, is that all existing species, genera, and classes of animals and plants have developed from a few simple forms by processes of change and selection. Up to the time of Darwin a large part of the civilised world believed that life had been created suddenly at the beginning of the world as described in the Book of Genesis, in 4004 B.C. The evidence of the rocks, however, gave a more convincing theory of creation, and by studying the fossils preserved in the various layers of the earth's crust the past history of the earth's life has been pieced together. See "The World of Science."

**Excommunication**, exclusion from the rights and privileges of the Church. It is of two kinds—the major, which means a total cutting off, and the minor, which shuts out only from participation in the Eucharist. In medieval times, major excommunications were often launched against rulers and leaders.

**Exelastes**, a genus of flies of the ichneumon family with impectinate claws, and having about 50 species, more than half of which are European.

**Existentialism**. An anti-rational modern philosophy best known through the literary works of the Frenchmen Jean Paul Sartre and Camus. As a philosophical movement, it dates back to the German Heidegger (rector of a university in Nazi Germany), Kierkegaard, the 19th-century Danish theologian, and even Dostoevsky. There appears to be no consistent body of belief, and existentialism is mainly concerned to express an emotional attitude to the universe. Man, it is inferred, is a failure, unacceptable to Nature; he is, and always must be, imperfect. Sartre (an atheist) considers that the world is meaningless, there is nobody to help human beings in their predicament—they must help themselves. "Man is what he makes of himself." If a man is able to realise that he is abandoned to the tyranny

of Fate, absolutely alone, and can count only on his own powers, then he will find freedom and greatness in this knowledge. Each individual must be free to make of himself what he can; everything is permitted to him within reason. Kierkegaard, on the other hand, was a Christian who believed that the intellect must be crucified—Christianity is not a belief, it is a form of relationship with God. There must be a defiant affirmation of God. This belief, often called Christian existentialism, has influenced such theologians as Brunner, Barth, Haecker, and others. The only consistent beliefs which appear to be accepted by all existentialists are: (1) defiance of reason and science; (2) an excessive individualism—an assertion of the right of each man to make himself in whatever way he thinks best.

**Exorista**, a parasitic fly, having its antennae projecting from the middle of the face, and the third joint considerably longer than the second.

**Exoterics**, the opposite of esoteric, is the term applied to doctrines openly expounded.

**Exotics** are plants of tropical origin not fully acclimatised.

**Exploration**. Modern exploration began in the second half of the 15th century with the voyages of the great Portuguese and Spanish discoverers. They were followed by sailors of other European nations, who profited from their developments in navigation and from their charts, and in less than one hundred years the coast-lines of much of the Americas, Africa, and south-west Asia had been revealed and the globe circumnavigated. The motives of these early explorers were mixed: they were seeking adventure, trade, plunder, national power, and the conversion of the heathen. Few if any were directly interested in advancing scientific knowledge. But from the reports of their voyages and travels, scholars at home compiled descriptions of the strange new world which stimulated their successors to undertake more systematic enquiries. One of the earliest English expeditions to be despatched for scientific research was that of William Dampier on the *Roebuck*, which was sent out by the Admiralty in 1699 to examine the coasts of North-west Australia. In the 18th century British explorers were at work mainly in the Pacific Ocean, with the object of breaking the Spanish monopoly of trade. Capt. James Cook sailed thither in 1769 to observe first the transit of Venus at Tahiti, and then to search for the alleged great southern continent. On this voyage he discovered and charted much of the coasts of New Zealand and the east coast of Australia. On his second voyage he was the first to sail across the Antarctic Circle, and he showed that the southern continent was much smaller than had been supposed. By 1800 the general outlines of the continents, except for Antarctica were known, and explorers in the 19th century were largely engaged in opening up the interiors. In Africa British explorers solved two problems which had puzzled men for centuries: Mungo Park and Richard Lander established the true course of the River Niger, and Sir Richard Burton, J. H. Speke, Sir Samuel Baker, and others revealed the true sources of the Nile. The greatest African explorer of that age was undoubtedly David Livingstone, the missionary, who in three great journeys explored the Zambesi and the region of the Great Lakes, spreading the Gospel, fighting the slave trade, and opening up the interior to settlement and trade. In North America Alexander Mackenzie was the first to cross the main breadth of the continent from sea to sea. In Asia motives were also mixed; men like Charles Doughty, who explored in Arabia, and Sir Francis Younghusband, who journeyed from China to India across the Gobi and the Himalaya, were impelled by a love of adventure and the quest for knowledge, but political considerations were often involved. In recent years, with the main features of the world's surface known, exploration has become more intensive. Teams of scientists go out to study restricted areas in detail. An Antarctic expedition can contribute to our knowledge of world weather, or by biological research into the life history of whales, can help to improve our food supplies. Similarly, expeditions in Africa

can help to check the loss of valuable agricultural land through soil erosion, or to develop areas of settlement by schemes for irrigation and power. And there are still great areas to be adequately mapped. All these problems are inter-related, and in solving them the modern explorer can call on many improved techniques and instruments—the aeroplane, the aerial camera, tracked motor vehicles, radio, in fact all the resources of modern science. But the human element is still vital, and for those with the old explorers' spirit there will always be problems left to solve.

**Explosives** are substances which burn to produce gases in such great volume that an explosion is induced. Gunpowder was the first explosive to be used; Roger Bacon's powder, consisting of charcoal, sulphur, and nitre, was the only practical explosive for centuries. 1845 brought gun-cotton, made by treating cotton with a mixture of sulphuric and nitric acids; but it was not until 1865 that Sir Frederick Abel perfected the process of manufacture that made it safe enough to store and use. In 1867 Alfred Nobel discovered how to make dynamite by absorbing nitro-glycerine in kieselguhr; in 1886 he produced cordite, evaporating a solution of gun-cotton and nitro-glycerine in acetone, the resultant jelly being squeezed through jets to form cords. Cordite came into general use as a propellant. High explosives, providing bursting charge for shells and bombs, include: T.N.T. (trinitrotoluol), picric acid (known as lyddite, melinite, etc.), cyclonite (R.D.X.). Chemical explosives have been eclipsed by the atomic explosives: Uranium 235 and plutonium; 1 kilogram (2½ lb.) of Uranium 235 is equivalent to about 20,000 tons of T.N.T.

**Extreme Unction**, the final sacrament of the Roman Catholic and Greek Churches, administered to a dying person, and consisting of the anointing with holy oil, after confession and absolution.

**Eyebright**, a genus of plants, of which only one species, the common Eyebright, or Eyewort, is known in Europe. Its juice is aromatic and astringent, and used to be a country remedy for eye ailments.

**Eyra**, a species of wild cat, with reddish fur, exceptionally long body, and long tail, native to Texas, Louisiana and South America.

## F

**Fabian Society**, a society of British socialists established in 1883. George Bernard Shaw, H. G. Wells, Beatrice and Sidney Webb became its leading personalities. The Fabians stood for a non-Marxian, evolutionary socialism and believed in the "inevitability of gradualness". It is affiliated to the Labour Party and has a strong intellectual influence on the Labour movement.

**Fables** are fictitious narratives intended to enforce some moral precept, and may be either in prose or verse, and deal with personified animals and objects or with human beings. Aesop in ancient times and Hans Christian Andersen and the Brothers Grimm (in many of their stories) in later days, have given fables. Mention must also be made of La Fontaine's and Krylov's fables.

**Faction**, a name originally given to the contending parties in the ancient Roman chariot-racing sports. In modern times, a party, combination, or clique within a state, government, party or other association.

**Fagging**, a public-school custom in England, once very prevalent, but now falling into disuse, whereby junior scholars were made to perform menial duties for their seniors, receiving in return protection from the insults or attacks of other boys.

**Faience**, a kind of decorated glazed earthenware invented in Faenza, Italy, about the end of the 13th century. Wedgwood-ware is a notable example of modern faience.

**Faille**, a light silk fabric used for veiling material and other purposes of adornment. In the Middle Ages the name was applied exclusively to long veils worn by nuns.

**Fairies** are imaginary creatures supposed to be invested with supernatural powers. At one time a general belief in them was prevalent,

especially amongst the peasantry, and the uncivilised races still existing cling to similar ideas. It was fancied that the world of fairyland was composed of good and evil spirits, variously embodied, always contending for supremacy, and exercising good and bad influence over humankind. If a person was lucky it was the work of the good fairy, if unfortunate the evil fairy was the cause. Early literature is crowded with the denizens of fairyland—fairies, elves, fays, sylphs, sprites, gnomes, goblins, genii, and so forth. Shakespeare's "Midsummer Night's Dream" is a fairy world of its own, and Spenser's "Faerie Queen" is a still more separate and distinct creative effort. Among the fairies of the domestic order, "Robin Goodfellow" was much talked of in England; as the "Banshee," with its warning apparition, was peculiar to Ireland; while the "Brownie," who rendered nocturnal help in household affairs, was more special to Scotland.

**Fairs** were established in mediæval times as a means of bringing traders and customers together at stated periods, and formed the chief means of distribution. The great English fairs of early times were those of Winchester and Stourbridge near Cambridge. Traders from the Netherlands and the Baltic gathered there with the great merchants of London, and goods of every kind, wholesale and retail, were sold. In Great Britain today improved conditions of transport and distribution and the commercial traveller have rendered commercial fairs practically unnecessary. Cattle, sheep, and pleasure fairs are still held. The British Industries Fair is the modern counterpart of the mediæval fair. Famous continental fairs are held at Leipzig, Lyons, Vienna, etc.

**Fairy Rings** are the circles caused in grassland by certain fungi. The circles expand outwards as the fungus spreads and at the advancing margin there is a ring of lush vegetation, and inside this, where the fungus is most dense, a ring of dead plants. Farther inward where the fungus is dying there is again a belt of strong vegetation. In olden times these rings were held to be the scene of fairy dances.

**Fakirs** are Mahomedan or Hindu mendicants who are held in great regard in India. There are two classes: those who are strict devotees to the principles of Islam and are called dervishes (*q.v.*); and those who are unattached to any religious order, but are simply wandering beggars—or itinerant so-called "holy men." Some of the more fanatical fakirs commit self-mutilation, and pride themselves upon their wretchedness.

**Falange**, the ruling party in Spain which came to power as a result of the Nationalist revolt against the Liberal Government, which gave rise to the Civil War of 1936. All power is vested in the Leader (El Caudillo), General Franco.

**Falchions** were a kind of sword, generally curved, used by the Roman soldiers, and afterwards adopted by other nations.

**Falcon**, name given to diurnal birds of prey which belong to the same family, *Falconidae*, as the hawk and eagle. They are swift of wing and feed on birds and small mammals. These birds have long, pointed wings, strong, hooked and notched bill, long, curved claws, and an eye of great power. They are found all over the world. Those that breed in Britain are the Kestrel (the most common), Hobby (one of the swiftest of European birds), Merlin, and Peregrine, a swift and magnificent bird with slate-grey back, blackish crown, black "moustache" and whitish breast. It makes its eyrie on sea cliffs or mountain crags. Other members of the family are the Gyrfalcon from northern latitudes, Iceland and Greenland, which is a winter visitor to Britain, the Lanner, Saker, Eleonora's falcon, Red-footed falcon, and the Lesser Kestrel. The Gyrfalcon and the Peregrine were used in the sport of falconry in olden times. Because of its fearlessness and larger size, the female bird was used. When the quarry was sighted, the bird was unhooded, set free, and after mounting high into the air would dart swiftly down to strike the prey. The heron was the usual victim.

**Falcularia**, a black-and-white bird only found in Madagascar, possessing a bill shaped like a sickle.

**Faldstool**, formerly a folding stool, but now



- applied to a small reading-desk in cathedrals and other churches at which the litany is recited by the officiating cleric.
- Falernian Wine**, famed for its place at the banquets of the ancient Romans, was made from grapes grown at Falernus. Virgil, Horace, and Martial all referred to it with enthusiasm.
- Fallow Deer**, received its name from its fallow or yellow colour. It is smaller than the red deer, and has cylindrical antlers with palmed ends. It is native to many parts of Europe.
- Falsetto**, tones of a voice, particularly the male voice, which are pitched higher than the natural tones of the voice. Used in choral singing by male altos.
- Familists**, a sect existing in England and Holland in the 16th century, founded by Hans Niklas, who advocated the doctrine that religion was a matter of love rather than of faith.
- Fandango**, a lively Spanish dance executed by two persons, who usually mark time with castanets.
- Fans** were used in ancient times in Greece and Rome; seen in England after the Conquest, when they were introduced from France. Examples of Egyptian fan-handles are to be seen in the British Museum.
- Fantail**, a variety of the domestic pigeon; also a genus of Australian birds of the *Muscicapidae* family.
- Fantasia**, a composition for orchestra or solo pianoforte which is not bound by the rules governing formal compositions, i.e., symphonies, sonatas, etc.
- Fantocini**, or marionettes, were first introduced in Italy, where they are still popular. Our English "Punch and Judy" descended from this source.
- Fan Tracery**, a complicated style of roof-vaulting, elaborately moulded, in which the lines of the curves in the masonry or other material employed diverge equally in every direction. It is characteristic of the late Perpendicular period of Gothic architecture, and may be seen in St. George's Chapel at Windsor and the Chapel of Henry VII. at Westminster Abbey.
- F.A.O. (Food and Agricultural Organisation of the United Nations)**. See "A Citizen's Guide."
- Farce** is comedy in its broadest form, usually confined to short pieces, and admitting of free and exaggerated treatment calculated to arouse laughter.
- Farmer-General**, the name given to any of the numerous aristocrats who in the days of the old French monarchy farmed certain taxes, contracting to pay the Government a fixed sum yearly, on condition that the specified taxes were collected and appropriated by themselves. The revolution of 1789 swept Farmers-General away.
- Farthing**, an English coin which has been current from the time of Edward I., when it was composed of silver. The copper farthing was first introduced in the reign of James I. It is equal to the fourth of a penny.
- Farthingale**, a hoop of whalebone worn beneath a woman's skirts for the purpose of extending them, fashionable in the 16th and 17th centuries. The crinoline of the 19th century was a partial revival.
- Fascism**, a movement which started in Italy in 1918 under the leadership of Mussolini to suppress Socialism. The Fascist party came into power in Italy in October 1922, following the March on Rome. In Germany the Fascist party came into power in August 1934, when Hitler began to exercise supreme and uncontrolled authority, following the death of President von Hindenburg. Fascism is a doctrine which sets the State above the individual and gives supreme power into the hands of one man. It flourishes in times of great depression. It seeks to destroy parliamentary democracy and working-class movements, is nationalistic in sentiment and in the past has not shrunk from using any means to achieve its ends. Italian fascism derived its name and emblem from the Latin word *fascis* (= bundles). The *fascis* were the axe and bundle of rods carried by the Roman lictors before praetors, consuls, dictators, and emperors and symbolised the discipline and authority of the state.
- Fasti Capitolini**, marble tablets found in the ruins of the Roman Forum in the 16th century, and containing a list of the Consuls from the year of Rome 250 to 765.
- Fata Morgana**, the name given to a curious mirage often observed over the Straits of Messina, attributed to the magic of the fairy Morgana, half-sister of King Arthur, who was fabled to live in Calabria.
- Fathers of the Church** were early writers who laid the foundations of Christian ritual and doctrine. The body of their writings includes important controversial works, legal codes, histories, topographies, and speculations of a scientific and philosophical nature. The earliest were the Apostolic Fathers, some of whom were contemporary with the Apostles. The next in order are the Primitive Fathers of the 2nd and 3rd centuries, including Justin Martyr, Clement of Alexandria and Tertullian. The later Fathers were of the 4th and 5th centuries, among them being Athanasius, Basil, John Chrysostom, and St. Augustine.
- Fats** are important foodstuffs. In physiology they constitute a valuable form of reserve food. They contain carbon, hydrogen and oxygen; chemically they are described as esters of glycerol (glycerine). Commonest fats are stearin, palmitin, and olein, esters formed by the combination of glycerol with stearic, palmitic, and oleic acid respectively. Fats are converted into soap by alkali; this process (saponification) also releases glycerol.
- Fault**, a term designating a breakage coupled with displacement of geological strata.
- Favosites**, a fossil coral found in the Silurian, Devonian, and Carboniferous strata.
- Feathers**, the epidermal covering forming the plumage of birds. A feather comprises a main stem, or shaft, a supplementary stem of after-shaft, and a series of lateral webs, each of which contains numerous small branches termed barbs. A bird carried various classes of feathers, the two main divisions being the quill feathers of the wings and tail, and the clothing feathers of the body. Feathers are of every variety of colour and of many shapes, the more beautiful of them being extensively utilised in millinery and for other adornments.
- February**, the second month of the year, comprising ordinarily 28 days, but in leap years extending to 29 days. When first introduced into the Roman calendar by Numa about 713 B.C. it was made the last month of the year and preceded January. It was not until 450 B.C. that it was made the second month.
- Federal Union**. (See "A Citizen's Guide.")
- Federation**. (See "Confederation.")
- Fee**, a payment of services, originally lands enjoyed in exchange for services under feudal law. The etymological meaning is property. The term is used in property law; e.g., fee-simple, an estate which can be willed freely by the owner; fee-tail, entailed property, etc.
- Félibrige**, a movement founded in 1854 to revive the ancient glories of Provence, initiated by the French poet Frédéric Mistral.
- Felidae**, the scientific name of all mammals of the *Carnivora* order which walk upon the tips of their toes, and embracing the members of the cat family, from the lion downwards.
- Fell**, a term in weaving indicating the end of a web formed by the last thread of the weft; and in sewing a form of hem in which one edge is folded over the other and secured with stitches; also a rocky upland, usually barren.
- Fellahs or Felaheen**, are Egyptian labourers, agricultural chiefly, and form the lowest class of the community, possessing little or no political status. They are of Nubian, Coptic, and Arab descent.
- Felo-de-se**, one who deliberately and while in sound mind destroys himself.
- Felony**, in law, is any crime of a more serious nature than a misdemeanour. In former times such an offence was punishable by death and forfeiture of lands, but since 1870 the only felonies involving capital punishment are those of murder and treason.
- Felspar**, the name given to a group of minerals, silicates of aluminium, which make up probably more than half of the earth's crust. It is formed in granite and other rocks, both igneous and metamorphic.
- Felt** is unwoven wool, hair, and fur matted to-

- gether by moisture and heat, the fibres becoming so closely intertwined that a compact cloth surface is formed. Roofing felt is produced by mixing the material with coal-tar or asphalt.
- Felucca**, a long narrow vessel with two lateen sails; occasionally propelled by oars and used on the Mediterranean for carrying light merchandise.
- Feme (or Femme) Covert**, a legal term designating a married woman who, in consequence of being under the protection and control of her husband, cannot sue or be sued for debt (except as regards her separate property, legally secured to her), or be proceeded against in minor criminal cases because of the presumption that she would act under her husband's compulsion. Since 1st January, 1883, by the operation of the Married Women's Property Act, a married woman is in the same position as regards property and continues as a *feme sole*.
- Fencibles**, a body of volunteer cavalry organised in 1794 for service within the United Kingdom. It comprised over 14,000 men, was of great utility during the invasion panic of that period, and seems to have been the forerunner of the yeomanry cavalry.
- Fenestella**, the niche set apart on the south side of the altar for the piscina in Roman Catholic churches.
- Fenians**, the name of an Irish-American revolutionary secret society, founded by John O'Mahoney in America in 1858 with the object of establishing a republic in Ireland. James Stephens was the first Fenian leader in Ireland. In 1866 a number of Fenians were arrested in Ireland. Bands of Fenians attempted to invade Canada in 1866 and 1870, but were suppressed. After about 1870 they became merged in other societies of a similar character.
- Fennel**, a plant cultivated for its aromatic seeds, which are of considerable utility as a medicament; also used for salads and garnishing.
- Fens** are low-lying lands covered with water, or of a boggy or marshy nature. The Fen districts of England are chiefly in Lincolnshire and Cambridgeshire, but in recent times most of the Fen land has been drained and cultivated.
- Feoffment**, an act or deed of transfer by which the fee-simple of any specified land is transferred for a consideration from one person to another (obsolete).
- Fermentation**, the action of chemical ferments or *enzymes* in bringing about chemical changes in the materials of living animals and plants.
- Ferret**, a carnivorous animal of the Pole-cat family, with a pointed head and long sinuous body, well adapted for following rabbits and game into their burrows and hiding-places, it being kept in this country for that purpose. It is a native of Spain and Africa, and does not exist in England in a condition of natural freedom. (See Domestic Pets Section).
- Fertilisers**, Artificial, chemical compounds which plants can use in building up their bodies, and which therefore promote the growth of agricultural crops. The most important are: ammonium sulphate, sodium nitrate (Chile salt-petre), calcium cyanamide, "superphosphate," and the sulphate and chloride of potassium. (See Gardening Section, p. 909.)
- Feudal System** existed in England from the Saxon period down to the end of the 13th century. It was a military and political organisation, based on land tenure, the land being divided into fiefs or fiefs, held on condition that certain military duties were performed; and, in default of this, the land reverted to the superior lord. Feudal tenures were abolished by statute in England in 1660, although from 1495 they had practically been inoperative. The system was not abolished in France until the Revolution of 1789. There was a feudal system in Japan as late as 1871.
- Feu de Jole**, the discharge of guns to denote public rejoicing.
- Feuilleton**, a French term for a serial story or other light literature occupying the bottom portion of a newspaper page, and adopted in England to some extent in recent years, several of the daily journals now running serial stories.
- Fiasco**, an Italian word signifying a flask, but applied both in Italy and elsewhere to a complete breakdown or failure in any enterprise, especially in regard to musical or dramatic performances.
- Flat** ("Let it be done"), a legal term generally applied to a degree, judgment, or warrant commanding a specific thing to be done.
- Fibrin**, an insoluble proteid substance. When blood clots a meshwork of fibres is produced, and these fibres are composed of fibrin.
- Fibrolite or Sillimanite**, a white or light-grey mineral of a fibrous structure; a silicate of aluminium.
- Fidia**, a very small leaf-beetle, covered with short white hair and destructive to grape vines.
- Fieldfare**, a kind of thrush, a regular winter visitor to this country. It is of a reddish-brown colour with spotted breast and is about ten inches long.
- Field-Marshal**, the highest ranking title in the British army, and only bestowed on royal personages and generals who have attained great distinction. The first British Field-Marshal was created in 1736, when John, Duke of Argyll, had the title conferred upon him by George II.
- Field-mouse**, the name given to such mouse-like British rodents as are not true or "house mice."
- Field-Officer** is of military rank between a captain and a general, as major, lieutenant-colonel, and colonel.
- Fieri Facias**, in English law, a writ of execution after judgment obtained in action of debt or damages.
- Fiery Cross**, a call to arms used in the Scottish Highlands in olden times, and consisting of a wooden cross, which, after being set on fire and quenched in goats' blood, was carried blazing to and fro among clansmen to rouse them to action.
- Fife**, a small flute with a compass of about two octaves used only in military drum-and-fife bands.
- Fifth Column**. When Franco, the Spanish dictator, revolted against the Spanish Republic in 1936 and attacked Madrid with four armies, he declared that a group of fascists within the city was assisting the besiegers. The term is used to describe a body of spies behind a fighting front.
- Fifth-Monarchy Men** were a fanatical Puritan sect which proclaimed about 1645 that the Millennium was near at hand, when Christ would come to earth again and establish the Fifth Universal Monarchy. They were dispersed by Cromwell in 1653, but in 1661 revived and became a menace to the public peace, and 11 of them were arrested and executed.
- Fig**, a tree common in most hot countries and bearing a fragrant fruit which has a large general consumption.
- Figaro**, a well-known comic character in drama and opera, invented by Beaumarchais, adopted by Mozart, and the name of a popular paper of Paris.
- Fighting-Fish**, small pugnacious Siamese fish with long anals and ventrals of five rays. They are kept in glass globes in Siam, and when brought into contact will fight to the death, these encounters being the occasion of much gambling.
- File Fish**, a fairly common fish in European waters, mostly found in the Mediterranean, but not infrequently off the southern coast of England. It averages from 18 in. to 2 ft. in length, and derives its name from its toothed dorsal fin.
- Filibuster**, a name first given to pirates and buccaners in the 17th century, who took possession of small islands or lonely coast lands, and there maintained themselves apart from any governing authority. In later times the term was used to specify men taking part in expeditions whose object was to appropriate tracts of country and settle upon them in disregard of international law. The most notable expeditions of this kind in modern times were those of Narcisco Lopez against Cuba in 1850-51, and of William Walker against Nicaragua, between 1855 and 1860. Both leaders were captured and executed. The term is also used to express the right of a minority in the United States Senate for unlimited debate, which is used on occasions to delay legislation for an unlimited period.
- Filigree**, the name given to a class of ornamental work done with threads of gold or silver, or with fine wire, and frequently attached to



- apparel or decorative objects. It was made by the ancient Greeks, and in the Middle Ages was greatly in vogue, and reached a high standard of artistic beauty. It is still made in certain parts of Italy.
- Floque**, the part of the Nicene Creed which proclaims that the Holy Ghost emanates jointly from Father and Son, and is styled the doctrine of the "double procession." It is generally accepted in the Western Church, but is rejected in the Greek Church.
- Filter**, an apparatus used for separating solids from liquids and constructed in many different forms. The filtering substances used range from sand, charcoal, and sponges to porous stones and fabrics.
- Filtration** is the process of separating suspended solid matter from a liquid. This is effected by passing the liquid through a filtering medium such as cloth, paper, carbon, kieselguhr, or sand, when the suspended matter is retained by the medium. In the purification of water for domestic purposes, filter beds made up of fine and coarse sand, fine and coarse gravel, and large stones are used.
- Finches**, a large family of small birds belonging to the Passerine order of birds. (See under separate names and also p. 1004.)
- Finial** (*archit.*), the ornamental apex of a spire, pinnacle, or gable, and of Gothic origin.
- Fir**, a cone-bearing tree with small evergreen leaves and of considerable use as timber. There are four leading varieties—the Silver Fir, the Norway Spruce, the Larch and the Lebanon Cedar. All these firs attain to a considerable height, and all yield turpentine or other resinous material.
- Fire Engines** for forcing water upon burning buildings have been known since A.D. 70. (See also London Fire Brigade.)
- Fire-Fly**, a small winged insect which is able to throw out a strong phosphorescent light in the dark. There are some remarkable specimens in tropical countries.
- Fire of London**, of 1666, extended from East to West, from the Tower to the Temple church, and northward to Holborn Bridge. It broke out in a baker's shop in Pudding Lane, and lasted four days, and destroyed 87 churches, including St. Paul's Cathedral, and many public buildings, among them the Royal Exchange, the Custom House, and the Guildhall. In the ruins were involved 13,200 houses and 400 streets. The plague had not disappeared from London when the fire occurred.
- Fireship**, the name given to a vessel stored with inflammable and explosive material, and floated into the midst of an opposing fleet to cause destruction and alarm.
- Firkin**, a former measure of capacity, the fourth part of a barrel, now only used in reference to a small cask or tub for butter, lard, tallow, etc.
- Firman**, a document of authority issued by Oriental governments granting any special privilege or concession, containing a command or installing a new officer, or conveying protection like a passport. The decree is issued by the ruler and signed by one of his ministers.
- Fischer-Tropsch Process**. A process for making synthetic petrol from carbon monoxide and hydrogen. The synthesis is accelerated by cobalt-thoria and nickel-thoria catalysts.
- Fish Louse**. Parasitic crustacea found on marine and fresh-water fishes.
- Fission, Nuclear**. A nuclear reaction in which the nucleus of an atom (*e.g.*, Uranium 235, plutonium) captures a neutron, and the unstable nucleus so produced breaks into two nearly equal fragments and throws out several neutrons as well. In biology the term fission is applied to reproduction by fragmentation of a single-cell organism, as in amoeba.
- Five-Mile Act** forbade any clergyman or schoolmaster from coming within 5 miles of a city or corporate town unless he swore that he would "not at any time endeavour any alterations in Government either in Church or State." It was passed in 1665 and repealed in 1689.
- Fabelum**, an ecclesiastical fan, formerly employed to drive away flies from the chalice during the celebration of the Sacred Mysteries; the fabelum was usually formed of the tail-feathers of the peacock.
- Flagellants** were a fanatical sect which sprang into notice at Perouse in the 13th century during a time of plague. They held processions and flogged themselves as they walked naked about the streets until they bled. They declared that sins could not be remitted without such practices. The sect continued down to the 16th century, in spite of their being declared heretics by Pope Clement VI., and 90 of them being burnt at the stake.
- Flageolet**. A sweet-toned instrument which is in effect a portable organ pipe whose length, and therefore pitch, may be varied by opening or closing holes in the pipe with the fingers. Sometimes called the English Flute or "Penny Whistle."
- Flag Officer**, a British naval officer who enjoys the right of carrying a flag at the mast-head of his ship, and is of the rank of Admiral, Vice-Admiral, or Rear-Admiral.
- Flagship**, the ship that flies the Admiral's flag, and from which all orders proceed.
- Flamen** were priests of ancient Rome dedicated to the service of particular deities, such as those of Jupiter and Mars, and were always of patrician birth.
- Flamingo**, a strangely beautiful, extremely slender wading bird of white and rose-pink plumage with long, slender legs and neck and a long, down-curved bill with which it rakes the mud and obtains its food of worms and molluscs. The wings are bright crimson, bordered with black, and a flock in flight is a picture of singular beauty.
- Flash-Point**. This is found by heating an oil in a special cup and taking the temperature at which sufficient vapour is produced to ignite when a small flame is applied. It is an index of the inflammability of oils.
- Flat**. A keyboard instrument has white keys and black keys. The notes played by the white keys are called "naturals." There are eight of these to each octave and they are called A, B, C, D, E, F, G, A. The black key immediately below a natural (one semitone interval) is called its "flat," *e.g.*, the black note below B is B flat and is written B $\flat$ . Conversely the black key above a natural (one semitone interval) is known as its "sharp," *e.g.*, the black note above A is A sharp and is written A $\sharp$ . Since B natural is a full tone above A natural, it follows that B flat and A sharp are the same note.
- Flax**, a textile fibre obtained from the flax plant, which is an annual, and is largely cultivated for commercial purposes, being grown in Russia, Germany, Italy, Holland, and the North of Ireland. After undergoing various preparatory processes, the flax is spun into yarn and woven into linen fabrics.
- Flea**. Fleas are small parasitic insects belonging to the order *Aphamptera* (so called because these creatures have no wings). They obtain their food by sucking blood from their host. They are laterally compressed, which immediately distinguishes them from lice. The human flea (*Pulex irritans*) is able to jump vertically a distance of over 7 in.
- Fleet Prison**, a noted debtors' prison that stood in Farringdon Street, London, where the Congregational Memorial Hall now stands, taking its name from the Fleet Ditch. Notorious for the cruelties inflicted on prisoners. It was pulled down in 1846.
- Fleet Street**, a famous thoroughfare in London, now the centre of journalism and newspaperdom, though it was long celebrated for its taverns where the literary coteries of the day were wont to meet. It takes its name from the Fleet stream which used to run from Hampstead through Holborn to the Thames at Blackfriars.
- Flemings**, the people of Flanders, whose ancestors of mediæval times excelled in the textile arts; England owes its early eminence as a manufacturing nation to the migration of numbers of Flemings to this country in the 16th and 17th centuries.
- Fleur-de-Lis**, the former national emblem of France, the flower of the lily. It was superseded by the Tricolour in 1789, but is still adhered to by the supporters of the old French royalties.

**Flint**, a kind of silica of a light grey colour and excessive hardness, which enabled it to be utilised in the formation of cutting implements in prehistoric times, and, before the invention of lucifer matches, was used along with steel for striking lights.

**Flint Implements** are objects found in the earlier geological strata, and constituting evidence of the condition and life of the period. They include knives, clubs, arrow-heads, scrapers, etc., used as weapons, tools and possibly as surgical instruments and in religious ceremonies. At the end of the Neolithic Period and the beginning of the Bronze Age a people using a new type of stone axe became evident in Europe, advancing towards the south and central regions, and supposed by many to be the ancestors of the present European stock, or Aryans. Similar to prehistoric specimens are the flint and obsidian implements of some modern savages, e.g. the Maori. Ritual weapons and sacrificial knives continued to be made of stone long after the introduction of metals for practical purposes.

**Flock**, a fibrous material for stuffing mattresses, upholstery, etc.; it is made by reducing coarse woollen rags, waste, etc., to a degree of fineness by machine manipulation.

**Flodden Field, Battle of** (Northumberland), was fought on Sept. 9th, 1513, when England under the Earl of Surrey defeated Scotland under King James IV.

**Florin**, a coin first made in Florence in the 13th century. The name was afterwards given to an English gold coin of the value of 6s. issued in 1493. The English florin of to-day represents 2s., and dates from 1849.

**Florist**, one who cultivates or is concerned in the cultivation of flowering plants.

**Flounder**, one of the most familiar of the smaller flat fishes common round the British coasts, and seldom attaining a weight of over three pounds.

**Flour**, the finely ground meal of any kind of grain, but more particularly applied to that of wheat.

**Fluorine**, a chemical element found in combination with calcium in fluorspar, and occurring in minute quantities in certain other minerals. Discovered by Scheele in 1771, it was first obtained by Moissan in 1886. A pale yellow gas, it is very reactive and combines with most elements except oxygen. Its acid, hydrogen fluoride, etches glass, the fluorine combining with the silicon to form volatile silicon fluoride.

**Fluorescent Lamp.** (See Electric Light and Ultra-Violet Rays.)

**Fluorspar**, a mineral; chemically, calcium fluoride. Can be colourless, green, or yellow, but is most commonly purple. Blue fluorspar under the name of Derbyshire "blue John" has been used for ornamental purposes.

**Flute**. A wooden musical instrument, part of the wood-wind of an orchestra, played by blowing across a mouth-hole, the notes being produced by pressing the fingers on finger-holes or keys. It has a compass of three octaves and a singular purity of tone. In simple form the flute has been known since Greek times, but the modern flute dates from the 18th century.

**Flux**, any substance used to assist soldering and brazing of metals. The fluxes most used for large operations are limestone or fluorspar, and for smaller purposes, alkalies, borax, etc. Black flux is obtained from cream of tartar, and is used mainly for analytical operations, while white flux, used for decomposing minerals, is obtained from carbonates of sodium and potassium in equal portions.

**Fly**, the popular name for a large number of insects with one pair of wings and a proboscis terminating in a sucker through which fluid substances can be drawn up. The best-known species are the common house-fly, the blue-bottle, and the blow-fly. In the larval form flies are maggots, and feed upon decaying substances, animal flesh, etc. Flies are able to walk upon ceilings or upright surfaces by having suckers at the soles of their feet.

**Flycatcher**, name of a large family of small birds, the Muscipidae. They are insect feeders, catch their food in the air, and are distributed over most countries of the world. The spotted fly-catcher and the pied fly-catcher are summer visitants of Britain.

**Fly-drill**, a kind of machine-tool having a reciprocating fly-wheel imparting steady momentum, the driving power consisting of a cord winding in reverse directions alternately upon a rotating spindle.

**Flying Dutchman**, a mythical mariner who, as the legend goes, was doomed as an expiation for his crimes to be for ever striving to reach harbour with his ship but never succeeding. Wagner constructed an opera round this weird subject.

**Flying Fish** are frequently to be seen in southern waters, and are capable of gliding considerable distances without touching the water. To build up speed for its "take-off" the fish swims rapidly, to break the surface at 15-20 miles an hour. Maximum air speed is about 40 miles an hour.

**Flying Fox**, an animal of the bat family, but of much larger size, and confined to the tropical and sub-tropical Old World. Like the bats, it is nocturnal, but it feeds entirely on fruits.

**Flying Lemur**, a remarkable genus of mammals, of which there are only two species, inhabiting Malaya and the Philippines respectively. They live on insects, fruit, and birds, and are provided with a parachute-like membrane which covers them from the neck to the tip of the tail, and is used in regulating their gliding.

**Flying Lizard**, a kind of Asiatic lizard, possessing wing-like projections from each side, which enable it to make flying leaps through the air, though not sufficient for continuous flight.

**Flying Saucers**, the name given to certain saucer-like shapes which have on occasion been seen travelling through the atmosphere. For some time speculation was rife, especially in America, but it has now been established that when not hallucinations, meteorological or cosmic-ray balloons, they are nothing more than atmospheric phenomena like mirages or mock suns caused by unusual atmospheric conditions. Described by Dr. Menzel, astrophysics professor at Harvard "as real as rainbows are real."

**Flying Squirrel**, rodents of which there are several species in Europe and America. It possesses a parachute-like fold of skin by means of which it projects itself through the air. In appearance they are much like ordinary squirrels, to which they are related. The African flying squirrels belong to a different family.

**Focus**, a word designating the point at which radiation such as heat or light is concentrated by refraction or reflection.

**Fodder**, food stall-fed to horses, cattle, etc., as distinguished from pasture feeding; also a weight standard for lead, equivalent to 21 cwt. avoirdupois.

**Fog** is caused by the presence of particles of condensed water vapour or smoke in the surface layers of the atmosphere, the term being applied meteorologically when the resulting obscurity is such as to render objects invisible at distances of up to 1 km. Fogs are frequently formed when the air near the ground is cooled below its dew-point temperature by radiation on a still, cloudless night, by flowing over a relatively cold land or water mass, or by mixing with a colder air stream. An accumulation of smoke over a large city may cause a high fog cutting off the daylight and producing gloom.

**Foil**, an extremely thin layer of rolled metal, as gold, tin, or lead, according to the purpose for which it is intended. Jewellers use it as a background to increase the colour or lustre of inferior precious stones. Any thin substance used for similar purposes—throwing into relief other objects—is termed foil. Tin-foil, as its name implies, is tin rolled out into thin sheets in the flattening mill.

**Fold**, an enclosure or pen for sheltering sheep or cattle.

**Foliation**, a geological term applied to rocks whose component minerals are arranged in parallel layers as the result of strong metamorphic action.

**Folio**, a paper and printing term for paper which is only folded once, a half sheet constituting a leaf.

**Folklore** concerns itself with the mental and spiritual life of the people—both civilised and primitive—as expressed in the traditional beliefs, customs, institutions, and sayings that



have been handed down from generation to generation by word of mouth, and with the observation, recording, and interpretation of such traditions. (The word *folklore* itself was first suggested and used—as two words *Folk Lore*—by W. J. Thoms in *The Athenæum* of August 22nd, 1846, and was at once absorbed into the English language.) Traditional lore of the kind included in the term folklore takes many forms and ranges from omens of good and bad luck (spilling the salt, breaking a mirror, dropping an umbrella, etc.) and the wearing of amulets or the possession of talismans (such as the horse-shoe) as protection against misfortune, to elaborate ceremonial dances such as the Abbots Bromley Horn Dance, the Hobby horses of Padstow and Minehead, the Northern sword-dances, and the Christmas mummers' plays. Especially important are the beliefs and customs associated with birth, babyhood, marriage, and death, such being occasions when the individuals concerned require special protection or when unusual happenings can be used for foretelling their future. The child born on a Sunday will be the luckiest; rocking an empty cradle will ensure the speedy arrival of a new baby; throwing an old shoe after a newly-married couple brings them luck; the bride should be carried over the threshold of the new home; on the sea-coast, death is believed to take place at the ebb-tide; the bees must be told of the death of the master of the house, or they will leave the hive. Another very large section of the subject deals with the traditional sayings and practices associated with particular days and seasons of the year—calendar customs, as they are called. The eating of pancakes on Shrove Tuesday; Mother Sunday customs and the simnel cake; Good Friday as the right day for planting potatoes, but emphatically the wrong day for washing clothes or cutting one's finger-nails; the necessity of wearing something new on Easter Sunday; the children's maypole dances and May garlands; midsummer fires; All Hallowe'en as the most favourable occasion for divining the future—especially in respect of marriage—and for games and sports such as apple-bobbing; the numerous practices accompanying the harvest. All these are examples of calendar customs; their full story would occupy several volumes. Folklorists are interested in all such oral tradition because they think that to a large extent it represents what folk have mentally stored up from the past and transmitted to their descendants throughout the centuries, and because therefore it is able to assist other historic methods—ethnographical, linguistic, archaeological, etc.—in the elucidation of the early story of man. In those countries with a great diversity of peoples in all stages of culture, a knowledge of folklore and what it can teach of the mind of man is of great importance to administrators. The Folk-Lore Society was founded in 1878, and that part of the subject represented by song and dance has now its own organisation in the English Folk Dance and Song Society.

**Foot**, a lineal measure of 12 in. of almost universal use, and originally adopted from the average length of the human foot. In prosody a foot is a measure of syllables making rhythmical accent.

**Football** is one of the most ancient outdoor winter sports, and was in a crude form popular in England in the Middle Ages. For modern development of the game, see articles in "Sports and Pastimes."

**Foot Guards** in the British Army include the Grenadiers, Coldstream, Scots, Irish, and Welsh Guards, from which the garrisons of London and Windsor are formed.

**Foraminifera**, an order of animals belonging to the sub-kingdom Protozoa, carrying a porous shell usually of calcium carbonate and having gelatinous bodies without definite organs.

**Force**, as a term in physics, signifies an influence or exertion which, when made to act upon a body, tends to move it if at rest, or to affect or stop its progress if it be already in motion. The c.g.s. unit of force is the dyne; the practical unit 1 gram-wt. = 980·616 dynes at sea-level Lat. 45°.

**Forgery**, the fraudulent imitation of a signature or writing whereby injury is done to another, or some deceit is practised. Forgery was punish-

able with death in England until the passing of the Forgery Act, 1861. The law is now consolidated in the Act of 1913.

**Formaldehyde**. Chemically it lies between methyl alcohol and formic acid; oxidation of methyl alcohol yields formaldehyde, and oxidation of formaldehyde produces formic acid. It is used as a disinfectant, in silvering mirrors, and in the manufacture of phenol-formaldehyde plastics (of which bakelite is the best-known example).

**Forme**, a body of letterpress type, composed and secured for printing from; or a stereotype or electrotype. The former is used more for newspaper formes and the latter in good book work.

**Formic Acid** can be obtained from a colourless fluid secreted by ants and other insects and plants. It is a strong irritant. Commercially it is obtained from sodium formate, which is synthesised by the absorption of carbon monoxide in caustic soda. It is used in the electroplating, tanning, and textile industries.

**Formula**, in mathematics and physics a statement of certain facts in symbolical form.

**Forte**, a musical term signifying "loud," and represented by the letter "f"; "ff" (fortissimo) indicating "very loud."

**Forth Bridge**, which spans the Forth at Queen's Ferry, near Edinburgh, was completed in 1890 at a cost of nearly £2,000,000. It is 1½ miles in length.

**Forum**, in ancient Rome, was a public meeting place and the centre of judicial and public business. It was also a market.

**Fossils** are the petrified remains of plants and animals and have been the means of disclosing a knowledge of prehistoric periods and of the history of the earth's life which would otherwise have been unknown. (See p. 163.)

**Foucault's Pendulum**. This instrument, which demonstrates the rotation of the earth, was conceived by the French scientist Foucault in 1851. It is a pendulum consisting of a metal ball suspended at the end of a long wire. Its direction of swing in space remains constant, but owing to the earth's rotation it appears to change direction by 15° in an hour, and this amount represents the hourly angular rotation of the earth.

**Four Freedoms**, a phrase coined by President Roosevelt in January, 1941, embodying what should be the goal of the Allies. They were (1) Freedom of speech and expression; (2) Freedom of every person to worship God in his own way; (3) Freedom from want; (4) Freedom from fear.

**Fox**, a well-known carnivorous animal of the Vulpine family, found in considerable numbers in most parts of the world. The common fox of Europe is a burrowing animal of nocturnal habits, living upon birds, rabbits, and domestic poultry, in the capture of which it displays much cunning. The fox in Britain is preserved from extinction chiefly for hunting purposes. Among other notable species are the Arctic fox and the red fox of North America, of which the valuable silver fox, coveted for its fur, is a variety.

**Fox-Shark**, a large species of shark common in the Atlantic and in the Mediterranean. It is very destructive to small fish, but although it attains a length of 15 ft. it is not to be classed with the sharks that are dangerous to man.

**Franc**, the unit of French currency, and a silver coin equivalent to a hundred centimes.

**Franchise**, an incorporeal hereditament, usually granted by a charter. It is usually interpreted as the right to vote.

**Franciscans**. (See Friars.)

**Franco-German War (1870-71)**. It was opened by a declaration of war by Napoleon III., but the Germans who were better prepared than the French, won victory after victory. In September Napoleon and the whole French army were made prisoners at Sedan, a Republic was then proclaimed, and Paris sustained a four months' siege. In the end France ceded Alsace and part of Lorraine to Germany, who claimed a war indemnity of over £200,000,000.

**Francolin**, a genus of birds closely related to the common partridge, belonging to Africa and sometimes referred to as the spur-legged partridge. The common francolin ranges from Cyprus to Assam, where it is known as the black partridge.

**Franks-Tireurs**, an irregular body of French troops prominent in the Franco-German War. Also any organised corps of irregular troops who conform to the usages of war.

**Frankincense** is of two kinds, one being used as incense in certain religious services and obtained from olibanum, an Eastern shrub, the other is a resinous exudation derived from firs and pines, and largely used in pharmacy.

**Franklin**, the name given in feudal times to a country landowner who was independent of the territorial lord, and performed many of the minor functions of local government, such as serving as magistrate.

**Freehold**, a legal term signifying an estate in fee-simple, or fee-tail, or for life, and to which no service or to a superior (as in copyhold) attaches.

**Freemasonry** dates back to mediæval times, if not to a more remote period. It is a secret organisation, having lodges for social enjoyment and mutual assistance. The Grand Lodge of England was established in 1717; that of Ireland in 1730, and that of Scotland in 1736. Roman Catholics are prohibited by Papal ban from being masons.

**Freestone**, any stone that can be easily worked with tools, the term being generally, however, specially applied to fine-grained sandstone.

**Fresco**, a painting executed upon plaster walls or ceilings, and much in favour for churches and public buildings in former times. The work is done with prepared pigments.

**Freshwater Shrimp**, a small crustacean abounding in British streams, and feeding on dead fish or other decomposing matter. Although of shrimp-like form it is not closely related to salt-water shrimps. Its generic name is *Gammarus*.

**Frequency Modulation**. A technique of radio transmission in which the frequency (instead of the amplitude) of the carrier wave is modulated.

**Friars**, members of certain mendicant orders of the Roman Catholic Church. The four chief orders are the Franciscans or Grey Friars, the Dominicans or Black Friars, the Carmelites or White Friars, and the Augustinians (Austin Friars).

**Friday**, the 6th day of the week, named after Frigg, the wife of Odin. It is the Mohammedan Sabbath, and is a general abstinence day of the Roman Catholic Church. According to popular superstition, Friday was an unlucky day.

**Frigate**, a small, swift war-vessel, generally with two decks, and carrying a number of guns, usually from 30 to 60. Now superseded by the armoured cruiser.

**Frigate-Bird**, a web-footed bird widely distributed over tropical latitudes, and deriving its name from its great expanse of wing and forked tail, which seem to suggest the shape of a swift vessel. It feeds on flying fish mostly, being unable to dive. A frigate-bird was found dying on the Hebridean island of Tiree in July 1953; only twice previously had one been recorded in Europe—the first on the German coast in 1792, and the second on the coast of France in 1902.

**Fringillidæ**, the scientific family name of a large class of passerine birds, including finches, redpolls, crossbills, grosbeaks, linnets, and buntings. (See p. 1004.)

**Frisians**, an old Teuton race formerly settled on lands now covered by the Zuyder Zee. Many of them joined in the Anglo-Saxon invasion of England, and occupied Mercian territory.

**Fritillary**, the name of a large class of British butterflies, all of them of beautiful colours and marking. There are seven species, the most prized of which is the "Queen of Spain" variety.

**Frog**, a familiar amphibian, breathing through gills in the earlier (tadpole) part of its existence, and through lungs later. It remains three months in the tadpole stage. The frog hibernates in winter at the bottom of the water.

**Frost** occurs when the temperature falls to, or below, 32° F., which is freezing point. Hoar frost is applied to the needles or feather-like crystals of ice deposited on the ground, in the same manner as dew. Glazed frost is the clear icy coating which may be formed as a result of rain falling on objects whose temperatures are below the freezing point. These layers of ice, often rendering roads impassable for traffic, damaging overhead power and communication

systems and endangering aircraft, can also be caused by condensation from warm, damp winds coming into contact with very cold air and freezing surfaces.

**Froth-Hopper or Frog-Hopper**. A family of bugs (belonging to the insect order Hemiptera) which in the young stage surround themselves with a protective mass of froth. These insects, which suck the sap of plants, bear a faint resemblance to frogs, and the adults possess great leaping powers.

**Fucaeæ**, an order of seaweeds of a leathery structure, with dark spores underlying the fronds, and found both attached to rocks and floating. There is a gelatinous kind which is edible, and is commercially valuable as the source of iodine and as a manure.

**Fugue**. A contrapuntal piece of music in which the several "voices" take up the theme in turn.

**Fulani**, a Mohammedan race inhabiting the Sudan, at one time possessing a kingdom in Nigeria, sometimes called the Sokoto Empire.

**Fuller's Earth**, a special kind of clay or marl possessing highly absorbent qualities, and used from ancient times in the "fulling"—that is, cleansing and felting—of cloth. It is common in certain parts of the south of England, and is valued as a skin emollient.

**Fungi**, a class of organism resembling plants, which reproduce from spores and lack the green colouring matter *chlorophyll*. They consequently have to get their food from organic substances, whether as parasites on living plants and animals or as saprophytes on dead matter. Fungi include moulds, rusts, mildews, smuts, mushrooms, etc. Penicillin was produced from a mould fungus. Potato blight is a fungus disease which caused the failure of the potato crop in Ireland in 1846. 50,000 different fungi are known. (See also *Agaric*.)

**Fusible-Plug**, a safety-plug placed in the skin of a steam-boiler, so as to be melted and allow of the discharge of the contents when a dangerously high temperature is attained.

**Fusil**, the old fire-lock gun which superseded the match-lock in our army, and was fitted with a flint and steel; it was about the length and calibre of the musket, but of lighter construction.

**Fusiliers** were originally bodies of foot soldiers carrying fusils, at a time when archers and pikemen still formed the main part of an army. There is still a British regiment called the Royal Fusiliers.

**Fustian**, the name given at various times to different kinds of textile fabrics. Originally, fustian was made of linen and cotton; later, wool was used; but in recent times the name has been mainly applied to a twilled cotton material with a nap surface.

**Fustic**, a kind of dyewood yielding various shades of yellow according to the mordants used. The tree grows in India, tropical America, and the West Indies.

## G

**Gabardine**, a long, loose, coarse, over-garment, worn by men of the common class in the Middle Ages, and prescribed by law as the distinctive garment of the Jews.

**Gabbatha**, the Hebrew term for that part of a judgment-hall which was occupied by the governor or supreme authority, and from which he pronounced sentence. Used in John xix. 13 to designate the place where Pilate sat at Christ's trial.

**Gabbro**, a kind of igneous rock, often very coarse-grained, containing a good deal of plagioclase feldspar, and monoclinic pyroxene; it may occasionally also include biotite, magnetite, ilmenite, and hornblende. A gabbro containing nickel at Sudbury in Canada is one of the richest sources known of that metal.

**Gabbroinite**, a mineral of foliated structure, mostly of a greyish colour, and of the appearance of scapolite. It is found in Norway.

**Gaberlunzie**, the name given to an old-time class of beggar in Scotland, who had licence to ply his "profession" within a prescribed district.

**Gable**, the triangular end of a building, rising above the cornice to its apex. The end wall of a sloping roofed house is called the gable-end; and a



gable-window is a window situated in the gable or constructed in gable form.

**Gabrielites**, a sect of Anabaptists, founded by Gabriel Schelling in Pomerania.

**Gadfly**, a widely distributed family of flies with only one pair of wings (*Diptera*), possessing great power of flight. The females are very voracious, being able to bite through the skin and suck the blood of animals. The males are harmless.

**Gadolinium**. An element belonging to the rare-earth metals discovered in 1886 by Marignac.

**Gaelic**, relating to the Gaels and their language, a term now applied only to the Celtic people inhabiting the Highlands of Scotland, but formerly also to the Celts or Ireland and the Isle of Man.

**Gag**, a word of modern stage slang referring to dialogue or expressions other than the author's words, introduced into a play by an actor, and usually indulged in by comedians for raising a laugh.

**Gahnite**, a grey mineral substance of the spinel group, an aluminate of zinc. Also called zinc-spinel. Called after Gahn, a Swedish chemist.

**Gaine**, a sculptured figure, the upper part of which is in natural form and outline, and the lower part (except sometimes the feet) is some simple architectural feature seeming to envelop the body and legs. The gaine was often used in ancient Greek and Egyptian architecture.

**Galacite**, a stone found in Scotland, yielding, when moistened and rubbed, a milk-like juice. A zeolite intermediate between natrolite and mesolite.

**Galago**, a sort of lemur, native to Africa, large-eyed, in keeping with its nocturnal characteristics.

**Galatians**, St. Paul's Epistle to the, is supposed to have been written by the Apostle about A.D. 56. It was addressed to the Galatian Churches, and, in addition to supporting Paul's apostolic authority, advocated justification by faith.

**Galaxy or Milky Way** is the part of the heavens, in Milton's words, "powdered with stars."

The term galaxy is also used as a name for our stellar universe, the huge disk-shaped cloud of gas and stars that is turning in space like a great wheel, with a diameter of about 100,000 light years. The Milky Way is really only a small part of this disk, and every star in the galaxy is moving round the centre under the gravitational control of the whole. The sun and planets lie near the edge of the disk, and it takes them about 250 million years to travel once round. The number of stars that can be seen with the unaided eye is just over 2,000, and they all belong to our galaxy. With the large modern telescopes many other systems, similar in size and weight to our galaxy, have been discovered, scattered more or less uniformly through space, and the universe is said to include at least 100 million such galaxies. (See "The World of Science.")

**Gale**, a high wind now technically defined as one of at least Beaufort force 8. Between thirty and forty gales a year occur on the north and west coasts of the British Isles and only about half of this number in the south-east. At St. Ann's Head, Pembroke, the anemometer registered a gust of 113 m.p.h. on Jan. 18, 1945, which is a record for these islands. Gusts exceeding 70 m.p.h. are rarely experienced in London. Gale warnings are issued for specified areas by the Meteorological Office, the warnings taking the form of radio broadcasts and the hoisting of storm signals at certain points on the coast. See Beaufort Wind Scale, p. 752.

**Galena**, the mineral, lead sulphide, containing over 80 per cent. of lead, of which metal it is the most important ore.

**Galerites**, a genus of fossil sea urchins, found in the chalk formation.

**Galidia**, a kind of ichneumon (*G. elegans*) peculiar to Madagascar, valuable for its fur, which in some varieties is beautifully striped; it is easily tamed, and serviceable as a destroyer of vermin.

**Gall**, abnormal vegetable growths, usually the result of an egg-deposit on leaves or bark by certain small flies called Cecidomyiids. Two of the best-known galls of oak are oak-apples and bullet-galls. The latter are spherical in form and yield tannin, useful for tanning and other commercial purposes.

**Galleon**, the name given to the old three-decked Spanish treasure vessels employed in conveying

the precious minerals from the American colonies to Spain. The term is often applied to any large, especially stately, sailing vessel.

**Galley**, an oar-propelled sea-boat used by the ancient Greeks and Romans for transport purposes, manned by slaves. Boats of a similar class were used by the French down to the middle of the 18th century, and manned by convicts.

**Gallic Acid**, obtained from gall nuts, sumach, tea, coffee, and the seeds of the mango, is used in the manufacture of inks and as an astringent in medicine. It is odourless, has a bitter taste, and is mostly of a pale yellow colour.

**Gallium**, a white metal related to aluminium, but which can be cut with a knife. It was discovered by Boisbaudran in 1875. Long before Mendeleeff predicted an element with its properties would be found to fill the then existing gap in the Periodic Table; this gap came immediately below aluminium, so he suggested the name "eka aluminium" for it.

**Gallows**, a wooden erection consisting of two posts surmounted by a cross-beam, suspended from which is a rope used for hanging criminals. Sometimes it takes the form of a single projecting wooden beam which serves to carry the rope.

**Gallup Poll**, a system, introduced by Dr. Gallup of the United States, for testing public opinion on topical subjects by taking a test poll on questions framed to elicit opinions.

**Galvanised Iron** is iron coated with zinc. The name comes from the fact that such a coat protective against rust could be deposited electrolytically. Electrodeposition is sometimes used, but the cheaper and more common process depends on dipping the iron in a bath of molten zinc.

**Galvanism**, a term, now obsolete, for the branch of electricity which deals with electric currents produced by chemical action, and named after its discoverer, Galvani.

**Gambeson**, a protective garment of leather or padded material, reaching from the neck to the knees, worn by soldiers prior to the introduction of plate-armour, and also beneath the hauberk.

**Gamboge**, a resinous gum obtained from certain trees native to Siam, Indo-China, and Ceylon, and used as a yellow pigment in paints and also as a purgative.

**Game** is the term applied to wild animals which are protected from indiscriminate slaughter by Game Laws. In the United Kingdom game comprehends deer, hares, pheasants, partridges, grouse, black game, moor game, woodcocks, bustards, and certain other birds and animals of the chase. Game can only be killed (with few exceptions) by persons holding game licences, which cost £3 a year. Occupiers of land and one other person authorised by them in each case are allowed to kill hares and rabbits on their land without licence. Game cannot be sold except by a person holding a proper licence. There is a "close time" prescribed for the different classes of game; for instance, the selling or exposing for sale of any hare or leveret during March, April, May, June, or July is prohibited by law. Grouse cannot be shot between Dec. 11th and Aug. 11th; partridges between Feb. 2nd and Aug. 31st; pheasants between Feb. 2nd and Sept. 30th; and black game between Dec. 11th and Aug. 10th. In regard to foxes, stags, and otters, custom and not Parliament prescribes a certain law which sportsmen rigidly adhere to. Game reserves are legally protected areas where natural vegetation and wild life are allowed to remain unmolested by sportsmen or those who might destroy for economic ends. See also p. 750.

**Gaming, or Gambling**—i.e., staking money on the chances of a game—differs from betting in that it depends upon the result of a trial of skill or a turn of chance. Gambling has long since been illegal in Britain, and no public gaming houses have existed here since the early part of the 19th century. Gaming is carried on by the sanction of the law at Monte Carlo. A gambling debt cannot be recovered at law, but is simply "a debt of honour." The Gaming Act, 1854, repealed the old Statute of 33 Henry VIII, so far as the prohibition of tennis, bowling, and other games of skill is concerned.

**Gamut**. The set of lines and spaces on which music is written.

**Ganga**, the pin-tailed sand-grouse, a handsome bird mostly found in North-Western Africa.

**Gangue**. Useless minerals associated with metallic ores.

**Gannet**, a fish-eating bird which dives on its prey from a great height, swallowing it under water; is found in large numbers off the coast of Scotland, and has breeding stations in the Hebrides, St. Kilda, Ailsa Craig, the Bass Rock, and Grassholme Island. It is a bird of white plumage, black tips to long narrow wings and wedge-shaped tail, and weighs about 7 lb. The gannet breeds in colonies on ledges of steep, rocky, island cliffs. Related to the cormorants, pelicans, and frigate-birds.

**Garden Cities** in England were founded by Ebenezer Howard (1850-1928), and his ideas were put forward in his book *Tomorrow—A Peaceful Path to Real Reform* (later re-issued as *Garden Cities of Tomorrow*). New towns should be so placed and planned as to get the best of town and country life, an adaptation of the model villages of certain industrial philanthropists such as Salt, Richardson, Cadbury, Leverhulme, and others. The Garden City Association (later the Town and Country Planning Association) was formed in 1899, and the first garden city was begun at Letchworth in 1904 and successfully established. Welwyn Garden City was also Howard's foundation, established in 1919.

**Gardener-Bird**, a bird possessing many of the characteristics of the bower-bird, and found only in Papua-New Guinea. See also *Bower Bird*.

**Gargantua**, the giant hero of Rabelais' satire, of immense eating and drinking capacity, symbolical of an antagonistic ideal of the greed of the Church.

**Gargoyle**, a projecting spout for carrying off water from the roof gutter of a building. Gargoyles are only found in old structures, modern water-pipe systems having rendered them unnecessary. In Gothic architecture they were turned to architectural account and made to take all kinds of grotesque forms—grinning goblins, hideous monsters, dragons, and so forth.

**Garial** or **Gavial**, the crocodile of the Ganges, feeding chiefly on fish. It has a long snout, and its overall length may exceed 20 ft.

**Garibaldi**, a kind of blouse-jacket formerly a good deal worn by women, and so styled because of its resemblance to the shirts worn by the Italian patriot and his soldiery.

**Garlic**, a bulbous plant of the same genus as the onion and the leek, and a favourite condiment among the people of Southern Europe. It possesses a very strong odour and pungent taste and its culinary use is age-long.

**Garnet**, a group of minerals; chemically they are orthosilicates of the metals calcium, magnesium, titanium. Garnets can be coloured yellow, brown, black, green or red; the blood-red garnet is an important gemstone.

**Garnishee**, a person who has received legal notice not to pay away sequestered moneys owing by him to a third party.

**Garrison**, a body of soldiery stationed in a fortified place to defend it against a foe, or to keep the surrounding population in subjection; also such a fort, manned with troops, guns, etc.

**Garrot** (Goldeneve), the name of a species of wild duck, widely distributed over the Arctic regions and a winter visitant to the northern parts of Britain. It is distinguished by having a large white spot in front of each eye on a dark ground.

**Garrote**, a method of strangulation used as capital punishment in Spain, and consisting of a collar which is compressed by a screw that causes death by piercing the spinal marrow. Garroting was also applied to a system of highway robbery common in England in 1862-63, the assailants seizing their victims from behind, and by a sudden compression of the windpipe disabling them until the robbery was completed.

**Garter**. The Most Noble Order of the Garter was founded (c. 1348) by King Edward III, and is the premier order of knighthood in Great Britain. The traditional story associating the garter and the motto with the Countess of Salisbury, who it was said dropped her garter while dancing with the King, who remarked "honi soit qui mal y pense" cannot be ac-

cepted. The order was originally limited to the Sovereign and 25 knights, but the number has been extended, and it may now be bestowed on royal personages and leading representatives of the British peerage. The insignia of the order are the garter of dark-blue velvet with the motto in letters of gold, the mantle of dark-blue velvet lined with white silk, the surcoat and hood, and the gold-and-enamel collar. The garter is worn on the left leg below the knee and by women as a sash over the left shoulder. (See *Knighthood*.)

**Gas** is an elastic fluid substance, the molecules of which are in constant motion, and exerting pressure. The technique whereby gases are liquefied depends on increasing pressure and diminishing temperature. Each gas has a critical point; unless the temperature is brought down to this point no amount of pressure will bring about liquefaction. Last gas to be liquefied was helium (1908) which boils at  $-209^{\circ}$  C. (See *Gas Laws* p. 762.)

**Gas from Coal** for lighting and heating purposes is obtained from bituminous coal. Such a gas was produced and used for illuminating purposes by William Murdoch towards the end of the 18th century in Birmingham, and about 1807 the illuminant was introduced in London, one side of Pall Mall being lighted with it. It soon supplanted oil and candles for outdoor and indoor lighting, and is still, in spite of the advances of electric light, a common illuminant, its power having been greatly increased by the incandescent burner. It is widely used for space heating and cooking. (See *Underground Gasification*.)

**Gas Turbine**. This kind of engine has recently become a competitor of the internal combustion engine. Mechanical movement is produced by a jet of gas impinging on a turbine wheel. Gas turbines are being used in aeroplanes, locomotives, and ships. These engines are mechanically simple compared with internal combustion engines, and require less maintenance. It has been stated that the jet-propelled Comet cruises at 450 m.p.h. burning less than  $\frac{1}{2}$  lb. of Kerosene per passenger mile.

**Gastropoda**, a class of molluscs which includes all such as possess a univalve shell—snails, whelks, limpets, etc.

**Gate House**, a structure built over and flanking a gateway, and common in ancient times at the more important entrances of a city, castle, monastery, abbey, or college. The Gate House of Westminster, built in 1370, was used as a prison. This was demolished in 1776, but one of its walls remained until 1836.

**Gauchos** are South Americans of Spanish descent, and of a wild and fearless disposition. They are mostly employed in the management of cattle, and are noted for their skill in the saddle, and for their lasso throwing. Their numbers grow less from year to year, and as the Pampas comes more under modern European control their existence as a distinct class will gradually dwindle away.

**Gauge**, a standard dimension or measurement, applied in various branches of construction. Thus, the Standard Railway Gauge is 4 ft. 8½ in. in the United Kingdom, United States of America, Canada, France, Germany, Austria, Holland, Egypt, Belgium, Denmark, Italy, Hungary, Sweden, Switzerland, and Turkey. In India, Ceylon, and Spain the gauge is 5 ft. 6 in. In Soviet Russia and Finland, 5 ft., Ireland, 5 ft. 3 in. Narrow railway gauges of different standards are in use on very steep inclines in various countries. Other standard gauges are fixed in building, gun-boring, and other operations.

**Gauls** were inhabitants of ancient Gaul, the country which comprised what is now France, Belgium, and parts of the Netherlands, Switzerland, and Germany.

**Gault**, a stratum of blue clay between the Lower Greensand and the Chalk. A typical section of the Gault can be seen at Folkestone.

**Gauntlet**, a glove of armour, worn in the 12th and 13th centuries as a sort of mitten, and attached to the sleeve of the hauberk. In the 14th century gauntlets were made of mail, and later of hammered steel with separated and jointed fingers.

**Gauze**, a thin, transparent material made of silk combined with cotton, linen, or hemp, and plain



- or figured. There are also gauzes of flannel, lace, ribbon, and wire.
- Gavel**, enough grain in the straw to form a sheaf, into which it is converted by binding.
- Gavelkind**, an old English custom of land tenure in Kent and other places in England, whereby on the death, intestate, of a property owner, his property is divided equally amongst his children and not according to the law of primogeniture. It was abolished by the Law of Property Act, 1922, and the Administration of Estates Act, 1925.
- Gayal**, a kind of wild ox about the size of an English bull. A native of Eastern India, and easily domesticated.
- Gaydiang**, a junk-like Annamese vessel, with two or three masts and triangular sails, carrying cargo from Cambodia to the Gulf of Tonkin.
- Gazelle**, an animal of the antelope family, of small and delicate shape, with large eyes and short cylindrical horns. It is of a fawn colour, a native of North Africa, and easily domesticated.
- Gecko**, the name of a family of lurid-hued lizards common in or near the tropics. They are of nocturnal habits and feed on insects, and though by some accounted venomous, they are harmless.
- Geez**, a Semitic or Arabic dialect, or language-variant, surviving in the ecclesiastical literature and speech of Abyssinia, mostly superseded by the Amharic.
- Geiger Counter**. The instrument most commonly used for making radioactive measurements.
- Geissler's Tubes**, invented by Geissler, contain rarified gases (at about  $10^{-5}$  atmosphere pressure), and when an electric discharge passes through them the gases glow brightly.
- Gelada**, the name of an Abyssinian baboon, possessing a large mane and long tufted tail. It is of a dark brown colour, and is closely allied to *Hamadryas*.
- Gelalean Era**, an era introduced by and named after Gelal-u-Din, Sultan of Khorassan, and commencing March 4th, A.D. 1079.
- Gelatine**, a transparent, tasteless, organic substance obtained from animal membranes, bones, tendons, etc., by boiling in water. It is of various kinds, according to the substance used in making it. Isinglass, the purest form of it, is made from air-bladders and other membranes of fish, while the coarser kind—glue—is made from hoofs, skin, hides, etc. Its constituents are carbon, hydrogen, oxygen, and nitrogen. Gelatine is applied to an immense variety of purposes, from the making of food jellies to photographic materials.
- Gemini**, one of the signs of the Zodiac lying east of Taurus and containing numerous stars, only two of which—Castor, the upper and brighter one, and Pollux, the lower one—are visible to the naked eye. The stars are named after twin divinities of classical mythology.
- Gemsbok**, a large South African antelope, with long straight horns and tufted tail. Light fawn in colour, it has a black streak across its face, and is very fleet of foot.
- Gems** are precious stones cut and polished for wearing as jewellery.
- Gender**, a distinction made in grammar between words to indicate the sex or lack of sex of the objects denoted by these words. While there are but two sexes, there are in some languages, like English and German, three genders: masculine, feminine, and neuter. In English, as a rule, words denoting inanimate objects are neuter gender (exceptions: sun (masculine), ship, engine (feminine), etc.), while in German, inanimate objects, besides being neuter, may be masculine or feminine gender. In French the neuter gender does not exist.
- Genealogy** is the science of family descent, treating of ancestors and their descendants in various branches in the natural order of succession. Pedigrees of the principal families in Great Britain are recorded at Heralds' College.
- General**, a military title next in rank to that of Field-Marshal, the highest officer in the army. Ranking below full General are Lieutenant-General, Major-General, and Brigadier.
- Generation**, a time-measure reckoned at about 30 years when children are ready to replace parents; also the body of persons existing at the same time or period.
- Generation, Spontaneous**. (See Abiogenesis.)
- Genesis**, the first book of the Pentateuch, compiled in the 5th century B.C., which carries the scriptural narrative from the Creation to the death of Joseph. The stories of the Creation, Garden of Eden, the Fall, and the Flood were largely derived from Babylonian mythology; the conditions described around the figures of Abraham, Isaac, Jacob, and Joseph have a genuine historical basis.
- Genet**, one of the smaller carnivorous animals, about the size of a cat, but with longer tail and spotted body. It is a native of Southern Europe, North Africa, and Western Asia, and is valued for its fine soft fur, and also for a perfume it produces.
- Genetics**, the science of heredity.
- Geneva Convention**, an agreement made by the European Powers at Geneva in 1864, establishing humane regulations regarding the treatment of the sick and wounded in war and the status of those who minister to them. All persons, hospitals, hospital ships are required to display the Geneva cross—a red cross on a white ground. A second conference held at Geneva in 1868 drew up a supplementary agreement. An important result of this Convention was the establishment of the Red Cross Society in 1870.
- Genii**, fabulous beings, regarded by the Arabs as between mankind and the angels, capable of becoming invisible at will, or assuming any shape.
- Genite**, an ancient sect of Jews spoken of by Purchas in his Pilgrimage as claiming to be of the pure stock of Abraham, by reason of their not having "taken strange wives."
- Genouillieres**, ancient metal caps for covering the knees of an armed man; an example may be seen on the Black Prince's monument in Canterbury Cathedral.
- Genre**, an art term used to describe a style of painting which deals with subjects of homely life, but also applied in France in connection with other kinds of paintings as *genre du paysage* (landscape painting), *genre historique* (historical painting), etc.
- Gens**, a group term used by the ancient Romans to designate the kindred or connections of any particular family, but only used in regard to the members of a noble family.
- Genthite**, a silicate of nickel and magnesium, found in stalactite formation in certain parts of Pennsylvania, and named after its discoverer, Dr. Genth.
- Gentian**, the name for a species of plants of the *Gentiana* genus. Gentian root is used in pharmacy.
- Gentian Root**, the dried root of the *Gentiana lutea*, much used in pharmacy as a tonic. The plant bears clusters of mostly blue flowers, and the most valuable species commercially are those of central and southern Europe.
- Gentile**, a term used in the Scriptures to designate any person who is not a Jew.
- Gentlemen-at-arms**, a corps of army officers of distinction under a captain whose duty it is to attend the Sovereign on ceremonial occasions. The corps was formed by Henry VIII in 1509 as personal bodyguard. They come under the direction of the Lord Chamberlain.
- Genus**, a term applied in biology to designate any kind, sort, or class of species.
- Geochemistry**, that branch of chemistry which deals with the composition of the earth and the chemical actions which have proceeded and are proceeding in it.
- Geodesy**, the science of calculating the configuration and extent of the earth's surface, and determining exact geographical positions and directions, with variations of gravity, etc. Land-surveying is a branch of geodesy.
- Geography**, the science which describes the earth's surface, its physical peculiarities, and the distribution of the various animals and plants upon it. It is usual to divide the subject into two main branches—physical geography, which deals with the composition of the earth's surface and the distribution of its living occupants, animate and inanimate; and human geography, which includes economic, political, and social geography.
- Geology**, the science which deals with the condition and structure of the earth, and the evidence afforded of ancient forms of life. The

geological strata are classified in the following categories: *Primary* or *Paleozoic* (the oldest rocks including the Cambrian, Ordovician, Silurian, Devonian, Carboniferous, Permian); *Secondary* or *Mesozoic* (Triassic, Jurassic, Cretaceous); *Tertiary* or *Cainozoic* (Eocene, Oligocene, Miocene, Pliocene, Pleistocene, Holocene); *Post-tertiary* (most recent rocks). (See "The World of Science.")

**Geometrical Progression** is a term used to indicate a succession of numbers which increase or decrease at an equal ratio—as 3, 9, 27; or 64, 16, 4.

**Geometry** is the branch of mathematics which demonstrates the properties of figures, and the distances of points of space from each other by means of deductions. It is a science of reason from fundamental axioms, and was perfected by Euclid about 300 B.C. The books of Euclid contain a full elucidation of the science, though supplemented in modern times by Descartes, Newton, and Carnot.

**Geophysics**, the term applied to the branches of physics which are concerned with the earth and its atmosphere. Meteorology, atmospheric electricity, terrestrial magnetism, seismology, and hydrology are geophysical subjects.

**George-Noble**, a gold coin, so called from St. George and the dragon depicted on its obverse. First issued in the reign of Henry VIII.

**German Silver**, an alloy of copper, zinc, and nickel, and used in the manufacture of table-ware, such as spoons, forks, etc.

**Germanium**. A silver-white hard brittle metallic element chemically related to silicon and tin. Discovered by Winkler in 1886. Its richest ore is germanite containing 6 per cent. of the metal. Coal is also a relatively rich source.

**Gesta Romanorum**, a Latin collection of stories published in the Middle Ages, and of unknown origin. It was used by our earlier writers, who found many romantic incidents and legends which they were able to turn to good account. The collection circulated over Europe, and is believed to have been written by a monk, Pierre Bercheur, of the convent of St. Eloi, Paris.

**Gestation**, the carrying of young in animals during pregnancy, varies considerably in its length. In the case of an elephant, the period is 21 months; a camel, 12 months; a cow, 9 months; a cat, 8 weeks; a horse, 48 weeks; a dog, 9 weeks; and a pig, 16 weeks. Hens "sit" for 21 days; geese, 30; swans, 42; turkeys, 28; pigeons, 18.

**Gethsemane**, a secluded spot on the side of the Mount of Olives, half a mile from Jerusalem, said to be the scene of Christ's Agony in the Garden.

**Geysers**, hot springs of volcanic origination and action, are remarkable for the fact that they throw out huge streams of boiling water instead of lava as in the case of a volcano. The most famous geysers are those of Iceland, which number over a hundred, the principal one having an opening 70 feet in diameter and discharging a column of water to a height of 200 feet. There are also geysers in the Yellowstone region of America, and some in New Zealand. Also a device now in common domestic use for heating running water quickly by gas or electricity.

**Ghat**, a river landing-place or stairway in India: a passage, or gateway. "Ghaut," another form of the word, means a mountain pass in the Mahratta tongue.

**Ghee**, a kind of butter much used in the East Indies and made from coagulated milk. It will keep sweet for a long time when properly prepared.

**Ghetto**, the name given to the quarter in any city or town where Jews were formerly compelled to live, shut off by gates from the rest of the city. Not only were the quarters usually allocated badly situated, but the Jews had to pay a tax for the privilege of living there.

**Ghost-Moth**, an interesting nocturnal insect (*Hepialus humuli*), common in England, possessing in the male a white collar and known for its habit of hovering with a pendulum-like action in the twilight over a particular spot where the female is concealed.

**Giambeaux**, metal armour for the legs and shins, worn by the warriors of Richard II.'s reign.

**Giants**, men of abnormal stature and bulk, have been met with in all ages, but it may be doubted whether ever any actual race of giants has existed, except in mythological fable.

**Gibbet**, a kind of wooden gallows with a projecting arm from which in former times criminals were hung in chains and left to decay.

**Gibbon**, the name of a long-armed ape mainly inhabiting S.E. Asia. It is without tail, and possesses the power of very rapid movement among the trees of the forests.

**Gilbertines** were members of a religious order founded by St. Gilbert in the 12th century, which did not spread beyond England. The order included both men and women who lived in double houses which had no communication. The habit was black, covered with a white cloak.

**Gimp**, a narrow trimming of worsted or silk cord, largely used for edging to gowns, draperies, etc.

**Gimp-Machine**, a narrow-warp loom designed to catch the woof and form loops or patterns, the gimp-cords of variant sizes being carried by independent needles or shuttles.

**Gin**, a well-known spirit distilled from malt or barley and flavoured with the juniper berry. The principal varieties are the English and American, known as "Gin" or "Dry Gin," and the Dutch, referred to as "Geneva," "Schnapps" or "Hollands." The word "Gin" is an abbreviation of "Geneva," both being primarily derived from the French *genièvre* (juniper).

**Ginger** is obtained from a reed-like perennial plant grown in tropical countries. There are two varieties, black ginger and grey ginger. The former is obtained by peeling and drying the root, the latter by scalding and drying. Ginger is largely used as a condiment.

**Gingham**, an ordinary kind of cotton fabric, dyed, plain, or figured, which received its name from being originally manufactured in Guingamp in Brittany.

**Gipsies** are a nomadic race, supposed to be descended from some East Indian tribe. Their language, Romany, is certainly a Hindi dialect mixed with other tongues. They are spread over many parts of the world, but are most common in Europe, having appeared in the Eastern portions of the Continent about the 14th century, finding their way to England at the beginning of the 16th century. They give evidence of their Eastern origin in their dark skins, large black eyes, black hair, and pearly white teeth. They are born wanderers, and pass from place to place following certain small occupations such as tinkering, basket-making, and the like, while some of the men are clever as horse-dealers, and some of the women pose as fortune-tellers.

**Giraffe**, the tallest of existent animals, reaching a height of from 18 to 20 feet when full grown. Its sloping back and elongated neck seem to be the natural evolution of an animal that has to feed on the branches of trees. It is a native of Africa, is of a light fawn colour marked with darker spots, and has a prehensile tongue.

**Giralda**, a beautiful and remarkable example of Arabian art, erected in 1195 at Seville, still in existence. Minarets similar to the Giralda are to be found at Morocco, Tunis, and Tetuan.

**Girandole**, a branching chandelier, or swing-armed candelabrum.

**Grasol**, a mineral of the opal variety. Of a bluish-white colour, with a red reflection under a bright light.

**Girl Guides**, founded by the late Lord Baden Powell in 1910, as a parallel movement to the Boy Scouts. Incorporated in 1915 and granted a Royal Charter in 1923, the movement spread rapidly throughout the world. It gives girls between the ages of 7½ and 21 a training in citizenship and leadership, with special emphasis on homecraft subjects and outdoor activities, such as camping. World Chief Guide: Lady Baden Powell.

**Girondins** or **Girondists**, one of the prominent parties of the early period of the first French Revolution. They were moderate, and up to 1792 were a strong party. Their first leaders were from the department of Gironde, hence their name. With the Reign of Terror their influence came to an end, Robespierre and his party overthrew them, most of them being sent to the guillotine.



**Girton College**, founded at Hitchin in 1869, and removed to Cambridge in 1873, is one of the leading English university colleges for women.

**Glacial Epochs or Ice Ages.** It is known from the evidence of the rocks that there have been three major glacial periods in the geological history of the earth, separated by long periods of time: the earliest in pre-Cambrian times, 600-700 million years ago, the second in late Palaeozoic times, 250 million years ago (in the southern hemisphere), and the third in the Pleistocene period, when an ice-sheet covered northern N. America and northern Europe. From the evidence of fossils world climates appear to have been temperate during the inter-glacial periods. (See "The World of Science.")

**Glaciers form** in the higher Alpine ranges, and are immense consolidated masses of snow, which are gradually impelled by their own force down the mountain-sides until they reach a point where the temperature causes them to melt, and they run off in streams. From such glaciers the five great rivers, the Rhine, the Po, the Rhône, the Inn, and the Adige, have their source. The longest of the Swiss Glaciers is the Gross Aletsch, which sometimes extends over 10 miles. Some of the glaciers of the Himalayas are four times as long. The Muir in Alaska is of enormous magnitude, and that of Justeldals Brae in Norway is the largest in Europe.

**Glacier-valley**, a vale, the essential factor in the formation of which has been glacial action.

**Glacis**, a sloping bank of fortification forming a parapet to the covered way, and serving to expose besiegers to the line of fire.

**Gladiators** were professional athletes and combatants in ancient Rome, contesting with each other or with wild beasts. At first they were drawn from the slave and prisoner classes exclusively, but so much were the successful gladiators held in esteem that men came to make a profession of athletics, and gladiatorial training schools were established. When a gladiator was vanquished without being killed in combat, it was left with the spectators to decide his fate, death being voted by holding the hands out with the thumb turned inward, and life by putting forth the hands with the thumb extended. Gladiatorial shows were the chief public displays in Rome from the 3rd to the 4th centuries A.D.

**Glands** are secretory organs whereby certain natural matters, such as urine, milk, bile, saliva, sweat, tears, etc., are drawn from or distributed over the system. Such of the matters as undergo rapid glandular expulsion, as urine, etc., are termed *excretions*, while such as are utilised in promoting the performance of the functions of digestion or milk-production are called *secretions*. Glands are composed of numberless minute secreting cells, arranged in simple or compound vesicles. (See "Medical Section.")

**Glasgow University**, founded by Pope Nicholas V. in 1451, had a new charter granted to it in 1577 by James VI. of Scotland, and in 1858 and 1899 was remodelled by the Universities (Scotland) Acts. It has usually about 5,000 students, including women.

**Glass**, a substance obtained from the fusion of silica (sand) with various bases, and is more or less transparent. There are numerous kinds of glass, but they group themselves under one or other of the following classifications:—Flint glass or crystal, whose components are potash, silica, and oxide of lead; window glass, made from soda, lime, and silica; Bohemian glass, containing potash, lime, and silica; and bottle glass, composed of soda, lime, alumina, silica, and oxide of iron. Heat-proof glasses used for making cooking utensils contain boron. Glass was made by the Phœnicians, and was familiar in ancient Egypt. The Egyptians introduced it into Rome. In the Middle Ages Venice was famed for its glass manufactures, but after the 17th century Bohemia acquired pre-eminence. English glass reached its highest level in artistic design in the 17th and 18th centuries. Window glass was not used in this country for dwellings until the end of the Middle Ages.

**Glass-Snake**, a legless lizard, with a long, sinuous tail, which has the faculty of regrowth if broken off. Four species are known; in S.E. Europe, S.W. Asia, Indo-China, and N. America.

Attains a length of about 2 feet, and its main colouring is green, with black and yellow markings.

**Glaucanite.** A green mineral, chemically a hydrated silicate of potassium and iron. Commonly found in sands (hence these rocks are known as "greensands") and sandstones.

**Glaucus** is a curious genus of sea lizards (Nudibranchs) often called the Sea Lizard. It is without shell and has a soft body, with horny mouth and four tentacles. It is a native of the South Atlantic, and is not more than 1½ inches in length.

**Glee**, an unaccompanied piece for three or more voices. Glee-singing was popular in England during the 18th and early 19th centuries and glee-clubs are still in existence.

**Glencoe, Massacre of**, occurred on February 13, 1692. The victims were the Macdonald clan, who had failed to take the oath of allegiance to William III. The chief and thirty-seven of his clan were butchered at the instigation of Dalrymple. A clamour arose, William was forced to grant a commission of inquiry and, as a result, in 1695 Dalrymple resigned his office.

**Gliding** is a form of engineless flight which is being enthusiastically practised on the Continent, in America, Australia, and in this country. Two Germans, Kronfeld and Magersuppe, have brilliantly demonstrated the possibilities of the modern high-efficiency glider or sail-plane and the two Germans Bödecke and Zander remained in the air for 5½ hours (December 11, 1938). The present distance record (205 miles) for the British Isles was made by P. A. Wills in the same year. Soaring is possible by using the energy of the air currents, and experiments are now being pursued to discover how a glider may be kept in the air over flat land surfaces where there are no favourable air currents. Towed gliders were used to transport men and military equipment in the second world war.

**Globigerina**, an oceanic unicellular animalcule with a perforated shell, and occurring in certain parts of the Atlantic in such vast numbers as to form a bed of chalk ooze with their empty shells.

**Glockenspiel**, an instrument composed of metal bars each of which is tuned to a note. The bars are struck by hand-hammers and give forth chiming sounds.

**Gloria in Excelsis** ("Glory to God in the highest") is the opening of the Latin hymn adapted from Luke ii. 4, and the most prominent hymn of the ecclesiastical rites in the Christian liturgies.

**Gloria Patri**, the lesser Doxology, with which chants are generally concluded in the English Church service—"Glory be to the Father, and to the Son."

**Gloriosa**, a genus of gorgeous flowering climbers growing in the Himalayas and Senegambia, lanceolate of leaf, with clinging tendrils and large red or yellow bloom; is of the Lily family.

**Glory or Brocken-spectre** is the series of coloured rings which an observer sees around the shadow of his own head as cast upon a bank of mist or thin cloud. This diffraction effect is produced by the scattering of light by the directly illuminated water droplets.

**Gloss**, an explanatory statement or marginal note, often found in ancient manuscripts, and is sometimes more valuable than the text to which it refers.

**Glove-Money**, an extraordinary reward paid to officers of courts, and fees given to clerks of assize and judges' attendants by a County Sheriff when no offenders were left for execution; the white gloves presented to justices when there is a maiden session are a survival of this old legal usage.

**Gloves** are coverings for the hand with a separate sheath for each finger, and are made of a great variety of materials. They were not in general use in England before the 13th century, and were not manufactured in this country until the next century. There was a London Glovers' Company in 1464.

**Glow-Worm**, a kind of beetle, possessing in the female the power of emitting a phosphorescent light underneath the extremity of the body. The male has the same power, but to a very limited extent, and has wings, while the female

is wingless and looks like a larva throughout her life.

**Glucinium or Eeryllium**, is a white metal prepared from beryl, and found also in the emerald and other rare minerals. Most of the salts of this metal have a sweet taste, hence the name.

**Glucose, Dextrose or Grape Sugar**. It is produced by hydrolysis from cane sugar, dextrine, starch, cellulose, etc., by the action of reagents. It also occurs in many plants, fruits, and honey. For brewing purposes glucose is prepared by the conversion of starch by sulphuric acid. Malt also converts starch into glucose.

**Glue**, a gelatinous substance obtained by boiling and chemically treating hides, hoofs, etc.

**Gluten**, a protein present in flour or wheat and other grains.

**Gluton or Wolverine**, the biggest animal of the weasel order, inhabits the northernmost parts of Europe and America. In build it resembles the bear, and is rather larger than a badger. Its fur is of a brown-black hue, but coarse; the animal has great strength, and is remarkable for its voracity.

**Glycerine or Glycerol**, occurs in natural fats combined with fatty acids, and is obtained by decomposing those substances with alkalis or by superheated steam. It is colourless and oily and sweet, and is put to a variety of commercial uses, being widely utilised for medicaments, for lubricating purposes, and in the manufacture of nitro-glycerine.

**Glycogen or Animal Starch**, a carbohydrate which is found in the liver. It is convertible into glucose.

**Glyptodon**, an extinct species of gigantic armadillo, fossil remains of which have been discovered in S. America. It was some 9 feet long, carried a huge tortoise-like shell, and had fluted teeth.

**Gnat**. (See Mosquito.)

**Gneiss**, a metamorphic rock containing quartz, felspar, and mica. It is banded, the light-coloured minerals being concentrated apart from the dark minerals.

**Gnomes**, dwarf supernatural beings, popularly supposed to exercise protective powers over mines and minerals.

**Gnostics** were an early Christian sect prominent from the 1st to the 6th century. They held that Christ was of divine origin, but they rejected the literal interpretation of the Scriptures; contending that God was unknown and beyond man's comprehension, and that knowledge rather than faith was the passport to Heaven.

**Gnu**, an animal of the antelope family, combining the characteristics of the buffalo in its head and horns, the ass in its neck and mane, and the horse in its long and bushy tail. There are two species, the common and the brindled, and they are about the size of an ass. They abound in Africa and congregate in herds.

**Goa Ball**, a peculiar and powerful drug, scented with musk, and sold in India in egg-shaped masses. It is a favourite specific in cases of fever and certain skin diseases, but its precise composition is kept secret.

**Goat-Moth**, a large moth of the *Zenaxeridae* family, common in Britain, evil-smelling, and very destructive in the larval stage to trees of the poplar and willow genus, into the wood of which the caterpillar bores during its three years' period of development.

**Goats** are horned ruminant quadrupeds, indigenous to the Eastern Hemisphere, but now domesticated in all parts of the world. Though allied to the sheep, they are a much hardier and more active animal. The male has a tuft of hair under the chin. Many species, including those of Cashmere and Angora, are valuable for their hair, which is used for fine textile fabrics. The milk of the goat is nutritive and medicinal, and goat-skins are in good demand for leather for gloves, shoes, etc.

**Goatsucker** is the popular name of the night-jar, and the bird was so called from the old country superstition that it was in the habit of sucking goats. It is a regular summer visitor to this country, and lays its eggs on the ground.

**Gobelin Tapestry** was originated by a family of dyers named Gobelin in the 15th century in Paris. The Gobelin establishment, which produced this beautiful tapestry, made of silk and

wool, or silk and cotton, was taken over by the Government of Louis XIV, in 1662, and since then has been the French national factory for that class of fabric.

**Goby**, the name of a well-known and widely distributed fish, of many species, some of which are common along the British coasts. The ventral fins of the Black Goby form a hollow disc, whereby the fish can cling to the rocks or other external objects.

**God** is the term by which the idea of the one Supreme Being is expressed. The conceptions of God vary with different religions and different countries. Theism regards God as a personal being, and the author and ruler of the universe; Pantheism identifies God with the universe and not as a personal being.

**Goethite**. A mineral; chemically, a hydroxide of iron. Colour: yellow, brown, red, or nearly black. It occurs in association with hæmatite and limonite.

**Gog and Magog**, two legendary City of London giants, supposed to be the offspring of certain wicked daughters of the Emperor Diocletian and a band of demons. They were brought captive to London and made to serve as prisoners at the Palace of Brute, which stood on the site of Guildhall. Effigies of the giants have stood in Guildhall since the time of Henry V. They were destroyed in the Great Fire of 1666, replaced in 1672, and used to be carried through the streets of London in the Lord Mayor's Show. The present figures, newly carved in lime wood by Mr. David Evans, replaced those carved in 1708 by Richard Saunders, which were destroyed in an air raid during the last war.

**Gold**. The greatest amount of gold is obtained by treating gold-bearing quartz by the cyanide process. The gold is dissolved out by cyanide solution, which is then run into long boxes filled with zinc shavings when the gold is precipitated as a black slime. This is melted with an oxidising agent which removes the zinc.

**Gold-Beaters' Skin** is the outside membrane of the large intestine of the ox, specially prepared and used by gold-beaters for placing between the leaves of gold while they beat them. This membrane is of great tenacity, and gets beaten to such extreme thinness that it is used to put on cuts and bruises.

**Gold Standard**, a system whereby bank notes are changeable into gold at a fixed rate at any time. Until the first world war North America and most countries of Europe adopted this system, that is to say, they were "on the gold standard." It was generally suspended during that war (not by the United States). Britain returned to the Gold Standard in 1925, but like some other countries, found it impossible to remain and came off the Gold Standard in 1931.

**Golden Age** of the classical mythology was the age of peace and innocence and patriarchal years.

**Goldeneye**. See Garrot.

**Golden Legend**, the title of a famous history of the Saints, compiled by Jacobus de Voragine, a Dominican monk, in the 13th century, translated and published by Caxton in 1483.

**Golden Number**, the number of any year in the metonic cycle of 19 years, deriving its name from the fact that in the old calendars it was always printed in gold. It is found by adding 1 to the number of the year A.D. and dividing by 19, the remainder being the Golden Number; or, if no remainder, the Golden Number is 19. The only use to which the Golden Number is put now is making ecclesiastical calculations for determining movable feasts.

**Golden Rose**, the Pope's rose of wrought gold blessed and sent from time to time to the church or community his Holiness selects to honour.

**Goldsmiths Company**, one of the richest London City Companies, and the official assayers of gold and silver, invested with the power of "hall-marking" the quality of objects made from these metals. First charter granted in 1327.

**Gondola**, the old regulation black boats so common on the canals of Venice, propelled by a gondolier with one oar who stands at the stern, his passengers being accommodated in a covered space in the centre.

**Gonfalon**, the pennon affixed to a lance, spear, or standard, consisting usually of two or three streamers, and made to turn like a weather-cock.



**Gophers.** Rodent mammals. The pocket gophers are stout-bodied burrowers common in the U.S.A. The slender burrowing gophers, also called "ground squirrels," occur in central and western U.S.A. The siskin or suslik is a related European species. They are a great pest among grain crops.

**Gordon Riots of 1780** were an anti-popey agitation fomented by Lord George Gordon. Called also "No-Popey Riots."

**Gorilla**, the largest of the anthropoid apes, found in the forests of Equatorial Africa, and at maturity standing from 4 to 5 feet high.

**Goshawk** (*Accipiter gentilis*), a diurnal bird of prey, fearless and extremely agile; loves wooded country and is very destructive of poultry and game-birds. It resembles the peregrine falcon in appearance, but has shorter, rounded wings. This bird was a great favourite of falconers in medieval times. It is still a familiar sight in parts of Europe, was once common in England, where it is said to have bred again in recent years.

**Gospels** are those portions of the New Testament which deal with the life, death, resurrection, and teachings of Christ. They are the gospels of Matthew, Mark, Luke and John, and the first three are called the *synoptic gospels* because of their general unity of narrative. That of John is of somewhat wider scope, and gives in addition to the story of the Passion an account of the ministry in Judea.

**Goths**, a Teutonic people who descended on Central Europe from Baltic regions and dominated a great part of the Continent. Under the leadership of Alaric (and then known as the Visigoths) they sacked Rome in 410, but by the 8th century they became merged in the Spanish race. There were Ostrogoths (Eastern Goths) and Visigoths (an offshoot of the Ostrogoths).

**Gourd Family or Cucurbitaceæ.** This family of about 650 species of flowering plants includes the gourds, pumpkins, cantaloupes, cucumber, gherkin, water-melon. Most abundant in the tropics, the cucurbits are mainly climbing annuals with very rapid growth. The bathroom loofah is the skeleton of one cucurbit fruit, *Luffa cylindrica*. The squirting cucumber is another member of the family. (See *Echallium*.)

**Governor.** A device attached to an engine, turbine, compressor, etc., which automatically controls the engine's speed in accordance with power demand. Most governors depend upon the centrifugal action of two or more balls which are thrown outwards as their speed of rotation increases and actuate a throttle valve or cut-off. The centrifugal governor was invented by Thomas Mead, patented by him in 1787, and used on windmills. Watt adapted it to the steam engine.

**Gowrie Conspiracy** was an unsuccessful project for securing the person of, or assassinating, James VI. of Scotland, afterwards James I. of England.

**Grail.** (See *Holy Grail*.)

**Gram or Gramme**, the unit of weight in the metric system, defined as the 1000th part of a standard cylinder of platinum-iridium kept at Sevres. Subdivision gives the centigram (100th part of 1 gram), milligram (1000th part) and so on. 1 ounce avoirdupois is equivalent to 28 grams approximately. (See *Metric System*.)

**Gramophone**, an apparatus on the disc principle for recording and reproducing vocal sounds, invented by E. Berliner, and was at one time the most popular of the talking machines.

**Grampus**, a cetacean of the Dolphin family frequent in temperate waters, and at maturity being over 20 ft. long.

**Grand Prix**, the "French Derby," was established by Napoleon III, in 1863. It is the chief French race and is an international competition of three-year-olds.

**Graphite or Plumbago**, commonly called black-lead, is a form of carbon occurring in foliated masses in limestone, graphite, etc. It is soft, will make black marks on paper or other plain surfaces, and is mainly used for lead pencils. It is also a valuable lubricant. Pure graphite has found a new use with the construction of atomic piles (*vide*). Important deposits occur in Siberia, Ceylon, Madagascar, Canada, and the U.S.A.

**Graphotype**, a kind of block for printing from, the drawings for which are made on a chalk surface with a siliceous ink. The soft parts are brushed away after the surface is dry, and a block is made from what remains in relief.

**Grapple**, a modified kind of boat's anchor, with flukes for holding by. Also an arrangement of hooks or clamps for fixing to and holding one ship to another while being boarded in an engagement.

**Graptolites**, fossil animals which became extinct after the Silurian period. Structurally and in their way of life they were similar to the living hydrozoa; they grew attached to seaweed or the sea-bed. The specimens best preserved occur in shales.

**Grass-Cloth**, a fabric made from China grass, the fibre of certain plants of the nettle order.

**Grasses or Gramineæ.** This family of flowering plants, including about 4,000 species, is the most important economically. Ordinarily the farmer applies the term "grass" to the pasture plants on which cattle, etc., feed, but botanically grasses take in the various cereal plants (wheat, barley, oats, rice, millet, etc.), and the bamboos.

**Grasshopper.** There are many species of these leaping insects which are related to the locusts. Most are vegetarians; a few eat flies and caterpillars also. The chirping sound they make comes by scraping the hind legs against the wings; in some species a noise is produced by rubbing the wings together.

**Gravitation**, the force of mutual attraction between massive bodies. Newton formulated the law of gravitation in these words: Any two particles of matter attract one another with a force directly proportional to the product of their masses and inversely proportional to the square of the distance between them. (See p. 157.)

**Gravity Railway** is a railway worked by the power of gravity alone. The road is constructed on inclined planes, usually so arranged that descending cars pull the cars from below to the higher level.

**Graylag**, the ordinary wild grey goose of Europe, the species from which domestic geese are derived; frequents fens and marshes; breeds in decreasing numbers in Scotland; distinguished by pinkish legs and feet and lack of black markings on bill.

**Grayling**, a fresh-water fish of the salmon family having a large dorsal fin, and averaging about 1 lb. in weight. It affords good sport to the angler.

**Great Circle Sailing** is the art of steering a ship in a line with a straight diameter of the earth.

"**Great Eastern**," the paddle steamship built by Scott Russell at Millwall, launched in 1858, then the largest vessel afloat, measuring 691 ft. in length and 83 ft. in breadth, and of 22,800 tonnage. It was used for some years in cable laying in the Atlantic and Mediterranean, and in 1888 was sold to be broken up.

**Great Powers**, the most powerful nations of the world, especially in political influence, resources, and military and naval strength.

Between the first and second world wars France, Germany, Gt. Britain, Italy, Japan, Russia and the United States were so regarded.

**Great War (1914-18).** Hostilities were precipitated in July 1914 by the Austrian ultimatum to Serbia, protesting on account of the assassination of the Archduke Ferdinand of Austria at Sarajevo, and demanding a large indemnity under conditions which it was impossible to accept, and being virtually a declaration of war. This involved the Russian Government, which was bound by promises to protect the interests of Serbia. In the meanwhile tension between France and Germany had become acute, and German troops occupied Belgium in August in defiance of the Treaty defending the neutrality of Belgium, signed by France, England and Germany in 1830. War was declared on Germany by this country on Aug. 4th, 1914. The war involved Italy, Rumania, Japan and ultimately the United States as allies of Great Britain and France, while Turkey and Bulgaria participated on the Germano-Austrian side. The war areas included eastern France, Poland, Transylvania, the Balkans and Northern Italy. Other complications resulted in fighting in Mesopotamia, Syria, E. Africa and on the high seas, the chief naval theatre being the North Sea.

The decisive engagements include: the Battles of the Marne (1914), which checked the advance of German troops on Paris; Neuve Chapelle; Ypres in the British offensive of 1915; German offensive: Verdun, 1916; naval battle of Jutland, May, 1916; Franco-British offensive; Somme, in 1916, Vimy Ridge, Passchendale Ridge, etc., 1917; German offensive on Western front, March, 1918; Rheims, Amiens, Cambrai, etc. A treaty was concluded between Germany and Russia in 1917 at Brest-Litovsk. Mutiny in the navy and the general breaking down of the morale of the German army, the exhaustion of the working masses and their political leaders culminated in a revolution and induced Germany to sign an armistice on Nov. 11, 1918. Peace Treaties were signed in Paris in 1919.

**Grebe**, a diving bird of beautiful plumage found over a great part of the world on lakes and oceans. The two species familiar in Great Britain are the Dabchick or Little Grebe and the large and handsome Great Crested Grebe, which has a feathery tuft on each side of the head. Grebes have remarkable courtship displays. The breast feathers are of a downy softness and silver lustre, for which they were formerly much hunted.

**Greek Church** represents the churches in accord with the Greek patriarchal see of Constantinople, and marks the point of separation from the Roman Catholic Church which occurred in A.D. 1054 when Pope Leo IX. excommunicated the patriarch, and the countries comprised in Greek, Greco-Roman, Russian, and certain Oriental groups remained faithful to the Patriarchal cause. The Greek Church accepts the doctrine of transubstantiation, believes in the intercession of the Virgin and saints, and the power of priestly absolution; but rejects purgatory, Papal supremacy, and allows its priests to marry. Greatly weakened after Russian Revolution and in Turkey after 1923.

**Greek Fire**, a combustible, supposed to have been composed of sulphur, nitre, naphtha, and asphalt, used with destructive effect by the Greeks of the Eastern Empire in their wars.

**Greek Kalends**, equivalent to never, as only the Romans, not the Greeks had kalends.

**Green Room**, the common assembling room for actors and actresses behind the stage, so called from the first room of the kind being decorated in green.

**Gregorian Calendar**, introduced by Pope Gregory XIII in A.D. 1582 to replace the inexact Julian calendar. Great Britain did not adopt it until 1752 when eleven days were dropped in the month of September. See Calendar.

**Gregorian Chant**, ritual music with a system of harmony suitable for church use. First established by Pope Gregory I.

**Grenadier** was originally a picked soldier, employed in throwing hand grenades.

**Gretna Green**, a celebrated village in Dumfries, just over the border from England, where runaway marriages were performed from 1754 to 1856, though only completely stopped during present century.

**Greyhound**, one of the oldest known varieties of dog, bred for the chase, and of great fleetness. Used in the popular sport of coursing and for dog-racing. Among its sub-varieties are the Scotch deerhound, the Irish boar-hound, and the Russian wolf-hound.

**Griffe**, the name given to a claw-like architectural decoration common in mediæval buildings, and placed at the base of columns.

**Griffin**, in ancient mythology, a winged creature with an eagle's head and body of a lion, found in ancient sculptures of Persia and Assyria. Its origin is traced to the Hittites. It had the same religious significance as the winged sphinx of Egypt. The griffon vulture is a bird named after the mythological creature, found in Europe, Africa and India.

**Grille**, a metal-work covering in the form of decorative bars, used to protect apertures in walls or doors.

**Grilse**, a young salmon, at that period of its development when the fish makes its first return to fresh water, usually in its second year.

**Grimm's Law**, formulated by Jacob Grimm, an eminent German philologist, lays down a principle of consonantal change in the Germanic

languages. For instance, Lat. *pater*, Eng. *father*, Ger. *Vater*; Lat. *frater*, Eng. *brother*, Ger. *Bruder*; Lat. *decem*, Eng. *ten*, Ger. *zehn*.

**Grindstone**, a wheel of sandstone, employed in smoothing surfaces, and grinding and sharpening tools; it may be worked by treadle or machinery. The millstones used for grinding corn are also called grindstones.

**Groat**, an old English silver coin of the value of 4d. It was first issued in the reign of Edward III., but after 1662 only coined as Maundy money. The fourpenny piece was resumed, though not under the old name, in 1836, but in recent years has dropped out of the coinage.

**Groats (or Grits)** are the grain of oats deprived of the husks; and, crushed, become whole meal.

**Grog**, the beverage served out to sailors, and compounded of spirit and water in prescribed proportions. The name, it is said, was derived from the fact that Admiral Vernon, who introduced it into the English navy in 1745, wore Grogam breeches. Now, any sort of mixed drink is called "grog."

**Gram**, a kind of rough fabric made of wool and some other fibre, such as silk, mohair, or cotton, formerly much used for commoner kinds of wearing apparel.

**Groschen**, a silver coin introduced into the German currency about the 14th century but not now in use. It was a thirtieth of a thaler, or about 1½ of a penny, English.

**Grotto**, a natural or artificial cave. Some grottoes are of great beauty, and are much frequented. Among the most famous are the Blue Grotto of Capri and the stalactite grotto of Antiparos. The latter has been known since 1673 and is of singular picturesqueness.

**Ground Wave**, that part of the energy emitted by a radio transmitter which travels along the ground; as opposed to the sky wave which is reflected back to earth by the ionosphere. With the lower radio-frequencies, the ground wave can be picked up over several thousand miles; in the broadcasting band, over a hundred or so miles; it is virtually useless at high frequencies.

**Grouse**, game bird of the northern latitudes where some 30 species occur. They are stout, compact, ground-dwelling birds, protectively plumaged (the willow grouse turns white in winter), the male usually being larger and more brightly coloured than the female. The red grouse of the English and Scottish moors is not found outside the British Isles. Of the same family are the blackcock, ptarmigan, capercaillie, American prairie-hen, and the common partridge. Grouse shooting begins in Britain on August 12th.

**"Grundy, Mrs."**, a sort of Mrs. Harris, introduced by Dame Ashfield, a character in Morton's comedy "Speed the Plough." The Dame considers every action from the point of view of Mrs. Grundy (a personification of British respectability), and is continually putting the question, "What will Mrs. Grundy say?" Thus the name became proverbial.

**Gruyère**, a special kind of cheese, first peculiar to the small town of that name in the canton of Freiburg, Switzerland, but now made in other parts of Switzerland and in France. It is of a pale yellow colour, and contains air passages and bubbles which give it a rather honeycombed appearance.

**Guanaco**, a large species of llama, common to South America, and utilised as a beast of burden.

**Guano**, the excrement of sea-birds, found in large quantities on the rocky islands of the western coasts of South America and Nauru Is. It forms a useful fertilising agent, being rich in phosphate and ammonia, and first came into use in 1841, since which time Peruvian guano has been a recognised article of commerce. Beds of guano of from 50 to 60 ft. in thickness are not uncommon. Fish guano and bat guano from caves in South America and the Bahamas are also used as fertilisers.

**Gudgeon**, a small fresh-water fish of the carp family.

**Guelph and Ghibelline**, italianised forms of the German words "Welf" and "Waiblingen," the names of two rival princely families whose conflicts made much of the history of Germany and Italy during the Middle Ages. The



feuds between these two factions continued in Italy during the campaigns of Emperor Frederick I., and later developed into the fierce struggles of the 13th century between Emperor and Pope. In Italy the Ghibellines supported the side of the German emperors and the Guelphs the cause of the Pope. It is interesting to note that Dante was a Ghibelline and Petrarch a Guelph. The present Royal Family of England is descended from the Guelphs, through the ducal House of Brunswick; the name of Windsor was assumed during the first world war.

**Guereza**, a large African monkey, with long flowing masses of white hair and tufted tail.

**Guildhall**, the place of assembly of the members of a guild, and at one time, when guilds were in full strength, was practically the Town Hall. The London Guildhall is to-day the hall of meeting for the City of London Corporation.

**Guilds** for the fostering and protection of various trades have existed in England since Anglo-Saxon times, and from the 12th to the 16th centuries exercised great influence and enjoyed many privileges. There were trades' guilds and craftsmen's guilds, and in all large cities and towns there was a guild hall. Their successes in the Middle Ages led to many monopolistic abuses, and in the end it became necessary to free the country from their restrictive power. Seventy-nine guilds, including the Mercers, Grocers, Drapers, still exist and enjoy considerable revenues, but they are now only private bodies and have little direct influence upon the course of trade.

**Guillemot**, a genus of sea-birds of the auk family, common in Northern Europe, two species—the Common Guillemot and the Black Guillemot—being natives of our own sea coasts, nesting and breeding on the cliffs.

**Guillotine**, the apparatus used in France for the execution of the death penalty. It consists of an oblique-edged knife, fixed between two grooved posts, which is heavily weighted and falls forcibly on the neck of the victim, severing head from body. A French physician, J. I. Guillotin, proposed in the Constituent Assembly of 1789 that it should be used instead of an axe or sword. It was invented by Dr. Antoine Louis, and was called at first "Louisson" or "Loutsette."

**Guinea**, an English gold coin of the value of twenty-one shillings, current from 1663 to 1817, and deriving its name from the first guinea coinage having been struck from gold obtained on the coast of Guinea.

**Guinea-Pig**, a rodent of the cavy family about 10 in. in length and with a tail so short that it does not project outside the body. It makes an excellent pet, though easily frightened. Its ancestors were species of the wild cavy of S. America said to have been domesticated by the Incas of Peru. (See p. 995.)

**Guinea Worm**, a large roundworm (nematode) which is parasitic in man. Occurs in tropical Asia and Africa.

**Guitar**, a six-stringed instrument with a hollow resonant body, the strings being plucked by the fingers. The instrument seems to have originated in Spain, but there is a variant known as the Hawaiian Guitar. A recent development is the Electric Guitar, in which the mechanical vibrations of the strings are converted into electromagnetic vibrations, amplified, and reproduced by a loud-speaker.

**Gulden**, a former gold coin of Germany, the Low Countries, and a former silver coin of Austria, worth about 1s. 8d. English. The silver gulden is still current in Holland.

**Gules**, a heraldic term, denoting a rose of red tincture, indicated by vertical lines drawn or engraved without colour.

**Gulf Stream** is confined entirely to the western side of the N. Atlantic and is the warm-water current flowing through the Straits of Florida from the Gulf of Mexico, parallel to the American coast up as far as Cape Hatteras. From there it continues north-eastwards as a slower, broader, cooler (yet even so, relatively warm) drift of water, merging with the North Atlantic Drift and losing its identity about 40° N. Lat., 60° W. Long. It is a common error to attribute the warmth of the British Isles and Western Europe

generally to the Gulf Stream, but this has no influence whatever except in so far as it feeds the North Atlantic Drift. Both the Gulf Stream and the North Atlantic Drift owe their movement to the direction of the prevailing winds, and it is the south-westerly airstream coming from warmer regions and passing over the surface waters of the Atlantic Drift that brings the warmth inland to influence the climate of Western Europe.

**Gull**, a web-footed, long-winged, sea-bird of numerous species, inhabiting the sea coasts of most parts of the world. They are mostly of a soft greyish-white plumage. Of the nine species native to Britain, the herring-gull and the so-called black-headed gull are the most abundant, the latter frequently being seen inland, especially in the winter.

**Gulliver**, the hero of Swift's satire, *Gulliver's Travels*, who, in Lilliput and Brobdingnag, passed through a series of adventures which were so contrived as to reflect the humour, follies, and shortcomings of Swift's day. Apart from its satire, it forms one of the best books ever written.

**Gums** are glutinous compounds obtained from vegetable sources, soluble in cold or hot water, but not in alcohol. There are innumerable varieties. Gum Arabic is exuded from a species of acacia grown in Senegal, the Sudan, Arabia, India and other countries, and is a valuable commercial product, used in dyeing, ink-making, as a mucilage, and in medicine. India-rubber is an elastic gum. Gums are also made from starch, potatoes, wheat, etc., from seeds, bark, roots, and weeds. Many so-called gums are resins.

**Gun-Cotton**, a powerful explosive manufactured by subjecting a prepared cotton to the prolonged action of a mixture of three parts sulphuric acid and one part of nitric acid. It burns without explosion on ignition, but by percussion explodes with a force five times greater than that of gunpowder.

**Gun-Money**, the name given to debased coins issued by James II. in Ireland in 1689 and made partly of metal from old cannon.

**Gunny**, a coarse cloth made in India from jute and hemp, used chiefly for bags and sacking, though sometimes also for clothing by the very poor. Gunny cloth is largely manufactured in Dundee.

**Gunpowder**, the oldest of explosive mixtures, is a compound of saltpetre, sulphur, and charcoal thoroughly amalgamated and reduced to fine powder. The proportion of the ingredients is varied according to the uses for which it is destined.

**Gunpowder Plot** was a conspiracy by a desperate band of Roman Catholics in the reign of James I. to avenge the harsh treatment to which Catholics were subjected. Barrels of gunpowder were secreted in the vaults underneath the Houses of Parliament, and it was proposed to fire these when the King and his Ministers assembled on Nov. 5th, 1605. The plot was betrayed and Guy Fawkes and his co-conspirators were arrested and executed. The date serves to perpetuate the ancient custom of burning the effigy of Fawkes, a custom in which young people are the most enthusiastic participants, with bonfires, fireworks, etc.

**Gunter's Chain**, a surveyor's chain, 22 yd. long divided into 100 links, invented by Edmund Gunter (1581-1626), Professor of Astronomy at Gresham College, for the measurement of areas. 1 acre contains 100,000 square links.

**Gurnard**, a sea-fish, with large, bony head and diminutive body, of which there are some forty species. They are plentiful in British waters.

**Gutta Percha**, the concrete juice of an evergreen tree common in the Peninsula and Islands of Malay. It possesses normally and naturally little elasticity, but becomes pliant under a rising temperature and has many commercial uses. In recent times it has become of considerable value as a covering for electric wires, being a non-conductor, while it is largely employed in making hose, belting, and other flexible goods. Combined with the more elastic caoutchouc it is easily vulcanized.

**Guy's Hospital**, founded by Thomas Guy in Southwark, London, in 1725.

**Gybing**, in navigation, means the moving of any boom-sail from one side of a mast to the other.

**Gymnasium**, originally the name given in ancient Greece to the public places where Greek youth used to exercise and receive instruction. Plato, Aristotle, and other great teachers lectured there. The Greek institution was never very popular with the Romans, and it was not until the 18th and 19th centuries that the cult of combining physical with intellectual activity again found a place in educational systems. In Germany the name was applied to the classical grammar school; in this country and America to the halls where gymnastics were practised.

**Gymnosperms**. In the pine and related plants the seeds are exposed and not contained in an ovary; because of the nakedness of the seeds, these plants are called gymnosperms. The gymnosperms, the most primitive of seed-bearing plants, include the Cycads, Ginko (maiden-hair tree), Conifers, and the Gnetales. Fossil gymnosperms were abundant by Carboniferous times.

**Gypso-plast**, a cast taken in white lime or Plaster of Paris.

**Gypsum**, a whitish mineral consisting of hydrated sulphate of calcium. The finest gypsum is alabaster. When heated gypsum is converted into the powder called Plaster of Paris; the water it loses can be taken up when the plaster is wetted, and the reconversion of Plaster of Paris into gypsum accounts for the way in which the former sets hard. The name "Plaster of Paris" came from the location of important gypsum quarries in the Montmartre district of Paris. It was found after the flood disasters of January 1953 that gypsum could undo the effect of sea-water. By spreading it for the rain to wash into the soil, thousands of acres of farmland in Holland and Britain were made productive again.

**Gyromancy**, divination by walking in circles, was one of the ancient superstitions. The person for whose benefit the art was invoked walked round and round in a circle (about which certain signs had previously been placed) until he fell from giddiness. From the manner of his fall in relation to the signs, the interpretation was formulated.

**Gyroscope**, an application of the principle of the spinning top to a single-rail railway, the steering of ships, and the steadying of torpedoes. (See *Compass*, also *Brennan, Louis, Prominent People*.)

## H

**Habeas Corpus**, the name given to a writ ordering the body of a person under restraint or imprisonment to be brought into court for full inquiry into the legality of the restraint to be made. The first Habeas Corpus Act was passed in 1679, though nominally such a right had existed from Magna Carta, but some of the more despotic kings had disregarded it. In times of public peril the privilege of *habeas corpus* is sometimes temporarily suspended, many instances occurring in the history of Ireland and during the First and Second World Wars.

**Haber Process**, the important industrial process for synthesising ammonia from atmospheric nitrogen. Nitrogen and hydrogen are made to combine at high pressure (200 atmospheres or upwards).

**Habrocoma**, a genus of South American rodents, possessing four toes to each fore-foot, having large ears, and a fine, soft chinchilla-like fur.

**Hackling-Machine**, an apparatus employed in removing burrs and other foreign substances from raw flax prior to spinning. It consists of a pair of rollers covered with brushes and hackles.

**Haddock**, one of the best-known fishes abounding in northern seas and averaging about 4 lbs. in weight. Largely used for curing, and sold as "finnan haddies."

**Hade** of veins, a mining term indicating the particular inclination that any vein, seam, or strata may have from the perpendicular; thus, in Weardale the veins mainly "hade" to the north.

**Hadrian's Wall**. (See *Roman Walls*.)

**Hæmatite**, peroxide of iron; one of the principal iron ores, containing about 70 per cent. of the metal. It is usually found in kidney-shaped

masses, and is specular, red or brown, in thin fragments, but greyish in bulk.

**Hæmocyania**, the respiratory pigment of crustaceans and molluscs. It functions like hæmoglobin, from which it differs in containing copper instead of iron and being blue when oxidised instead of red.

**Hæmoglobin**, the pigment containing iron which gives red blood corpuscles their colour. It is a respiratory pigment, having the property of picking up oxygen when the blood passes through the lungs to produce the compound known as oxyhæmoglobin. In other parts of the body the oxyhæmoglobin breaks down, liberating oxygen, which is used in the oxidation processes (respiration) that the body tissues carry on.

**Hafiz**, besides being the pseudonym of a famous Persian poet, is a title conferred upon any Mohammedan who has committed the whole of the Koran to memory.

**Hafnium**, a metallic element discovered by Coster and Hevesy in 1922. It occurs in most zirconium minerals to the extent of about 5 per cent.

**Hag-fish**, a parasite sea-fish with soft backbone and eel-like form; found within the bodies of other fish, and called sometimes the "borer," or "the glutinous hag-fish."

**Hagiarchy**, a form of government composed of priests.

**Hagiology**, a branch of literature that is wholly given up to the history of the saints, and the setting forth of the stories and legends associated with their names.

**Hail**, hard, roughly spherical, balls of ice, consisting of white cores covered by layers of both transparent and opaque ice, frequently falling during thunderstorms. They usually do not exceed 1 inch in size, but hailstones larger than apples and weighing more than 2 lb. have been observed. The general theory of a hailstone is that near the top of a cumulonimbus cloud a raindrop becomes frozen, grows in size by condensation and through collisions with snow particles, and eventually becomes so weighty as to overcome the ascending air currents in the cloud. Falling, it first encounters supercooled water drops, immediately freezing on it, increasing the white core, and then at lower levels ordinary water drops, freezing more slowly, producing a layer of clear ice. Before the hailstone arrives at the ground gusts and lulls may transport it several times up and down both regions, adding alternate coatings of soft white and hard clear ice.

**Haileybury College**, in Hertfordshire, originally established in 1809 for the education of boys for service under the East India Company. Since 1862 it has been a public school, receiving its charter in 1864.

**Hair**. See "Medical Dictionary" and "Hygiene and Cosmetics."

**Hake**, a fish of the cod family, found in large numbers in the seas of Europe, but not in high favour for the table with fastidious feeders.

**Halberd**, a kind of spear much used as a military weapon in feudal times. Its blade was sharp-edged, and it bore an axe or projecting knife a few inches from the point. Halberdiers often formed the bodyguard of kings and notables.

**Halcyon**, a term associated in olden times with the kingfisher and days of soothing calm, "halcyon days" being a frequently used expression. The legend was that the kingfisher laid its eggs on the sea at a time of perfect stillness.

**Halibut**, one of the largest of the flat fishes, averaging when full grown from 4 to 6 feet in length, and highly esteemed for the table. Specimens of still larger size occasionally occur. It is plentifully distributed. Its two eyes are on the right side of the head.

**Hall-mark**. A mark or group of marks, impressed by an assay office on gold or silver articles guaranteeing the standard of fineness of the precious metal used in them. These marks, which have been applied to silver made in London since the beginning of the 14th century and perhaps earlier, make it possible to establish the year and place of assay as also the name of the maker. English pieces of silver usually have not less than four marks, viz., (1) town mark; (2) maker's mark; (3) date letter; (4) sterling mark.



The town mark is rarely changed; in London a crowned leopard's head was used from the earliest days until 1820 with only minor modifications, except for the period 1697-1720 when a lion's head erased was substituted; since 1820 the crown has been omitted.

Until the late 17th century a symbol was often used as a maker's mark, from 1696 to 1720 the first two letters of the maker's surname, and subsequently the maker's initials. Owing to the destruction of the earlier mark plates at Goldsmiths' Hall no maker's name prior to the late 17th century can be identified with certainty.

The London date letter is changed at the end of May each year, so each letter covers seven months of one year and five months of the following. The London date cycle has usually consisted of twenty letters: the alphabet of each cycle is of different style, and the letters are enclosed in shields of different shape.

The sterling mark, the lion passant, was introduced in 1544 and continued in use until 1697, when the higher Britannia standard was introduced in order to discourage the practice current amongst goldsmiths of melting down coin of the realm to make plate. The leopard's head crowned and the lion passant were then replaced by a figure of Britannia and a lion's head erased. Though the regulation imposing the higher standard was withdrawn in 1720, a small amount of Britannia standard silver continued to be made and still is made.

From 1784 until 1890 a plate tax was levied on all silver assayed in Great Britain and an additional duty mark, the sovereign's head, was used during this period. A Jubilee mark bearing the head of George V and of Queen Mary was used in between the years 1935 and 1935, and in 1953 a coronation mark with the head of Queen Elizabeth was introduced.

The tables of hall-marks on pp. 743-45 give the London date letter cycles from 1598 to the present day. The form of town mark and sterling mark used during each cycle is given at the head of each column. Where a major alteration took place in either of these marks during a date-letter cycle, the alternative forms are also shown. The date of the change can be established by reference to the notes above. At the bottom of each page the marks used by the major provincial, Scottish and Irish assay offices are shown. Owing to lack of space, the complete date-letter cycles are not shown, but two examples only from the 17th, 18th or 19th centuries. Where a provincial assay office was established in the 17th century or earlier, the marks of one year in the 17th and 18th centuries respectively are shown, where the office was not established until the 18th century, the marks of one year in the 18th and 19th centuries are given.

**Halloween** (Oct. 31st), the eve of All Saints' Day, a time associated, especially in Scotland, with certain pleasing superstitions attractively set forth in Burns's famous poem "Hallow-e'en." It is the night when young men and maidens are supposed, by observing certain rites, to have their future wives and husbands disclosed to them.

**Halo**, a luminous circle usually of 22° radius, surrounding sun or moon, produced by the refraction and reflection of light by ice crystals of high cirrus cloud. It is a very common occurrence, in the British Isles almost one day in three. The inner side is red and the outer a whitish-yellow colour. "Mock suns," i.e., patches of light at the same elevation as the sun are much rarer occurrences, sometimes being of great beauty and brilliance. (See *Coronae*.)

**Halogens**, the group name for the four non-metallic elements, chlorine, bromine, iodine, and fluorine. The term "halogen" means "salt-producer."

**Halteres**, the vestigial rear-wings of the two-winged flies or *Diptera* (e.g., the house-fly). The equilibrium in flight of these insects depends on the halteres, which are commonly called "balancers."

**Hampton Court Conference**, presided over at Hampton Court Palace by James I. in 1604 and which brought about his authorised translation of the Bible, had an important bearing on the

religious differences of the time. James refused to grant tolerations to the Puritans. This sowed the seeds of civil war. Following the conference three hundred English Puritan clergy were ejected from their livings.

**Hamster**, a kind of burrowing rodent, about the size of a rat, an inhabitant of Northern Europe and Asia. Remarkable for its cheek pouches, in which it stores food. Its fur is of considerable commercial value. The golden hamster (*Mesocricetus auratus*) is a delightful pet. (See *Domestic Pets* Section.)

**Hanaper Office**, a former Chancery office, deriving its name from the fact that its writs and papers were kept in a hanaper (hamper). The Chancellor's officer thus came to be known as the Hanaper. The Comptrollers of the Hanaper were abolished in England in 1842.

**Hand**, a measure of four inches, the average size of the palm; used in reckoning height of horses.

**Handfasting**, an informal marriage custom once prevalent in Scotland, whereby a man and woman bound themselves to cohabit for a year and a day, and at the end of that period either confirmed their contract by a regular marriage or separated.

**Handspike**, a wooden bar shod with iron to raise weights, used on shipboard and by artillery.

**Hansard**, the title given to the official reports of Parliamentary debates, so named after Luke Hansard who in 1774 became partner in a firm of printers to the House of Commons. His son T. C. Hansard was first the printer and then the publisher of an unofficial series of parliamentary debates inaugurated by William Cobbett in 1803. In 1909 production was taken over by H.M. Stationery Office and today's volumes contain full substantially verbatim reports of what is said in both Houses of Parliament.

**Hanseatic League** was a confederation of North German towns established about 1241 for purposes of mutual protection in carrying on international commerce. The League became so powerful that it was able to dominate the foreign trade of Norway, Sweden, Denmark, and even to some extent of London. A branch was established in London and had its guild hall in Cannon Street for hundreds of years. The League existed down to the middle of the 17th century. Hamburg, Lübeck, and Bremen are to-day the only cities which, as free ports, still by commercial courtesy retain the name of Hanse towns.

**Hansom**, a two-wheeled one-horse cab, invented by Joseph A. Hansom in 1843. It was, until the introduction of the motor-cab (or "Taxi"), the cab in most ordinary use in London and many other cities and towns in the United Kingdom. Lord Beaconsfield styled it the "gondola of London." It is constructed to seat two persons, and the driver sits on a "dickey" behind, level with the roof of the cab.

**Hara-kiri**, the custom of suicide by compulsion, or "happy despatch," once common in Japan, but no longer permitted. The condemned person gave himself the first cut, and if his courage then failed him, the fatal blow was dealt by a friend.

**Hare**, the leading member of the *Lepus* genus, and common in Northern Europe. Noted for having four upper front teeth, one pair behind the other, long ears, short tufted tail, and a cleft upper lip. It is a very swift animal, and intelligent in eluding pursuit, therefore much hunted, greyhounds being used to chase it, the sport being called "coursing." The hare makes a nest of grass, called a "form." It is prohibited by law to sell a hare or leveret during March, April, May, June and July.

**Harleian MSS.** comprise some thousands of volumes of MSS. and documents, collected by the first Earl of Oxford (1661-1724) and his son Edward. After the death of the latter, his widow handed the MSS. over to the nation for £10 000, a sum that did not represent a quarter of their value, and they are deposited in the British Museum.

**Harlequin**, the buffoon of ancient Italian comedy. As adapted to the British stage, however, harlequin is a pantomime character only, in love with Columbine, appearing in parti-coloured garments and carrying a wand, by which he exercises a magic influence in thwarting the fantastic tricks of the clown and pantaloon.

**Harmattan**, a dry wind which may blow between January and May across the Sahara to the Gulf of Guinea. Although affording relief from the tropical heat, vegetation withers because of its extreme dryness and much irritation is caused by the clouds of fine dust which it carries.

**Harmonic Motion**, regular periodic motion of the kind exemplified by a ball bobbing up and down at the end of a spring, and by the piston in a steam engine. It may be simple (simple harmonic motion) or composed of two or more simple harmonic motions. In simple harmonic motion the acceleration is proportional to the distance of the moving body from its original rest position.

**Harmonics**. Flute-like tones which can be produced by touching the strings of a violin in a certain way. The effect is due to the suppression of the fundamental frequency at which the string would normally vibrate. In consequence only the harmonics or overtones (notes one octave or more above the fundamental which combine to give the characteristic timbre of the instrument) are heard.

**Harmonica or Mouth Organ**, a small instrument consisting of reeds enclosed in separate chambers through which air is blown or sucked by the mouth. Recent improvements and elaborations have made of it a versatile solo instrument in the hands of an expert.

**Harmonium or American Organ**, a small organ of one or two manuals consisting entirely of reed stops. There is no pedal organ, the feet being used to operate the bellows.

**Harp**, a musical instrument of ancient origin consisting of many strings stretched on a frame. The player stands beside it and plucks the strings with his fingers. Used orchestraly in early Italian operas (17th century).

**Harpoon**, a kind of barb-headed spear used for attacking whales. These used to be thrown by hand, but the modern harpoon is an instrument of ingenious mechanism, with shaft, slot, and ring, and is fired from a gun.

**Harp-seal**, the ordinary Greenland seal, with a dark harp-shaped marking on its back, hence its name. It abounds in Newfoundland waters and further northward towards the Arctic.

**Harpisichord**, a keyboard instrument with a compass of up to six octaves in which stretched strings are plucked by quills. The harpischord was an instrument of great importance from the 16th to the 18th centuries, but it was eventually eclipsed by the pianoforte, in which the plucking action (*cf.* Harp) was replaced by a striking action (*cf.* Dulcimer).

**Harp-y Eagle**, a large bird of prey named from the winged monsters of Greek mythology, inhabiting the forest regions of Central and South America. It has a handsome grey plumage and large crest. It attacks and kills animals much larger than itself, and was called by the Aztecs "winged wolf".

**Harrier**, a bird of prey of the falcon family: of the various species distributed over the world, three breed in Britain: the moorland Hen harrier, the March harrier, and Montagu's harrier. They are slender birds with long tails and pointed wings. They nest on the ground and eat small mammals, frogs, lizards, and small birds.

**Harrow**, an agricultural implement with a series of strong teeth underneath which, when pulled over it, the ground is broken up. Iron is now largely used both for teeth and frame.

**Harrow School**, founded 1571, is a famous boys' school with great traditions.

**Hartebeest**, common African antelope of a grey-brown colour, with ringed and knotted horns bending backward and tapering to sharp points; gregarious, of large size, and capable of domestication. There are several species. Its flesh is not unlike beef in flavour.

**Hart's Tongue**, the common name for ferns of the *Scolopendrium* genus, only one species of which is found in England in the wild state.

**Harvard University**, the first American University, established at Cambridge, Massachusetts, in 1636, by John Harvard, a settler from Cambridge, England.

**Harvest Bug**, a very small insect, of a dark red colour, which appears in large numbers in the fields in autumn, and is peculiarly irritating to

animals and man by the tenacity with which it attaches itself to the skin and burrows underneath. Probably the larvæ of spinning mites (Trombidoids).

**Harvest Moon**, the full moon that occurs nearest to the autumn equinox, in September. It rises for several nights running about the same time, and yields an unusually brilliant series of moonlight nights.

**Harvestman or Phalangid**, animals related to the spiders. Usually with small oval bodies and extremely long thin legs. Harvestmen with shorter legs may be confused with spiders; the abdomen, however, is always segmented, a point of distinction from the spiders.

**Hashish**, a narcotic drug prepared from the gum extracted from Indian hemp, and largely used for smoking by the Arabs, and made into a beverage called *bang* in India, in both cases having much the same effect as opium.

**Hatchment**, in heraldry, is a square board, in vertical diagonal position, placed outside a house or on the tomb at the death of a member of a family and so arranged that it indicates the sex and condition of the deceased.

**Hatchways**, places or openings in the centre of a ship's decks, through which goods are lowered to or lifted from the hold.

**Hauberik**, a name first given to a portion of mail armour worn over the neck and shoulders, but later applied to a coat of mail extending below the knees.

**Hawfinch**, a well-known European bird of the finch family, having a variegated plumage, a sturdy bill, and black-and-white tail. In England it is seldom found away from the Midland and Eastern Counties. (*See* p. 1004.)

**Haw-haw**, a fosse or ditch sunk between slopes for defensive purposes, and not perceptible until closely approached.

**Hawk**. This name is applied to almost any diurnal bird of prey other than eagle, falcon, or vulture, but in its strict sense applies only to the *Accipiter* genus—the small Sparrow Hawk and the larger Goshawk, round-winged, long-tailed birds with barred under-parts. They prey upon small birds captured in flight.

**Hawk-moths**, large species of moths, thick of body and strong of wing, which fly with rapid swooping motion, hence its name. There are numerous handsome species in Britain.

**Hearth-Money** was a tax laid on hearths (in all houses paying the church and poor rates). Charles II. introduced it in 1662, and it was repealed in the reign of William and Mary.

**Heat**, a form of energy possessed by a body in virtue of the motion of its molecules. Heat can be conducted to other bodies and raise their temperature, or it can be radiated as waves into space. When a body changes its state, energy is involved. Thus when a liquid changes into vapour, as in evaporation, there is a fall of temperature, the energy absorbed being known as the latent heat of vaporisation. Conversely, when a gas changes into a liquid, as in condensation, the temperature rises, the energy released being known as the latent heat of condensation. Water has a great capacity for heat, the oceans being huge storehouses, a factor of the utmost importance in meteorology. The specific heat of a substance is the number of calories of heat required to raise the temperature of 1 gram of the substance through 1° C. In the case of gases the specific heat has two values, one at constant pressure and one at constant volume. (*See* p. 760.)

**Heath**, a flowering plant of that section of the family *Ericaceæ* called *Ericææ*. Heaths are widely distributed over uncultivated spaces of Europe and Africa. In Britain they are represented by heather (of which there are several species) and ling (*Calluna*), which cover thousands of acres of moorland. Some of the African or Cape heaths are very beautiful and much prized by florists. One species of heath (*Erica arborea*) which grows in S. Europe and N. Africa has close-grained woody rootstock used for making briar pipes.

**Heat Wave** is a spell of very hot weather, due chiefly in this country to a warm southerly current of air caused by the presence of an anticyclone over western or central Europe at the same time as a depression is stationary



- over the Atlantic. In the heat wave of May 29-June 8, 1947, temperatures of at least 85° F. were registered each afternoon in London. High humidity increases the discomfort.
- Heaviside-Kennelly Layer**, the layer of the ionosphere 60-70 miles above the ground which reflects radio waves of medium wave-lengths. It is a more efficient reflector at night than during the day. Short waves penetrate this layer.
- Hebrews**, Epistle to the, one of the books of the New Testament, to which no direct authorship can be assigned. Its chief mission was to proclaim Christianity as the continuation and fulfilment of the older Jewish faith.
- Hecatomb**, the name given to the public sacrifice of a hundred oxen in ancient Greece. In later times the word has been used to express any wholesale sacrifice of human beings or animals.
- Hedgehog**, a common insectivorous animal covered with sharp spines which it can, when on its defence, project in every direction by rolling itself up into a ball. During winter hedgehogs hibernate and should not be disturbed. (See Domestic Pets Section.)
- Hegira**, an Arab term signifying departure or flight, and used in reference to Mahomed's departure from Mecca for Medina, A.D. 622, from which date the Mahomedan era is reckoned.
- Helicopter**, heavier-than-air aircraft which obtains its lift from blades rotating above the fuselage in windmill-fashion. The first successful helicopters were the Focke-Wulf 61, a German machine (1936), and the VS-300, designed by Igor Sikorsky, flown in 1937. Helicopters can hover, and rise and descend vertically, in addition to being capable of horizontal flight.
- Heliograph**, an apparatus, used for sun-signalling, consisting of a movable mirror fixed on a tripod, which mirror flashes light reflections to a distant station in the Morse code, forming an effective means of communication. Heliograph signalling can be carried on up to 50 miles in ordinary weather without the aid of field glasses.
- Heliumeter**, an astronomical instrument for investigating the parallax of the fixed stars, and consisting of a telescope which has had its objective cut through the optical axis, admitting of both halves being conjointly utilised, one directed on one star while the other brings another into coincidence.
- Helio-stat**, an instrument used in astronomical observations which reflects the sun's rays continuously in the same direction.
- Heliotrope**, a favourite sweet-scented flowering plant, common in tropical and sub-tropical countries; the Peruvian heliotrope is the "cherry pie" of our summer garden borders.
- Heliotype**, a method of printing from photograph negatives by the use of a chemically treated gelatine surface as from a lithographic stone.
- Helium**, a gaseous element first discovered by means of the spectroscope in the sun's atmosphere. This discovery, made in 1868 by the astronomer Sir Norman Lockyer, was followed in 1895 by Sir William Ramsay's proof that the element existed on earth. He found it in the uranium ore, cleveite. Later it was established that helium is formed by the radioactive decay of many elements which emit  $\alpha$ -particles (nuclei of helium atoms) and is contained in all radioactive minerals. The largest source of helium is natural gas, the richest in helium being the gas from certain wells in Utah, U.S.A. Next to hydrogen, helium is the lightest gas known, has a lifting power equal to 92 per cent. of hydrogen and the advantage that it is inert and non-inflammable. It is used in the U.S.A. for inflating airships. Ordinary air contains 1 part in 200,000 of helium. It was the last gaseous element to be liquefied, this being achieved by Onnes in 1908 in Leyden.
- Hell**, according to the teaching of the earlier Christian fathers, is a place of eternal torment, to which the spirits of the wicked are doomed after mortal death. The Inferno, as imagined by Dante, is even now believed in by many; but in the general broadening of philosophic inquiry in modern times, the idea of this material hell has been greatly modified. The most orthodox of preachers in these days would hesitate to proclaim his belief in the hell of burning fires as accepted so generally a few generations ago.
- Hellebore**, a plant of the *Ranunculaceae* order. The best-known British examples are the green and stinking varieties. There is also a garden kind which flowers in December called the Christmas Rose. Hellebore yields a bitter substance which forms a drastic purgative, but is now little used.
- Hellenism** is the pursuit of the Greek ideal of physical and intellectual culture. Matthew Arnold's doctrine of "sweetness and light" had its foundation in Hellenism.
- Helmet**, originally a soldier's protective head covering, now a term applied to defensive head-gear generally. In mediæval times helmets were for the most part of metal, and varied in shape from reign to reign. Roman gladiators wore helmets that covered the face entirely, and the helmets worn at tournaments in the 15th and 16th centuries were so closed in that the wearers could only see through the perforations of the visor. The stiff hats worn by soldiers, policemen, and firemen generally are now styled helmets.
- Helots**, bondmen of ancient Sparta upon whom devolved the most menial occupations without other recompense than food and lodging.
- Hemiptera**, the order of insects to which belong the true bugs. Their wing structure is in most species incomplete, hence the term hemiptera. This order includes the familiar water insects, the water boatman and water skater, also the aphids, cicadas, leaf hoppers, scale insects.
- Hemisphere**, half of the terrestrial or celestial globe. Thus, taking the equator as the dividing line, we have the Northern Hemisphere above that line, and the Southern Hemisphere below it. Again, there is the geographical division of the Eastern and Western Hemispheres, the former comprising Europe, Asia, Africa, and their outlying islands; the latter including North and South America.
- Hemlock**, a plant of the *Umbelliferae* family, growing in all parts of Britain, and containing a strong alkaloid poison. Used medicinally, this alkaline substance is of considerable service, being a powerful sedative. According to Pliny, hemlock was the poison used by the Athenians in putting criminals to death.
- Hemp**, name of a plant native to Asia, now cultivated widely for the valuable fibre contained in the stalk or in some species in the leaves. Hemp fibre has been replaced by cotton for textiles and jute for sacks and is now chiefly used for cordage and twine. It contains a resinous substance from which the narcotic hashish is made. The seed yields a valuable oil. The term hemp is also used for other fibre plants, including manila hemp from the Philippines, sunn hemp from India, sisal from W. and E. Africa and phorium from New Zealand.
- Henbane**, a plant found in Britain and other parts of Europe and Northern Asia. It belongs to the potato family *Solanaceae*, grows mostly on waste ground, and bears yellow-brown flowers veined with purple. The leaves yield a poisonous alkaloid substance which, medicinally prepared and administered, is of great use. Tincture of henbane is often preferred to laudanum.
- Henna**, an Egyptian plant bearing small white flowers; Mahomed's "chief of flowers," and the "camphire" mentioned in the Bible. The leaves yield a dye with which it is the practice of Eastern women to stain their nails, eyelids, and hair.
- Heptameron**, a book of stories, written or compiled by Queen Margaret of Navarre in imitation of Boccaccio's *Decameron*, and supposed to have covered seven days in the telling.
- Heptarchy**, a word derived from the Greek *hepta*, seven, and denoting the seven kingdoms (*archai*) into which Anglo-Saxon England was supposed to have been divided before 900. The seven presumably were Kent, Essex, Sussex, Wessex, Mercia, East Anglia, and Northumbria.
- Heracleum**, a plant of the *Umbelliferae* family, common in southern and central Europe, though only one species, the cow parsnip, grows in England. It has a bitter root, and from the juice of the stem an intoxicating liquor is occasionally prepared.

**Herald**, an officer of state empowered to make formal proclamations and deliver messages from the sovereign or other high personage whom he served. In the developments which took place in armorial bearings, the herald was the functionary charged with the duty of their proper depiction.

**Heraldry**, the art or science of genealogy and armorial bearings, was mainly the outcome of the love of outward distinction which prevailed in mediæval times. "Heraldry," says Stubbs, "became a handmaid of chivalry, and the marshalling of badges, crests, coat-armour, pennons, helmets, and other devices of distinction grew into an important branch of knowledge." The *shield*, or *escutcheon*, is the ground upon which armorial signs are traced, the colour of the shield being called the *tincture*, the signs recorded the *charges*. There are seven *tinctures*—or (gold), *argent* (silver), *gules* (red), *azure* (blue), *vert* (green), *purpure* (purple), and *sable* (black). The *charges* are classed as "Honourable" and "Subordinate" ordinaries, comprising lines and geometrical forms; and "Common" ordinaries, which latter includes all representations of natural objects. There is also a system of external signs, such as crowns, coronets, mitres, helmets, mantlings, wreaths, and crests, each having its distinctive significance. For other distinguishing marks see *Hatchments*, *Badges*, *Quartering*, *Rampant*, *Peau*.

**Heralds' College** or **College of Arms**, was incorporated by Richard III. in 1483. Its head is the Earl Marshal (an office hereditary in the family of the Dukes of Norfolk), and there are three King-of-Arms, six Heralds, an extra Herald, and four Pursuivants. The business transacted is wholly connected with the tracing of genealogies and the granting of armorial bearings. In Scotland the Heraldic functions are performed by the Lord Lyon King-of-Arms, and in Ireland by the Ulster King-of-Arms.

**Herbarium**, a systematically classified collection of preserved plants. One of the largest herbaria in the world belongs to the Royal Botanic Gardens at Kew.

**Herbivora**, animals subsisting upon grass, herbs, or other plants.

**Heredity** is the study of the transmission of physical and mental characteristics from one generation to another. Gregor Mendel (1822-1884), a great experimenter in the field of inheritance, considered the sex cells to be the bearers of hereditary characteristics, by which they are handed on. The modern theory is that hereditary factors are situated in the minute bodies known as genes, which form the constituent parts of chromosomes, found in the centre of the nucleus of each cell. In general psychological characteristics are due more to social environment than to inheritance. (See p. 173.)

**Hereford Cattle**, a breed having a dark-red body, with a white face and breast, and sometimes a long line of white upon the back. They are hardy, good grazing animals, excellent for the butcher, but not useful for dairying purposes.

**Heretics**, a term applied to those who choose their own creed instead of adopting one imposed by authority. In the past heretics were severely dealt with, thousands being burned at the stake.

**Heriot**, a fine or acknowledgment of service due to a manorial lord and paid on the decease of the tenant, originally in the form of military equipment, afterwards money or beast.

**Hermaphrodite**, human beings, animals, or plants possessing both male and female generative characteristics. True hermaphrodites very rarely occur.

**Hermetic Philosophy**, the doctrine or system propounded by Hermes Trismegistus, an Egyptian of the 2nd century, who was supposed to have written forty-two books devoted to religion and the occult sciences, which books were always kept under secret guard, hence the term "hermetically sealed." These Hermetic Books were presumed to be copied from the ancient sacred books of Egypt.

**Hermit**, one who retires into seclusion for the purpose of religious contemplation and a desire to live apart from the world. Hermits were regarded with reverence in mediæval times and were free to wander about. Peter the Hermit instigated the first Crusade.

**Hermit Crab**, a kind of crab having a soft fleshy body, without shell-protection. It possesses itself of the empty shell of some mollusc, into which it backs itself, and thus usurped shell it carries about with it thenceforward, or until it has outgrown its dimensions, when it seeks a larger one. The common Hermit Crab of Britain usually resorts to a whelk shell.

**Heron**, a large wading bird with long curved neck and pointed bill, is a member of the *Ardeida* family, of which there are many species. Egrets and bitterns are included as herons. Herons are to be met with in marsh lands and near rivers and lakes, where they feed on fish and frogs. They nest in trees in large numbers, these colonies being called heronries. The common heron is native to England, and other species from the Continent are frequent visitors.

**Herring**, a common sea-fish abounding in northern seas and always to be found in large numbers round the British coasts. The herring fishing is the most important fish industry in this country, a very numerous fleet being engaged in it. The fishing season proper lasts from May to October, the enormous shoals being followed as they move from place to place. The spawning season is about the end of August. One female herring will yield from 20 to 50 thousand eggs.

**Heteromys**, a species of "spiny pocket" rodents, possessing cheek pouches, belonging to the family *Sacomysina*, and indigenous to Trinidad.

**Heulandite**, a mineral; one of the best known zeolites; chemically, calcium-sodium-aluminium silicate.

**Hexagon**, a figure consisting of six sides and six angles, called a regular hexagon when all the sides and angles are equal.

**Hexahedron**, a solid body having six sides, particularly exemplified in the cube, or regular hexahedron.

**Hexameter**. See *Mètre*.

**Hexapla**, a 3rd-century edition of the Old Testament in parallel Hebrew and Greek characters, by Origen.

**Hexateuch**, the title given to the first six books of the Old Testament, comprising the Book of Joshua in addition to the five books of the Pentateuch.

"**Hiawatha**," the title of one of Longfellow's best-known poems. The hero is a being supposed by the Red Indians to be a spirit sent from realms of space to lead them to a higher existence.

**Hibbert Lectures**, on theology by eminent authorities, founded in 1878 by the bequest of John Hibbert, a West Indian merchant.

**Hibernation**, expresses the dormant condition in which numerous mammals, reptiles, amphibians, insects, plants, etc., pass the winter. Before hibernation sets in, the animals fatten themselves up, but in spite of this there is considerable loss of weight sustained during hibernation. Animals of the torrid regions pass through an analogous period during the hot season, when the sources of food are dried up.

**Hickory**, an American tree of the walnut family, remarkable for its very hard, solid, heavy white wood, and bearing an edible, four-lobed nut.

**Hickory-shirt**, an American term signifying a shirt made from checked cotton stuff.

**Hicksites** were a small community of American Quakers, who separated themselves from the parent church, under Elias Hicks, in 1827.

**Hierarchy**, a term applied to ecclesiastical or Church government, and involving a graded organisation with a supreme head.

**Hieroglyphics** are the earliest form of pictured symbolic expressions, and are supposed to have been introduced by the ancient Egyptians. They consist of rude depictions of animals, plants, signs, and objects, and in their later examples express, in abridged form, ideas and records from which significant historical information has been gleaned. The deciphering of Egyptian hieroglyphics long formed an ardent study, but gradually the key to the riddle was discovered, and most of the ancient records can now be understood. But the Mexican and Maian picture writings are still largely unsolved. (See *Rosetta Stone*.)

**Hieronymites** were hermits following the rule of St. Augustine with additions taken from the writings of St. Jerome, founded in the 14th century on the Peninsula. They went to



- Spanish and Portuguese America and helped to Christianize the American Indians. The order still survives in Spain.
- Hindi**, the great Aryan vernacular language of Northern India.
- Hinduism**. The original inhabitants of India (the Dravidians) were primitive tribes who worshipped many nature gods. Some time about 2000 B.C. India was invaded from the North by the Aryans, a light-skinned and civilised people; the word Hindu is believed to be a Persian word used by the Dravidians to describe their conquerors. "Hinduism" is not only the religion but also the social institutions of about three-quarters of the population of the country. The original religion of the Aryans described in the religious books known as the Vedas mingled with the polytheism of the Dravidians to form a most complex mixture now known as Hinduism. At the highest level, known as Brahmanism, belief is in a subtle and sophisticated form of monotheism (Brahma is a universal and all-embracing spirit), but there is a tolerant acceptance of more primitive beliefs. Thus Vishnu (a conservative principle) and Siva (a destructive principle) are accepted as aspects of the deity. Krishna is said to be an incarnation of Vishnu, somewhat as Christ is in the Christian world accepted as an incarnation of God. There are, however, many other gods, and the religion embraces many primitive and crude beliefs.
- Hindustani**, the *lingua franca* of India, a Sanskritized Hindi vernacular introduced by the British in 1837 to replace the official Persian. It is written in Devanagari (Sanskrit) characters. The Persianized Hindi vernacular is known as Urdu.
- Hippodrome**, in ancient Greece, was a building set apart for horse and chariot races, and was often the scene of great spectacular performances.
- Hippogriff**, a fabulous animal, like a horse in body, but with the head, wings, and front legs and claws of an eagle. The monster frequently appears in the romances of the Middle Ages.
- Hippopotamus**, the largest living representative of the hog family, and widely distributed over Africa, where it is known as the "river-horse." It is of immense bulk, attaining a length of 12 feet and a weight of 4 tons and stands about 5 feet high. Its skin is hairless and about 2 inches thick, and it has a pair of tusks often weighing as much as 6 lb. It spends most of its time in the water, and lives entirely on vegetation, both aquatic and terrestrial. The pigmy hippopotamus, which occurs in forests and swamps in W. Africa, is only half the size.
- Hippuris**, a genus of plants growing in marshy places. It has an erect stem, bears polygamous flowers, and has its leaves in whorl form. Its astringent qualities render it of use in medicine. The common Mare's-tail is a well-known species.
- Hisingerite**, a hydrous iron silicate found in certain parts of Scandinavia, and named after Hisinger, the Swedish mineralogist.
- Histology** is that part of anatomical science which deals with those details of the human structure that can only be investigated with the aid of the microscope.
- Historiography**, the writing of history.
- Hittites**, an ancient race (often mentioned in the Old Testament) who inhabited Asia Minor and N. Syria from the third to the first millennium B.C. Excavations have revealed that they attained a high level of civilisation round about 1350 B.C. They were rivals of Egypt, disputing with Pharaoh the mastery of the Middle East.
- Hobby**, a bird of the falcon family, about 12 inches long, seen in England in the summer, and formerly flown at small birds, which are its chief food.
- Hobson's Choice**, a term meaning the compulsory acceptance of the thing offered, is an English proverbial phrase which had its origin in the circumstance of the letting of horses by a Cambridge innkeeper named Hobson, who compelled each customer to take the horse which stood nearest to the stable door; "that or none."
- Hochheimer**, a Rhine wine of high repute, made from the yield of the vineyards of Hochheim, near Mainz, Germany.
- Hog**, the common name of animals of the Suina family, including the wild boar, pig, and sow. The wild boar, *Sus scrofa*, is the common ancestor. The skin of the hog is covered with bristles, the snout truncated, and each foot has four hoofed toes. Hogs are omnivorous feeders and eat almost anything that is given them.
- Hogmanay**, the Scottish New Year's Eve festival and a national holiday of the country. The custom of demanding Hogmanay bread is still upheld in many parts of Scotland.
- Hogshead**, a cask of varying capacity, also a specific measure. In the old English measure a hogshead was 52½ imperial gallons, or 63 old gallons of wine. Of beer 54 old gallons make a hogshead.
- Holland**, the name given to a fine kind of cloth made from flax, originally manufactured only in Holland. Brown Holland is the kind not fully bleached.
- Hollands**, Schiedam, or Schnapps, a kind of gin made mostly in Holland from rye and malt, with a flavouring of juniper berries.
- Holly**, a hardy evergreen shrub, largely grown in England. Its bright dark green prickly curved leaves and its clusters of red berries are familiar in all parts of the country, and used as house decoration between Christmas Eve and Twelfth Night. Its wood is white and hard, valued for carved work, while its bark yields a gummy substance which is converted into birdlime.
- Holograph**, a letter, manuscript, or document written throughout by its author.
- Holothuroidea**, the class of marine animals commonly called sea-cucumbers. Dried sea-cucumber is called trepang or béche-de-mer, which is highly prized as a food, particularly in China.
- Holy Alliance**, an alliance ostensibly for conserving religion, justice and peace in Europe, but used for repressing popular tendencies towards constitutional government. Formed by Alexander I. of Russia, Francis I. of Austria and Frederick William III. of Prussia, at Paris on September 26, 1815. Subsequently joined by all the sovereigns of Europe, except the Pope and the King of England. It ended after the 1830 revolution in France.
- Holy Coat of Treves**, a garment preserved in the Cathedral of Treves and said to have been worn by Christ. It was brought from Jerusalem by the Empress Helena in the fourth century.
- Holy Grail**, the cup from which Christ drank at the Last Supper, and supposed to have been preserved by Joseph of Arimathea. Many poets and romancers have made the "Quest of the Holy Grail" the subject of their imaginings, Tennyson making fine use of it in his "Idylls of the King."
- Holy Rood**, an annual Roman Catholic festival held on September 14th to celebrate the Elevation of the Cross in commemoration of its re-erection in Jerusalem by the Emperor Heraclius in 628 after it had been lost for nearly 300 years and had fallen into the hands of the Persians. Also included in the Church of England calendar.
- Holyrood**, the ancient royal palace at Edinburgh, dating from the 15th century, and inhabited by many Scottish sovereigns, notably Mary Stuart, the rooms occupied by her (including the one in which Rizzio was murdered) being still shown. It is now known as Holyrood House and is still used as a royal residence.
- Holy Water**, water blessed by a priest and kept in small fonts at the entrance to Roman Catholic churches, and used by worshippers going in, and out, or by priests in sprinkling.
- Holy Week** is the week preceding Easter Sunday, and includes the days of the Sufferings of Christ, ending on Good Friday.
- Homage**, an act of fealty whereby a person acknowledges his service of inferiority to another.
- Home Rule**, the term applied to a separate Irish Parliament, which was the object of two Bills introduced by Mr. Gladstone in 1886 and 1893, both of which were rejected, and led to the establishment of a Liberal Unionist party of seceding Liberals. Mr. Asquith introduced a new Home Rule Bill on February 12, 1912. In September strong counter demonstrations, headed by Sir Edward Carson, took place in Ulster; the Bill passed the Commons but was

rejected by the Lords. On the outbreak of war party politics were set aside, and ultimately the Bill was allowed to pass, its operation to be delayed until after the war. In 1920 another Bill was passed in lieu of that of 1914, providing for a Northern Ireland Parliament, sitting at Belfast and a southern Parliament sitting at Dublin. In 1921 a Bill was passed establishing the Irish Free State, later known as Eire. The Republic of Ireland Act, Nov. 1948, established the Irish Republic as a sovereign independent state outside the British Commonwealth.

**Homer** (Omer), an ancient measure of capacity used in Syria, Palestine and Babylonia.

**Homicide** (the killing of a human being) has three classifications—*justifiable*, as when the killing is an act of necessity, or performed in the execution of justice; *excusable*, when done in self-defence or by misadventure; and *felonious*, when done of deliberate intent, as murder, manslaughter and suicide.

**Homily**, something between a discourse and a sermon; not so discursive as the one, or so elucidatory as the other.

**Honey**, the sweet syrup formed by bees from the nectar of flowers, the sucrose in the nectar being converted into a mixture of the simple sugars, glucose and fructose.

**Honeydew**, a viscid secretion, from plant lice (aphids), found on leaves, chiefly in hot weather, and looking like dew.

**Honey-eater**, an Australian bird (of which there are many species) provided with a long curved bill, and tufted tongue. It lives by sucking the "nectar" from the flowers which abound in rural parts of Australia and New Zealand.

**Honours of War**, a privilege sometimes conceded to a defeated force of marching out of the place surrendered with colours flying and drums beating.

**Hookah**, an Oriental pipe for tobacco smoking, the smoke being drawn through the water of a glass goblet by means of a long flexible tube.

**Hook-money**, an old silver currency of Ceylon, in use in the 17th century, consisting not of coinage, but of hooked pieces of actual silver.

**Hookworm**. A minute roundworm (*nematode*) parasitic on man, causing the disease called also hookworm or ankylostomiasis. It passes through a larval stage in the soil and then penetrates into its human host through the skin, particularly the skin of the feet. It is then carried in the bloodstream to the lungs, whence it passes to the gut via the pharynx. A heavy infection results in acute anemia and severe debility. The disease is widespread, but most prevalent near the Equator.

**Hoopoe**, a remarkably handsome bird with vivid black and white-barred wings and tail and black-tipped crest which opens like a fan. Ranges over Europe, Asia, and Africa and occasionally visits Britain in the spring. Other species are confined to Africa, Madagascar, and India.

**Hoplite**, the name given to a heavily armed foot soldier in ancient Greece, carrying a shield and javelin, and wearing a helmet and armour.

**Hops**, the female "cones" of the hop plant used in brewing; their essential oils give beer an aromatic flavour, and their tannin and resin act as a preservative as well as accounting for the bitter taste desired. The hop is a perennial climber belonging to the mulberry family. The male and female organs are on separate plants; as only the female flower-heads are commercially useful, female plants predominate in a hop garden, only a very few male plants being grown so that the female flowers can be fertilised.

**Horary**, a term used of the arc which a celestial body describes in an hour, or the angle which that arc subtends, the eye of the onlooker being supposed to be at the angular point.

**Horizon**, the limit of vision, the apparent line where sea and sky, or land and sky meet. This is termed the *sensible* or visible horizon. An ordinary person at the height of 5 feet can see for 3 miles, at 20 feet 6 miles, at 50 feet 9½ miles, and at 1,000 feet 42 miles. The figures are approximate.

**Hormone**, a distinct chemical substance produced by an endocrine or ductless gland which causes a physiological reaction in another organ (or organs) to which it is carried by the bloodstream. Examples are: insulin (secreted by

the pancreas), thyroxine (thyroid gland), adrenaline (adrenal glands), and sex hormones. (See Glands, "Medical Dictionary.")

**Horn** or **French Horn**, a brass instrument of the trumpet family (i.e., played by three valves) whose tube is very thin and long (Horn in F = 12 ft.). In consequence the tube is curled in a complicated manner. Owing to the sweet tone it is capable of producing, the Horn sometimes plays as part of the wood-wind.

**Hornbill**, large bird found in Africa and oriental regions, remarkable for its having an immense horned upward-curved helmet, growing over its downward curved beak. It inhabits tropical regions, and feeds on fruits. When the female has laid her eggs in the hollow of a tree, the male bird stops up the entrance, and keeps her imprisoned until the hatching is completed and the young ones are able to fly. There are several species.

**Hornblende**, a hard common mineral, a silicate of calcium, magnesium, iron and aluminium, of a dark green colour. It is a constituent of numerous rocks, including diorite, syenite, and hornblende schist.

**Horn Book**, a children's alphabet and primer which had a cover of thin horn. It was in use until about a hundred years ago.

**Horned Viper**, a curious African genus of *Viperidae*, with a small pointed bone over each eyebrow; a venomous species, found in Egypt, is thought by some to be identical with the "adder" mentioned in Genesis xlix. 17.

**Hornet**, a general name for many of the bigger wasps. It usually nests in hollow trees, and despite its rather fearsome appearance does not sting unless unduly provoked.

**Hornpipe**, an old English single-step dance, which used to be executed to the music of an ancient hornpipe, hence its name.

**Hornstone**, a dark flint used for flint mills in potteries.

**Hornswink**, a popular name for the lapwing.

**Horology**, the science of time-measurement, including the construction and management of clocks, watches, etc. Instruments of this kind are not known to have existed before the 12th century, and until the introduction of the pendulum in the 17th century, clocks were ill-regulated and inaccurate. The time-recording mechanisms of the present day include (a) the *clock*, which shows the hours and minutes by hands, and strikes the hours, and sometimes quarters; (b) the *timepiece*, which is not generally a fixture and shows the time, but does not strike; (c) the *watch*, which is a pocket time-keeper; (d) the *chronometer*, which indicates the minutest portions of time; (e) electric timepieces, mains electric clocks; (f) the highly accurate quartz-crystal clocks used for astronomical purposes. See also Clocks.

**Horoscope**, an astrological term, indicating the reading of the signs of the planetary bodies, according to the methods of the astrologers, at the date of a personal nativity, or other given date. In ancient times there were astrologers attached to the various courts, and their "castings" and predictions had many believers.

**Horse Chestnut**, one of the large forest trees, with ample branches and full foliage, and much esteemed for parks and ornamental grounds. The bark and fruit seeds yield substances of commercial value, but the timber is not worth much. The tree came originally from Asia about the 16th century.

**Horse Guards**, the building in Whitehall which until 1872 was the headquarters of the Commander-in-Chief of the British Army. The archway is still sentinelled by mounted guards.

**Horse Latitudes** are the belts of calms between the regions of the trade winds and the westerlies of higher latitudes. At one time when ships transporting horses were becalmed in these belts the horses were thrown overboard.

**Horse, Master of the**, the Court official having charge of the royal stables, the provision of horses, carriages, and motor-cars for the royal family. The duties are actually carried out by the Crown Equerry.

**Hospice**, a place of refuge and rest for travellers and pilgrims. The most famous is that of the St. Bernard Pass, where dogs are kept for the succour and help of belated wayfarers.



**Hospitallers, Knights**, were of the order of St. John of Jerusalem, at first devoted to the aid of the sick, but afterwards military monks, who became prominent figures in the Crusades of the 12th century; in the 16th century they had the island of Malta given to them and continued there until dislodged by Napoleon in 1798. There has been some attempt to revive the order, and the modern English institution of Knights of St. John commemorates the old name and continues something of the original service. (See *Templars and Teutonic Order*.)

**Hospitals**. The earliest hospital is supposed to have been at Caesarea in the 4th century. In the 7th century the Hôtel Dieu was founded in Paris; in the 9th century there were 24 hospitals in Rome. Some of the earliest hospitals of Great Britain are in London; St. Bartholomew's 1123, Bethlehem 1247, St. Thomas's 1213, Westminster 1720, Guy's 1724, London 1740. The British hospitals have in the past been largely dependent on voluntary contributions. There are excellent equipped medical schools attached to most general hospitals, and expert research workers are engaged on the investigation of diseases. The best physicians and surgeons give their services free to the hospitals. (See *The National Health Service*, p. 806.)

**Hôtel des Invalides**, the famous military hospital and soldiers' home in Paris, founded in 1670, and one of the attractions of the city in later years, as it contains the tomb of Napoleon.

**Hottentots**, name given to certain African natives by Dutch settlers in the 17th century. They used to occupy the greater part of Cape Colony, and though driven out a number still survive in S.W. Africa. Appear to be related to the Bushmen, though their culture is more advanced. In addition to herding, they practise some farming and know how to smelt iron.

**Hounds** are dogs that were originally bred and trained for hunting, such as the greyhound, foxhound, bloodhound, wolfhound, deerhound, beagle, harrier, etc., but now often kept also as domestic dogs. The greyhound, deerhound, and wolfhound hunt by sight, the others, with the bloodhound first in order, track by scent.

**Hour-glass**, a glass instrument tapering to the middle to a narrow orifice, through which a sufficient quantity of fine sand gravitates to mark an hour of time. When the sand has run through from one end, it can be reversed and made to count the hour in the opposite direction. The same kind of glass with smaller supplies of sand will indicate shorter periods, as an egg-glass, which runs its course in three minutes—time to boil an egg by.

**Hours**, according to the Koran, are beautiful nymphs of paradise set apart to attend upon the "faithful" Mohammedans as they enter the celestial abode.

**House Flies** abound in all countries and are exceedingly prolific. Their eggs are hatched within 24 hours of being deposited, and full maturity is attained in a month. They feed mainly on decayed animal and vegetable matter.

**Hovas**, the dominant tribe in Madagascar until the French took possession of the island in 1895.

**Howdah**, a railed, canopied seat fitted on to the back of an elephant for conveying people in. The name is also given to a somewhat similar contrivance for the backs of camels.

**Howitzer**, a cannon, short and light in proportion to its bore, used for throwing shells and case-shot, and requiring a comparatively small charge.

**Howler Monkey**, a species of South American monkey noted for a laryngeal conformation which enables it to emit a loud reverberant noise something between a yell and a howl, as the name suggests. The peculiarity is developed most strongly in the males, which are the largest American species.

**Hoy**, a small sloop-rigged vessel usually engaged in light traffic, such as conveying passengers and goods from the shore to steamers, or *vice versa*.

**Huanuco-bark**, a medicinal bark, brought from the Peruvian town of that name, and derived from the *Cinchona micrantha* tree.

**Huckaback**, a kind of strong linen cloth, with one side rough; generally used for towellings.

**Huguenots**, a name applied to the French Protestant communities of the 16th and 17th centuries. Henry of Navarre, by the Edict of

Nantes in 1598, granted them religious freedom, but more than a quarter of a century before—August 24, 1572—thousands had been put to death in the massacre of St. Bartholomew. The revocation of the Edict of Nantes by Louis XIV. in 1685 drove thousands into exile in England, Holland, Germany, and America.

**Hulsean Lectures**, a series of from four to six lectures delivered annually by a selected preacher before the University of Cambridge on Scriptural subjects, under the provision of the will of John Hulse, who died in 1790. There is also a Hulsean professorship of divinity at the same university, established in 1860 in substitution for the office of "Christian Advocate" originally founded by Hulse.

**Humane Society**, Royal, instituted in 1774 to collect and circulate the most approved and effectual methods for recovering persons apparently drowned or dead; to provide suitable apparatus in and around the Metropolis for rescuing persons from drowning; to bestow rewards for the preservation and restoration of life; and to encourage swimming exercises at public schools and training-ships with reference to saving life from drowning. Supported by voluntary contributions.

**Humanism**, represents a system of education based not only on the Greek and Latin classics but also on the civilisation of the Renaissance.

**Humble-bee or Bumble-bee**, the common name of the insects of the genus *Bombus*, of the Hymenoptera order. They live in small communities comprising males, females, and neuters, their habitations being underground. They do not have one queen bee only like the hive bee, but several females occupy the same nest, and these alone live through the winter, breeding and forming new colonies in the spring. Although this large bee buzzes loudly, it does not sting.

**Humidity**, the state of the atmosphere with respect to the water vapour it contains. "Absolute humidity" is defined as the density of the vapour present, while "relative humidity," more frequently employed, indicates the degree of saturation, i.e., the ratio of the actual vapour pressure to the saturation vapour pressure at the particular temperature, expressed as a percentage.

**Humite**, a mineral of the Chondrodite variety, crystalline and translucent, brownish-yellow to white in colour, composed of magnesia, silica, fluorine, and protoxide of iron.

**Humming Birds** are so called because of the humming noise made by the vibration of their wings in flying. They are of radiant plumage, and in size they are among the smallest birds. There are from four to five hundred species, and they are confined wholly to North and South America, being most numerous in the tropical latitudes. They have long, slender bills and tubular tongues which reach down into flowers to suck up the nectar on which they feed.

**Hummum**, the original name for what is now called the Turkish Bath in this country. One of the first of these baths to be established in London was the Hummums in Covent Garden.

**Hundred**, the ancient divisional name given to a portion of a county for administration or military purposes. It is supposed to imply the territory occupied by a hundred families; or the space of a hundred hides of land, or the capacity of providing 100 soldiers. Each hundred has its hundred court, with powers similar to those of a manor court, but this was abolished in 1867 by County Court Act.

**Hundred Days**, the interval of time between Napoleon Bonaparte's entry into Paris after his escape from Elba and his departure after his abdication, extending from March 20, 1815 to June 28. During this period occurred the battle of Waterloo, June 18.

**Hundredweight** in Great Britain is 112 lb, avoirdupois; in the United States it is an even 100 lb.

**Hundred Years' War**, a term applied to the almost incessant contest between England and France, lasting from 1338 to 1453, including such famous battles as Crécy, Poitiers, and Agincourt, and engaging successively Edward III., Henry V., and Henry VI., among English kings.

**Huns**, a fierce Asiatic race which swept over eastern Europe in the 4th century. Under Attila about the middle of the 5th century they obtained control of a large portion of central

and eastern Europe, forcing even Rome to pay tribute. Their defeat at Châlons-sur-Marne in 451 and the death of Attila in 453 terminated their empire.

**Hunterian Museum**, a celebrated collection of anatomical specimens originated by John Hunter, the distinguished surgeon and physiologist, towards the end of the 18th century in London, and now in the possession of the Royal College of Surgeons. Dr. William Hunter, the brother, founded a Hunterian Museum at the University of Glasgow.

**Hurdy-Gurdy**, an Italian rustic so-called musical stringed instrument of the lute order, the sounds of which are produced by the action of a rosined wheel turned by the left hand, the notes being made by the fingering of the right hand.

**Hureaulite**, a transparent, almost colourless mineral, found in granite measures at Limoges, near Hureau.

**Hurricane**. (See *Cyclone and Wind*.)

**Hussites**, followers of John Huss, the Bohemian reformer and disciple of Wyclif, who was burned at the stake in 1415. After their leader's death, the Hussites became a formidable body, and took up arms on behalf of their faith, their religion being strongly imbued with political feeling. In spite of persecution they survived until the Reformation.

**Hyæna**, a carnivorous quadruped of which there are three species: striped, or laughing hyæna common to North Africa, India, Syria, and Persia, and noted for the peculiar cry from which its name is derived; the brown hyæna, with long shaggy hair, a native of Southern Africa; and the spotted hyæna, also confined to Africa. They have great jaw-power, and are of nocturnal habits.

**Hybrid**, an animal or plant produced by the union of two distinct species.

**Hydra**, an aquatic animal of simple structure, whose body is in the form of a cylindrical tube, with a disc-shaped base by which it attaches itself to any shifting substance. Its mouth is surrounded by tentacles by which it catches its food. The Hydra has the power of reproducing lost parts.

**Hydrates** are compounds containing water of crystallisation.

**Hydraulic Press**, perfected by Joseph Bramah, the inventor, in 1795, is a useful apparatus, the pressing power of which is obtained by the action of water. Two plates, the upper one movable and attached to a large piston, the lower one fixed, are contained within two uprights. The movable piston works in a cylinder of water in connection with a small force-pump, and the pressure is applied by moving a lever which brings a well-known hydrostatic law into operation, and presses the material between the two plates to the required degree. The hydraulic press is largely used for compressing articles for packing, and for extracting purposes.

**Hydraulic Ram**, a form of automatic pump, used to raise water to a height by the action of its own falling velocity.

**Hydraulics**, the science of applied hydrodynamics, or water-machine engineering, ranging from pumps to marine engines.

**Hydrocarbons** are compounds of carbon and hydrogen. They include the *paraffins*, which are saturated compounds (e.g., methane); the ethylene, acetylene and other series which are unsaturated; compounds with ring structures, e.g., benzene, naphthalene, and anthracene. Petroleum is composed almost entirely of hydrocarbons.

**Hydrochloric Acid**, a colourless gas, consisting of hydrogen and chlorine, and resulting in considerable quantities as a bye-product of the soda-ash or salt-cake manufacture. Its solution forms the common hydrochloric or muriatic acid of commerce. It is present to the extent of nearly half a per cent. in the digestive juice secreted by the stomach.

**Hydrocyanic Acid**, cyanide of hydrogen or prussic acid; very poisonous, and of the odour of bitter almonds. Discovered by Scheele in 1782.

**Hydrodynamics**, the science of fluids in motion.

**Hydrofluoric Acid** is obtained by distillation of fluorspar with sulphuric acid, and is a compound of fluorine and hydrogen. Its action is

highly corrosive, it is a valuable agent in etching on glass, and is a rapid decomposer of animal matter.

**Hydrogen**, a colourless gaseous element and the lightest of all substances. Cavendish in 1766 was the first to recognise that it was an element. It is 14·4 times as light as air, and is found in a free state in volcanic regions. It can be obtained by the action of metals on acids, and when burned in air combines with oxygen to form water. Commercially it is used to produce the very hot flame of the oxy-hydrogen blow-pipe for cutting metals; to fill balloons and airships; to harden certain oils and render them suitable for margarine- and soap-production.

**Hydrography**, the science of water measurement, as applied to seas, rivers, lakes, currents, rocks, reefs, etc., and embracing the whole art of navigation.

**Hydrometer**, an instrument for measuring the specific gravity of liquids, especially for ascertaining the strength of spirituous liquors and solutions. It is usually in the form of a glass bulb, to the lower end of which a smaller bulb, containing mercury, is attached, which forces the instrument to sink into the liquid which it is to test. The larger bulb has a scale fixed to it, and the indication on this scale of the sinking point shows the specific gravity. There are many varieties: Twaddell's—a pear-shaped bulb containing mercury; Beaumé's, of similar construction, but applicable to liquids both heavier and lighter than water; Sykes's, largely employed for determining the strength of alcohol; and Nicholson's, used for taking the specific gravities of solids.

**Hydrophathy**, the method of treating disease with water, either by bathing or drinking. Natural springs of special chemical and therapeutic properties, such as sulphur springs, and other mineral sources, have been used since prehistoric times for this purpose. It is probably one of the most ancient methods of cure. Recently the beneficial effects of pure water treatment have been advocated. Hydropathic establishments have been set up in many health resorts.

**Hydrophilus**, the largest genus of water beetles, including the giant water beetle, which is of a shiny black and measures 1½ in. in length, and is common in N. America. There is also a European species (*H. piceus*), which is not quite so large.

**Hydroponics**, the culture of plants without soil. The plants are grown with their roots dipping into a solution of nutritive mineral salts; or they may be rooted in sand which is watered with such a solution.

**Hydrostatics**, the science of the pressure and equilibrium of liquids that are non-elastic.

**Hydrozoa** are, zoologically, a low order of water animals of the *Ctenophora* sub-kingdom to which Hydra (*vide*) belongs. In one order of the Hydrozoa, free-swimming colonies showing marked division of labour between the individual units occur; this order includes the Portuguese man-of-war.

**Hydrus**, a constellation of the southern celestial hemisphere commonly called the Southern Snake.

**Hygiene**, the science of health in its broad significance, the study of sanitary conditions, and the application of the laws of health generally. The progress made in hygienic science during the last hundred years has led to many legislative enactments and preventive measures which have resulted in a great improvement in the general standard of public health.

**Hygrometer**, an instrument for measuring the amount of water vapour in the atmosphere. A simple form of hygrometer, known as the wet-and-dry bulb, consists of two vertical thermometers affixed to a frame. One bulb is exposed to the air, and the other is covered with muslin which dips into a water-bath to keep it moist. If the air is saturated, it takes up no moisture from the wet bulb and the two thermometers read the same. If the air is not saturated, evaporation takes place from the wet bulb, latent heat is absorbed from the air, and the temperature of the wet bulb is lower than that of the dry bulb. Relative humidity and dew-point of the air can then be derived from suitable tables. Hygrometers depending



upon the expansion of human hair and gold-beater's skin and the deposition of dew on a polished surface, when cooled sufficiently, are also in general use. (*See Humidity.*)

**Hymenoptera**, the order of insects to which bees, wasps, hornets, ants and sawflies belong. They are notable for having four wings, the hind pair smaller than the front pair, to which they are attached by a row of hooks. They have mouths and tongues which enable them to bite, or to bite and suck, and the females possess an ovipositor used both for depositing eggs and stinging. There are about 70,000 species in this order.

**Hyperbole**, a rhetorical term implying extreme exaggeration for the sake of effect, and often indulged in by emotional orators, as well as in ordinary speech.

**Hypersthene**, a crystalline mineral of a grey-green colour, found foliated and massed in igneous and metamorphic rocks. It is a silicate of iron and magnesium, and has been met with in Cornwall, Northern Europe, and Tyrol, and North America.

**Hypnosis**, also known as Mesmerism, is an increased degree of suggestibility which sometimes leads to superficially puzzling phenomena. It must have been known in the East for many centuries, but was rediscovered towards the end of the 18th century by the Viennese Anton Mesmer, after whom it was named Mesmerism. The discovery created a sensation all over Europe at the time; for Mesmer was, although brilliant, somewhat of a charlatan and made the most fantastic claims. In his salons in Paris he claimed to cure all sorts of diseases by the new method, and since many illnesses are, in fact, neurotic in origin, numerous patients were cured (*see under Neurosis* in "Medical Section"). Mesmer believed that his cures were due to what he called "animal magnetism"—a physical influence passing from the operator to the patient, but this is now a discredited belief. As the British physicians Elliotson and Braid and the Frenchmen Charcot and Bernheim showed, hypnosis is a purely psychological state of increased suggestibility due to the influence of the operator on the patient in the emotional sense. There is nothing mystical about it. Nevertheless, the states which can be produced by hypnosis are astonishing enough: the patient can be put to sleep or can be made unable to feel pain so that a limb can be removed while he is in this state; he can be paralysed so that he is unable to move, and even blisters can be produced on the skin by the suggestion that it is being burned with a hot piece of metal.

**Hypocaust**, an arched fire vault or chamber through which heat is distributed to rooms above. Used in the baths of ancient Rome.

**Hypostyle**, an architectural term, designating a colonnade or pillared hall, such as in the famous hall of Karnak.

**Hypothec**, a Scottish legal term implying a landlord's lien on his tenant's cattle, sheep, and produce for rent. No right of hypothec has existed since 1880, where the land exceeds 2 acres.

**Hypothenuse**, the name given in geometry to that side of a right-angled triangle which is opposite to the right angle.

**Hypothesis**, an imaginary theory set forth in such a manner as to illustrate by parallel the force of some other theory which it is sought to demonstrate.

**Hypsometer**, an instrument formerly used by mountaineers to find the height above sea-level by indirectly measuring the atmospheric pressure by determining the boiling point of water at the particular height. Based on the fact that as pressure decreases with height so the boiling point is lowered. Superseded by the aneroid barometer.

**Hyrax**, an animal of the order *Hyracoidea*, possessing a cleft upper lip like the hare, molar teeth shaped similar to those of the rhinoceros, and in other respects showing ordinary rodent characteristics. It has a brown fur, and is confined to Africa, Syria, and Arabia.

**Hyssop**, a labiate plant, with blue flowers, growing wild in Southern Europe, and yielding a kind of

camphor; at one time largely used medicinally as an anti-spasmodic and carminative.

## I

**Iambic Verse**. (*See Metre.*)

**Ibex**, wild goats of several species found in the mountain regions of Europe, Asia, and Africa. The male has exceedingly large curved ridged horns. The species that lives in the Alps is called the steinbok or bouquetin.

**Ibis**, belongs to a family of birds related to the stork. The sacred ibis of ancient Egypt is now extinct in Egypt but is found in the lakes and swamps of the Sudan near the Upper Nile. It has white and black plumage and a long curved beak. Other species are found elsewhere, the Glossy Ibis (black plumage glossed with purple and green) occasionally visiting England.

**Ice** is frozen water. It is a colourless, crystalline and brittle solid. Being only 92 per cent, as dense as water, it floats on the latter; the expansion which occurs as water changes into ice causes the fracture of water-pipes, though the fracture only becomes obvious when the ice melts and leaks out through the crack. The temperature at which ice forms is 0° C. 32° F. Ice can be melted by pressure, and the ease and smoothness with which one is able to skate on ice depend on this phenomenon.

**Ice Age**, Great, began at the end of the Pliocene period more than half a million years ago when immense glaciers and ice sheets extended over large areas of the continents. There were four cold periods known as the First, Second, Third, and Fourth Ice Ages, separated by interglacial periods when the climate was warmer. During the Pleistocene Ice Age, as the Great Ice Age is sometimes called, the ice sheets in the British Isles reached as far south as the Thames valley. (*See also Glacial Epochs, Pleistocene, and p. 163.*)

**Icebergs** are detached masses of glacier which subside into the sea and float as wind or current may take them. About one ninth of an iceberg is above sea-level. The North Atlantic is the chief home of icebergs, which reach the ocean from the ice-clad plateaux of Greenland. Some of these floating masses of ice are of enormous proportions, and constitute in the spring and early summer seasons a great menace to the safety of ships, as was disastrously shown in the *Titanic* catastrophe of 1912. For some years past these menaces to N. Atlantic shipping have been kept under close observation by vessels specially detailed for this work.

**Ice-breakers** are heavy bow-plated boats used for breaking up ice on navigable rivers, and, in the Baltic and on the St. Lawrence in Canada especially, have the effect of considerably shortening the ice-bound period each winter.

**Ice-floe**, a small ice-field or sheet of floating ice, liable to be frozen to other ice-floes, imprisoning any ship enveloped.

**Iceland Dog**, a kind of white shaggy dog which was in former times a great domestic favourite, but is now little seen in this country.

**Icelandic Literature**, the Old Norse, which includes numerous works of poetry, mythology, and history of interest and importance. (*See also Edda.*)

**Iceland Moss**, a kind of lichen (*Cetraria*) which grows in great quantities in the mountain regions of Iceland and other Northern countries. It possesses certain nutritive qualities and is of some value in medicine.

**Iceland Spar**, a colourless form of calcite (calcium carbonate), frequently found in association with metallic ores; it has the power to produce strong double refraction of light so that two images are seen of an object viewed through a piece of Iceland spar.

**Iceni**, an ancient British race who in early times lived in Norfolk and other parts of Eastern England. Their most famous ruler was Queen Boadicea, who led her people against the Romans in A.D. 61.

**Ice Plant**, also called "dew plant" and "diamond plant." A South African mesembryanthemum commonly grown in British gardens. Its name is derived from the fact that the leaves are covered with small glistening bladder-shaped hairs that look like ice crystals.

**Ice Saints, St. Mamertus, St. Pancras and St. Servatius**, so called because of the legendary cold on these Saints' Days, namely, May 11-13.

**Ichabod**, signifying "the glory is departed," was the name of the son of Phineas, born after the latter was killed in fighting against the Philistines.

**Ichneumon**, the Egyptian mongoose, popularly known as "Pharaoh's Rat." It is of great use in checking the multiplication of reptiles. It is frequently domesticated.

**Ichneumon Fly**, a numerous group of hymenopterous insects abounding in many lands, and all having the peculiarity of depositing their eggs in the bodies of other insects. It destroys swarms of caterpillars, which become the unwilling hosts of its progeny.

**Ichthyography**, the art of drawing plans of everything connected with the ground floor of a building or site.

**Ichthyol**, a liquid used for rubbing on the skin in certain diseases, and obtained by distillation of a mineral in which fossil fish is found.

**Ichthyology**, the department of zoological science which concerns itself with the structure and variation of fishes, their habits and distribution.

**Ichthyornis**, a fossil bird with teeth discovered in the cretaceous strata of Kansas. About 8 in. in height.

**Ichthyosaurus** was a gigantic marine reptile of the Mesozoic age. The fossils are mostly found in the lias formation. Some were not less than 30 ft. in length.

**Iconoclasts** were originally an Eastern sect of the 8th and 9th centuries, whose object was to prevent the worship of, and to destroy, images used in religious rites. Also any Protestant who took part in or supported the destruction of images in churches in the 16th and 17th centuries. The term has been applied in modern times to enemies of religious beliefs generally.

**Iconoscope**, a form of electron camera used in television.

**Idea**, in its planitonic significance, had reference to what a thing seemed rather than the actuality, but in later philosophies an idea is, as Locke expresses it, "whatsoever the mind perceives in itself."

**Idealism**. Idealism is the belief that there is no matter in the universe, that all that exists is mind or spirit. Most philosophers have held that there were two principles, mind and matter; a few that the only reality was matter (see Materialism). Kant, Descartes, Locke, and even Plato believed in both spirit (mind) and matter; for, if Plato is often considered to be an idealist, he did believe that the universe contained physical objects, although spirit alone was the "real" world. Berkeley (1685-1753), a great British divine and philosopher, later Bishop of Cloyne in Ireland, was an idealist who believed that the universe was an idea in the mind of God, but the great period of pure idealism was 19th-century Germany. Fichte, Schelling, Hegel, Lotze, Schopenhauer, and Schleiermacher are its main philosophers. Fichte believed that the whole universe was God (that is to say, he was a Pantheist—one who believes that God is everything). Schelling thought that the universe was a world-spirit, which, however, only became self-conscious in man. Lotze believed that the universe was alive and was mind; Schleiermacher that God was the source of all life, but was more than the universe. Hegel, the greatest of the idealists, believed that the universe was a process of thought in continual evolution; in nature the process is unconscious, but in man the process becomes fully self-aware.

**Ides**, in the ancient Roman Calendar, the 15th of March, May, July, October, and the 13th of all other months; always the eighth day after the Nones.

**Idiograph**, a mark, signature, or flourish peculiar to any individual; a trade mark is an idiograph.

**Idiom**, an expression characteristic of a country, district, dialect or language, which usually gives strength and force to a phrase or sentence. The idioms of a language are its distinctive marks, and the best writers are the most idiomatic.

**Idolatry**, the worship of idols, images, inanimate objects, animals or symbols. A kind of idolatry existed in all primitive modes of existence, and

instances are numerous in the earliest records. In their most symbolised form images have a considerable part in the rites of the Roman Catholic Church.

**Idols** are images or effigies which are made objects of worship and are usually of wood or stone, but sometimes of ivory or more precious materials, and attain their symbolic significance after being put in the places destined to receive them, when they are made objects of veneration by some religious dedication.

**Idris**, a famous giant belonging to the myths of Wales, commemorated by a chair of rock on the top of the Cader Idris mountain in Merionethshire.

**Idyll**, a poem or story of a simple or pastoral kind dealing with rural characters and events for the most part, but sometimes used in a broader sense, notably in Tennyson's "Idylls of the King," which are of a distinctly imaginative form.

**Ignatian Epistles**, letters bearing the name of St. Ignatius, the authenticity of which is now generally accepted, and in their several forms exercised great influence in mediæval times. Fierce controversy raged around them in the 17th century, because of their strong support of episcopacy, and a good deal of doubt was thrown upon their genuineness.

**Igneous Rocks** are such as have been molten under conditions of great heat at some stage in their history: e.g., granite, basalt.

**Ignis Fatuus** or "Will-o'-the-wisp," a phosphorescent light which may often be seen on summer and autumn evenings hovering over marshy ground or graveyards. Its nature is hardly understood, though it is generally believed to be the result of the spontaneous combustion of the gases from decaying organic matter. In olden times when marshy grounds were more common than now, this "dancing light" was very frequently visible and was regarded with superstition.

**Ignorantines**, a Roman Catholic Order founded in 1679 at Rheims, reorganised by Jean Baptiste de la Salle and intended for special ministration among the children of the poor. The name "Ignorantine" was given to them because the admission to the order of priests with a theological training was forbidden.

**Iguana**, large South American lizards, with a long tail, a scaly back and head, a thick fleshy tongue and a prominent dew-lap in the throat. Specimens of the different species average 4-5 ft. in length, and they live mostly in trees, though they are equally at home on land or in the water. The flesh of some species is good eating, as are also the eggs.

**Iguanodon**, a genus of extinct dinosaurs, whose fossils are found in the jurassic and cretaceous rocks. Iguanodons were 15-25 ft. long, and walked on their hind legs, the front legs being small and adapted for grasping the branches of trees on the leaves of which they fed.

**Ilex**, mentioned by classical authors, is the holm- or holly-oak, which flourishes round the Mediterranean. To botanists Ilex is the genus to which the holly and maté plant belong.

**Iliad**, the great epic poem of ancient Greece, for many years attributed to Homer (c. 850 B.C.), though the opinion is now widely held that the epic is the work of a series of poets from about 750 to 550 B.C. It consists of ancient folk tale and saga, welded into an artistic unity, having as plot the carrying off of Helen by Paris to Troy and the subsequent siege of Troy.

**Illinium**, an element classed among the rare-earth metals. Discovered in 1926 by Harris, Yntema, and Hopkins.

**Illuminated MSS.** of great value and beauty of decoration exist in most public museums and in many private collections, some of them being of great antiquity, especially those of ancient Egypt executed on papyrus. Greek and Latin specimens are also numerous, and the British Museum contains fine examples of all these kinds and also an extensive collection of mediæval English MSS.

**Illuminati**, the name by which certain religionists of the 16th, 17th, and 18th centuries were known. They claimed the possession of superlative knowledge in everything pertaining to religious doctrines, rites and ceremonies, but



were not at any time a very numerous body. An Order of the Illuminati was formed at Ingolstadt which was a secret society, and professed to free religion and politics from superstition and despotism. It has some similarity to freemasonry.

**"Illustrated London News,"** the first of the weekly pictorial papers to be published in England. It was originated by Mr. Herbert Ingram, a Boston printer and newsagent, in 1842, and was a pronounced success from its foundation. The idea occurred to Mr. Ingram after he had noticed what an immense "run" there had been on a few crude pictures which one of the ordinary weekly papers had given of incidents connected with the Greenacre murder.

**Ilmenite**, a mineral widespread in igneous rocks: chemically it is an oxide of iron and titanium. Rich deposits have recently been found in the Allard Lake area of Quebec; the Travancore sands are also a source of ilmenite.

**Images**, in the form of carved, sculptured, or painted objects, have been regarded as aids to worship, by primitive races, and also in various Christian Churches from early times, but since the Reformation have been prohibited in the Church of England.

**Imagination** is the creative power and faculty enabling the mind to picture to itself scenes, events, and persons of which a person may hear or read, and in its more intense form constitutes the genius by which the poet, the novelist, the historian, the painter, and the musician attain their idealisations.

**Imam**, a Mohammedan religious title borne only by princes or leaders of the faith.

**Imbrex**, an architectural term given to the covering tile of the ancient roof.

**Immaculate Conception**, the dogma that the Virgin Mary was absolutely pure and sinless from the womb, after being a fierce subject of controversy for many centuries, was on Dec. 8th, 1854, expressly proclaimed by Pope Pius IX. to be an established doctrine of the Roman Catholic Church. Dec. 8th is the festival day of the Immaculate Conception in the Roman Church, and Dec. 9th in the Greek Church.

**Immolation**, the act of sacrificing a living object or objects for the propitiation of the Almighty, or, in classic days, the gods.

**Immortelles** are wreaths, crosses, or other designs made from what are called everlasting flowers, which are obtained from certain plants of the Composite order, and retain their colours and compactness for a long time. Immortelles are largely used as mementoes for decorating graves, especially in France.

**Impact**, in kinetics, is the impingement of two bodies one against the other. The principle of conservation of momentum states that total momentum of two bodies before impact is equal to their total momentum after impact.

**Impeachment**, a special arraignment, usually before Parliament or other high tribunal, of a person charged with some offence against the State. The custom in England was for the impeachment to be made in the House of Commons, and the trial to be before the House of Lords. The first instance occurred in 1376 when Lord Latimer was impeached. With present parliamentary procedure, impeachment is no longer necessary, since the Cabinet is responsible for the individual actions of its ministers, who, acting as a team, must carry the Commons with them, or resign, when it falls to the Leader of the Opposition to form a new Cabinet. Other famous impeachments were those of the Lord High Chancellor Francis Bacon (1621), Earl of Strafford and Archbishop Laud (1640), Warren Hastings (1788), the last being that of Lord Melville (1805). Under the constitution of the United States public officials may be impeached by the House of Representatives and tried by the Senate. The most famous case was that of President Andrew Johnson.

**Imperial Institute**, erected at South Kensington as a memorial to the Jubilee of Queen Victoria, by whom it was opened in 1893. Centre for spreading knowledge of the Commonwealth. Permanent exhibitions illustrating life, scenery, and interests of all countries of the Empire overseas. Guide lecturers available. Film shows daily.

Other services include supply of lecturers, film strips and other visual aids, and publications, Chairman of the Board of Governors—Viscount Hudson, C.H., Director—Kenneth Bradley, C.M.G.

**Imperial Service Order**, a decoration confined to members of the Civil Service. Founded in 1902 by Edward VII., it is limited to 700 members.

**Imperial War Museum** is a collection connected with the first world war and consists of war trophies, relics, arms, ship and other models, pictures, photographs, maps, etc., and a library of over 60,000 books. It was opened in 1920 at the Crystal Palace, transferred to Kensington, London, in 1924, and to Lambeth Road, S.E.1, during the winter of 1935-36.

**Impluvium**, a basin or tank in the hall or atrium of an ancient Roman house, serving the purpose of receiving the rain that dropped through the open space in the roof.

**Impressionist**, an artist or author who attempts in his work to convey by broad effects of colour or treatment the impressions which a subject has stamped on his own imagination, apart from detail or form.

**Impressment**, the forced seizure of persons for service on board British war-ships, sanctioned by laws still unrepealed, but not resorted to in this country since the Napoleonic wars.

**Imprimatur**, originally an official licence to print, and an important formula in the early days of printing. The term is now used in the wider significance of authority, stamp, or endorsement.

**Impromptu**, a piece of music for orchestra or solo instrument of informal construction and composed without preparation.

**Impropriation**, a legal term signifying the surrender of a benefice and its revenues into the hands of a layman or lay corporation, carrying with it the obligation to provide for the continuance of the ecclesiastical duties.

**Inbreeding**, mating of closely related animals and plants. Close inbreeding has long been held to be harmful, but this is not necessarily so, for if practised with selection, stock can be purged of the undesirable qualities and the race improved.

**Incarnation**, in Christian theology, designates the doctrine that the Divine Spirit, incarnated in human form in the person of Jesus Christ, has had actual existence on earth, subject to human limitations, yet without losing the Divine essence.

**Incas**, an Indian people who inhabited ancient Peru, founded a great empire, and reached a high level of civilisation; overthrown by the Spaniards in 1533.

**Incense**, an aromatic resinous substance which, under combustion, exhales a pungent odour, and is used, mixed with certain fragrant perfumes, in the celebration of Mass in Roman Catholic churches. Olibanum or frankincense is ordinarily the leading ingredient. It is not used in the orthodox service of the English Church except by the more pronounced Ritualists.

**Incisors**, the sharp-edged cutting teeth at the front of mammalian jaws.

**Incognito**, the dropping of name, identity, or distinctive mark, so as to pass unknown.

**Independence Day**, commemorates the adoption of the Declaration of Independence on July 4, 1776. July 4 is celebrated as a holiday in the United States.

**Independent Television Authority** was set up in August 1954 under the Television Act, 1954, to provide television services additional to those of the B.B.C. Its statute runs for 10 years. The Authority consists of a Chairman (Sir Kenneth Clark, K.C.B.), a Deputy Chairman and eight members. At the head of the Authority's permanent staff is the Director-General, Sir Robert Fraser. Privately financed companies provide the programmes, advertisers pay the programme companies for their advertisements and the Authority itself acts as controlling body.

**Index Expurgatorius** is an index, prepared under the authority of the Roman Catholic Church, of such books as may not be read by the faithful at all, and such as can only be read in part: that is, with what are considered objectionable passages expunged. The first Expurgatorial List was

issued by Pope Paul IV. in 1559 and all later lists have been under direct papal authority.

**India Office Library** (since 1947 called the Library of the Commonwealth Relations Office (Division B)). This is an orientalist library, which specialises in Indian studies. It was founded in 1801 by the East India Company, and contains 20,000 manuscripts in European languages and in Sanskrit, Persian, modern Indian, and other oriental languages, and a quarter-of-a-million printed books, of which three-quarters are in oriental languages. There are also collections of drawings, photographs, and other objects of oriental interest. It is accessible to *bona fide* students.

**Indian Cress**. Popularly known as "nasturtium"; the correct Latin name for the genus to which these plants belongs is *Tropaeolum*.

**Indian File**, marching forward in single formation, as Indians progress through the woods.

**Indian Ink**, a pigment made from lampblack and gum or glue, originally prepared in China and Japan. It is dried and is marketed in small sticks. It is used mainly by artists for shading and lettering.

**Indian Mutiny**. This turning-point in the history of modern India occurred in 1857-58. The ostensible cause was the serving out to the native troops of cartridges greased with animal fat, for contact with this was forbidden both by the Hindu and Mohammedan faiths. A rebellious feeling, however, had long been developing, and when the Sepoys at Meerut in May 1857 refused to obey the English officers, overpowered and put them to death, the mutiny spread like wildfire. The rebels took Delhi and Lucknow, and for many months terrible massacres and atrocities were committed; men, women and children were slain in thousands. Order was re-established in the autumn of 1858 when the governing power was transferred from the East India Company to the Crown.

**Indian Summer** is applied to a warm spell of weather occurring in the late autumn, the term originated in America. There is no evidence that such spells recur regularly in this country.

**Indicators**, substances which by a marked change in colour are used to indicate the course of a chemical reaction. Litmus paper, for instance, is red with acids and blue with alkalis. In biological work some radioactive substances are used as tracer elements.

**Indictment**, a formal document of accusation setting forth the criminal charge or charges upon which a person has to be tried before a proper tribunal. It represents the "finding" of the grand jury, and is framed on the "true bill" returned by that body.

**Indigo**, the substance obtained from the plant *Indigofera tinctoria*, a native of S. Asia, India being the chief producing country. The colouring matter is the result of the decomposition and fermentation of a glucoside contained in the plant. This is afterwards dried and becomes the caked indigo of commerce. Natural indigo has been eclipsed by artificial indigo, a coal-tar dye which came into commercial production at the end of the last century, which is cheaper and more uniform in quality.

**Indium**, a scarce lead-coloured metal found in zinc blende in Saxony and certain other ores. This element was discovered in 1863 by Reich and Richter.

**Individualism**, a theory of government which favours freedom of action on the part of the individual without the interference of the state; opposed to state-planned economy and collectivism. The extreme form of individualism is anarchism.

**Indo-European**, a term used to designate the great Aryan family of languages, which embraces Indo-Iranian, Celtic, Greek, Italic, Slavonic, and Germanic. Basque, Magyar, Turkish, and Finnish do not belong to this family.

**Indra**, an ancient Hindu god, personifying the sky; the supreme object of worship in Vedic times.

**Induction**, in Logic, is an argumentative inference in regard to an entire class of facts, based on actual demonstration as to individual facts comprised in that class. In Physics, it is a term applied to the action or effect produced by an

electrical or magnetic body upon a non-electrical substance near to it but not in actual contact.

**Induction Coil**, an electrical device which converts current of low steady voltage (as from a battery) into a high intermittent voltage. Used for ignition in internal combustion engines.

**Indulgence**. In the Roman Catholic Church the remission of the temporal punishment which often remains due to sin after its guilt has been forgiven by God. The indiscriminate sale of Indulgences by Tetzel and other Papal agents in the 16th century was one of the grievances which led to the Reformation.

**Indulgence, Declaration of**, was the proclamation by which James II. suspended the penal laws against Roman Catholics and Dissenters. It was issued in 1688, but the clergy as a body refused to obey, and the trial of the Seven Bishops and their acquittal by a jury followed. An invitation was thereupon sent to William of Orange to become King.

**Induline**, a group of aniline dyes used for various fabrics, all giving dark blue shades.

**Industrialism**, the pursuit and practice of commerce and industry until these branches become the dominating factors in the economic life of the country.

**Industrial Psychology**. Industrial psychology is the application of the principles of psychology to industry with a view to increased production on the one hand and increased well-being of the worker on the other. Although such an attitude must have existed in a general way for many centuries, the first important experiments in this field were carried out by an American, Frederick Winslow Taylor (known by his associates as "Speedy" Taylor). Born in Philadelphia of Quaker stock at the end of last century, Taylor became chief engineer at the Midvale Iron Works, where he soon became convinced that the traditional ways of doing things were often inefficient. His working principles were: (1) To employ only the best workers. (2) To discover by experiment the simplest motions for carrying out a given job. (3) To stimulate incentive by giving a higher wage for higher production. In this way he was able to raise the amount of iron handled by a worker from 12½ tons a day to 47½ tons. Since then, most industrial psychologists have concerned themselves: (1) with the study of individual differences—finding the worker most suited to the job, and (2) studies of fatigue and the effect of improved lighting, heating, etc., on the worker—i.e., the betterment of working conditions. Prof. Mayo, however, showed at Chicago in 1938 that *what* was done to help the worker was often less important than *how* it was done, that a happy and satisfied working group did better work than one based on purely technical conditions of efficiency. Today people often blame mass-production methods in industry for making work dull, frustrating, and uninteresting; but this is not the reason for industrial frustration at all. It is rather that workers have not been treated as intelligent beings who need to know *what* they are doing, *why* they are doing it, and to *what* end. Work is frustrating, not in terms of what it actually is, but in terms of what it means, or does not mean, and what is frustrating about the industrial situation is not that it implies dull work or hard work or work under bad conditions, but that it often seems to imply meaningless work. One of the greatest discoveries of 20th century medicine has been the rediscovery of the patient. This is of importance because its significance extends far beyond the bounds of medicine into psychology, sociology, and all the social sciences. *See also* "A Citizen's Guide", Industrial Relations.

**Inertia**, a term used in mechanics for the tendency of a body to preserve its state of rest or uniform motion in a straight line.

**Inescutcheon**, a small scutcheon borne heraldically within the shield of ordinary dimensions.

**Infallibility**, the Roman Catholic doctrine that accords the Pope divine immunity from error, in the execution of all that pertains to his pontifical functions. It was first proclaimed as dogma of the Church by the Vatican Council in 1870.



**Infante** was the title of any son but the eldest of the king or queen of Spain or Portugal. *Infanta* was similarly the title of any daughter except one that might be heiress to the throne.

**Infantry**, the portion of an army which consists of foot soldiers equipped with "small arms."

**Inflorescence**, a cluster of flowers upon a shoot. Many arrangements of the flowers are possible and there are many kinds of inflorescence; e.g., the spike, catkin, umbel, capitulum (in composites).

**Infra-Red Rays or Radiation**. This is the range of rays which come between the visible red rays and the ultra-short Hertzian radiation. The wave-lengths involved range from about 0.00076 millimetre (7,600 Angstrom units) to 0.4 millimetre. Infra-red rays penetrate haze; hence landscapes obscured by haze or cloud can be photographed using plates sensitive to infra-red. Many substances strongly absorb these rays and thereby become hot; this happens in toasting bread. Many industries use infra-red lamps for drying paints and lacquers.

**Infula**, a sacred fillet, of woollen material, worn on the head by priests anciently, and by magistrates and rulers on solemn occasions, also by persons fleeing for protection to sanctuary. The infula later became a pendant to the mitre of bishops.

**Ingoldsby Legends**, a series of whimsical metrical tales full of droll humour written by the Rev. R. H. Barham, and first published in *Bentley's Miscellany* in 1837.

**Ink**, a liquid pigment ordinarily made from an infusion of nut-galls, coppers, and gum arabic. Shumac is substituted for nut-galls for inferior inks. An acid is sometimes added to prevent oxidation, and for the blue-black inks a small quantity of solution of indigo serves for colouring. Copying ink contains glycerine or sugar, which keeps the ink moist. Lampblack used to be the leading ingredient in printer's ink but now new methods of manufacturing have been developed. Marking ink is composed of a solution of nitrate of silver, gum, ammonia, and carbonate of soda. For red, blue, and other coloured inks, colouring solutions are used. The earliest examples of ink writing (on wooden tablets) ever found in Britain were recovered from the well of a Roman villa (3rd cent. A.D.) during excavations in 1954 at Chew Stoke, Somerset.

**Ink Sac**, a glandular organ found in squids and other cephalopods which contains an inky solution. When roused the animal discharges the contents of the ink sac into the water, to make a cloud through which its enemies cannot see. The pigment, sepia, comes from the ink sac of the cuttlefish.

**Inlaying** is the introduction of one class of substance into another in some artistic or other design, such as silver let into zinc, copper, or lead, and called *bidri*; the insertion of gold and silver into iron or steel, which is *damascening*; the mingling of brass with tortoiseshell, *buhl work*; the inlaying of woods, *marquetry*; of stone, *pietra dura*; and of the arrangement of small pieces of stone, for floors, walls, etc., *mosaic*.

**Innocents' Day**, a festival day in Roman, Greek, and Anglican Churches in commemoration of the killing of the children of Bethlehem by Herod, Dec. 28th.

**Inns of Court**, the four bodies in London which enjoy the privilege of calling candidates to the bar after they have studied for a certain number of terms and passed certain examinations. The Inns are: the Inner Temple, the Middle Temple, Lincoln's Inn, and Gray's Inn.

**Inquisition**, a Roman Catholic ecclesiastical court which became a formidable weapon of the Church in the 13th century under Pope Innocent III, in dealing with charges of heresy. It was effectively set up in the various Catholic countries of the Continent, obtaining its fullest and most sweeping organisation in Spain in the days of Ferdinand and Isabella, when Torquemada was made Grand Inquisitor, and used its powers with terrible severity. (See *Auto-da-fé*.) In the 18th century its influence began to wane, and although the Congregation of the Holy Office still exists at Rome, its jurisdiction is limited to the suppression of heretical literature.

**Insectivora** are mammals which live almost exclusively on insects and worms. This mammalian order comprises hedgehogs, moles, shrews, etc.

**Insectivorous Plants** are of various orders, and are found in all parts of the world, the *Common Sundew* and the *Common Butterwort* being the best-known British species. These two plants have leaves with sticky hairs which entrap insects. Enzymes from the plant then digest the insects and the soluble compounds so formed are absorbed by the leaves.

**Insects**. This huge class of invertebrate animals includes about 700,000 species. Insects are ubiquitous except in the sea, only a very few species being adapted to marine existence. Characteristic features are: the body is divided into three parts, head, thorax, and abdomen: the head carries a pair of antennae, the thorax three pairs of legs, and usually two pairs of wings. The most primitive insects constituting the sub-class *Apterygota* are wingless. The other sub-class, *Pterygota*, is divided into the *Ecopterygota* (*Hemimetabola*), which have a simple metamorphosis; and the *Endopterygota* (*Holometabola*), with a complex metamorphosis. The fifteen orders of the *Ecopterygota* are: *Orthoptera*, *Isoptera*, *Plecoptera*, *Embioptera*, *Dermaptera*, *Ephemeroptera*, *Odonata*, *Psocoptera*, *Anoplura*, *Thysanoptera*, *Hemiptera*. The *Endopterygota* comprises nine orders: *Neuroptera*, *Mecoptera*, *Trichoptera*, *Lepidoptera*, *Coleoptera*, *Strepsiptera*, *Hymenoptera*, *Diptera*, *Aphaniptera*.

**Insignia**, marks or badges of office or honour, such as stars, ribbons, crosses, medallions or other designating objects, worn by members of special Orders or holders of prominent offices.

**Institut de France** was formed in 1795, and after various modifications was in 1832 organised on its present basis. Its five academies are—the Académie Française, Académie des Inscriptions et Belles-Lettres, Académie des Sciences, Académie des Beaux-Arts, Académie des Sciences Morales et Politiques. It is restricted to 40 members.

**Instruments, Musical**. Musical instruments may be classified in a number of ways, but in general they fall into one of the three main classes, String, Wind, and Percussion, according to how the sound is produced. **Stringed Instruments** are those which produce the sound by the vibration of a string: (a) by plucking, as in Harp, Lyre, Psaltery, Zither, Lute, Guitar, Balalaika, Ukelele, Harpsichord; (b) by friction (bowed), as in Crwth, Rebec, Viol, Violin, Marine Trumpet, Hurdy-Gurdy; (c) by striking (hammered), as in Dulcimer, Pianoforte, Clavichord; (d) by wind (blown), as in the Aeolian Harp. **Wind Instruments** are those in which the air in the instruments is set in vibration: (a) by blowing into a tube (flue-voiced), as in Recorder, Pandean Pipe, Flute, Organ; (b) by means of reeds (reed-voiced), as in Oboe, Clarinet, Saxophone, Bagpipe, Cor Anglais, Bassoon, Organ reed-stops; (c) those in which the sound is produced by the vibration of the player's lips against the mouthpiece (lip-voiced), as in Bugle, Horn, Trumpet, Tuba, Trombone, Saxhorn, Flügelhorn, Cornet. In a modern orchestra these are known as the *Brass*; instruments of the flute, oboe, and clarinet families as the *Woodwinds*. Then there are the **Percussion Instruments**, which include the Drums, Cymbals, Tambourines, Castanets.

**Insulation**, the condition in which an electrified body is prevented from communicating electricity to contiguous bodies by the interposition of a non-conducting material. Glass, shellac, ebonite, and gutta-percha are all non-conductors, and wires obtain insulation by wrappings of cotton or silk.

**Insulin**, the hormone secreted by the islet tissue of the pancreas, from which it was isolated in 1922 by Banting and Best. (See *Med. Section*.)

**Intaglio**, engraving or carving on a sunken ground, a method frequently adopted in the ornamentation of stones and rings.

**Intelligence**. Intelligence has been variously defined as "the ability to see the relationships between things" and "the ability to profit from experience." The idea of intelligence testing was first devised by the French psychologist Binet at the beginning of this century.

He was asked by the French government to invent a test which would weed out backward children in state schools, and thus save public money and avoid holding back the work of the class by teaching children who were incapable of learning at a given standard. Binet solved the problem by giving a large series of practical questions and finding how many could be solved by the majority of children in a particular age-group. The questions were arranged so that in one group the majority of problems could be solved by most children of ten, in another by most children of twelve, and so on. If a child of thirteen could solve correctly only those problems devised for a child of ten, his Mental Age was said to be ten, and his Intelligence Quotient was  $10/13$  multiplied by 100, of roughly 77 per cent. His intelligence, in other words, was only 77 per cent of the normal. More modern intelligence tests have been devised which to some extent discount the influence of learning, since "intelligence" refers to innate ability—the capacity to learn rather than learning itself. The following facts have been discovered about intelligence: (1) Men and women do not differ in average intelligence. (2) Different races do not vary in average intelligence. (3) Delinquents are more often of lower intelligence than others. (4) Intelligence is in-born, and does not increase after age 14. (See p. 175.)

**Interdict**, a Roman Catholic ecclesiastical prohibition, directed either against a country, community, or Church, or against persons. It is a weapon that is now rarely used, but in former times was often exercised with great power and severity.

**Interlude**, any short stage piece, or brief musical composition, for performances between more important pieces. In the strict musical sense an interlude is an instrumental composition played between the acts.

**International Date Line**, a line along the 180° meridian, marking the difference in time between E. and W. For the westward-bound traveller crossing the line the date would be put forward one day, for the eastward-bound, back one day. To avoid difference of date in adjacent land areas, the line deviates from the 180° meridian where this crosses land.

**I.L.O.** See "A Citizen's Guide," p. 132.

**Interval**, in music indicates the difference in pitch between two notes. This is often expressed numerically. Thus the interval between C and the E above it is a major third, that between C and E flat is a minor third, that between C and G is a sixth, and so on.

**Intransigents**, an ultra-republican party whose chief members were very active and aggressive in France, Italy, and Spain at the end of the 19th century. Henri Rochefort was a leading representative.

**Introut**, the psalm or hymn in common use in the Anglican Church, which is sung as the clergy enter the church to commence the divine service of Holy Eucharist.

**Invention of the Cross**, a Roman Catholic festival, held on May 3rd to celebrate the finding of the alleged True Cross at Calvary by the Empress St. Helena in 326. Also included in the Church of England calendar. (See Holy Rood.)

**Invertebrata**, the primary division of the animal kingdom used to be into vertebrates—animals with backbones—and the invertebrates. This classification is now obsolete (see Animal Kingdom), and the Invertebrata is now defined as the portion of the animal kingdom containing all but the phylum Chordata.

**Investiture**, the ceremony of conferring honour, office, or possession—the investment of the recipient with badge, token, or public recognition.

**Involution**, a form of magic or witchcraft that prevailed in older times, consisting of pricking a wax or clay image of a person whose death was desired, invoking simultaneously the aid of evil spirits, the belief being that the spell would have a fatal effect.

**Iodine**, a substance formerly exclusively obtained from the ribbon-wrack seaweeds. These were burnt and the ashes (kelp) extracted with water. After concentrating the iodides, these were distilled with manganese dioxide and sulphuric acid to yield iodine vapour which was con-

densed in stoneware bottles. Nearly all iodine now in use is derived from the iodine salt present in Chili saltpetre (sodium nitrate). Iodine is used in photography, as an antiseptic solution in alcohol or potassium iodide (tincture of iodine), and in medicine. Courtois discovered iodine in 1812.

**Ion**, an atom or group of atoms carrying a positive or negative electrical charge. When an electric force is applied to a solution the ions into which the molecule of the dissolved substance is dissociated are attracted to the oppositely charged electrodes, the movements constituting an electric current through the solution. In the same way gases, including air, conduct electricity by virtue of the free ions. Combustion, radio-activity, and ultra-violet and cosmic radiations produce ionisation.

**Ionic Order** of architecture is one of the five classic orders, its leading characteristics being the volute of its capital, which has on each side distinctive curved or scrolled ends.

**Ionosphere**, the layer above the earth's surface in which ionisation occurs, probably due to the absorption of ultra-violet radiation. The ionosphere is divisible into several layers with distinctive properties, these being known as the B, C, D, E, and F layers. The E layer is called the Kennelly-Heaviside layer; the F layer, the Appleton layer; these are respectively about 60 and 200 miles above the earth. The Kennelly-Heaviside layer reflects medium radio waves; the Appleton layer reflects short waves.

**Ipeacacanha**, a flowering plant of the madder family, a native of the Brazilian forests. Its root is of great utility in medicine.

**Ireland**. See Union of Gt. Britain and Ireland.

**Iridium**, a white and very hard metal discovered by Tennant in 1804. It occurs naturally as an alloy with platinum or osmium; tips for fountain-pen nibs have been made from the former native alloy. The standard metre is composed of platinum-iridium alloy, as are parts of scientific apparatus and surgical tools that must be non-corrodible.

**Iris**, the typical genus of the botanical order *Iridaceae*, with tuberous rhizomes and sword-shaped leaves, many of the family having beautiful flowers. About 100 species of Iris are recorded from the northern temperate zone, but only two species occur wild in Britain—the yellow flag and the gladdon. Orris root, used in perfumery, comes from another iris species.

**Irish Moss**, a kind of seaweed (*Chondrus*) found on certain parts of the Irish coast, and collected, dried, and bleached for use as cattle food or for making a nutritious jelly.

**Iron** is extracted by smelting from different ores, hematite, magnetic iron, and spathic iron, coal or coke being now universally used for smelting purposes. The kinds of iron produced are cast iron and wrought iron. Alloys of iron are called steels.

**Iron Age**, the period when primitive man made and used weapons and implements made from iron. It came after the Stone and the Bronze Ages.

**Ironclads**, ships of war cased in iron or steel plates of sufficient thickness to resist projectiles. They were first introduced (1858) in the French Navy, and in 1860 the first British ironclad, the *Warrior*, was launched.

**Iron Cross**, a Prussian order instituted in 1813 for distinguished services in war.

**Iron Crown**, the crown of the ancient kings of Lombardy and emperors of Germany, and noted for its iron band, said to have been forged from one of the nails of Christ's cross. Napoleon I. insisted on being crowned with it, and in 1866 it was presented to Victor Emmanuel at Turin.

**Iron Curtain**. In a speech at Fulton, U.S.A., on Mar. 5, 1946, Mr. Churchill used this phrase to describe the dividing line behind which, he said, lie all the capitals of the ancient States of Central and Eastern Europe—Warsaw, Berlin, Prague, Vienna, Budapest, Belgrade, Bucarest, and Sofia. These famous cities and the populations around them, said Mr. Churchill, lie in the Soviet sphere and are subject "to a very high and increasing measure of control from Moscow."

**Ironsides** were Cromwell's special troopers, so called because of their solidity and firmness in battle.

**Ironwood**, the intensely hard and heavy timber of



certain kinds of trees, natives of the warmer regions of Asia and Africa, and mostly of the *Sapotea* order.

**Irridentists**, a political party organised in Italy about 1878 with the object of incorporating with Italy neighbouring regions. Also a person, group, or party advocating policies for the restoration to their country of territory formerly belonging to it but later lost.

**Irrigation**, an artificial method of providing water for the growth of plants on lands where the natural supply of water is deficient. The science has made immense progress during the last fifty years, and has been the means of bringing into profitable cultivation vast tracts of territory in India and Western America which had previously been arid wastes. The systems are various and are utilised according to the special conditions of the land to be irrigated, but the success which has attended these experiments has been very gratifying. In fact, irrigated lands are often more productive than lands which receive a fair amount of moisture from the elements; the irrigation supply can be distributed and regulated exactly according to requirements. Irrigation also serves the purpose of supplying warmth in winter; e.g. in the English water-meadows, and in the more highly developed Italian *marcile* and winter-meadows, where the water is mostly applied in winter when there is plenty of rain. There are several other functions of irrigation; e.g., washing out of excess salts.

**Isinglass**, a gelatinous substance manufactured from the swim bladders of certain fish, the best kinds coming from Russia and Brazil. Coarser varieties are made from hides.

**Islam**, the Mahommedan religion, the word signifying devotion to God.

**Isobars** are the lines drawn on charts linking together points of equal barometric pressure.

**Isolationist**, the body of opinion in the United States advocating non-interference in European affairs. Its strength has much declined in the light of contemporary events.

**Isomerism**, a chemical term indicating two compounds having the same formulae and the same molecular weight, but differing in chemical or physical properties. This arises from the difference in the arrangement of the atoms in the molecule.

**Isopoda**, the crustacean order to which the wood-lice belong.

**Isotherms** are lines drawn on charts through points of equal temperature.

**Isotopes**. When one talks of an element, say, uranium or lead, the name of the element is a generic name for a collection of uranium species and lead species. The different species are called isotopes. For any particular element, the number and arrangement of electrons around the nucleus are the same in all the isotopes, so all the isotopes have the same chemical properties. Soddy has described isotopes as "elements, the atoms of which have similar outsides but different insides." For example, in the nucleus of the uranium isotopes, U 235, U 238, and U 239, there are respectively 143, 146, and 147 neutrons. The isotopes have different atomic weights, in this instance respectively 235, 238, and 239. Britain is the largest exporter in the world of radioactive isotopes. See pp. 162 and 189.

**Isthmian Games** were held in alternate years by the ancient Greeks on the Isthmus of Corinth, in honour of Neptune, and were of the same class as the Olympian Games. Wreaths were the only prizes.

**Istle**, a kind of fibre yielded by the *Bromelia sylvestris*, a Mexican tree that grows immense leaves, from which the fibrous material is obtained. For carpets, cordage, sacking, belting, nets, etc., this fibre is very extensively used.

**Itaka-wood**, often called tiger-wood because of its markings, is a hard and beautiful wood furnished by the *Machærium Schomburgkii* of British Guiana. For ornamental cabinet work it is highly prized.

**Itch-Mite**, a minute mite which burrows beneath the skin and produces scabies.

**Ivory**, the dentine substance of which the tusks of the elephant, hippopotamus, walrus, etc., are composed. The tusks of the African elephant

sometimes weigh as much as 100 lb., and reach a length of 8 or 9 ft.

**Ivory Black**, a species of bone-black, made by the calcination of ivory scraps and turnings, used as a pigment in the manufacture of printer's ink, paint, etc.

**Ivory Gull**, a small, beautifully shaped, sea-bird with striking all-white plumage and black legs which breeds on the rocky shores of the Arctic and occasionally wanders south in the winter.

**Ivy**, the well-known climbing shrub, chiefly evergreen; furnishing a sudorific, the berries having also emetic properties.

**Ixia**, a genus of *Cape Iridaceæ*, with beautiful flowers produced in considerable variety of coloration under culture.

**Izar**, a fixed star in the constellation Bootes.

## J

**Jabiru**, the Brazilian name for the giant stork of South America.

**Jacamar**, from *Jacameri*, the Brazilian name for a smallish bird with long, sharply pointed bill and brilliant plumage which inhabits the tropical regions of South America east of the Andes. These birds are seen sitting motionless on trees, darting off at intervals to catch insects on the wing.

**Jacana**, a tropical bird (the water-hen of Brazil and the warmer parts of America) of wide range, beautiful of plumage, with slim body and narrow wings, and long pointed beak. It feeds on seeds and insects, inhabits marshy lands, and is related to the plovers.

**Jack**, a small schooner-rigged vessel, used in the Newfoundland fisheries; a pike; an oscillating lever; a device used in roasting meat.

**Jackal**, a small wild dog related to the wolf and resembling a fox. The Common Jackal is found in S.E. Europe, India, and Ceylon; other species inhabit Africa and Egypt. The jackal is a well-known scavenger.

**Jackboot**, a leathern boot reaching above the knee; in common use during the 17th and 18th centuries, but in modern days surviving only as foot and leg gear for fishermen, ostlers, etc.

**Jackdaw**, one of the smaller members of the Crow family. This European bird is typically black with grey collar. It is easily tamed, makes an amusing pet, and delights in making off with and taking to its nest bright objects, such as silverware. (See p. 1004.)

**Jack Ketch**, a by-name for the common hangman, and said to have been the real name of the public executioner of the time of James II.

**Jacobins**, a French revolutionary club or party, formed in 1789, and accustomed to meet at a Jacobin convent, hence the name. It became a controlling force in the Revolution, especially in the movement which led to the Terror. Robespierre was its chief spokesman.

**Jacobites**, adherents of the Stuart cause after the abdication of James II. First James himself, then his son (the Old Pretender), and later his grandson (the Young Pretender) tried to fan the flame of rebellion in Scotland and Ireland, but after the defeat at Culloden in 1746 the cause was lost.

**Jacquerie**, a revolt of French peasants in 1358 against the tyranny of the nobles. So named from the contemptuous title, "Jacques Bonhomme," given by the nobles to the peasantry.

**Jade**, a green mineral found in China, America, and New Zealand, and used for making vases, bracelets, and other ornamental articles. There are many varieties, and there is evidence that the stone was in common use in prehistoric times for weapons and utensils.

**Jaggernaut**, or **Juggernaut**, the name of the great Indian idol at Puri, which once a year is brought forth from its temple, placed on an enormous car, and conveyed at the head of a mighty procession through the streets. Multitudes of pilgrims assemble on these occasions, and it used to be the practice for many fanatics to throw themselves beneath the wheels of the car and allow themselves to be crushed to death.

**Jaguar**, a South American carnivorous animal resembling the leopard, but much larger and more powerful.

**Jail or Gaol**, a place of confinement for persons charged with or convicted of criminal offences.

- Jains**, a religious community in India numbering about 1,500,000. Jainism, which arose rather earlier than Buddhism in revolt against Hinduism, is based on *ahimsa*, non-injury to all living things; wealth and possessions are discarded. The founder was Mahavira, born c. 599 B.C. The Jain temples are among the most beautiful in India.
- Jamb**, the upright sides of a door, window, fireplace, or other aperture, supporting the lintel, entablature, or mantel and shelf.
- Janeite**, a devotee of Jane Austen and her writings.
- Jangada**, a rude sort of boat or catamaran carrying a large sail, used off the coasts of South America.
- Janissaries**, a former band of Turkish foot soldiers who acted as the Sultan's bodyguard, and were noted for their turbulence and cruelty. They existed from the 14th century to 1826, when they were finally disbanded after the people had risen against them and massacred many thousands.
- Jansenists** were followers of Jansen, Bishop of Ypres, who denied "the freedom of the will and the possibility of resisting Divine grace." They were suppressed in France early in the 18th century; a few adherents went to the Netherlands.
- Janthina**, the "Ocean snail," occurs in the Atlantic. It has a purple shell, and floats at the surface of the sea by means of a float made of hardened slime secreted by the animal and buoyed up with enmeshed air bubbles.
- Jantu**, a water-raising contrivance, balanced on a bar. It is of considerable antiquity, still used in India and the East in irrigation operations.
- January**, the first month of the year, named after Janus, the two-faced god of the Romans. It was the *Wolf month* and *Aefter Yule* of the Saxons.
- Japanning**, the process of coating metal, wood, and other surfaces with the varnish called Japan, which produces a lacquered effect and is capable of receiving a high polish.
- Jarrah Wood**, the wood of the mahogany gum tree of Western Australia, one of the hardest of all woods.
- Jasmine**, a graceful climber belonging to the olive family with odoriferous blossom, originally a Persian plant, but now acclimatised in many varieties in almost all parts of the world. Two species of jasmine (the common jasmine and the Spanish jasmine) yield oils used in perfumery.
- Jasper**, a precious stone of the chalcedony variety, opaque, and coloured red, brown, yellow and sometimes green. It was greatly esteemed by the ancients, the Bible having numerous allusions to it.
- Jaunting Car** was a two-wheeled vehicle peculiar to Ireland, containing a lengthwise seat on each side and a seat in front for the driver.
- Javelin**, a spear thrown by hand and one of the common weapons of war from the days of ancient Rome to the Middle Ages. A rude form of javelin is still used by many savage tribes.
- Jay**, a gaily-coloured bird of the crow family, of many species—the Blue Jay of N. America, the Canada jay, sometimes called "whisky jack," the Siberian jay, and the British jay, fawn-coloured with black and whitish crest and bright blue feathers in the wings. It lives in woods and like the magpie, takes the eggs and young of small nesting birds. (See also p. 1004.)
- Jazerine**, an antique military or protective jacket, strengthened by small overlapping pieces of steel or other metal internally, worn generally by the Italian nobility during the Middle Ages.
- Jazz**, a rhythmical syncopated music probably originating among the Negro population of the Southern States of the U.S.A. It became popular during the first world war and, in a commercialised form, has held the popular field ever since. Modern dance music and popular songs are based on the jazz idiom, which has also had a profound effect upon contemporary music of a more serious kind.
- "Jeames,"** a name brought into familiar use by Thackeray in his "Yellowplush Papers," and since largely adopted in referring to footmen and flunkies.
- Jean**, a stout kind of twilled cotton cloth much worn in olden times, and resembling fustian. Blue *jeans*, adopted by American city youngsters from farmworkers, are now the fashion elsewhere and worn not only as overalls by workmen but by both sexes in leisure time.
- Jebusites**, are often referred to in the Old Testament. They were a Canaanite nation, who held Mount Zion, and were in frequent conflict with the Israelites, until finally defeated by David.
- Jehovah**, one of the Hebrew names of the Deity, the etymology of which is obscure. The English translators of the Old Testament rendered it "the Lord." The Jews, however, regard the word as too sacred for speech, and use the equivalents *Adonai* or *Elohim* instead of it.
- Jelly-fish**. The jelly-fishes, which have gelatinous bodies fringed at the margin with delicate tentacles, constitute the coelenterate order *Scyphozoa*. The mouth, with a squarish opening, is seen on the underside, and there are four horseshoe-shaped sex organs.
- Jenny**, the name given by James Hargreaves to the spinner frame invented by him in 1766, which greatly improved and extended cotton-spinning operations.
- Jeofail**, a law term, referring to the correction of some error in legal process.
- Jerboa**, small jumping mammals of the Rodent order. These mice-like animals have long tufted tails and very long hind legs, the front legs not being used for locomotion. The African jerboas have three toes, the Asiatic jerboas five.
- Jereed**, a wooden javelin, used in Turkey and Persia in tournaments and marksmanship competitions. It is about five feet long, and great skill may be attained in flinging it at a moving object or fixed target.
- Jeremiad**, any utterance or writing in which sorrow or complaint is the chief characteristic, so named as recalling the style of the "Lamentations of Jeremiah," in the Old Testament.
- Jerkin**, a short upper garment or jacket, made of leather or cloth, in common wear by men in the 16th and 17th centuries.
- Jersey**, the name given to a close-fitting garment of fine woollen yarn worn by men and women, and a common garment of athletes, cricketers, etc.
- Jerusalem Chamber**, a room in Westminster Abbey, deriving its name from the circumstance of its having originally been decorated with a view of Jerusalem. Henry IV. died in this chamber, and the Committee for the Revision of the Bible met there in 1870 and later.
- Jesuits**, members of the Roman Catholic teaching order founded by Ignatius Loyola in 1534. The education of the young and of society itself was an important part of their programme. A long and vigorous course of study is prescribed before they are admitted into the privileges of full membership. They are required to take the vows of voluntary poverty, perfect chastity, perfect obedience, and complete submission to the Pope. The Society played an important part in politics.
- Jet**, a deep black fossil substance admitting of a high polish and much used for jewellery, ornaments, and trimming. It is a form of lignite, the most important British deposit being found near Whitby, where jet manufacture has been an established industry for a long period.
- Jet Engine**, an aeroplane engine which derives its thrust from the high velocity of the gases it ejects. The essential units in a jet engine are a rotary compressor and a gas turbine, the latter driving the compressor. The first reliable, high-performance jet propulsion engine for aircraft was invented by Air Commodore Sir Frank Whittle.
- Jetton**, a kind of metal counter formerly used in card-playing. Monarchs, nobles, and abbays had their distinctive jettons, which were often as carefully devised and inscribed as if they had been pieces of coin. Examples survive in many museums.
- Jetty**, a construction of wood, masonry, or iron-work projecting into the sea, and serving as a wharf for shipping and merchandise, or as a mole for harbour protection.
- Jeunesse dorée**, gilded youth, a term applied to young men "about town" remarkable for their luxurious habits. The name was originally given to the young men of the upper classes who aided in suppressing the Jacobins after the Reign of Terror.
- Jewish**, a large fish of the *Serranidae* family, plentiful round the coast of America.



**Jewish Calendar** is supposed to date from the Creation, which according to their reckoning occurred on 7th Oct., 3761 B.C.

**Jews**, descendants of the ancient Hebrews or Israelites, who settled in what is now called Palestine about the 15th century B.C. Before the Nazi persecutions and massacres—the greatest tragedy of Jewish history—world Jewry numbered over 15 million. About 5 million lived in the United States and 10 million in Europe (Poland 3 million, Russia 3 million, Central Europe 2 million, Germany 500,000, England 300,000, France 170,000, Holland 120,000). Some 6 million Jews perished in the course of the Nazi persecutions. A movement to restore Jews to Palestine was founded in 1897, known as the Zionist movement (*q.v.*). From 1923, when the Treaty of Lausanne formally ended the war between the Allied Powers and the Ottoman Empire, until 1948, Palestine was administered by Great Britain under a mandate. Efforts to reconcile Jews and Arabs proved unsuccessful and Great Britain in 1946 decided to submit the problem to the United Nations for solution and terminated the mandate on May 13th, 1948, when the Jewish National Council proclaimed a Jewish State of Israel. When the Israeli state was created the population was about 650,000 Jews and 1,000,000 Arabs. In 1951 the population figure was 1,578,000 (80 per cent. Jews). (*See Anti-Semitism.*)

**Jew's Ear**, a fungus that grows in the shape of an ear and is common in England. At one time it was accounted of medicinal value, and in China is esteemed both as a medicine and as an article of diet.

**Jew's Harp**. The name is believed to be a corruption of "jaws harp." This instrument consists of a metal frame with a central tongue of spring steel. The frame is pressed against the teeth, and the tongue of the harp is twanged with the finger, the mouth acting as a resonating chamber. By altering the shape of the mouth the resonant frequency and therefore the note can be varied.

**Jewstone**, a pale grey egg-shaped fossil stone that was once highly prized.

**Jhumung**, the name of a method of cultivation adopted in the jungle parts of India, but only followed for a year or two after the forest has been cleared by felling and burning.

**Jib**, the front triangular sail of a ship, resting on a stay, and in large vessels projecting from the end of the jib-boom. There is also a flying jib outside this.

**Jig**, a rapid dance for one or more persons, much indulged in in Ireland and the English and Scottish provinces, a survival of old English days.

**Jigger**, **Jigger Flea** or **Chigoe**, a kind of flea common in the West Indies and some of the warmer parts of the United States. The female buries the hind part of her body in human skin, and causes great irritation.

**Jihad**, a religious war of Mohammedans against unbelievers. Fanatics attempted to set one on foot in India in 1877, and simultaneously another was proclaimed at Constantinople against the Russians, but it came to naught.

**Jimson Weed**, corruption of Jamestown Weed, a synonym for the Thorn Apple.

**Jingal**, the name of a swivel-musket largely used by the Chinese for shooting water-fowl and other birds.

"**Jingos**," an English political term which came into vogue in the "seventies" and "eighties," when Russia seemed to be threatening an advance on Constantinople. A music-hall song of the day, sung by Macdermott, the refrain of which was "We don't want to fight, but by *jingo* if we do," etc., emphasised the feeling of the party and gave the cue for their being called "Jingos."

**Jinnees** are supposed to be spirits of evil, assuming various shapes, human and animal, and exercising good or evil influence, according to their origin or mission. In the *Arabian Nights* and other Eastern literature Jinnees or genii are numerous.

**Jinrikisha**, a hooded, two-wheeled vehicle drawn by one or two men, and used in Japan, India, and other Eastern countries.

**Joachimites** were adherents of the Italian religionist Joachim, who was abbot of San Giovanni del Fiore at the beginning of the 13th century, and maintained that three reigns would complete the history of the earth; the first was the reign of the Father, from the Creation to the birth of Christ; the second that of the Son, from the birth of Christ to 1260; and the third that of the Holy Spirit, from 1260 to the end of the world.

**Jockey Club**, the governing body that, although possessing no legal status, frames rules and laws by which horse-racing and turf matters generally are regulated. The club-house is at Newmarket.

**Johannisberger**, a famous white wine produced from grapes grown in the Rheingau district near Wiesbaden.

**John Bull**, the typical figure of an Englishman, bluff, big, and burly. Arbuthnot's *History of John Bull* is supposed to have originated the character.

**John Company**, a familiar appellation of the East India Company.

**John Dory**, a well-known sea-fish of which there are six species. It is of a golden-yellow colour (*jaune doré*), has a high dorsal fin with long filaments projecting from the spines, and is much valued as a table fish. It is sometimes found in British waters, but the Mediterranean is its chief habitat.

**John o' Groats' House**, W. of Duncansby Head, Caithness, popularly named as the northernmost point of Scotland. According to legend the house, which has now disappeared, was built in octagonal form by a Dutchman Jan de Groot who came to live there in the 16th century. The site is marked and an inn was erected near it in 1876.

**Joiner**, a workman whose occupation is to construct articles in house-building by joining woodwork with framings, glue, screws, nails, etc.; a specific branch of the craft of carpentry.

**Joist**, a horizontal timber employed in the support of floors and ceilings in house-building; latterly iron joists have also been used in the construction of many important edifices.

**Jongleurs** were minstrels and jesters who wandered from town to town singing songs and giving entertainments in mediæval France and Norman England.

**Jordanite**, the name given to a native sulphide of arsenic and lead, found in orthorhombic crystals in the dolomite of the Binnenthal, in Switzerland.

**Joss**, the popular name of a Chinese idol, the place where it is kept being called a joss-house.

**Jougs**, an ancient Scottish instrument of punishment, in the form of an iron collar, which was fitted to the neck and held to the wall or to a tree by a chain; a variety of pillory of a barbarous character, employed at times in the repression of female recalcitrants.

**Joule**, a unit of energy equal to 10<sup>7</sup> ergs, or about  $\frac{1}{4}$  of a foot-pound. Named after the British scientist, J. P. Joule (1818-89). It may be defined as the work done in one second in maintaining a current of one ampere against a resistance of one ohm.

**Jousts** were military tiltings in the nature of tournaments, where the contestants strove against each other on horseback with blunted lances. It was the sport of nobles in feudal times.

**Jovinianists**, a sect founded in the 4th century by a Milanese monk named Jovinian, who contended for the equality of sins, rewards, and punishments, and denounced celibacy and other prevalent features of Church doctrine.

**Jowler**, a Cornish and West of England term for a fish-hawker who plies his trade on horseback.

**Jube**, in church architecture, the road-loor over the entrance to the choir from the chancel.

**Jubilee** (or **Jublie**), the year following the seventh seven-year period. A year of perfect rest (*Lev. xxv*). In the Roman Catholic Church the Jubilee Year is every 25th year from Christmas to Christmas (originally 100 years), during which time plenary indulgence is obtainable. Introduced by Boniface VIII. Feb. 22nd, 1300. In recent years the word Jubilee has been applied to any form of 50th year celebration.

**Judge Advocate General** is an officer whose duty

- it is to advise the Crown on Courts Martial and on subjects connected with military law.
- Julian Calendar**, named after Julius Cæsar, who in 46 B.C., finding the Roman year 90 days in advance of the real time, was the first to adopt the calculation of time by the solar year, the average length being fixed at 365½ days. There was still an overplus of a few minutes every year, and this was rectified by the Gregorian Calendar, introduced in Italy in 1582 and adopted in England in 1752, from which date what is called the "New Style" begins.
- Julianists**, a sect of Copts who believed the body of Christ to be incorruptible, in contravention of the doctrine of the Severians.
- Julus**, a genus of millipedes with cylindrical bodies and two pairs of legs to each segment, the latter being 40 to 50 in number. In South America specimens 5 or 6 inches long are frequent, but those found in England are small.
- July**, the seventh month of the year, named after Julius Cæsar. It was the *Maed monath* (Mead-month) of the Saxons.
- July Revolution**, the French revolution of 1830 whereby Charles X. was deposed and Louis Philippe made king. The latter was deposed by the revolution of 1848.
- Jumart**, a fabulous monster which often cropped up in early English literature, supposed to be the offspring of a bull and a mare, or of a horse and a cow.
- Junco**, the name given to a genus of snowbirds, confined to the American continent.
- June**, the sixth month of the year, containing 30 days and deriving its name from Juno. It was the *Sear* (Dry) *monath* of the Saxons.
- Jungle**, the Indian name for a forest or dense tract of undergrowth or desert land.
- Jungle-Fowl**, birds related to the peacocks and peacock-pheasants. At least four species are known from the jungles of India, Ceylon, and Java. The domestic chicken has been derived from the Red Jungle-Fowl (*Gallus bankiva*).
- Juniper**, the Nova Scotian name of the American larch; also all the trees of the *Juniperus* genus; from the unripe fruit of some species of which is distilled the stimulant and diuretic oil of juniper.
- Junk**, a flat-bottomed Chinese sea-going boat, carrying large masts, and employed on the coasts and seas of China and Japan.
- Junkers**, name of the ruling class of Prussia, military in spirit, who were the party of reaction and defenders of the landed interests. Supported Bismarck prior to the Franco-Prussian war and helped bring Hitler to power. They have been expropriated and broken.
- Junket**, a sort of sweetmeat, consisting sometimes (as in Devonshire) of curds and cream, sweetened and flavoured at will, made with rennet.
- Junta**, a Spanish word designating a legislative or other distinguished assembly entrusted with the passing of laws or the deciding of policy. A grand council of state.
- Jupiter**, the largest body of the planetary system except the sun, from which orb it is distant 483,000,000 miles. Its mass is over 300 times that of the earth, while in bulk it is 1,300 times as large. It has 4 major (discovered by Galileo in 1610) and 7 minor satellites, the former being visible with field glasses. Also the supreme deity of the Romans, identified with the Greek Zeus.
- Jurassic Formation**, a series of rocks (the evidences of which are most marked in the Jura Mountains) coming between the Cretaceous and Triassic groups and including the Oolite and the Lias. It is a formation rich in fauna, abounding in echinoids, lamellibranchs, ammonites, and belemnites; large reptiles, marine and land, are common, as are the plants called cycads. It extends through a great part of Europe and to America.
- Jury**, a body of men chosen and sworn to hear and pass verdict upon evidence brought forward at a trial, inquest, or inquiry. Its origin is obscure, but it was in existence in the 13th century. The trial jury consists of twelve jurors, except in the county court, where small civil cases are sometimes tried by the judge and a jury of five. The jurors are the judges of fact upon the evidence laid before them. Since the passing of the Sex Disqualification (Removal) Act, 1919, women may serve as jurors throughout the United Kingdom. (See *Compurgation*.)
- Jurymast**, a word of doubtful origin, but indicating an improvised mast put up in place of one lost or broken.
- Justice**, is defined as "a written or prescribed law, to which one is bound to conform and make it the rule of one's decisions."
- Jute**, the name given to the fibre of a plant grown largely in Pakistan in the Ganges delta and used for the manufacture of coarse cloths, cordage, etc. Calcutta is the biggest jute-manufacturing centre of the world, as Dundee was in the 19th century.
- Jutes**, a Low German race who in the 5th century invaded the south-eastern part of England, establishing themselves in Kent and making Canterbury their capital.
- Juvenalia**, games of young people instituted in Rome's imperial days by Nero.
- Juzail**, a heavy type of rifle used by the Afghans.

## K

- Kaaba**, the inner shrine of the Great Mosque at Mecca, only thrown open to the faithful three times a year. It contains in its south-eastern corner the famous sacred "black stone," said to have fallen from heaven with Adam.
- Kaffirs**, Bantu-speaking negro tribes of the Union of South Africa, whose occupations are cattle-raising, farming and hunting.
- Kago**, a rude Japanese palanquin suspended from a pole borne on the shoulders of two carriers, the person carried resting in a sort of bamboo hammock.
- Kagu**, native name for a curious bird related to the sun-bittern and the only member of the Rhinocetinae family, found inhabiting New Caledonia when that island was colonised by the French.
- Kaha**, the Dyak name for the Proboscis monkey of Borneo.
- Kain**, a tribute or duty formerly taken—in kind, as poultry, etc.—by landlords in Scotland and elsewhere as part of the rents due to them from their tenants.
- Kainite**, a mineral found in the Stassfurt salt mines, Magdeburg, Germany, forming a source of potassium compounds, and consisting of magnesium sulphate and potassium chloride.
- Kaiser**, the German form of the word Cæsar, emperor, borne up to 1918 by the then sovereigns of Germany and Austria. Charlemagne was the first prince to assume the title of Kaiser.
- Kakapo**, the Maori name for the New Zealand owl-parrot, a peculiar and interesting species, possessing wings but not able to use them for flight, of brown mottled plumage, nocturnal in its habits, and nesting in burrows. The bird, once abundant, is rapidly becoming extinct.
- Kalan**, a local name for the sea-otter which is only found in the seas of Kamchatka and North-West America. It is larger than the beaver, and weighs from 70 to 80 lb.
- Kalanchoë**, the genus of *Crassulaceæ*, the leaves of varieties of which are applied to medicinal uses in China, India, and South America.
- Kale**, a kind of cabbage with curly leaves; but also applied to cabbages in general.
- Kaleidoscope**, an optical instrument, the invention of Sir David Brewster (1781-1868) and consisting of a cylindrical tube containing two mirrors inclined to each other at an angle, which produce a symmetrical reflection of any transparent coloured substances placed between. An endless variety of beautiful patterns is obtained by turning the toy round.
- Kahnuks**, a branch of the Tartar or Mongol race who in the 17th century migrated to Europe. Many of them returned to China in 1771. The descendants of the last of these nomads to enter S.E. Russia are now organised as the Kalmyk Autonomous Soviet Socialist Republic.
- Kalpis**, an ancient three-handled Grecian water vase of large size, decorated with classical figures in red on a dark ground.
- Kami**, a Japanese title applied to gods and celestials and their descendants, the emperor, and members of the imperial family, and daimios and governors.
- Kamptulicon**, a floor-covering composed of a mixture of india-rubber, gutta-percha, and cork. It was invented by Elijah Galloway in 1843, and



- though at first only made in grey shades, is now produced in a variety of bright-coloured patterns.
- Kangaroo**, pouched (marsupial) mammals of Australia and adjacent islands. There are over 20 species, the smaller ones being known as "wallabies." Kangaroos leap in a succession of springy bounds 10-20 ft. long, the forefeet not touching the ground. They can reach a height of over 6 ft. and a weight of 200 lb. First seen by white men when Capt. Cook's expedition visited Australia in 1770. Related genera include the tree kangaroos, rat kangaroos, and the Tasmanian Jerboa kangaroo.
- Kantianism**, the philosophical principles propounded by Immanuel Kant, the 18th-century German metaphysician, which sought to restrict human knowledge to objects of possible experience, while admitting religious ideas as modifying influences.
- Kaolin** or **Kaolinite**, a fine clay much used in the manufacture of high-class pottery. It results from the decomposition of felspar, and is found in China, Japan, Devon, Cornwall, at Limoges, and in certain parts of the United States.
- Karaites**, a Jewish sect founded in the 8th century in Persia by Anan ben David, who adhered strictly to the Scriptural word and rejected the rabbinical traditions and the Talmud. Remnants of the sect still exist in parts of Eastern Europe.
- Karma**, the Hindu theory that a man's actions control his destiny after death, as the natural effect of a natural cause. The idea of successive existences is bound up with the doctrine, and forms a fruitful subject of ethical speculation.
- Katydid**, large long-horned insects of the grasshopper family, common throughout the United States east of the Rockies. Their name comes from the sound these insects make.
- Kauri Pine**, the large coniferous tree which yields Kauri gum or copal so largely used in varnish making, occurring in Australia and New Zealand. Some of the best Kauri copal comes from the fossilised pines and is dug out of the soil far from any living trees.
- Kava**, a refreshing drink made from the pounded root of the pepper plant (*Piper methysticum*) and the national drink of Tonga.
- Keble College**, an Oxford college founded and endowed in 1870 in memory of the Rev. John Keble, author of *The Christian Year*.
- Keep**, the central tower or chief stronghold of an ancient castle, sometimes called the donjon.
- Kellogg Pact**, was signed by fifteen principal nations at Paris on August 27th, 1928. The contracting parties agreed to "condemn recourse to war for the solution of international controversies and renounce it as an instrument of national policy in their relations with one another." It had no effect.
- Kelpie**, a water-sprite of Scottish fairy-lore, whose appearance assumed various forms, and foreboded drowning to the person who saw it.
- Kentish Fire**, a noisy long-continued kind of cheering and clapping of hands which originated in Kent at the Protestant meetings held in 1828-29 to oppose the Roman Catholic Relief Bill.
- Kentish Rag**, a kind of fossiliferous clayey limestone found in Kent. Used in building.
- Keratin**, a hard protein material of which horns, nails, claws, hoofs, and reptiles' scales are made.
- Kermes**, a crimson dyestuff, less brilliant than cochineal, but more lasting. It is made from the bodies of the females of a small oak-inhabiting insect (*Coccus*) found in immense numbers on the coasts of the Mediterranean. It was discovered before cochineal.
- Kermesite**, a somewhat scarce mineral, being a combination of oxide and sulphide of antimony, and of a red colour. Often called red antimony.
- Kerosene**, an illuminating oil distilled from petroleum and shale. Also called paraffin.
- Kersey**, a coarse kind of woollen cloth, originally made at Kersey, in Suffolk, and much used in the Middle Ages for ordinary men's clothing.
- Kestrel**, the most common British falcon, well known for its habit of hovering for minutes at a time with vibrating wings and then swooping down to attack mice and insects. The male has spotted chestnut-brown back, greyish head and tail, which has a broad black band near tip.
- Ketch**, a sailing vessel formerly in considerable vogue, with two tall masts fore and aft, and clear amidships.
- Jew Gardens**, officially known as the Royal Botanic Gardens, are amongst the most celebrated gardens in the world. They were established in 1759 by order of George III. Since 1841 the gardens have been open to the public, and form one of the most attractive resorts near London.
- Key**, the old English name for hemlock; so called because of the hollow stems of the plant.
- Key**, a musical term indicating the central dominating note that gives the melodic order in which the tones of a tune or composition are arranged. It is the starting-point, and different starting-points demand different scales. The natural key of C, for instance, requires no flats or sharps; all other keys require the use of sharps or flats to bring the notes of their scales into proper relation.
- Keys, House of**, is the Manx representative assembly. (See Tynwald.)
- Keystone**, the stone which occupies the centre and highest point of an arch and is usually the last to be inserted.
- Khair Tree**, a small prickly tree of the Acacia family, bearing white flowers on long axillary spikes, and common in Western India.
- Khaki**, a clay-coloured cloth adopted for uniforms in the British Army in the time of the war with the Boers, and used in the first and second world wars. First used by Indian regiments.
- Khan**, a title formerly of importance in Eastern countries, and given to princes and governors of states, but now of too common use to be much more than a mere courtesy designation. Also the name of a caravanserai.
- Khedive**, the title borne by the viceroys of Egypt from 1867, after Ismail Pasha's arrangements with the Sultan establishing hereditary succession in his family. It was abolished by the British in 1914.
- Khonds**, a race of aboriginal East Indians occupying the jungles and lower regions of Orissa, and formerly noted for their frequent human sacrifices, which, however, have been prohibited since 1842.
- Kikuyu** (Akiikuyu), the largest Bantu tribe in Kenya (estimated in 1952 at 1,060,000), the majority of whom live in the three Kikuyu reserves of Kiambu, Nyeri, and Fort Hall, an area of 2,000 square miles. They are chiefly peasant farmers and share the Bantu idea that cattle is a measure of wealth. They are passionately concerned to own at least some land which will provide security for old age. Many, however, work as casual labourers on European farms and in the towns. Few Kikuyu have any education beyond the primary stage and witchcraft and evil spirits are very real to them. (See Mau-Mau.)
- Kilderkin**, once a common liquid measure in England, representing 18 gallons.
- Kilogram**, a unit of mass equal to 2.2 lb. One kilogram equals 1,000 grams.
- Kilowatt**, a unit of electrical power; equals 1,000 watts, and is equivalent to about 1½ horsepower. An average electric fire "burns" 2 kilowatts of electricity. Electric power of 1 kilowatt used continuously for an hour represents an energy consumption of 1 kilowatt-hour; this is commonly called 1 "unit" of electricity.
- Kilt**, a short pleated plaid skirt-like garment forming part of the Highland costume, and reaching from the waist to the knees. In olden times it was simply the lower part of the belted plaid.
- Kilting**, a dressmaking term denoting an arrangement of flat single pleats, placed side by side.
- Kimmeridge Shale**, the name given to a peculiar geological formation most prominent at Kimmeridge in Dorsetshire, abounding in reptilian fossils, and forming the base of the Portland oolite group. Much of the shale is bituminous and can be burned as fuel.
- Kindergarten**, a system of infant education ("garden of children") invented by Friedrich Froebel in 1837 and introduced into England in 1854, based on the activity of the pupils themselves by means of toys, games, and singing—things in which children take delight naturally. The system is now well established in nearly all countries, having been developed on very

- successful lines in the primary schools of England.
- Kindred Table** was compiled in 1563, and is printed in the *Book of Common Prayer* of the Established Church.
- Kinetic Energy**, the energy possessed by a body by virtue of its motion.
- King Crab**, remarkable crustaceans inhabiting the sea coasts of America, Japan, India, and Malay Peninsula, carrying a shield-shaped shell, and having a long pointed spine projecting from the posterior. The body comprises three separate sections articulated together. These crabs—in America known commonly as the horseshoe crab because of their shape—are from 18 in. to 2 ft. in length. Fossil king-crabs are found as far back as the Silurian. There are about six living species.
- Kingfisher**, a well-known family of brilliant-plumaged birds, found in all continents, comprising some 250 species and sub-species. The British kingfisher, *Alcedo atthis*, haunts the rivers and streams, and is one of the most beautiful of native birds, having iridescent blue-green, salmon pink, and rich chestnut in its plumage and bright-red feet. All kingfishers have long, dagger-shaped bills. In the Malay region, New Guinea, the Moluccas, and Australia the varieties are very numerous. The quaint *Laughing Jackass* of Australia is among the largest of the kingfisher family. The European kingfisher is the bird of the Greek legend of the Halcyon.
- King-of-Arms**, the name of the chief officials of the Herald's College. There are several in England—the principal being those of the Garter, Norroy, and Clarenceux. (See Herald's College.)
- Kinkajou** or *Jupura*, a carnivorous animal of the raccoon family, having a yellow-brown fur. It is common in the forests of Central and South America, lives mostly in the trees, feeding on birds, fruit, insects, etc. Its tail is prehensile.
- Kiosk**, a word of Russian or Turkish origin meaning a small open pavilion of light construction much used in Eastern countries as a place of shade and rest. Similar structures are common in the streets of Paris as news and advertisement stands, and in London as telephone offices.
- Kirimon**, one of the two Japanese imperial crests, comprising the design of the flowers, leaves, and stems of three pawlonia plants. The *kikemon* is the other imperial crest.
- Kirk**, the Church of Scotland. Kirk-Session is a "court" of the Presbyterian churches, consisting of the ministers and elders.
- Kirschwasser**, a spirituous beverage distilled from the wild cherry, made chiefly in the Vosges and Black Forest.
- Kirtle**, the name given in the 16th and 17th centuries to a woman's garment, but not always to the same kind of garment. At one time it was an under-garment or petticoat, at another a gown or a cloak, and sometimes referred to men's garments. More generally a kirtle was a woman's outer skirt.
- Kish**, the impurities which float to the surface of molten lead in smelting.
- Kismet**, a word signifying fate, destiny, or doom, frequently employed (or its equivalent) in most Oriental countries, and also in considerable use in European literature and speech.
- Kit-Cat Club**, a famous club formed in the early part of the 18th century, and having among its members many notable people, including Addison and Steele. It derived its name from the pastrycook who served it with pies—Christopher Cat—and has had its existence commemorated in a special size of portrait called a "Kit-Cat," because of the fact that the portraits of the members of the club were all done (by Sir Godfrey Kneller) to this size—36 in. long by 28 in. wide. Its summer meetings were held at the Upper Flask Inn, Hampstead.
- Kitchen Middens**, the name designating certain large mounds, presumably the sites of prehistoric villages, distinctive features of which are stone-hearths. These mounds contain large quantities of fossil remains of edible molluscs, bones of birds, animals, and fishes, fragments of implements, etc. They exist in the largest numbers on the east coast of Denmark, and here and there on the coasts of Scotland, Ireland, Eng-
- land, and N. America, and belong, it is supposed, to the early Neolithic Age.
- Kite**, name of several birds of prey, widely distributed, related to the hawks and eagles, graceful in flight, and distinguished by their long wings and deeply forked tails. The red kite, light chestnut brown, once the most familiar bird of prey in Britain, seen scavenging the streets of London, is now the rarest, and found only in Wales. The Egyptian kite and the pariah kite of India, notorious for their daring thefts, are closely related to the black kite, a smaller European species, with less forked tail and blackish-brown plumage.
- Kittiwake**, a beautiful white and pearl-blue gull inhabiting the rocky coasts of the North Atlantic. It has a yellow bill and triangular black wing tips.
- Kiwi**, flightless, stoutly-built birds of New Zealand, now very rare and carefully protected by the Government. They are little larger than a domestic hen, and lay astonishingly large eggs for their size. Incubation and care of chicks falls to the male bird. They have rudimentary wings concealed by the plumage, and the feathers are hair-like. They are nocturnal in habit.
- Klipspringer**, a small South African antelope standing little more than 2 ft. high. It has long bristly hair, and the males have short slight horns. Its habitat is the rocky regions of the Cape.
- Klystron**, an electron tube used in ultra-short-wave circuits to generate oscillation power by velocity modulation.
- Knighthood** is a degree of honour or title common in Europe since the Middle Ages, and was at first exclusively a military order. In Great Britain the four main orders of knighthood are those of the Garter, the Bath, the Thistle, and St. Patrick; in addition to which there are several other orders, such as the Order of St. Michael and St. George, the Star of India, etc. There are also Knights Bachelors, such as are not associated with any special order. The title is not hereditary, and therefore ranks below that of a baronet, though both are entitled to the prefix "Sir" (See p. 737.)
- Knobstick**, a term of opprobrium much in use among the working-classes in England in the middle part of the last century, and applied to workmen who dissociate themselves from the majority, and either accept work while others are on strike, or otherwise decline to abide by the rules of trade unions or associations.
- Knot**, a nautical measure of speed (1 sea mile per hour), and formerly measured by a log-line, divided by knots at equal distances  $\frac{1}{10}$  of a geographical mile. The number of knots travelled by the ship in half a minute corresponded to the number of sea miles it travelled per hour. A sea mile is equal to about  $1\frac{1}{4}$  of a statute mile.
- Knout**, formerly a Russian instrument of punishment, consisting of a whip of many thongs, used upon Russian criminals since the 15th century. A hundred and twenty strokes were considered equivalent to a sentence of death, half that number sufficing to kill in many instances. Czar Nicholas I., however, changed the form of the knout, and made it a much milder instrument.
- Knuckle-duster**, a formidable apparatus contrived for the purpose of protecting the knuckles and to add force to their use; frequently employed by garroters and other lawless ruffians.
- Knurr and Spell**, an obsolete game played with a trap, bat, and ball.
- Koala**, the Australian arboreal marsupial mammal that looks like a toy teddy-bear, with ashy-grey fur, bushy ears, and rudimentary tail. It feeds on the leaves and shoots of certain eucalyptus trees, and is not more than 2 ft. in length.
- Kohl**, a powder prepared from antimony or burnt almond shells, and in common use by the women of the East for darkening the eyelids.
- Kopeh**, a Polynesian aroid, cultivated by the natives of the South Sea Islands for its large edible yam-like roots.
- Koran**, the Bible of the Mohammedans, founded by Mohammed in the 7th century, and supposed to be a transcript of a series of messages delivered to the prophet by the Angel Gabriel during a period of 23 years. It constitutes the law of life, civil, military, religious, and legal to Mohammedans. It recognises Christ and Moses as prophets of God, but gives the chief



place to Mohammed. The first English translation made direct from the Arabic was by George Sale, London, 1734.

**Koreish**, an ancient Arab tribe whose members kept guard over the sacred stone of Mecca before the rise of Mohammed. They opposed his view and compelled him to quit Mecca but they were ultimately defeated by Mohammed and his followers.

**Kos**, a Jewish measure of capacity, equivalent to about four cubic inches.

**Koto**, a musical instrument in general use in Japan consisting of a series of 13 silken strings stretched across a curved wooden surface, and played with the fingers. Each string is 5 ft. long, and has a separate bridge so fixed as to give the vibration necessary for the note it has to produce. It is a sort of horizontal harp, and in the hands of an expert player is capable of giving forth excellent music.

**Koumiss**, a beverage made from mare's milk fermented, and often served up with cooked grain; a common refreshment of the Arabs of Africa and some of the tribes of Asia, particularly the Tartars.

**Kraal**, a hut or collection of huts in an African village.

**Kraken**, a fabled Scandinavian sea monster, around which many legends and superstitions have been formed in Norway. It is generally described as a sort of sea-serpent, and was so large and weird of form as to be mistaken, so the tradition runs, by fishermen for an island.

**Kremlin**, a large fortified citadel in Moscow, containing the cathedral in which the Czars were crowned, an imperial palace, and important garrisons and arsenals. At the foot of the Ivan Tower rests, in a cracked condition, the famous great Ivan Bell, weighing 200 tons. The Kremlin is now the headquarters of the Soviet Russian Government.

**Krishna**, one of the Hindu deities, and a chief character in the Mahabharata epic.

**Krypton**, one of the rare gases, occurring in the air to the extent of 1 part in 20 million. It was discovered in 1898 by Ramsay and Travers.

**Ku-Klux-Klan**, a secret political organisation in the Southern States, active after the close of the Civil War and having for its chief aim the establishment of white control. Suppressed in 1871 by the Enforcement Act (popularly known as the Ku-Klux Act or Force Bill) after numerous outrages had been committed. Revived between the two world wars as a sadistic anti-Negro, anti-Jewish, anti-Catholic society, spreading to the North as well as the South.

**Kulin**, a Brahmin of high sacerdotal position, to whom the privilege of plurality of wives is permitted, with whom he gets liberal dowries, while each wife is maintained in the parental home.

**Kummel**, a German cordial, flavoured with cummin, caraway seeds, or fennel.

**Kunzite**, a transparent lilac to peach-pink spodumene (*vide*) gemstone with remarkable fluorescent properties.

**Kuomintang**, the Chinese "People's National Party," founded by Sun Yat-Sen in 1912 after the successful National Revolution of 1911. Sun Yat Sen sought to establish a democratic Republic modelled on western parliamentary democracy and in his famous "Testament" laid down the principles upon which the constitution of China was to be based. After his death in 1925 Chiang-Kai-shek emerged as leading man in China. Beginning as a Russian-inspired revolutionary movement, the Kuomintang developed into a reactionary oligarchy and collapsed in 1949 when the Nationalist forces suffered military defeat by the Communists.

**Kurds**, a native race inhabiting Kurdistan, a wandering people professing the Mohammedan faith and speaking an Iranic dialect.

**Kussier**, a Turkish musical instrument consisting of five strings stretched over a sort of kettle-drum.

**Kusti**, the sacred cord or girdle of the Parsees, consisting of 72 threads—the number of the chapters of the Izashue—and two branches, each branch containing six knots, together standing for the 12 months of the year.

**Kutch**, the packet of vellum leaves in which gold is placed for the first beating; the gold-beaters'

skin packet into which the leaf is placed for the second beating is known as the "shoder."

**Kutia**, a special Russian dish eaten after a funeral ceremony at church or cemetery, and composed of boiled rice or other cereal mixed with honey and raisins, the ingredients being supposed to possess some symbolical significance.

**Kvass**, a common Russian fermented beverage made from an infusion of flour or meal or dough of rye, wheat, or malt. A superior kind is made from fruits.

**Kyanite**. This mineral, commonly blue to white in colour, is an aluminium silicate.

**Kylix**, the name given in ancient Greece to a graceful double-handled drinking-cup, in general shape something like a modern champagne glass.

**Kymograph**, an instrument for recording the pressure of fluids, especially the blood in living beings, on a revolving cylinder covered with smoked paper.

**Kyrie Eleison** ("Lord, have mercy"), the name of a common form of prayer in the Anglican, Roman Catholic, and Greek Churches; also applied to the English Church responses after the recital of the commandments.

**Kyrie Society**, named after Pope's "Man of Ross," John Kyrie, founded by Miss Miranda and Miss Octavia Hill in 1875, and having for its object the decoration of workmen's clubs, hospitals, etc., and the promotion among the poor of a taste for literature, music, and outdoor recreation.

**Kyste**, a chest or coffin for the burial of the dead.

## L

**L.S.D.**, from the Latin *libra* (a pound), *solidus* (a shilling), and *denarius* (a penny), introduced by the Lombard merchants.

**Labadists** were a sect of Christian communists instituted by Jean de Labadie in France in the 17th century. They did not distinguish Sunday from other days, holding that life was all Sabbath.

**Labarum**, the standard of Constantine the Great, adopted after his conversion to Christianity, marked with his seal, and represented upon the coinage.

**La Belle Sauvage**, a site on the north side of Ludgate Hill, famous for the inn that stood there from the fifteenth century to the early nineteenth. The site was blitzed during the second world war.

**Labour Party**, The, is made up of 84 Trade Unions with a membership of 5,529,760, five Socialist and Co-operative Societies with a membership of 34,610, and 667 Constituency and Central Parties with an individual membership of 544,042 men and 389,615 women. The total membership is 6,498,027. The Party organisation is governed by a National Executive Committee elected annually by the Labour Party Conference, with Ald. E. G. Gooch, C.B.E., J.P., M.P. as Chairman (1955-56) and Mr. Morgan Phillips as Secretary. The Parliamentary Labour Party (1955-56) consists of 277 Members in the House of Commons, of whom the Rt. Hon. H. T. N. Gaiskell, C.B.E., M.P., is Leader; Rt. Hon. James Griffiths, M.P., Deputy Leader; Mr. H. W. Bowden, C.B.E., M.P., Chief Whip. The Parliamentary Committee (or Shadow Cabinet) consists of these three plus twelve elected Members and three Peers. Mr. Carol Johnson, C.B.E., is Secretary of the Parliamentary Party. In the House of Lords, the Party consists of 55 Peers of whom the Rt. Hon. Viscount Alexander of Hillsborough, C.H., is Leader and the Earl of Lucan, M.C., Chief Whip. The Deputy Leader of the Labour Peers is the Rt. Hon. Lord Silkin. Labourers, English Statute of, was passed 1350-51, with the object of compelling labourers to accept a certain rate of wages and not leave their employers' service, the Plague having rendered labourers so scarce that they were in great demand and had been insisting on higher pay. These enactments were bitterly opposed and led to the "Peasants' Revolt," headed by Wat Tyler.

**Labradorite**, a feldspar of a pearly lustre on cleavage, found in masses in igneous rocks, the best samples of which come from Labrador.

**Labyrinth**, or **Maze**, a combination of roads and passages so constructed as to render it difficult for anyone ignorant of the clue to trace the way to the central part. The Egyptian labyrinth near Lake Moeris had 3,000 rooms, half of them subterranean, and the remainder above ground. The labyrinth in Crete, according to Greek myth, was built by Dædalus to house the Minotaur. There was one at Lemnos, renowned for its stalactite columns; and another at Clusium constructed by Porsenna, King of Etruria, about 520 B.C. The labyrinth in which Fair Rosamond was concealed was at Woodstock. Hampton Court maze dates from the 16th century.

**Labyrinthodonts**, gigantic fossil amphibians which get their name from the curious labyrinthine structure of their teeth. They occur in the Red Sandstone formation, and remains have been found in Britain and other parts of Europe. Their heads were several feet long, and their footprints, by which they were discovered, closely resemble the prints of the human hand.

**Lac**, a resinous matter deposited on the branches of a number of tropical trees by the females of the lac insect, the exudation including eggs and a viscous covering. At the gathering time the twigs are broken off and dried in the sun, when the insects die, and the lac that remains is termed *stick-lac*. From this, by the removal of extraneous accretions and dissolving, *seed-lac* is produced. *Shell-lac* is seed-lac after it has been melted and otherwise prepared, and this is the best known of the lacs, being used in printing and the manufacture of varnishes and sealing-wax, and for other commercial purposes.

**Lac**, or **Lakh**, a Sanskrit word, meaning a mark, used in India to indicate a lac, i.e., 100,000 rupees.

**Lace**, a delicate fabric of linen, silk, or cotton threads, made by hand or machinery, and worked in various ornamental designs. The kinds of lace are many, deriving their distinctive names either from the method employed in production or from the place where any special variety was originally made. The best-known makes are pillow or bobbin-lace, woven and plaited by hand; needle-point lace, worked by the needle over a traced design; and machine lace, which practically dates from Heathcote's invention of the early part of the 19th century. Some of the most famed laces are the following: *Alencon*, a needle-point lace; *Brussels*, a very fine kind, with needle-point sprigs and flowers; *Chantilly*, a silk variety with flowers and openwork; *Chuny*, a netlace with darned stitch; *Hombton*, a delicate kind with dainty sprigs and figures; *Mechlin*, generally made in one piece and very varied in design; and *Valenciennes*, or bobbin lace, of great durability, the pattern and ground of which are made at the same time, being one of the best and most costly of laces, now manufactured mainly in Belgium.

**Lace-Wings**, insects with frail, transparent, and much-veined wings whose grubs eat large numbers of insect pests such as aphids. The eggs are borne at the ends of threads attached to plants.

**Lacerta**, the name of a group of long-tailed lizards inhabiting the warmer parts of Europe and Asia. Also the name of a constellation, lying south of Cepheus, its most important star being only of the fourth magnitude.

**Lachesis**, a genus of venomous snakes of the rattlesnake family confined to tropical countries, and including the "deadly bushmaster," of Surinam, and several *Crotalidæ* pit-vipers of Guiana and Brazil.

**Lacquer**, a varnish made from shellac and certain colouring matters, and utilised for imparting lustre to various surfaces of metal or wood. In China and Japan the production of lacquer ware of a decorative character has long been an important industry, bringing into use gold, coral, vermilion, sprinkled, and other lacquers, with pleasing effect.

**Lacrimoso**, a musical term denoting a mournful method of playing; sadly, with feeling.

**Lacrosse**, a ball game largely played in Canada, of Red Indian origin. (See "Sports Section.")

**Lacrymatory**, tube-like vessels of glass found in graves of the ancients of the urn-burial period, and supposed by some to have been the receptacles of the consecrated tears of lamenting

friends, but really used for holding ointments or perfumes.

**Lacs-d'Amour**, a cord of running knots worn on the arm at one time by widows and unmarried women to denote their condition.

**Lactic Acid**, an organic acid that may be obtained by fermenting milk sugar (lactose). It is formed in muscular tissue when this is active.

**Lactometer**, a tube or instrument for ascertaining the proportion of cream in a quantity of milk. Called also a galactometer.

**Ladder**, a framework of portable steps, made of wood or metal. There are innumerable varieties, according to their uses. Thus: the standing-ladder, the step-ladder, scaling ladder, companion ladder, collapsible ladder, etc.

**Ladybird**, the common name of a large family of beetles—the *Coccinellidæ*. The insect is usually of a red or yellow colour with small black or coloured spots. Ladybirds are of good service to the gardener because their larvæ feed on aphids. There are about 2,000 species.

**Lady-Day**, the day of the festival of the Annunciation of the Virgin Mary, Mar. 25th. One of the four English quarter days.

**Lagoon**, a stretch of shallow water opening out upon the sea. Venice is built on lagoons.

**Lake Dwelling**, certain prehistoric habitations originally built above the waters of lakes or rivers, evidences of which have been found in Switzerland, Britain, and other parts of the old and new worlds. They were erected on platforms supported by piles, the stumps of many of which still remain. The most valuable evidences in this connection, however, are the recovered fragments of pottery, bone, flint, bronze, and iron implements, as well as some few human skeletons, affording interesting testimony to the primitive existence led by the lake dwellers.

**Lakes** are bodies of water collected in depressions of the earth's surface. The most notable lakes are the Great Lake series of North America, including Lakes Superior, Michigan, Huron, Erie, and Ontario, all discharging into the St. Lawrence River. Africa has an enormous area of lakes, including the Albert Nyanza and the Victoria Nyanza, forming the sources of the White Nile, Lakes Tanganyika, Nyassa, Tchad, etc. Smaller lakes are numerous in other countries—Switzerland, Germany, Italy, England, Ireland, Scotland, all having their lake regions, where the scenery is invariably beautiful and romantic.

**Lake School**, the name given, at first in ridicule, to a distinguished trio of poets—Wordsworth, Coleridge, and Southey—who made their homes in the English Lake District.

**Lalo**, the leaves of the Baobab, dried and powdered; a favourite food of certain African tribes.

**Lama**, a priest of the Tibetan Buddhists. At the head of the hierarchy is the Grand or Dalai Lama. The priesthood constitutes the civil as well as the religious government of Tibet. When the Dalai Lama dies, his spirit is held to pass into a new-born infant; a royal search is instituted, and the child selected as the new Dalai Lama is recognised by certain bodily marks. Second in importance is the Tashi or Panchen Lama, regarded as an incarnation of Amitabha, a Buddha.

**Lamellibranchs** (Pelecypods), the class of molluscs to which the oysters, cockles, mussels, clams, and scallops belong. In these animals the body, which is compressed laterally, is enclosed in two hinged shells held together by muscle action. The gills are thin plates, hence the name "lamellibranch." All are aquatic molluscs.

**Lamellicornia**, a group of beetles, distinguishable because the antennæ are made up of a number of plates. The Lamellicorn beetles are herbivores and number several thousand species, the best-known being the stag-beetles, cockchafers, and scarabs.

**Laminarians**, seaweeds with long ribbon-like fronds.

**Lamination**, a geological term designating a class of rocks with thin cleavages, such as slate or shale.

**Lammas Day** is one of the oldest of the Church festivals, probably derived from the loaf-mass



(hlafræsse) of the Anglo-Saxons. It occurs on August 1st. In the olden times it was the day when loaves were given in place of first-fruit offerings.

**Lammerger, the bearded vulture** of alpine regions, resembling an eagle in appearance. It has a white head with black tufts at base of the bill, and its general plumage is dark brown, nearly black. It is found in the remote mountain ranges from Southern Spain to China, and is becoming scarce.

**Lampblack, a carboniferous pigment** obtained from flame-smoke, and now produced in specially constructed furnaces in which bodies rich in carbon, such as tar, resin, petroleum, etc., are burned. The smoke or soot resulting is collected from the sides of the furnace, and forms lampblack. It finds use in making printer's ink, black paint, etc. Being a very pure form of carbon, it is also utilised in the manufacture of dynamo brushes and arc-lamp carbons.

**Lamprey.** These fish differ from those with which most people are familiar in having no jaws, no paired fins, and no scales. Together with the hagfishes, the lampreys are placed in a special class—the Cyclostomes. There are three British lampreys: all are eel-like in form.

**Lamps** are vessels for holding an illuminating agent, and in modern times are of many kinds. In Anglo-Saxon times they were made of horn. The first public street lamps were oil lamps, London being lighted in this manner in 1681. Gas lamps were introduced in 1814. A great advance was made in domestic lamp illumination by Argand, a Frenchman, in 1787, who invented a lamp having a circular burner or wick. The flame was oxygenised by the admission of a current of air greatly increasing the brilliance of the light. Among the more distinctive lamps of later times are the various electric lamps, the incandescent gas lamps, the paraffin oil and naphtha spirit lamps, the submarine lamp for burning under water, and the Davy safety lamp for colliery use.

**Lance,** a military weapon which was up to 1927 carried by cavalry regiments, and consisted of a long spear for hurling at or charging an enemy with. The war lance of the Middle Ages was about 16 ft. long.

**Lancelet.** (See *Amphioxus*.)

**Lancers,** light cavalry soldiers. Most European armies had regiments of Lancers—the Russian Cossacks, the German Uhlans, etc.—but there were no regiments of Lancers in England before 1816. There were four regiments in 1939.

**"Lancet,"** the name of a noted English medical journal, established in 1823 by Dr. Wakley.

**Lancewood,** a hard, durable, and elastic kind of wood obtained from certain West Indian trees of the *Anonaceæ* order, and much used in coach-building; in Guiana, the wood is called Yari Yari.

**Landau,** a kind of carriage, originally made at Landau in Germany, its distinguishing feature being that the covered top is in two parts and can be let down or put up as required.

**Land Crab,** a family of crabs (*Gecarcinidae*) which live mainly on land, though migrating to the sea to deposit their eggs.

**Land League,** an association formed in 1879, with Parnell as president, for compelling a reduction in the rents of land and a reconstruction of the land laws in Ireland, and in case of non-compliance refusing to pay rent. For a time this League exercised great political influence and was an important aid to the Home Rule agitation.

**Landrail,** popularly known as the Corncrake, is a regular summer visitor to Britain, and is well known by its harsh and piercing note, so familiar in cornlands in the night time.

**Landslip, a breakage of a mass of soil or rock** away from a mountain, hill, or cliff, due to a variety of natural causes, such as the saturation of the earth by water or the decay or slipping of portions of rock. Many serious landslips have occurred from time to time. In 1618, an earthfall happened at Plurs, on Lake Como, involving the destruction of many buildings and the loss of numerous lives. In 1806 a portion of Rossberg mountain in Switzerland slipped from its position, and falling into the valley

below buried many villages and hamlets and over 800 people. A chalk cliff from 100 to 150 ft. high and three-quarters of a mile long fell at Lyme Regis, in Dorsetshire, in 1839, doing great damage. Over 200 people were killed by a landslip in Naini Tal, in India, in 1880; and at Quebec, in 1889, a rocky eminence called Cape Diamond gave way, many buildings being destroyed and lives lost. Notable landslips in recent times have occurred at Amalfi (Italy) in 1924, and at Murchiston (New Zealand) in 1929.

**Langue d'Oc,** an ancient French dialect—the language of the Troubadours—confined to the country south of the Loire. It derived its name from the fact that it used *oc* instead of *oui* for the affirmative.

**Langue d'Oui,** the old Northern French dialect, distinguished by the use of *oui* for the affirmative.

**Lantern,** a case for enclosing, holding, or carrying a light. In its earliest form it was made of horn, and called a lantern, but the name now covers a variety of forms, from the large stationary lantern of a lighthouse to a Chinese collapsible paper lantern. (See *Magic Lantern*, etc.)

**Lantern Fly,** bugs belonging to the family *Fulgoroide* in which the head is drawn out to form a lantern-like structure. In no instance is the "lantern" luminous, though naturalists used to think it was.

**"Lantern of England,"** Bath Abbey possesses so many windows that it is called sometimes the "Lantern of England." Among numerous interesting monuments Bath Abbey contains that of Malthus, author of *Essay on Population*.

**Lanthanum,** a metal belonging to the rare-earth group of metals, discovered by Mosander in 1839.

**Lapidary,** a cutter of, or dealer in, precious stones; also used in adjective form in regard to the working, engraving, or setting of stones.

**Lapis Lazuli,** an azure-blue mineral. The pigment ultramarine is made by grinding it, though artificial ultramarine has largely superseded it. The mineral (also called *lazurite*) has been used as a gemstone since ancient times.

**Laplanders,** inhabitants of Northern Europe.

**Lapwing or Green Plover,** familiar British bird on moors and marshlands with iridescent greenish-black plumage, white underparts, and black crest. Often called "peewit" from its cry.

**Starboard** is the old nautical term indicating the left-hand side of a ship, and changed by Admiralty order to "port" in 1844. Starboard is the right-hand side.

**Larch,** a familiar coniferous tree in the mountain regions of northern Europe, and though not native to Britain, the Common Larch is successfully cultivated in various parts of the kingdom. It is one of the best of all turpentine-yielding trees, and the bark is valued for tanning. The larch is an unusual conifer in being deciduous.

**Larceny** in its broad significance means the fraudulent taking away and appropriation of the personal goods of another. Larceny is of two kinds: *simple larceny*, which is theft apart from accompanying aggravation; and *compound larceny*, that which is rendered more serious by being combined with assault, or forced entrance into an enclosed place, such as a house or shop.

**Lares** were tutelary deities of the ancient Romans, and of two classes, *Lares domestici*, the household gods, and *Lares publici*, the gods of public places. Both classes were represented by images or statues.

**Laridae,** a family of web-footed swimming gulls, white and nearly blue in colour, very widely distributed over the sea coasts of the world and feeding mainly on fish.

**Lark,** a family of song birds (*Alaudidae*) of many species, some of which—notably the skylark—are famed for their habit of soaring into the air, singing all the while. They build their nests on the ground in the open country and, except for the black lark of Russia, have streaked brown plumage. The skylark and woodlark are the best known British species, while the crested lark and shore lark are among the occasional visitors. Africa has the greatest number of larks; America has only one species, the horned lark.

**Larkspur,** the common name of the genus *Del-*

**phivium**, a favourite flower introduced into British gardens from Switzerland in 1578.

**Larva**, the undeveloped form of any animal which, before maturity, undergoes metamorphosis.

**Lascar**, commonly an East Indian sailor engaged in British or foreign service. The name is also given to East Indian camp followers and regimental servants.

**Lastage**, a shipping term referring to the lading of a ship, and also formerly a duty for the right of conveying goods by ships.

**Lateen**, a triangular sail affixed to a tapering yard, used on light cargo vessels of the Mediterranean.

**Latent Heat** is the quantity of heat required to convert 1 gram of a substance from solid to liquid (latent heat of fusion) or from liquid to vapour (latent heat of vaporisation). Thus when a solid changes into a liquid or a liquid into a gas, the addition of heat to bring about the change produces no rise in temperature, the energy being absorbed in the form of latent heat. An equal amount is released when the process is reversed. The latent heat of fusion of ice is about 79.6 calories per gram and that of the vaporisation of water about 539 calories per gram.

**Lateran Councils** were the religious conventions held in the Lateran basilica at Rome for deciding important questions of Church doctrine. The most brilliant was that of 1215, which pronounced in favour of a Crusade. That of 1869-70 pronounced the infallibility of the Pope. (See **Ecumenical Councils**.)

**Laterite**, a ferruginous clay formed in tropical countries, e.g., India, Arabia, and the Sahara, by the weathering of igneous rocks. According to their content of the two metals, laterites are sometimes valuable iron- or aluminium-ores.

**Lateroflexion**, a scientific and pathological term signifying "a bending aside."

**Latex**, milky substance found in many plants, e.g., poppy, dandelion, spurge. Kinds of latex which are commercially important include rubber, chicle (base of chewing gum), and opium.

**Latitude** of a point on the earth's surface is its angular distance from the equator, measured on the surface of the earth in degrees, minutes, and seconds. Thus the equator is 0° Lat. and the poles 90° Lat. (N. or S.). First determined by Hipparchus of Nicea about 160 B.C.

**Latitudinarians**, a body of theologians whose object was to enlarge the scope of the Anglican Church so as to bring the Nonconformists within its fold, and included such eminent 17th-century divines as Burnet, Tillotson, Hales, and Chillingworth.

**Laughing Gas** is nitrous oxide, and received its name from the fact that the first effect to be noticed was that of producing exhilaration. One of the earliest anaesthetics, it is still much used in dentistry and for minor surgical operations.

**Laughing-stock**, a butt for ridicule, a person or an object provoking scornful hilarity.

**Laughter**, a convulsive action of the respiratory muscles, accompanied by a succession of short vocal sounds, induced by sudden joy or mirth.

**Lauance**, a family of eel-like sea fishes found in large numbers on the coasts of North America and Europe. There are two species common to British waters. These fishes are of a bright silvery hue, and live much in the sand under neath the water. They are prized as bait.

**Laurentian Shield** refers to a group of Pre-Cambrian rocks in the region of the Upper Lakes of Canada, nearly 2 million sq. m. in extent. Of enormous importance to Canada on account of the mineral wealth, forests yielding valuable timber and wood-pulp, and water-power.

**Lava**, the molten fluid rock which is ejected from a volcano while in eruption.

**Laver**, the popular name of certain edible seaweeds.

**Lawn**, very fine sun-bleached linen, in olden time called "cloth of Rheims."

**Lead**, a soft malleable metal, occurring in numerous ores, which are easily smelted. It is found in its native form in small quantities in Sweden. Lead is largely used in plumbing on account of its pliability, and as an alloy element it combines in the formation of type metal, stereo metal, shot metal, pewter, and many other compounds.

Lead mining is carried on in several of the northern counties of England and in Wales. The world output of lead ore before 1939 averaged 1,800,000 tons per annum, of which about one-fourth was raised within the British Empire, Australia being the chief British lead-producing region.

**Lead Insect**, a group of insects related to the locusts and grasshoppers which in colour and form closely resemble leaves.

**Leaf Miners**, larval insects which tunnel between the upper and lower skins of leaves. Most leaf miners are caterpillars of tiny moths; some sawfly larvae have the same habit.

**Leagues**, or combinations of kings, countries, communities, have been frequent since the kings of Canaan united against the Israelites. Among the most famous leagues may be mentioned the Holy or Catholic League, which prevented the accession of Henry IV. of France until he became a Roman Catholic; and the League of Augsburg against Louis XIV. of France in 1686.

**League of Nations**, was founded on Jan. 10th, 1920, with the object of promoting international peace and security. The original members were the signatories to the Peace Treaties at Versailles, and membership grew to fifty-three as new nations and ex-enemy States were admitted. Two notable absentees were the United States and Soviet Russia, the latter not being represented until 1934. Germany was a member from 1926 to 1933. The League had an Assembly which met at Geneva every year and a Council which met five or six times a year. The Permanent Court of International Justice sits at The Hague. The final Assembly of the League was held at Geneva between April 8th and 18th, 1946. Its place has been taken by the United Nations. The International Labour Organisation, set up by the League of Nations, met on April 20th, 1944, at Philadelphia and resumed its old quarters at Geneva under the new organisation in 1946.

**Leap Year or Bissextile**, was fixed by Julius Caesar, 45 B.C., the addition of one day in every four years bringing the measure of the calendar year even with the astronomical year, with three minutes per year over. The Gregorian Calendar corrected this by dropping leap year at the centuries not divisible by 400. For instance, 1700, 1800, and 1900 were not leap years.

**Leather** was made in ancient Egypt, Greece, and Rome, and has through succeeding centuries played an important part in the service of man. It consists of the dressed hides or skins of animals after the process of tanning has been gone through. Untanned skins are known as pelts. Leather is classed either according to the skins from which it is made or the system of preparation employed. The best-known kinds are morocco, kid, Russian, chamols, Cordovan, grained, patent, russet, tan, calf, Hungarian, etc.

**Leather-Jacket**, the larva of the Crane-fly (daddy-long-legs). Leather-jackets can prove serious pests of grassland.

**Leaven**, a mixture of flour and sour milk, formerly used in fermenting large quantities of fresh dough, a preparation now superseded by yeast.

**Lebensraum**, a German slogan for "living space."

**Leech**, an aquatic blood-sucking worm, mostly found in fresh-water ponds. Each end of the body is provided with a sucker, but that at the head end has jaws and teeth. The medicinal leech has three jaws. The leech attaches itself with avidity to animal bodies and sucks until glutted.

**Leeward**, a nautical term, meaning the sheltered side of a vessel—that is, the opposite side to that from which the wind is blowing.

**Legal Tender** of gold is good in this country to any amount; silver is legal tender up to 40s., bronze up to 1s., including farthings. Bank of England notes for £1 and 10s. are legal tender for the payment of any amount. (See p. 738.)

**Legend**, a story in which the marvellous, supernatural or mythical is a leading feature.

**Legerdemain**, sleight of hand, conjuring, juggling, a kind of performance in which trick and dexterity of hand deceive the eye and give



- the impression of feats that are naturally impossible.
- Legion**, a body of Roman troops, varying in numbers at different periods. A legion was divided into 10 cohorts, and every cohort into three maniples. Three legions composed the Roman army of occupation in Britain.
- Legion of Honour**, the French order for distinguished services, military or civil, was instituted by Napoleon I. in 1802, and confirmed and modified under later rules. There are five grades—Grands Croix, Grands Officiers, Commandeurs, Officiers, and Chevaliers.
- Legitimists**, supporters of the claims of the elder branch of the Bourbon family to the throne of France. The death of the Comte de Chambord in 1883 childless transferred the right of claim to the Comte de Paris, head of the younger Bourbon branch. Now applied to any supporter of monarchy by hereditary right as against a parliamentary or other title.
- Legume**, the fruit typical of the pea, bean family, or *Leguminosae*.
- Leipoa**, a kind of pheasant native to Australia, nesting in mounds. It has a crested head and dark plumage.
- Leitmotif**, a musical theme intended to represent a particular idea and introduced whenever the composer wishes that idea to be held in mind. Wagner made use of the leitmotif to such an extent that his enemies said that each of his characters presented a visiting-card.
- Lemming**, small light-brown rodents with dark spots, abounding in Scandinavian countries and in Siberia. The lemming is about 5 in. long, with a short stump of a tail. The migrations of the lemming are famous; so insistent is the urge to keep moving that these animals will march on into the sea in their thousands and be drowned.
- Lemur**, the most primitive member of the Primate order of mammals (to which man, apes, and monkeys also belong). They are noted for having strong plantar toes enabling them to use their feet as hands, and also well-developed thumbs on the hands. They have long squirrel-like tails, fox-shaped heads, and large staring eyes, and are distributed over the tropical parts of the Old World, being most abundant in Madagascar.
- Lend-Lease**, an arrangement made by the U.S.A. in Mar. 1941 to provide goods, services, and capital facilities to nations whose fighting contributed to her own defence. The principal beneficiaries were Great Britain and Soviet Russia. There was to be payment or repayment in kind, property, or other benefits to the U.S.A., but when the time of settlement came goods already consumed were written off the account and the recipient countries were asked to make some payment for what remained in existence. By the end of the war practically all the Allies were giving each other Mutual Aid, as it was called, making available their own resources for the use of others in the task of defeating the common enemy. It is estimated that Lend-Lease aid given by the U.S.A. amounted to over £12,000 million and Mutual Aid given by Great Britain to over £2,000 million.
- Lenses** are, broadly speaking, either *convex*, having the thickest part in the centre and magnifying objects, or *concave*, with the thinnest part in the centre and reducing the objects. Each kind has several varieties, peculiar from their proportions, arrangements, and specific effects.
- Lent**, the forty days' period of fasting that precedes Easter.
- Leo**, one of the twelve signs of the Zodiac, bounded on the west by Cancer, and on the east by the Virgin. The constellation consists of seventy-five stars, of which Regulus (a double star) is the brightest. The Leonids, the best-known of meteor showers, radiate from a point in this constellation.
- Lepidodendron**, a fossil plant of gigantic height (nearly 100 ft.) bearing a cone-like fruit, frequently met with in the coal strata.
- Lepidoptera**, the order of insects to which the 90,000 butterflies and moths belong.
- Lepidosiren**, a genus of S. American lung-fishes. In times of drought these fish burrow in the mud, and breathe by means of the air bladder which functions as a lung.
- Lepus**, the constellation of the Hare, situated under the Orion group, and one of the constellations with which the ancients were familiar.
- Lernæa**, a crustacean parasitic on fish. This "fish louse," after entering upon its parasitic stage, loses its external organs.
- Lettres de Cachet**, sealed letters which the kings of France issued to their agents to secure the imprisonment of distrusted or disliked persons without trial. Abolished in 1789.
- Leucine**, a crystalline, pulverulent substance produced by the decomposition of nitrogenous matter, otherwise known as amido-caproic acid, and called leucine because of its whiteness.
- Levée**, a State reception held by the Sovereign or his representative and attended by men only.
- Levellers**, an English military-political party prominent about 1647 in the Parliamentary army, which advocated the rights of the people.
- Lever**, a rigid bar of metal or wood used for raising heavy bodies, and worked by means of a support called the fulcrum placed underneath the lever.
- Lewis**, a contrivance of stone-lifting, the principle of which was known to the ancient Romans; it consists of two dovetail tenons of iron or other metal, expanded by an intervening key in a dovetail-shaped mortice in the stone, and shackled by a ringed bolt to the hoisting chain.
- Leyden Jar**, the earliest form of electrical condenser. Its invention is usually credited to Muschenbroeck of Leyden (1745). It consisted of a jar coated inside and out with tinfoil for about two-thirds of its height and having its inner coating connected with the top by a brass knob and chain. The jar was charged by connecting it to an electrostatic machine.
- Li**, a Chinese distance measure, about the third of an English mile. Also a Chinese weight, the thousandth part of an ounce, or liang.
- Lias**, a geological term referring to the lower section of the Jurassic group, and mainly comprising shales and limestones.
- Libel**, any writing, printed matter, picture, or illustration put forth with malicious intent for the purpose of bringing a person into public ridicule and contempt. An aggrieved person may proceed either by civil action or criminal indictment. A good defence is that the words complained of are true and to the public advantage to be made known. Since 1881 no newspaper proprietor can be criminally prosecuted for libel without the fiat of the Public Prosecutor. A spoken libel is *slander*.
- Liberalism** has grown historically from protest, political, economic, social or ethical, against what were regarded as the authoritarian aspects of the modern state. Its aim has been to remove obstacles blocking human progress, to gain personal liberty in all fields, and fiscal liberty in the form of free trade. It is the successor of the Whig Party, which in the 17th and 18th centuries stood for the limitation of royal power. From 1830 to 1885 the Whig, later the Liberal, was the dominant Party in parliament. In 1886 it split on the Irish Home Rule question. The close of the 19th century saw the fortunes of Liberalism at a low ebb, but at the election of 1906 the party was returned to power with an overwhelming majority. Up to the beginning of the First World War, the Liberal Government carried through a bold programme of social reform which laid the foundations of the Welfare State as we know it to-day. After the Coupon election of 1918, the Liberal Party gradually lost its hold on the electorate, and its forces were further decimated by the break-away of the National Liberals in early 1932. In the crisis of 1931 the Liberal Party had joined the National Government and had accepted tariffs under an agreement to differ, but in the following year Liberal Ministers resigned from the Government on account of their opposition to the Ottawa Agreements. Certain Liberal Ministers who remained in the Government formed the nucleus of the National Liberals, who from that period onwards have given general support to the Conservative Party. Modern Liberal policy calls for the protection of the rights of the individual; for the freeing of World Trade and the restoration

of the convertibility of sterling; for a system of profit-sharing to bring harmony into industry and create a property-owning democracy, and for full support for the United Nations. It supports social legislation and also private enterprise. On nationalisation, Liberal policy demands that no undertaking should be nationalised until it has been clearly shown by an impartial enquiry that State control and ownership is necessary in the interests of the community as a whole. Liberals supported the nationalisation of the coal-mines, the railways, gas and electricity on these grounds. They opposed the nationalisation of steel, and stated in the 1951 General Election that they were opposed to any further nationalisation.

**Libra**, the Scales, one of the twelve Signs of the Zodiac, lying east of the Scorpion.

**Libraries**, before the invention of printing, were few, and collected together at enormous cost. At Nineveh remains of libraries, consisting of tablets of baked clay, have been discovered. There were two libraries at Alexandria containing a vast collection of rolls or volumes, founded by Ptolemy I Soter (305-283 B.C.) and established by Ptolemy II Philadelphus (285-57 B.C.). Among the great libraries of later times may be mentioned the Vatican Library at Rome, moved to its present premises in 1588; the Royal Library in Paris which later became the Bibliothèque Nationale; The Astor Library, New York; and in England, the Bodleian Library, Oxford, and the British Museum Library at Bloomsbury. Since 1850 Public Libraries have been established in all the chief cities and towns of the kingdom, and Andrew Carnegie devoted several millions sterling to the building and endowment of such institutions in America and the British Empire. The first lending library was opened in Edinburgh in 1726. Mudie's circulating library was founded in 1852. (See Bodleian Library, British Museum, India Office Library and also "A Citizen's Guide.")

**Libration**, an astronomical term referring to an apparent irregularity in the moon's course, which may be libration in longitude or latitude, or diurnal, and due to a variety of causes.

**Libretto**, the word-book of an opera or oratorio. Usually the composer and the librettist collaborate in the writing of an opera, but several composers (e.g., Wagner) wrote their own libretti. Boito, librettist to Verdi for "Otello" and "Falstaff," himself composed two operas, "Mefistofele" and "Nerone."

**Licence**, special permission to do or sell certain specified things, usually such as are liable to excise duty. Licences are required for keeping motor vehicles, dogs, for shooting game, for hawking and peddling, for selling beer, ale, wines, and spirits, tobacco, patent medicines, etc.

**Licensing Hours** for the sale and supply of liquor are fixed by the Licensing Act, 1921, at 9 hours for London on weekdays and 8 hours for the provinces with 5 hours on Sundays. Local authorities have the power to modify these hours for various reasons (Market day, etc.).

**Lichens**. In every lichen, two plants are associated (a condition called symbiosis)—one being an alga and the other a fungus. The fungus derives its food from the alga; probably the alga gains too from the association, being protected against desiccation by the fungus. Lichens are the first plants to colonise on bare rocks.

**Lictor**, a public functionary of ancient Rome whose duty was to carry out the orders of the magistrates, punish offenders, and attend upon his superiors on all public occasions.

**Lieder**, the plural form of the German word *Lied* meaning song. It is applied particularly to poems set to music by the German romantic composers, Schubert, Schumann, Brahms, and Hugo Wolf.

**Lieutenant**, a title implying the holding of an office under or for a superior. Thus, a Lieutenant-General is next under the full General and takes his place in his absence, and so with Lieutenant-Colonel. When the title is held alone it ranks in the army next to the Captain, and in the navy next to a Lieutenant-Commander.

**Life-Boat** was invented by three men, Lionel Lukin, who converted a cable into a boat for saving life

in 1785; William Wouldhave, who discovered how to make a boat right herself if she capsized; and Henry Greadhead, who built a life-boat, partly from Wouldhave's model, in 1789. This boat was stationed at South Shields, which was the first permanent life-boat station to be established. It was not until 1851 that the first life-boat able to self-right was built, and a motor was first installed in a life-boat in 1904. Modern motor life-boats have engines of from twin-18 h.p. to twin-80 h.p., with a speed of nearly 10 knots. All coastal life-boats in this country are maintained by the Royal National Lifeboat Institution founded by Sir William Hillary in 1824. Over 76,000 lives have been saved including 6,376 during the last war. The life-boat service is maintained entirely by voluntary contributions and costs over £400,000 a year.

**Light**. The speed of light is one of the fundamental physical constants, and is basically involved in atomic theory and in astronomical measurements. Recent measurements carried out by Dr. L. Essen of the National Physical Laboratory have changed the hitherto accepted value of the speed of light in *vacuo* (186,271 miles per second). The revised value, now accepted, is 186,282 miles per second.

**Light Alloys**. Alloys of aluminium and magnesium.

**Light Year**. A measure of astronomical distance, equal to the distance light travels in the course of a year. A light year is thus 5·88 million million miles. (See also p. 152.)

**Lighthouses**, to warn ships of dangerous places and indicate coasts, points, harbours, etc., have existed since the building of the first Pharos, at Alexandria, 285 B.C. In early lighthouses the lights were simple fires. A coal-fire light was shown at Tynemouth Castle Lighthouse in 1638. There was no great advance made in lighthouse building until the first Eddystone erection was put up in 1759-60 (see Eddystone). The whole problem of lighthouse building and lighting, invested though it has been with tremendous difficulties, may be said to have been mastered within the last century; not only are the present structures impregnable to storm and tempest, but the light that they are supplied with is a thousand times more brilliant than under the older systems. The introduction of parabolic mirrors was a great improvement, providing a reflecting medium that carried to a great distance. Further improvements were made by Fresnel, Stevenson, and others, and now the electric light has been adopted to a large extent with ample success. The lighthouses of England and Wales are under the control of Trinity House; Commissioners of Northern Lighthouses control those of Scotland; and the Commissioners of Irish Lights control the coasts of Ireland.

**Lightning**, the flash of a discharge of electricity between two clouds, or between a cloud and the earth, when the strength of the electric fields becomes so great as to break down the resistance of the intervening air. With "forked" lightning the actual path, often branched, is visible, while with "sheet" lightning the flash is hidden by the clouds which themselves are illuminated. "Ball" lightning is the name given to the luminous balls which have been seen floating in the air during a thunderstorm. The Boys camera has provided much information regarding the sequence of events in a lightning discharge. It is found that a flash consists of a number of separate strokes, usually four or five, and that the discharge of electricity to earth begins with a faintly luminous "leader" moving downwards and branching at intervals. As the ground is approached a much brighter luminosity travels back along the conducting channels, lighting up the several branches. The multiple strokes which follow in fractions of a second have the same "return" nature and are rarely branched. Lightning flashes to earth damage structures, cause loss of life and endanger overhead power systems, often interrupting electricity supply. Such storms generally affect radio transmissions and present hazards to aircraft. Thunder-clouds may develop energy far exceeding the capacity of our largest power generating stations.



- Lightning Conductor**, a metal rod, the upper part of which is of copper with a conical point, the lower portion being iron, which extends into the earth. Its effect is to gather to itself the surrounding electricity and discharge it into the earth, thus preventing its falling upon the protected building. In ships, lightning conductors are fixed to the masts and carried down through the ship's keel-sheathing. Benjamin Franklin was the first to realise the possibilities of lightning protection and, in 1752, carried out his famous experiment of drawing electricity from thunder-clouds with the aid of a sharp-pointed conductor fixed to a kite.
- Lignin**, a substance found in the cell walls of plants, being particularly abundant in all woody fibres.
- Lignite or Brown Coal**, an intermediate substance between peat and coal; it is, in fact, undeveloped coal, and known as brown coal. The best-known deposits in Britain are the Bovey Tracey Beds in Devon.
- Lignum Vitæ**, heartwood of a tree (*Guaiacum*) native in the W. Indies. The heaviest commercial wood, a cubic foot weighs 76 lb.
- Lillibulero**, an old marching song composed by Purcell. With words by Wharton, it is said to have "sung James II. out of three kingdoms." During the second world war it was used by the B.B.C. as a station identification signal preceding news bulletins.
- Lily Family (Liliaceæ)**, one of the largest families of flowering plants, with 200 genera and 2,500 species. It includes the true lilies (*Lilium*), tulips and hyacinths. Useful vegetables belonging to the family are the onion and asparagus. Most members are herbaceous plants; shrubs or small trees occur in the genera *Aloe* (Yucca) and *Dracæna* (Dragon-tree).
- Limbουργ**, a specially strong kind of cheese made at Limburg, a province partly in Holland and partly in Belgium.
- Lime**, an alkaline earth obtained from kiln-heated limestone, and used in making mortars and cements; a valuable fertiliser, particularly on acid and clay soils.
- Limestone** is carbonate of calcium. It is found in every geological formation, and is often highly fossiliferous. Marble is limestone that will polish after cutting.
- Limnology**, the division of biology dealing with fresh-water organisms.
- Limonite**, a mineral; hydrated oxide of iron, of which it is an important ore in Luxembourg, Sweden, etc.
- Limpet**, a marine mollusc with a single-valved shell, generally found sticking close to seawashed rocks.
- Lincoln College**, one of Oxford University's Colleges, founded in 1427 by Richard Fleming, Bishop of Lincoln.
- Linen**, a textile fabric manufactured from flax fibre, known to the ancient Egyptians, and first manufactured in England under Henry III. by Flemish weavers. The chief seat of the manufacture is Ulster, with Belfast as the centre. Dunfermline (famous for its damasks) and Manchester are also large linen-producing towns.
- Ling**, a sea-fish common on the coasts of Britain, and abounding in more northern waters. It averages from 3 to 4 ft. in length, and is a voracious feeder, living chiefly on small fish. Ling is also the name applied to *Calluna vulgaris*, the plant which most people call "heather."
- Linseed**, the seed of the flax plant, containing, apart from its fibrous substance, certain oily and nitrogenous matter of considerable commercial value. This yields linseed oil, and what is left is converted into cattle food.
- Lion**, the most impressive of the Cat tribe (Felidæ) of the order Carnivora. It is chiefly found in Africa, being comparatively rare in Asia. Its large square head, its flowing mane (in the males only), and its tufted tail distinguish it. From tip to tip it can reach a length of 10 ft.: a weight of 500 lb.
- Lion and Unicorn**, the supporting figures of the royal arms of Great Britain, date from the union of Scotland with England at the accession of James I. (James VI. of Scotland), the lion representing England and the unicorn Scotland.
- Liqueurs** are essences combined with alcoholic liquid, and are of many kinds, named according to their flavourings or place of production, and include Maraschino, Chartreuse, Curacao, Benedictine, Noyau, Kummel, etc.
- Liquid**, the name given to matter in such state that it takes its shape from the containing vessel. The volume it occupies is independent of the container, however.
- Liquorice**, a juicy substance obtained from the root of the *Glycyrrhiza glabra*, and used in the making of sweetmeats and as a throat remedy.
- Litanies** were first used in church processions in the 5th century. The first English litany was commanded to be recited in the Reformed churches by Henry VIII. in 1545.
- Lithium**, a silver-white metallic element discovered by Arfvedson in 1817. It is softer than lead. Its main ores are lepidolite, spodumene, amblygonite.
- Lithography**, the art of drawing on stone and printing therefrom, was discovered by Alois Senefelder about 1796, and was introduced into England a few years later. Many improvements in the art have been made in recent years, especially in chromo-lithography and photolithography.
- Litmus**, a special kind of colouring matter produced from certain lichens. The resulting colour is violet; is turned red by acids and blue by alkalis.
- Litre**, a French measure both for liquids and dry articles. In the former measure it is equal to 1.76 imperial pints; in the latter to a cubic decimetre.
- Liturgy**, the name given to the Church ritual, though strictly applying only to the portion used in the celebration of the Eucharist. The present English liturgy dates from 1547-48, when it received the approval of Parliament.
- Liverworts (Hepatics)**, plants related to the mosses and belonging to the second most primitive subdivision of the Plant Kingdom. There is no differentiation into stem and leaves. Liverworts are most common in damp situations, such as the banks of ditches.
- Livre**, an old French coin, the equivalent of the present franc. Not current since the end of the 18th century.
- Lizard**, the name given to a diversified order of reptiles, of which there are about 1,600 species. Included among the lizards are the geckos, chameleons, glass snakes, skinks, and blind worms.
- Llama**, mammals related to the camels, from which they differ in small size, absence of humps, and more woolly coat. The domestic llama of S. America is used as a beast of burden, also providing wool, meat, and milk.
- Loach**, a fresh-water fish, a common inhabitant of British rivers and streams. It has several barbels around its mouth, and is of a darkish-green colour on the back, with darker stripes and spots.
- Loadstone or Lodestone**, an oxide of iron, found chiefly in Sweden and Norway. Its scientific name is magnetite. It has the power of attracting pieces of iron and served as the first magnets used in compasses.
- Loam**, soil composed of clay and sand in such proportions as to keep the ground porous.
- Lobby Correspondents** are political correspondents of newspapers who do not report the actual proceedings of Parliament—this is done by Parliamentary Correspondents—but interpret political news and events.
- Lobsters** are marine crustacean animals existing in large numbers in the northern seas of Europe and America, and in fair proportion on some parts of the British coasts, especially in the neighbourhood of the Channel Islands.
- Locarno, Treaty of**, 1925, whereby Germany, France, and Belgium undertook to maintain their present frontiers and to abstain from the use of force against each other. Hitler broke the pact by re-occupying the Rhineland, the demilitarisation of which had been recognised by Germany.
- Lock-out**, name given to a forced cessation of work caused by the action of an employer. The opposite of a strike, in which the men take the initiative. The best-known lock-outs in Great Britain have been in the engineering industry in 1922, boilermakers in 1923, shipyards in

1924, and the Rossendale slipper factory in 1927.

**Locust**, insects of the grasshopper family, but much more powerful. They are inhabitants of hot countries, and often make their appearance in untold millions, like clouds, devastating all the vegetation that comes within their course. The locust-tree (*Ceratonia siligua*) is supposed to have furnished food to St. John the Baptist in the wilderness, and its "beans" have accordingly been styled "St. John's Bread."

**Loess**, a deposit of silt or marl laid down by wind action. The biggest loess deposits are in Asia, the source of the dust of which they are composed probably being the deserts of Central Asia.

**Log**, a line used for reckoning the speed at which a ship is travelling. It was first used in the 16th century. The line is divided into spaces of 50 ft. marked off by knots and measured by a half-minute sand glass, bearing the same proportion to an hour as 50 ft. bear to a mile.

**Loganberry**, a hybrid between the raspberry and blackberry.

**Logarithms**, a system of calculation invented by John Napier in 1614, and developed by Henry Briggs a few years later. Thus if a number is expressed as the power of another number, i.e., if  $a = b^n$ , then  $n$  is said to be the logarithm of  $a$  to base  $b$ , written  $\log_b a$ . Common logs are to base 10 and Napierian to base 2.7182818 ..., expressed as  $e$ . Their use represent a great saving of time.

**Logical Positivism**, a school of philosophy founded in Vienna in the nineteen-twenties by a group known as the Vienna circle; their work was based on that of Ernst Mach, but dates in essentials as far back as Hume. Of the leaders of the group, Schlick was murdered by a student, Wittgenstein came to Britain, and Carnap to America following the entry of the Nazis. Briefly, the philosophy differs from all others in that, while most people have believed that a statement might be (a) true, or (b) false, Logical Positivists consider there to be a third category. A statement may be meaningless. There are only two types of statement which can be said to have meaning: (1) those which are tautological, i.e., those in which the statement is merely a definition of the subject, such as "a triangle is a three-sided plane figure" ("triangle" and "three-sided plane figure" are the same thing), and (2) those which can be tested by sense experience. This definition of meaningfulness excludes a great deal of what has previously been thought to be the field of philosophy; in particular, it excludes the possibility of metaphysics. Thus the question as to whether there is a God or whether free-will exists is strictly meaningless, for it is neither a tautological statement nor can it be tested by sense-experience.

**Logogram**, a phonogram or sign, briefly representing a syllable, word, or phrase; logographic printing was introduced in 1783 by Henry Johnson and Mr. Walter of *The Times*.

**Logwood or Hæmatoxylin**, a familiar dye-wood, obtained from a tree abundant in the West Indies and some parts of South America. It is red in colour, and is used for producing a variety of shades, from red to black.

**Lollards**, a body of Reformers who, under the leadership of Wyclif, were subjected to cruel persecution in the reign of Richard II. Sir John Oldcastle was a prominent Lollard, and was burned at the stake.

**Lombards**, the name given to a community of Italian merchants who settled in England in the 13th century and first became prominent as moneylenders and later as bankers. Lombard Street derives its name from them.

**London**, situated near the mouth of the river Thames, London is a world exchange for every commodity. It is a great centre of banking, insurance, news agencies, transport, and trade of all sorts. With an area of 693 square miles and 8½ million inhabitants, Greater London (the Metropolitan and City police areas combined) is the largest and most populous city in the world. The outer ring of suburbs is excluded from the *County of London*, which is administered in 29 divisions; the smallest of these, covering 678 acres, is the heart of the capital, the ancient *City*

of London, whose Corporation is older than Parliament. Elected by his fellow freemen of the City, the Lord Mayor is one of a line unbroken since Henry Fitzalan was elected the first Lord Mayor in 1189. Though evidence is to be found of settlements at the mouth of the Thames dating from the Stone Age, London did not rise from obscurity until the Roman occupation of Britain in the first century of the Christian era. The Romans built the city on two small hills divided by Wallbrook, and in A.D. 61 Tacitus mentioned Londinium (the name was not Roman but Celtic in origin), as a place "much frequented by merchants." In that year Boadicea's hordes sacked the city. The Romans restored order, but their withdrawal from this country early in the 5th century was followed by raids on London by Saxons, Franks, and Danes. In the 7th and 8th centuries the city was three times destroyed by fire, and it was again burnt in 982. It is not surprising, therefore, that, although the lie of the City streets is still determined by the line of the Roman walls and gates, very little of Roman London remains above ground and scarcely a trace of Saxon buildings. The growth of London has been continual but haphazard. The Keep of the Tower of London remains one of the most complete examples of Norman architecture in Britain. Reminders of the great religious orders of mediæval times are to be found in the bomb-scarred Temple, once the home of the Knights Templar, and in the names of Carmelite Street, where the White Friars founded a monastery, and Blackfriars Bridge, near which the offices of *The Times* stand on the site of the Black Friars' convent. London's West End originated with the establishment of Court and Parliament in the neighbourhood of the Abbey of St. Peter, predecessor to Westminster Abbey. The latter, a superb example of 13th-century architecture, was mostly built by Henry III. Near by in the Banqueting Hall in Whitehall, Inigo-Jones (1572-1652) left a fine memorial to his genius as a builder. Great opportunities came to Sir Christopher Wren in 1666, when half the City's buildings were destroyed in the Great Fire; 68,596 Londoners died in the Great Plague which preceded the fire. Wren left his mark all over the City, and in St. Paul's Cathedral he produced the finest Renaissance building in England. This is the third Christian church to stand on Ludgate Hill, first crowned by a Roman temple to Diana. Still greater opportunities for reconstruction came through the widespread destruction all over London by enemy action in 1940-45. By decentralising London's population and industries, post-war plans aim at the abolition of overcrowding, the relief of traffic congestion, and the provision of more open spaces. During recent years blocks of Government offices have been built on the site of Henry VIII's Whitehall Palace and on that of the old Westminster Hospital. During excavations in Walbrook in 1954 a Roman Mithræum (Temple of Mithras) was found dating from A.D. 90 to 350. The temple, 60 ft. long by 20 ft. broad, is to be preserved and has been moved to an open courtyard on an adjacent site.

**London Clay**, geological stratum which outcrops in various parts of London, notably at Highgate. It represents the lower stratum of the Eocene. Outside the metropolis, brickfields utilise the clay for brickmaking. Water held above this impervious stratum is tapped by a number of artesian wells in London. The tunnels of the Capital's underground railways run through the London Clay.

**Londonderry, Siege of**, by James II.'s army in 1689, lasted 105 days. The garrison and inhabitants were driven to famine, but held on until the siege was raised.

**London Fire Brigade**. The fire protection for the administrative county of London (area 117½ square miles and population 3,363,000) is controlled by the L.C.C. The staff consists of 2,400 officers and men. In 1955 there were 58 land stations in the area and 245 appliances and vehicles on the run. There were also three river stations, with a fire-boat at each. The most up-to-date fire-boat is the *James Braidwood*, commissioned in 1939. Received 23,197 calls during



1955 and dealt with 15,220 actual fires (including chimney fires), as well as responding to calls to lift accidents, persons pinned under vehicles, flooded basements, and other special services.

London Salvage Corps works in close co-operation with the London Fire Brigade, but it is controlled by a Committee appointed by the leading insurance companies and it is not part of the Brigade.

**London University** comprises nearly one-third of the academic activity of the United Kingdom, and is recognised as one of the great universities of the world. Originated in the foundation of a non-sectarian college in Gower Street in 1823. Among the chief colleges are: University, Kings, Imperial College of Science and Technology, London School of Economics, School of Oriental and African Studies, Queen Mary, Birkbeck, and the 3 women's colleges, Royal Holloway, Bedford, and Westfield. London University was the first to throw open all degrees to women (1878).

**Long Distance Routes.** The National Parks and Access to the Countryside Act 1949 provided for the establishment in England and Wales of Long Distance Routes for walkers and where possible for horse riders. The first routes chosen were the Pennine Way (a magnificent hill walk of 250 miles from Edale in Derbyshire along the Pennines over the Cheviots to the Scottish border); the Cornwall and Pembrokeshire coasts; and Offa's Dyke which runs some 168 miles along the marches of Wales. Surveys are also being made of a way from Beachy Head to Salisbury; the Pilgrim's Way; and a walk over the Chiltern and Berkshire Ridges, the Marlborough Downs and so to Seaton. (See also National Parks.)

**Longicornia**, a family of large horned beetles found only in warm countries, remarkable for their wood-boring capacity when in the larval state.

**Longitude** of a point on the earth's surface is the angle which the meridian through the poles and that point makes with some standard meridian. The meridian through Greenwich is usually accepted as the standard meridian and the longitude is measured east or west of that line. (As the earth revolves through  $360^\circ$  in 24 hrs.,  $15^\circ$  longitude represent 1 hour's difference in apparent time.

**Lord**, a title of honour held by such as are peers of the realm, and bestowed on persons who have achieved distinction or inherited by descent. It is also borne by Bishops, on spiritual and ecclesiastical grounds, and is accorded as a courtesy to the eldest sons of dukes, marquises, and earls, to the younger sons of dukes and marquises, and to Judges of the High Court in England and Scotland.

**Lord Lieutenant** is the Queen's representative in the county, and his office is now largely ceremonial. On his recommendation the magistrates or Justices of the Peace are appointed by the Lord Chancellor. The office was created by Henry VIII. in 1549 to take over the military duties of the sheriff.

**Lords, House of**, the Upper House of the British Parliament composed of Lords Spiritual and Lords Temporal. The former consist of the Archbishops and twenty-four English Bishops and the latter of Peers. The full membership is about 790. The right of the Lords to veto Bills passed by the Commons was restricted by the Parliament Act, 1911, by which Money Bills are enacted upon Royal Assent if not passed unamended by the Lords within one month. Moreover, even a non-money Bill, although vetoed by the Lords, becomes law, if passed by the Commons in three successive sessions provided one year lapses in the meantime. The Lord Chancellor presides over the House of Lords. (See "A Citizen's Guide.")

**Loris**, small lemurs found in S.E. Asia and East Indian islands. Because of their slow movements they are also called "slow lemurs."

**Lory**, a handsome family of parrots with deep scarlet plumage, green wing covers, purple head, and yellow breast line. They belong to the Malay Archipelago and live mainly on fruit juices.

**Long-speaker**, an instrument which transforms electric energy into sound energy; the sound can be heard at a distance. Much used in wireless, obviating the wearing of earphones and allowing several people to hear at once.

**Louis d'Or**, a French gold coin of the value of 24 francs, first issued by Louis XIII. in 1640, but superseded by the Napoleon, or 20-franc piece.

**Louse**, parasitic insects found on the skin of birds and mammals. The bird or biting louse make up one order (*Mallophaga*); the true or sucking louse belong to another order, called *Anoplura*. Two species of lice parasitise man, and one of these, the body louse, is a carrier of typhus.

**Louvre**, one of the old royal palaces of Paris, was built in its present form partly by Francis I., and added to by later monarchs, Louis XIV. completing the edifice. Napoleon I. turned it into a museum and enriched it with the plunder of many foreign art galleries. The great extension to the Louvre building begun by Napoleon I. was completed under Napoleon III. in 1857. Much injury was done to the building during the Commune of 1871. Amongst other famous treasures it houses the Venus de Milo and Leonardo da Vinci's masterpiece, "La Gioconda."

**Lovebird**, a vivid little bird native to Africa, resembling a parakeet but with a short, wide tail and short body. Lovebirds build nests, parakeets do not. (See also p. 1002.)

**Luddites**, a combination of workmen formed in 1811, in a period of great distress, with the object of destroying the new textile machinery then being largely adopted, which they regarded as the cause of their troubles. Their first outbreak was at Nottingham, and was stated to have been started by a young apprentice named Ned Ludd. Afterwards, serious Luddite riots occurred in various parts of the country, especially in the West Riding of Yorkshire, where many people were killed, mills were destroyed, and numbers of rioters were tried and executed. Charlotte Brontë used the period in her novel, *Shirley*.

**Lugworm**, a species of worm living on the seashores and burrowing in tunnels which it makes in the sand. It is much used for bait by fishermen.

**Lumpfish**, a carnivorous sea-fish which attaches itself to rocks and other firm substances, and lives on small fish and marine worms. It is mainly an inhabitant of northern seas, and has three species, one of which is found on our own coasts.

**Lunar Month**, the period in which the moon makes its revolution around the earth—about 29½ days.

**Lung Fishes or Dipnoi.** In these fishes an air bladder, which can be filled with air gulped in through the mouth, functions as a lung. This method of breathing enables them to survive in the muddy bottom of dried-up streams and swamps. They occur in Australia, Africa, and S. America.

**Lupercalia**, yearly festivals held in ancient Rome in honour of Pan.

**Lupus**, the constellation of the Wolf in the southern heavens, at the east side of the Centaur. It contains no star of more than the third magnitude.

**Lusida**, a famous Portuguese epic poem by Camoens, celebrating the establishment of Portuguese sway in India; first published in 1571.

**Lustrum**, a sacrificial celebration occurring every five years in ancient Rome after the taking of the census. From this each period of five years was called a lustrum.

**Lute**, a stringed instrument of the guitar type which was introduced into Europe in the 6th century and remained popular up to Elizabethan times.

**Lutecium**, element of the rare-earth metal group discovered in 1907 by Urbain.

**Lynch Law** is the dealing out of summary punishment to offenders by private individuals without appeal to the law. It is said to get its name from one Charles Lynch, a Virginian planter, who in the latter part of the 18th century was accustomed to take into his own hands the punishment of offenders. Instances of lynch-law have been frequent in the United States, and generally result in the carrying out of a rough and ready death sentence, negroes often having been the victims.

**Lynx**, cats of sturdy build, with tufted ears and

spotted fur, inhabiting many parts of the world, including Northern and Central Europe. They commit serious ravages among sheep and goats and are very fierce.

**Lyon King of Arms**, the President of the Scottish Lyon Court, and head of the heraldic organisation for Scotland.

**Lyra**, the constellation of the Harp, situated between Hercules and Cygnus, comprising twenty visible stars, the principal of which is Vega, one of the most brilliant of all the stars.

**Lyre**, an upright stringed instrument rather like a miniature harp. It was the universal musical instrument of classical Greece and Rome.

**Lyre-Bird**, a remarkable genus of Australian birds, the males of which possess a beautiful lyre-shaped tail. The bird is not more than 15 in. long, but its tail, which it displays to advantage during its remarkable courtship dance, is 23 in. in length.

**Lyrids**, meteor showers to be observed about Apr. 20th each year.

## M

**Macadamising**, the system of road-making invented by John Macadam (1756-1836). The road bed is laid with hard broken stones, of a nearly uniform size, which by the weight of the traffic alone soon assume firmness. Nearly all the main country roads are macadamised.

**Macaque**. These monkeys are related to the Mangabeys, but whereas the latter are restricted to Africa, only one species of macaque occurs in that continent, the others being Asiatic. Their muzzles are longer than those of mangabeys. The tail may be rudimentary (*e.g.*, Brown Macaque of Cochin China) or long (*e.g.*, Pig-tailed Macaque of Burma).

**Macaw**, a genus of large parrots with brilliant scarlet and sky-blue plumage, with interminglings of green. Native to South and Central America.

**Maccabees**, a patriotic Jewish family whose achievements in early history were very notable. The revolt of the Maccabees in the 2nd century B.C., in which Judas captured Jerusalem and purified the Temple, is the most famous exploit connected with this historic name. The feast of the Maccabees is celebrated with rejoicing in December.

**Mace**, originally a weapon of offence, now an ensign of authority borne before officers of state and other dignitaries. At the present day, among others, there are maces for the Speaker of the House of Commons, the Lord Mayor of London, and other mayors. The mace-bearer is the functionary who on ceremonial occasions carries the symbol of authority before judges and civic or state officials.

**Macedonians**, a sect formed by Macedonius, Bishop of Constantinople, in the 4th century, who denied the existence of the Holy Ghost. The Papal Council expelled the bishop and his followers from the Church in 360.

**Mach Number**. Unit of high-speed flight. The ratio of speed of flight to speed of sound under same conditions of pressure and density. Speed of sound at sea-level is 762 m.p.h., so flight speed of 381 m.p.h. is equivalent to a Mach Number of 1. At supersonic speeds the Mach Number is greater than 1; subsonic speeds, less than 1.

**Machine Organa**, defined in the 10th book of Vitruvius as "contrivances for the concentration and application of force," and known by the names of instruments, engines, and machines.

**Mackerel**, a familiar sea-fish existing in large numbers in the northern waters of both hemispheres. In May and June immense shoals are to be found round the British coasts.

**Madder**, one of the most important of dye-stuffs, largely used in producing Turkey-red dye, but now superseded by artificially prepared alizarin. Natural madder is the root of the *Rubia tinctorum*.

**Mad Parliament**, held in 1258 at Oxford to settle the differences between Henry III. and his barons. It resulted in the Provisions of Oxford, which provided for an advisory council of fifteen for the king that was to meet twelve

representatives of the barons three times a year for consultation. The plan was operative until the rising of the barons under Simon de Montfort in 1263.

**Madrepore**, a white coral-like substance consisting of carbonate of lime, formed by the gradual growth of polyp deposits, and abounding in tropical seas.

**Madrier**, a term in military engineering denoting a beam laid in a ditch to support a wall, or in a mine to hold up the sides or roof; also an armoured plank affording protection against hostile fire, or fitted to receive the mouth of a petard in attacks upon obstacles.

**Madrigal**, a style of unaccompanied composition for three or more voices. Developed in the Netherlands, it reached perfection in 13th-century Italy. Brought to England during the Renaissance it achieved great popularity and many English composers became famous for their madrigals.

**Madwort**, a common name of the botanical genus *alyssum*.

**Maelstrom**, a great whirlpool. The most famous is that off the coast of Norway, between the islands of Moskenes and Mosken, of the Lofoten group, the power of which has been much exaggerated.

**Mafia**, a secret Sicilian society formed for purposes of vengeance, private and public, prominent about 1860, and again after the second world war.

**Magenta**, an aniline dye discovered in 1859 by Sir W. H. Perkin, and named after the great battle of that year between the French and Austrians.

**Maggot**, the larva of many species of two-winged flies; a term commonly applied to that of the common fly, which feeds upon putrid matters, animal and vegetable.

**Magi**, priests of the Persian fire-worshippers. Their sacred fires blazed in the open air, and around them they performed their mystic rites. Zoroaster, their great reformer, flourished about 615 B.C. It was not till thirteen centuries later that Parseeism in Persia was superseded by Mohammedanism, and the only representatives of the old worship now left are the Parsees of India.

**Magic**, a term applied to the pretended art of influencing the course of events by supernatural means. According to some a primitive stage of belief in magic precedes the establishment of religion. Magic has been practised in all countries and in all ages. The priesthood of ancient Egypt was notably proficient in these arts, and much early ritual seems to have been magical in intent, including the rite of sacrifice. The powers of the gods themselves are often attributed to magic in Egyptian, Babylonian, Vedic, and other mythologies. The practice of magic continued in Europe during the Middle Ages in spite of the efforts of the Church. Magic took various forms—the cure of disease, predictions, and the gratification of personal desires. Thus, there was *black magic*, which communed with evil spirits; *white magic*, dealing with good spirits; and *natural magic*, the science of the occult; while *astrology* and *alchemy* were the advanced outcome of these superstitions. In a primitive state of culture when conditions are difficult and knowledge limited, man in his despair resorts to magical practices to bring about his desires.

**Magic Lantern**, an apparatus for throwing pictures on a screen, invented by Kircher in the 17th century, and consisting of a lantern, behind the light of which is a reflector, while in front is a tube carrying a condensing lens, this being supplemented by a double convex lens which enlarges the object to be shown.

**Magistrates or Justices of the Peace** preside over courts of petty sessions, and are appointed by the Lord Chancellor on the recommendation of the Lord Lieutenant of the County. There are some 25,000 magistrates in Britain, of whom about 1,000 are women. They are unpaid. Mayors during their time of office are J.P.s *ex officio*. In certain big towns a barrister known as a stipendiary magistrate is appointed to act as full-time salaried magistrate. There are 28 stipendiaries in London known as Metropolitan Police Magistrates. (*See p.* 129.)

**Magna Carta** was sealed by King John at Runnymede on June 15th, 1215, in obedience to the insistent demands of the barons, and has



been confirmed many times by later monarchs. It was not a revolutionary document. It laid down what the barons took to be the recognised and fundamental principles for the government of the realm and bound king and barons alike to maintain them. Its main provisions were that no man should be punished without fair trial, that ancient liberties generally should be preserved, and that no demands should be made by an overlord to his vassal (other than those recognised) without the sanction of the great council of the realm.

**Magna Græcia** were independent states established by Greek colonists in South Italy about 720-650 B.C. They had been decadent long before the Romans appeared in 282 B.C.

**Magnesia** is the oxide of the metal magnesium, and is in the form of a white powder.

**Magnesium**, a metallic element, first isolated in 1808 by Sir Humphry Davy, who prepared it by electrolysis of the chloride. Its chief ores are magnesite and dolomite. Industrially it is obtained by electrolysis. Many important light alloys contain magnesium. The metal burns with a very bright light, and for this reason it is used in photographers' flash bulbs and also in fireworks manufacture.

**Magnetic Poles** are at a considerable distance, of the order of 1,000 miles, from the geographical poles, and are not antipodal to one another. The poles do not remain fixed, and the North pole wanders more than the South. The present position of the North magnetic pole is in the region of lat. 74° N.; long. 100° W., considerably north of Amundsen's observations of 1904. The South magnetic pole is not far from lat. 70° S.; long. 150° E.

**Magnetic Storms**, large irregular disturbances superimposed upon the normal magnetic field of the earth. They may occur at any time, but are most frequent during equinoctial months and in years of sunspot maxima. World-wide in extent, magnetic storms are most pronounced in the polar regions, being due apparently to intense electric currents located in the upper atmosphere near to the zones of greatest auroral frequency. One theory attributes the high ionisation of these belts to solar radiation. Magnetic storms cause radio fade-outs and interfere with telegraphic communication.

**Magnetism**, the quality of attraction for iron possessed by the lodestone or magnet-stone, was known to the ancient Greeks, Chinese, and Arabians. Later, perhaps about the time of the Norman Conquest, it was discovered that lodestone or magnetised iron, if freely suspended, sets itself north and south. This discovery led to the invention of the mariner's compass. Basic law of magnetism is "like poles repel, unlike poles attract," and this was formulated by Peter the Pilgrim in 1269. The earth acts like a huge magnet with its axis inclined at about 10° to the axis of rotation, the magnetic poles being on the Boothia Peninsula (North Canada) and South Victoria Land (Antarctica). The magnetic field at the surface consists of the regular field of a magnetised sphere with an irregular field superimposed upon it. Variation in the magnetic forces occurs from place to place and from time to time, and maps showing the distribution over the globe of points of the same declination (i.e., the angle which the magnetic meridian makes with the geographical one) are of the utmost importance in navigation. In the south-east of the British Isles, at present, a magnetic needle points 9° and in the north-west 14° west of true north. Little is known regarding the origin of the main (regular) field of the earth, but it is believed that most of the irregularities are due to the presence of intense electric currents in the upper atmospheres. (See p. 158.)

**Magneto**, a device for producing high-voltage alternating currents: it is in effect a very compact electric generator, used for providing the ignition in internal-combustion engines (though the coil-and-battery system is more common than magnetos in motor-cars).

**Magnetron**, a vacuum tube (valve) in which the electrons travelling between the electrodes are deflected by an externally applied magnetic field. The centimetre waves which brought

great advances in radar (*vide*) were generated by magnetron valves.

**Magnets** are usually magnetised bars of steel with two opposite poles (N. and S.) one at or near each end, containing tungsten, cobalt, or chromium, etc. These magnets are called permanent magnets in contrast to electro-magnets.

**Magnificat**, the hymn of the Virgin Mary, given in Luke 1, 46 beginning in the Vulgate with the words "Magnificat anima mea Dominum" ("My soul doth magnify the Lord"), and used in the services of all Christian Churches.

**Magnitude** in astronomy is a measure of the apparent brightness of a star, which is inversely proportional to the square of its distance. A low number indicates a bright star, and a high one a faint star. The *absolute magnitude* is a measure of *real* brightness, i.e., the brightness a star would have at a standard distance away of 32.6 light years. The distance can be calculated if the apparent and absolute magnitudes are known. (See reference to Cepheid variables on p. 154.)

**Magnolia**, the type of the botanical family *Magnoliaceae*, comprising many beautiful trees and shrubs with large and fragrant flowers, and chiefly native to North America and Asia.

**Maggie**, a well-known bird of the crow family, of glossy black and white plumage, famed for its mischievous propensities. (See also p. 1004.)

**Magyars**, the Hungarian race who came to eastern Europe from S.W. Asia and settled in Hungary in the 10th century. Their language belongs to the Finno-Ugrian group.

**Mahdi**, an Arab leader of great influence, invested with powers akin to those of a Messiah in the Mohammedan mind. The title was taken by Mohammed Armed, who overran the Egyptian Sudan, and in 1885 captured Khartoum.

**Mahogany**, a fine hard wood susceptible of a very high polish, and distinguished for the beauty of its colour and markings. The tree which produces this wood (*Swietenia mahogany*) is a native of the West Indies and tropical America. Mahogany is said to have been first brought to England by Raleigh in 1595.

**Mahrattas**, a warlike people strongly opposed to the East India Company in the 18th and early part of the 19th centuries, but subdued in 1818.

**Maidenhair Tree or Ginkgo**. This tree takes its name from the shape of its leaves, which resemble those of the maidenhair fern. Widely cultivated in China and Japan. It is the only survivor of an order of gymnosperms which flourished in Mesozoic times. Botanically remarkable in that the pollen tube contains two sperms which are motile.

**Mail-Coaches**, which are usually regarded as things of a very distant past, did not come into existence till 1784, when Mr. John Palmer, of Bath, put the first mail-coach on the road between Bath and Bristol. They were soon afterwards adopted in other parts of the kingdom, and were employed in carrying the mails until superseded, in great part, by railways. The present mail vans carry no passengers.

**Maize**, an important cereal largely grown in U.S.A., Argentine, Rumania, China, India, and Union of S. Africa, commonly known as Indian corn in the U.S.A.

**Majolica**, a kind of pottery carrying a highly coloured glaze or enamel, supposed to have been introduced into Europe by the Moors from Majorca, in the 15th century, and brought to a high degree of artistic beauty in those days. Raphael and other great artists made designs for the ware. After the 16th century majolica production practically ceased, though in recent times some clever imitations of the old ware have been manufactured.

**Major**, in the British Army, ranks next below a Lieutenant-Colonel. A Major-General ranks beneath a Lieutenant-General.

**Major Scale**. (See Diatonic Scale.)

**Malachite**, a bright-green variety of copper ore,  $\text{CuCO}_3 \cdot \text{Cu(OH)}_2$ .

**Malacostraca**, the sub-class of the Crustacea to which the lobsters, crayfish, shrimps, belong.

**Malays**, a race of people with oblique eyes, high cheek bones, and brown skin, whose native countries are Malaya, Polynesia, the Philippines, and Madagascar.

**Malic Acid**, a substance obtained from unripe fruit,

- and present in the largest quantities in rhubarb and mountain-ash berries; its salts are called malates.
- Mallophaga**, the bird lice or biting lice which constitute one of the insect orders.
- Malmaison** derives its name from having been inhabited in the 11th century by the Norman brigand Odon, and afterwards, according to the tradition, by evil spirits, exorcised by the monks of St. Denis. Little was known of it, however, until its purchase, for 160,000 fr., by the Empress Josephine, who died there in 1814 as the result of a chill caught while showing the Russian Emperor round the grounds. After the Second Restoration, Prince Eugene sold Malmaison, removing its gallery of pictures to Munich. In later years it was for some time the residence of ex-Queen Christina of Spain. In 1900 it was given to the nation.
- Malmsey**, a strong, sweet wine originally made in Greece, but now also in Spain, Madeira, and the Azores; known also as Malvoisie.
- Malt** is barley grain which has gone through a steeping and preparing process to render it suitable for brewing purposes. It was for a couple of centuries subjected to a fluctuating duty, producing in 1863 a sum of £6,273,727. The tax was abolished in 1880.
- Maltese Dog**, one of the smallest of dogs, with long, silky white hair and pendulous ears; much appreciated as a drawing-room pet.
- Maltose**, a sugar formed in cereal grains during germination. It is produced by hydrolysis of starch, and further hydrolysis converts the maltose into glucose.
- Mamluks**, commonly known as Mameluks, were originally—in the 13th century—a bodyguard of Turkish and Circassian slaves in the service of the Sultan of Egypt, and attained such influence that in 1250 they were strong enough to appoint one of their own body to the throne of Egypt. After that a succession of Mamluk Sultans reigned down to 1517. Then the Turks annexed Egypt, and the Mamluks were taken into the service of the Beys. They again came to the front after Napoleon's conquest of Egypt, and for a time resumed governmental sway; but in 1811 they were decoyed into the citadel of Cairo and massacred by order of Mehemet Ali.
- Mammalia**, a zoological term covering all that portion of the animal kingdom, the females of which are provided with mammary glands for suckling their young. A further characteristic is the double articulation of the skull with the vertebral column.
- Mammoth**, extinct elephants of gigantic size. In 1799 the first perfectly preserved specimen was found in Siberia in a block of ice. It was in prehistoric times an inhabitant of Britain and other parts of Europe, as well as of Asia and America.
- Mammoth Cave of Kentucky**, about 10 miles long, is one of a series of spacious caverns formed in the limestone rock formation, and is from 40 to 300 ft. wide and at one point 300 ft. high. Stalactites and stalagmites abound.
- Manatee**, an aquatic mammal of the sea cow (Sirenia) order of mammals, averaging when full grown from 10 to 12 ft. in length, with shovel-shaped tail, and four limbs and nails which almost give the appearance of arms and hands. In spite of their ungainly aspect, these creatures are believed to have given rise to the legend of mermaids.
- Manchus**, the original nomadic race inhabiting northern Manchuria who invaded China early in the 17th century. A Manchu dynasty occupied the imperial throne of China from 1644 to 1911.
- Mandamus**, a writ of command issued from the Queen's Bench Division of the High Court addressed to any person, corporation, or inferior court requiring them to do something which appertains to their office.
- Mandarin**, the name given to a powerful Chinese official, civil or military under the old régime, whose rank was shown by the wearing of a button on the cap. In Chinese the name is Kwan.
- Mandible**, the lower jaw in human anatomy. The two parts of a bird's beak are known as the upper and lower mandible. The term is also used for biting jaws in arthropods.
- Mandilion**, a form of upper garment, worn by soldiers and servants in the 17th century, confined mostly to France.
- Mandoline**, an Italian fretted guitar, so called from its almond conformation.
- Mandrel**, a cylindrical bar or spindle used for a variety of purposes in engineering.
- Manes**, the ancient Roman name for the shades of the dead, who were regarded as tutelary divinities, and worshipped.
- Manganese**, a metallic element discovered by Scheele in 1774. It is silver-white, not very hard (it forms a hard alloy with carbon), brittle, and tarnishes when exposed to air. Its chief ore is pyrolusite (manganese dioxide). Steels containing manganese are very tough, and used for making machine parts.
- Mangel or Mangel-wurzel**, a variety of beet, used as food for stock animals.
- Mango**, a tree extensively cultivated in the tropics for its fruit, which has orange-coloured flesh.
- Manicheans**, a sect founded by the philosopher Mani in Persia about A.D. 261, which spread into Egypt and Arabia. Mani called himself "the Envoy of Christ," rejected the Old Testament, and propounded a system of his own based partly on Christianity and partly on the dogmas of the ancient fire-worshippers.
- Manikin**, a dwarf or pigmy; an artificial figure employed in anatomical demonstrations, made sometimes of papier-mâché.
- Maniple**, eucharistic vestment worn over left arm.
- Manna**, a tree of the ash genus growing in the South of Europe and in the East, and exuding a sweet substance which is gathered, boiled, and eaten.
- Manometer**, instrument used to measure gas pressure. Usually a U-tube containing water or mercury, one end open to the atmosphere, the other to the gas whose pressure is to be measured. More sensitive for small pressures than the Bourdon gauge.
- Manors** were estates originally granted in Anglo-Saxon times as rewards for knight service, and included the privilege of a special court with jurisdiction, criminal and civil, within the manorial territory. In recent times the ancient privileges of the manorial system have almost passed out of existence. (See Court-Leet.)
- Mansfield College**, Oxford, for the education of students for the Nonconformist ministry, was established in 1886, and opened in 1889. It is a Non-University College, and is devoted solely to the study of Theology.
- Mansion House**, the official residence of the Lord Mayor of London, stands opposite to the Bank of England, and was erected in 1739-53 from the designs of George Dance.
- Manslaughter** is the unlawful killing of another without malice or premeditation, and is classed as voluntary, as when done under a sudden provocation, or involuntary, when it is the result of some unlawful act. Culpable homicide also comes within the term of manslaughter.
- Mantis**. Large insects belonging to the same order as the locusts and grasshoppers. The manner in which the forelegs are held, as though in supplication, has gained for these insects the common name of "praying mantis." They are distributed throughout the warmer countries of the world.
- Manuals**, the keyboards of an organ which are operated by the hands as apart from the pedals which are worked by the feet. In a large organ there may be four manuals, each controlling a group of stops. These groups are called great organ, swell organ, choir organ, solo organ.
- Manx**, the original Celtic inhabitants of the Isle of Man, where a Celtic dialect still lingers.
- Maoris**, one of the native races of New Zealand who migrated to the island originally from one of the Polynesian group about the year 1350. They number about eighty-two thousand, and being very intelligent people have adapted themselves with considerable success to the conditions of civilised life. Until 1870 they were frequently in arms against the Government, but since then have settled down with the Whites as equal citizens.
- Maple**, trees native to the northern hemisphere. There are over 100 species. The sycamore is the best-known species growing in Britain.



The sugar maple abounds in Canada and the eastern parts of the United States. The sugar is tapped by boring holes in the tree in Feb. and Mar., and the juice that escapes is collected and evaporated. The maple-leaf is the Canadian national emblem.

**Maquis**, name of the dense scrub in Mediterranean France and Corsica, providing good cover for bandits and outlaws. The French resistance movement adopted the name Maquis during the German Occupation, 1940-45.

**Marabouts**, Mohammedan hermits or monks, especially amongst the Moors and Berbers of N.W. Africa. They live in monasteries or attached to mosques and are held in great veneration by the Berbers.

**Marble** is limestone in its hardest and most crystalline form. There are many varieties—33 were used in the building of the Paris Opera House—but white is the purest and rarest. From about 568 B.C. white marble was used by the Grecian sculptors for their statues. Rome was rich in marble buildings and monuments, and Palmyra was mainly built of white marble. Devonshire and Derbyshire yield the best English marbles, and several localities in Ireland furnish particular kinds. Vermont, Massachusetts, and Tennessee are the chief marble-producing States of America. The American marbles are mostly light grey. The Marble Arch, at the northern entrance to Hyde Park, was originally built for the front of Buckingham Palace.

**March**, the third month of the year, and the first of the old Roman Calendar. It was named after the god Mars, and was the *Hlyd* (storm) *monath* of the Anglo-Saxons.

**Mardi Gras**, the last day of the Carnival in France, Shrove Tuesday.

**Mares' Tails**, term popularly applied to high (cirrus) cloud when it appears in tufts or feather-like plumes.

**Margarine**, invented in 1869 by the French chemist Mège Mouriès, who, at a time of acute food shortage, had been commissioned by Napoleon III to find an alternative to butter. His invention was pioneered by two families of Dutch merchants who lived in the village of Oss in Holland. Originally made from beef fat, milk and water, margarine is now made chiefly from vegetable oils and fats, including groundnut, coconut, palm, palm-kernel, soya and sunflower, and also some marine and animal fats. Research on the vitaminisation of margarine was first undertaken by Lever Brothers, Ltd., and the first margarine to contain a suitable concentrate of vitamins A and D was made in Britain in 1927.

**Mariner's Compass**. (See Magnetism.)

**Marliolatriy**, a term applied by non-Catholics to the worship (hyperdulia) of the Virgin Mary, began in the 4th century, and still a prominent part of Roman Catholic religious observances.

**Marionettes** are puppets moved by strings. They originated in the *Fantoccini* of the 15th century which had such vogue in Italy and are still popular, being adopted in Germany and England later. Our *Punch and Judy* is a version of Punchinello.

**Marl**, a rock composed partly of clay and partly of carbonate of lime or magnesia. Usually grey in colour.

**Marlinspike**, a pointed iron tool used by sailors to splice wire. The instrument used when rope splicing is called a fid.

**Marmoset**, small monkeys confined to the New World. Very squirrel-like in appearance, with long bushy tails, and thick woolly fur, they are pretty little animals and the smallest of all monkeys. There are claws, not nails, on their digits, the big toe excepted.

**Maronites**, a sect founded by a monk named John Maro in the 7th century, in Syria, and still existing in the Lebanon regions. They differ from the Roman Catholics (to whose Church they are allied and report themselves) in certain points of doctrine concerning Christ. In 1860 they suffered severe persecutions at the hands of the Druses, some 1,300 being massacred and 100,000 driven from their homes.

**Marprelate Tracts**, seditious pamphlets written with great maliciousness by a group of Elizabethan puritans about 1586, and intended to discredit the episcopacy, caused a great sensa-

tion in their time, and led to the execution of their supposed author, John Penry.

**Marquess or Marquis**, the title next in precedence to that of duke. The first English marquess was Robert de Vere, Earl of Oxford, who had the honour conferred upon him by Richard II. in 1385.

**Marquetry**, a kind of inlaying in which thin layers of coloured woods are wrought into a design, and mainly used in ornamental floors.

**Mars**, the fourth nearest planet to the sun, being 141,500,000 miles distant. Its diameter is 4,215 miles as against the earth's 7,920. There has been much speculation about certain dark lines which some observers have seen on the surface of Mars; photographs give no support to the theory of an artificially constructed network of canals, but it is possible they represent areas covered by some simple form of vegetation of the lichenous type. The temperature of the planet's surface would allow living organisms as we know them to exist, but the quantity of oxygen in the atmosphere would be almost certainly too little to support animal life.

**Marseillaise**, the French national hymn, written and composed by Rouget de L'Isle, a French engineer officer, who was inspired to write it in 1792 to encourage the Strasburg conscripts. It immediately became popular, and received its name from the fact that it was sung by the Marseillaise troops while marching into Paris.

**Marshalsea Prison**, a once well-known house of detention in Southwark. It stood near St. George's Church, and was originally a prison for royal servants convicted of offences, but from 1842 to 1849 was a debtors' prison. It was abolished in 1849. Dickens described it in *Little Dorrit*.

**Marsh Gas**. (See Methane.)

**Marsh Tortoise**, an amphibious animal of the order *Chelonii*, spread over many countries and inhabiting ponds and small rivers. There are 42 species, and they are all carnivorous.

**Marston Moor**, near York, was the scene of the famous battle between Prince Rupert and his forces against Cromwell and his troops on July 2nd, 1644. Cromwell was victorious, and this formed the turning-point in the Civil War.

**Marsupials**, mammals having a marsupium or pouch; the young are born of comparatively small size and imperfectly developed, but are transferred to the maternal pouch. Except for the opossums of America, all marsupials occur in Australasia. Well-known marsupials are the kangaroos, wallabies, and wombats.

**Martello Towers**, circular forts erected on the coasts of England early in the 19th century as defences against the threatened Napoleonic invasion. So called from the circular fort at Mortella (Corsica), which resisted an English fleet in 1794.

**Marten**, carnivorous animals of the weasel family, one species of which was once common in Britain but now seldom met with. Many valuable furs come from martens, e.g., the sable of N. Asia and the marten of N. America.

**Martial Law** is a term loosely employed to indicate the suspension of the administration of normal civil law and its replacement by military authority when this is rendered desirable by such circumstances as war or rebellion.

**Martin**, a well-known bird-visitor to Britain. It belongs to the swallow family, and the two species that spend their summers here are the house-martin, which makes its nest of mud under the eaves of houses, and the sand martin, which builds in sandy banks.

**Martingale**, a long strap or thong of leather, one end of which is fastened to the girth of a horse, between the fore legs, and the other to the bit, or to a thin mouthpiece of its own.

**Martinmas or St. Martin's Day**, falls on Nov. 11th, and is one of the Scottish quarter days. St. Martin was a popular Saint with our ancestors, and Martinmas was a busy time for the mediæval housewife. It was the date when "Martlemas Beef" was dried in the chimney, and enough bacon and mutton cured to last until the spring, because, owing to the scarcity of winter fodder, fresh meat could seldom be obtained. This diet of dried meat without vegetables caused scurvy, King's evil, leprosy, and other maladies. Originally the goose be-

longed to Martinmas, not to Michaelmas, the legend being that when Martin was elected Bishop of Tours he hid himself, but was betrayed by the cackling of geese. He died in the 4th century. The spell of fine weather sometimes occurring at Martinmas is called St. Martin's Summer.

**Martyrs.** People who suffer death in testimony to their faith. Stephen was the first Christian martyr in 39. The first English martyr was St. Alban, 286, and in Tudor times many eminent churchmen went to the stake at West Smithfield, in London, and at Oxford, where now exists the "Martyrs' Memorial." There is a Martyrs' Memorial Church in St. John St., Clerkenwell, not far away from the scene of the Smithfield fires.

**Marxism.** The doctrine formulated by Karl Marx and Friedrich Engels about the middle of the 19th century and the basis of modern Communist theory (with the new addition of the works of Lenin and Stalin). Marxist thought was strongly influenced by that of Hegel, but the Idealism of Hegel was transformed into the Materialism of Marx and Engels. The most important aspect of Marxism is its interpretation of history, which is seen as the history of class struggles according to the law of the dialectic described by Hegel. (See Idealism.) Thus the Feudal System with its land-owning aristocracy was thesis to the antithesis of the rising merchant class, and the result (synthesis) was the modern capitalist system, which in its turn will be thesis to the working-class's antithesis leading to the classless society. Differing ideologies and, in fact, differing cultures, all are produced by the economic relations within a society; thus all ideologies are a form of propaganda for the ruling class. (E.g., Darwin's theory of the struggle for existence was a justification of the capitalist's attitude to the working-class.) Marxism also implies an economic theory based on the concept of surplus value, and is applied to physics, biology, and all other sciences in the form of dialectical materialism. Although the work of Marx has led to a greater understanding of society and contains much truth, few other than Communists accept the theory wholeheartedly. Anthropologists accept that the material and technological structure of a society influences the ideologies and the way of life of the individuals within it, but they would not agree that it completely determines them. Furthermore, they point out, most societies have not been arranged on a class basis.

**Mason and Dixon's Line** is the boundary line separating the old Slave States of America from the Free State of Pennsylvania. It was drawn by two English surveyors, Charles Mason and Jeremiah Dixon, between 1763 and 1767.

**Masquerades** are balls or dances at which those who take part appear masked or in character. Edward III. was fond of this type of entertainment. Pepys and Evelyn mention a masquerade held at Whitehall on Feb. 2nd, 1665. This form of revel became a craze in London at the beginning of the 18th century. In modern times it survives in the fancy dress ball.

**Masques** were light dramatic compositions set to music and performed on special occasions. One of the best-known examples is Milton's "Comus," which was given at Ludlow Castle in 1634.

**Mass**, the service in the Roman Catholic Church in which are enacted and enshrined Christ's words and actions at the Last Supper. It is high or low, i.e., performed with full choral service, or merely by the rehearsal of prayers without singing. Mass was first celebrated in Latin in the 4th century, and was introduced into England in the 7th century.

**Mass Spectrograph**, an instrument for separating isotopes. It works by sorting electrified particles according to their masses; the particles stream through a magnetic field, and the lightest particles undergo the greatest deflection.

**Massorah**, a collection of criticisms on the Hebrew text of the Scriptures, and rules for its correct interpretation.

**Mast**, a long round piece of timber or tubular steel or iron, standing upright in a vessel, and supporting the yards, sails, and rigging in general.

The earliest ships had only one mast, carrying a simple sail. The number increased until there were 4 or 5, or even more. Above the lower mast of a sailing-ship comes the topmast, and above that, the topgallantmast and royalmast. The position of each mast is indicated by a prefix, as foremast, foretopmast, foretopgallantmast, foreroyalmast, mainmast, maintopmast, etc. The foremast is in the fore of the ship, the mainmast in the centre, and the mizzen nearest the stern. In large vessels nowadays the mast does not extend to the keel, as it formerly did, but is usually stopped at the second deck.

**Master of the Revels** was an important Court official upon whom devolved the arrangement of Court festivities. The office is at least as old as the time of Edward III. By 1737 it seems to have died.

**Master of the Rolls**, one of the English judges, formerly a judge of Chancery, but since 1881 a judge of the Court of Appeal only. In addition he has charge of the rolls or records of Chancery and ranks next to the Lord Chancellor and Lord Chief Justice.

**Mastiff**, a domestic dog said to be an original British breed. A large massive animal with pendulous ears, it is a formidable watch dog.

**Mastodon**, an extinct order of quadruped closely resembling the elephant in structure, but much larger.

**Materialism** is the philosophical belief that the basic stuff of which the universe is made is matter, and that everything in the universe is either matter or derived from matter. The earliest materialists were the Greek philosophers of the Ionian School in Asia Minor—Thales of Miletus, Anaximander, and Anaximenes (c. 600–550 B.C.). After Plato, the philosophy of materialism seemed to be discredited and was little heard of until the 19th century, when advances in physical science seemed to make the theory more plausible. It is now generally thought that, with further discoveries, the position is once more untenable. But it must be remembered that there are two forms of materialism—the atomistic-mechanistic type and the organismic type. The former somewhat crude belief is, it may safely be said, untenable. It held, for example, that man and other living things are mere machines, and that concepts such as mind, beauty, truth are meaningless. Organismic theory holds that all things, living or otherwise, are systems of energy—that one must consider not merely structure but also relations and process. Mind in this theory is not a thing but a process occurring at a particular level of development, beauty is a particular relationship between object and observer, truth similarly is a relationship. Since the body, for example, consists of relationships between organs as well as the organs themselves, it cannot be explained as the mere sum of its parts. "The whole is more than the sum of its parts." In this form the theory of materialism is much more tenable and cannot be said to be outdated.

**Mathematics** is the language of physics, and uses symbols for expressing measurement, theories, and laws. Mathematical formulæ summarise and condense in exquisite simplicity the results of vast numbers of observations and experiments.

**Matins**, an early morning church service. The service includes, in the Roman communion, the Lord's Prayer, the Angelic Salutation, the Creed, and certain Psalms. The name was also given to the early morning massacres (a) of St. Bartholomew, Aug. 24th, 1572, called the "French Matins," and (b) the massacre of Prince Demetrius and his Polish adherents, May 27th, 1606, the "Matins of Moscow."

**Matriarchate**, an ancient theory that the mother was the source of authority and not the father, and that in the "golden age" women exercised supreme control.

**Mau-Mau**, a secret, anti-European, terrorist movement which has been agitating the Kikuyu tribe of Kenya. The initiation ceremony is conducted with great ritual and its members are bound by oath. (See Kikuyu.)

**Maundy Thursday**, the day before Good Friday, commemorates the Last Supper. "Maundy" derives from Christ's command (mandatum) to his disciples on that day to love one another.



It was the custom in the monasteries for the monks to wash the feet of the poor on this day, and for many centuries the sovereigns of England, through their almoners, have distributed money, food, and clothing to "as many old men and as many old women as the Sovereign is years of age." The Royal Maundy ceremony is still observed, special silver money granted by the Royal Almoner is coined for the occasion and the distribution takes place in Westminster Abbey. (See also p. 738.)

**Mausoleum**, a special place of sepulture, generally for the reception of the remains of members of a royal or other family of distinction. The name is derived from the tomb of King Mausolus at Halicarnassus, erected about 350 B.C., and forming one of the seven wonders of the world. The royal mausoleum at Frogmore was founded by Queen Victoria, where she was buried, together with the Prince Consort and other members of the Royal Family since deceased.

**Mauve**, a colouring matter produced from lichens by Dr. Stenhouse in 1848, but in 1856 obtained from aniline by Perkins, and forming the first of the aniline dyes to be prepared on a large scale. The term mauve, however, was used to designate a purple shade of colour in the 18th century in France.

**May**, the fifth month of the year, but the third of the ancient Roman calendar. Supposed to be named after Maia, the mother of Mercury, to whom sacrifices were offered on the first day of this month. In England in former days May Day was made the occasion of many festivities, including the crowning of the May Queen, dancing round the Maypole, etc.

"**Mayflower**," the name of the ship which in 1620 conveyed the Pilgrim Fathers, 101 in number, from England to America. (See Pilgrim Fathers.)

**May Fly**, sluggish insects abundant over streams and rivers. The larvæ, which are aquatic, live several years, but the adults die a day or so after emerging and laying their eggs.

**Maynooth College**, near Dublin, was founded by Parliament in 1795, and possesses a large permanent endowment. It accommodates 500 students, who are trained for the Roman Catholic priesthood.

**Mayor**. In Great Britain various authorities share the work of local government. The village has three authorities, the parish council, rural district council, and county council; the small town has two, the urban district council and county council; the medium-sized town has two, the borough council and county council; the large-sized town has only one, the county borough council. Only the boroughs and county boroughs have a mayor and corporation. A mayor is *ex officio* a justice of the peace during his term of office. He represents the borough on all formal occasions, and has precedence (subject to Royal prerogative) over everyone else in the borough. Some cities, notably London and Birmingham, have a Lord Mayor. The chief Scottish cities have their Lords Provost. (See Local Government, pp. 122-33.)

**Mayors of the Palace** were functionaries of great influence under the later Merovingian kings; indeed, they exercised so much power that they ruled while the kings were mere puppets.

**Mazarine Bible**, an edition of the Latin Vulgate discovered in the library of Cardinal Mazarin; from which Gutenberg between 1450 and 1455 printed the first book for which the metal types were used.

**Mazurka**, a Polish dance in 3-beat time. Chopin wrote many Mazurkas as concert-pieces for the pianoforte.

**Meal-Tub Plot** was a pretended conspiracy in 1679 against the Duke of York, afterwards James II., concocted by an informer named Dangerfield, who sought to incriminate the Earls of Halifax, Essex, and Shaftesbury. Evidence of the fictitious nature of the plot was subsequently discovered in a meal-tub belonging to a woman with whom he had lived, and he was publicly whipped and put in the pillory. A man named Francis struck him a blow which caused his death, for which the assailant was hanged.

**Meal-Worm** is the larva of a beetle—*Tenebrio molitor*—and is found in corn mills, granaries, and bakeries, where it does considerable damage.

**Mean**, The, in mathematics, of two or more quantities is an intermediate quantity determined by certain rules. The arithmetic mean is the average value of the quantities, and the geometric mean is the square root of the product of the quantities.

**Mechanics**, the science dealing with the effects of forces upon bodies at rest or in motion.

**Meco-Moore**, a cutter-loader now used in considerable numbers in British coal-mines, capable of cutting and loading up to 500 tons a shift.

**Medals**, as decorations for military service, were first issued in this country by Charles I., who ordered medals for gallantry to be distributed to certain soldiers in 1643. Medals were also issued to officers and men who were victorious against the Dutch fleet in 1653. After Lord Howe's victory in 1794 a naval medal was instituted. Medals were also struck for the victory of Waterloo, and since that time special medals have been issued in connection with all our wars. The Victoria Cross, a special reward for personal gallantry in the Navy, Army, and Air Force, was instituted in 1856. The George Cross for gallantry instituted in 1940 ranks next to the Victoria Cross. The Military Cross was instituted in 1914. (See Back Endpaper.)

**Medlar**, a tree of which the fruit is about 1 in. in diameter and hard fleshed when gathered, but after being stored for a few weeks it softens. It has a peculiar flavour. Its large white flowers give it a decorative appearance.

**Meerschau**, a white or yellow-white earthy mineral, found in beds in Asia Minor, Greece, and other places, is a silicate of magnesium allied with water. Its chief use is in making pipe-bowls, though in Spain it is used for building purposes.

**Megalith**, a prehistoric monument, consisting of a large single stone or a group of such stones, in a circle as at Stonehenge or in burial chambers as at New Grange, Ireland. Megalithic monuments have been constructed by different peoples in different parts of the world since the third millennium B.C.

**Megalosaurus**, an extinct reptile of enormous proportions, having a length of from 30 to 40 ft. Fossil remains of this monster have been found in Oolitic Slate and Weald Clay.

**Meiosis**, a process of plant or animal cell division, in which the number of chromosomes is halved.

**Melinite**, a crystalline solid explosive of tremendous power, whose chief ingredient is picric acid.

**Melody**, a succession of single notes forming a pattern around which the rest of the composition (harmony, counterpoint) is woven. The theme (of a fugue, for instance) is a short melody.

**Melon**, a well-known tropical fruit, of which there are numerous varieties, cultivated since the days of Ancient Egypt.

**Mendelian Law**. The first statistical rules of inheritance, determining the ratio of variation of characteristics in the offspring of differing individuals, and the classification of characters discontinuously inherited, were first formulated by the Austrian monk Gregor Mendel (See "Prom. People" and also p. 173.) The results of his most important experiments in the crossing of peas were published in 1866, and showed that when two races are crossed, the resultant hybrids will exhibit the dominant features of one parent, but the offspring of the second generation will show those of both grandparents.

**Mendicant Friars**, certain religious orders which spread over Europe in the 13th century, and comprised the Franciscans, Dominicans, Augustines, and Carmelites. Originally they depended entirely on alms.

**Meniscus**, the curved surface of a liquid in a tube.

**Mennonites**, a protestant sect, an offshoot of the Anabaptists, which broke away in 1525 and adopted the doctrines of Menno Simons, a Dutch reformer. At first known as the "Swiss Brethren". There are several communities still existing. (See Anabaptists.)

**Mercator's Projection**, a method of indicating meridians and parallels of latitudes on maps, introduced by Mercator in the 16th century, and still universally used in navigator's charts.

**Mercers' Company**, the wealthiest and one of the

oldest of the London Livery Companies. It governs St. Paul's School and the Mercers' School and administers many important charities.

**Merchant Adventurers' Company**, a famous chartered regulated trading company which operated from the 14th century to near the end of the 18th century. It had a monopoly of the export trade in cloth.

**Merciless Parliament**, the name given to the parliament of 1388 summoned by Richard II., which decreed the execution of several of the king's ministers and the outlawry of the Duke of Suffolk.

**Mercury**, one of the smaller planets and the nearest to the sun, being 36 million miles distant. It has no satellite.

**Mercury or Quicksilver**, is one of the oldest-known metals, whose chief ore is the sulphide, cinnabar, found in certain parts of Spain, China, Japan, Mexico, and South America. It is liquid at ordinary temperature. It is largely used in the construction of barometers and thermometers. Alloys of mercury are called amalgams. It is also of great value in medicine.

**Meridian**, an imaginary circle extending through the North and South Poles and any given place. When the sun is at its midday height at any place it is "on the meridian"; hence the terms ante-meridian (a.m.) and post-meridian (p.m.).

**Merino Sheep** were imported into England from Spain in 1788, and had great influence in improving native breeds, especially in regard to the quality of the wool.

**Merit**, Order of, founded by King Edward VII in 1902 as a special distinction for eminent men and women without conferring a knighthood upon them. The Order has twenty-four British companions in addition to foreign honorary members limited in number, as the choice of members is, by the Sovereign's pleasure. Lord Kelvin was the founder companion. The only honorary members still alive are General Eisenhower (1945) and Dr. Schweitzer (1955). Florence Nightingale is the only woman to have received this coveted decoration.

**Merovingians**, the name given to the family that ruled over France from about 500 to about 750. Clovis was first of the line and Chilperic the last.

**Meson (Mesotron)**. Particles which are believed to be important in the interaction of protons and neutrons in atomic nuclei. The existence of mesons was predicted by the Japanese scientist Yukawa in 1935 on theoretical grounds, and was established the following year by the American scientists Anderson and Neddermeyer, who observed them to be thrown out by matter bombarded with cosmic rays. The charge on the meson is equal in size to that on the electron and the proton; the mass is about 200 times that of the electron. It is a very short-lived particle, with a free existence to be measured in millionths of a second. The first "man-made" mesons were produced in 1948, by bombarding carbon nuclei with alpha particles accelerated in E. O. Lawrence's new cyclotron at Berkeley, California, then the biggest in existence. A new kind of meson has since been discovered; the neutral *pion*, sometimes called the *neutretto*.

**Mesozoic**. The geological era which includes the Triassic, Jurassic, and Cretaceous. It began about 200 million years ago and lasted about 140 million.

**Metal Spraying**. The technique of spraying molten metal with a special spray gun. It can be used to deposit a protective coating (e.g., zinc on steel), or to build up worn surfaces of machine parts.

**Metamorphic Rocks** are such geological deposits as have undergone alterations of structure and composition. The most active agents in producing these metamorphic changes are heat, water, and pressure.

**Metayer System**, a land cultivation method prevalent in Italy and France, whereby the landlord provides the land and materials and the tenant the labour, the produce being evenly divided between them.

**Meteorites**. The word meteor originally signified any natural phenomenon, but in modern usage meteors are small bodies coming from inter-

planetary space which become luminous by friction on entering the earth's atmosphere. Popularly called "Shooting Stars." Larger meteors are known as fireballs. Some of these reach the ground. The object which has been a meteor in flight then becomes a meteorite. In some meteorites iron is the predominating element, others are like rock. The iron meteorites are more common amongst those which have been preserved, but falls of rock-like meteorites occur more frequently. At l'Aigle in France in 1803 from 2000 to 3000 meteorite stones fell; this fall is famous because it convinced scientists that meteorites really came from outside our atmosphere. (The largest meteorite stone actually known to have fallen to earth is one which descended in Emmett County, Iowa, in 1870, weighing 437 pounds.) A meteorite weighing no less than 36½ tons found in Greenland is now in New York. On June 30th, 1908, an enormous meteor fell in Siberia in a sparsely-inhabited region. A hot blast destroyed all trees within a radius of about 5-10 miles, the explosion waves being recorded by barographs as far distant as London, Washington, and Batavia. For the next few nights there was in Europe in the northern sky brilliant illumination due to sunlight falling on clouds of dust at a great height in the atmosphere. Whether this dust had accompanied the meteor in its journey through space like the tail of a comet or whether the dust had come from Siberia is unknown. When the place where the meteor fell was visited in 1927 some 200 craters were found, but no considerable meteorite has been recovered.

**Meteorograph**, a collection of instruments for recording continuous fluctuations in temperature, pressure, and humidity of the atmosphere.

**Meteorology**, the science of the atmosphere considered as a heat engine. Deals with weather, climate, optical phenomena, atmospheric electricity, physical processes such as radiation and precipitation, the dynamics and structure of cyclones, anticyclones, etc. Wide application to problems of aviation, agriculture, commerce and shipping. Meteorological observing stations are in operation all over the world, and on the simultaneous or synoptic reports of their instrument readings and estimates of pressure, temperature, humidity, speed and direction of wind, rain, character and amount of cloud, visibility, etc., forecasts, gale, snow and frost warnings are based. The Meteorological Office is part of the Air Ministry, whose Director is appointed by the Air Council. (See Weather.)

**Methane**. This gas occurs over marshes and swamps, where it is liberated in the decay of vegetable matter. It is the main constituent of natural gas, and also occurs in coal-mines, where it is called "fire-damp" because of the explosive character of its mixture with air.

**Methodists**, a term designating the religious organisation founded by John Wesley in 1739, after a long course of successful preaching by him in all parts of the kingdom, as well as in America. It professed to have but one aim, "to spread scriptural holiness over the land." The itinerant system of the ministry is a prominent feature of the organisation. Since Wesley's day, some off-shoots of Methodism have arisen and flourished. A scheme of union was consummated in Sept. 1932 at a United Conference in the Albert Hall, London, whereby the Wesleyan Methodist, the Primitive Methodist, and the United Methodist Churches became one Church, now known as The Methodist Church.

**Methuen Treaty**, a treaty of commerce between Great Britain and Portugal, concluded by Paul Methuen, British Ambassador at Lisbon, in 1703. Provided for the importation of port wine at reduced rates and a corresponding advantage to English wool in the Portuguese markets and brought Portugal into the war of Spanish Succession as a member of the Grand Alliance.

**Methylated Spirit**, a mixture of 90 parts by volume ethyl alcohol, 9½ parts wood naphtha (methyl alcohol), ½ part crude pyridine, together with small amounts of petroleum oil and methyl violet dye. Industrial methylated spirit consists of a mixture of 95 parts by volume ethyl alcohol and 5 parts wood naphtha.



**Metre**, unit of length in centimetre-gram-sec. system = 39.37 in.

**Metre** is the form of poetic rhythm, or the way words are arranged in a rhythmic pattern to make verse, and may be determined by: (a) length of time taken in pronouncing the syllables, as in classical Greek, Latin, and Persian verse; (b) stress with which the syllables are pronounced, as in modern English verse; (c) tone or pitch, as in Chinese verse. The repeated rhythmic unit of a group of syllables is called a *foot*, the principal being: *dactyl* (long-short), used in Greek and Latin verse, *anapaest* (short-short-long), *spondee* (long-long), *pyrrhic* (short-short), *iamb* (short-long), the commonest foot of English verse, *trochee* (long-short). The measure most used by the ancient Greek poets was the dactylic hexameter or heroic line, consisting basically of six dactyls, any of the first four of which could be replaced by a spondee, and the last always a trochee. The principal English rhythms are the 5-foot Iambic or English heroic line, initiated by Chaucer, Blank Verse (unrhymed 5-foot line, the standard measure for dramatic and epic verse), Heroic Couplet (5-foot iambic lines in couplet rhyme), and stanza. Individual poets have invented many different arrangements of rhymes and grouping of lines of all lengths to suit the poetic material. Free verse is without any obvious rhythmical basis.

**Metric System** is the system of weights and measures based on the gram and the metre, smaller units and larger units being decimal subdivisions or multiples of the primary units respectively. It came into force in France in 1801, and has since been adopted in most of the continental countries and is used universally in scientific work. There have been many attempts to get the system adopted in this country, and there is now reason to hope that others will follow the enterprising example of the pharmaceutical industry which adopted metric weights and measures in wholesale trading in July 1953. (See pp. 740-41.)

**Metronome**, an instrument for beating time during the performance of a musical composition. It has a double pendulum, and is wound up like a clock.

**Metropolitan Water Board**, a body constituted by special Act in 1902, consisting of 66 members, and controlling the water supply of London. £42,000,000 was paid as compensation to the water companies absorbed.

**Mezzotint**, an engraving from copper or steel produced by instruments which burnish and scrape away portions of the surface, and yield an impression effectually graded in light and shade.

**Mica**. The mica of commerce is a nearly transparent mineral, which has great heat-resisting power, and can be split into thin plates. The most important micas are muscovite (potassium mica), the commoner variety, and phlogopite (magnesium mica).

**Michael, St., and George, St.**, an order of knighthood originally founded for the Ionian Isles and Malta in 1818, and reorganised in 1869, so as to admit Crown servants connected with the Colonies. The Earl of Derby, Earl Russell, and Earl Grey were the first of the new knights.

**Michaelmas Day**, the festival day of St. Michael and All Angels, Sept. 29th, one of the English quarter days.

**Microbe**, a term proposed by Sédillot in 1878 to denote any minute organism, vegetable or animal, or found on the borderland between the two great natural kingdoms. The term is commonly used, but not by scientists.

**Micrometer**, an instrument for measuring minute distances; usually attached to the eye-pieces of a microscope or telescope, and consisting of two very fine hairs or wires stretched across the field of view, one fixed, the other movable. It was invented by William Gascoigne in the 17th century and improved by later inventors. Sir Joseph Whitworth made one in 1858 to measure the millionth of an inch.

**Microphone**, an instrument for converting sound waves into electrical variations. The first microphone was invented by Prof. David Edward Hughes, in 1878. It is used for telephone communications, in broadcasting, in gramophone recording, etc.

**Microscope**, invented about 1590 by Janssen, and

improved by Galileo, Fontana, and others, is an instrument which by a lens system magnifies minute objects. Microscopes are simple, compound, and binocular. The more powerful instruments have a magnifying capacity of as much as 10,000 diameters. (See *Electron Microscope*.)

**Middle Ages**, usually considered to comprise the 1000 years from the fall of the Western Roman Empire in the 5th century to the Renaissance in the 15th. The period was essentially the age of faith and we owe it many churches of incredible beauty. It was dominated by the Roman Church, while the monasteries were the storehouse of learning until the rise of universities in the 13th century. Feudal ideas and practices became very widespread, their later decline being hastened by the Black Death.

**Midge**, the common name of small two-winged flies of the genus *Culicoides*. The term "gnat" is sometimes applied to midges, though in Britain it is more commonly a synonym for the mosquito, clouds of which appear on summer nights in country places.

**Midrash**, the explanation of the Jewish Scriptures, dating from the interpretation originated by Ezra after the Captivity and continued by later Rabbis.

**Milan Decree**. (See *Berlin Decree*.)

**Millenary Petition** was presented to James I. in 1603, on behalf of nearly 1,000 Puritan Ministers against certain of the rites and ceremonies of the Church of England. The Hampton Court Conference was the outcome of this petition.

**Millenium**, a period of a thousand years. The term is specifically used of the period of a thousand years during which, according to Rev. xx. 1-5, Christ will reign in person on earth. The Millenarians are a sect that interprets the "Millennium" as beginning with the commencement of the 6001st year from the Creation, which according to Archbishop Ussher (1581-1650) was in 4004 B.C.

**Millipede**. Arthropods allied to the centipedes, from which they differ in having two pairs of legs to each body segment instead of one pair. Worm-like in shape but with a pair of antennae on the head, they are vegetarians and can do much harm to garden plants.

**Millstone-Grit**, a bed or rock of the Carboniferous group underlying the Coal Measures, and attaining in England a thickness in parts of 5,000 ft. It is from this rock that millstones have been made from time immemorial.

**Mimicry**, the resemblance of an animal to another animal or to inanimate objects. Examples of the former are the hover flies, which mimic wasps and bees; of the latter, leaf insects, stick insects, and caterpillars that look like dead twigs.

**Mind**. The nature of mind has for the most part been thought of as a philosophical problem, and historically has been described in terms of three main theories: those of materialism, idealism, and dualism. Materialism implies that mind does not, in fact, exist—it is merely an illusion, since the whole universe is composed of matter and matter alone. This belief, held by the Ionian school of Ancient Greece, has been held by few other philosophers. Idealism, on the other hand, takes the opposite point of view: it considers that matter is an illusion and that the whole universe is composed of the same stuff as mind. Sometimes, as in the philosophy of Berkeley, this belief takes the form of a theory that the universe is a thought in the mind of God. Dualism, the third viewpoint, insists that both matter and mind are fundamental—that neither can be reduced to the other. Most philosophers have held some form of this theory. The difficulty about dualism is that, if both mind and matter exist, it is very difficult to see how they interact—how thought is translated into action and how physical states of the body can (as they obviously do) influence the mind. Three further theories have been devised to explain how, if we accept dualism, interaction takes place. These are: (1) interactionism, which simply insists that interaction does take place; (2) psychophysical parallelism, which states that mind and body are parallel processes which coincide by the will of God but never really act one on the other; and (3) epiphenomenalism, the theory

- that mind is simply an appearance given off by matter as a flame is produced by a candle. In recent times, however, psychology has had something to say about the problem. Most psychologists consider that mind is a process, not a "thing." We do not, for example, ask to see what a "digestion" is or what it looks like—we accept the obvious fact that digestion is a reality but that it is a process going on in the stomach. In much the same way, the psychologist says, mind is a process going on in the brain. (See "The World of Science.")
- Mineralogy**, the science of minerals. The British Mineralogical Society was established in 1800.
- Minim**, a musical term denoting a note equal to two crochets, or half the value of the semibreve; also pharmaceutical term for  $\frac{1}{16}$ th part of a fluid ounce.
- Mink**. Semi-aquatic mammals closely related to polecats. There is one American species and one European. The fur, which varies light to dark brown, is soft and thick, and is among the most valuable of commercial furs.
- Minnesingers** were minstrel poets of Germany who, during the 12th and 13th centuries, composed and sang love ballads to amuse the knights and barons of the time.
- Minnow**, a small fresh-water fish of the carp family, abounding in all the waters of Europe; it has a mottled back and silvery belly, and forms a popular bait for trout.
- Minor Scale**. (See Diatonic Scale.)
- Minstrels** were originally specially appointed instrumentalists and singers—pipers, harpers, and gleemen—engaged by barons and manorial lords to amuse their tenants. Later, minstrels assumed nomadic habits, made their way into the houses of the great, and were generally welcome. By Elizabeth's time, however, they were too numerous, and they were classed as "rogues and vagabonds," along with actors.
- Minuet**, a composition in 3-beat time and in the rhythm of the minuet dance. A movement of a sonata or symphony may be in minuet form.
- Miracle Plays**, which were very popular in England in the 15th century, were usually religious in character, representing some of the dramatic incidents of the Bible. Staging of plays was one of the many activities of the Gilds of those days.
- Mirage**, an optical illusion often observed in desert regions when the objects on the surface of the earth often some distance away appear as if reflected in a surface of water. Mirage is due to the unequal heating of the different parts of the atmosphere, which bends the light rays, and so produces distorted images.
- Mirrors** were made of burnished metal in ancient times, brass usually. Silver mirrors were introduced by Praxiteles, 328 B.C. The Venetians made the first mirrors of glass, in the 14th century, but they were not made in England until the 17th century.
- Mishna**, the first part of the Talmud, setting forth the "Oral Law" of the Jews.
- Misprision**, a legal term, signifying an offence which may border on a capital charge. Misprision of treason indicates a knowledge of treason without participation in the treasonable act.
- Missal**, the name of the mass-book of the Roman Church compiled 492-96 by Pope Gelasius I., and revised by Gregory I., 590-604. The present Roman Missal was sanctioned by the Council of Trent 1545-63. In the Anglican Communion the Book of Common Prayer superseded the Missal in 1549.
- Missel-thrush** receives its name from its partiality to the mistletoe-berry. Larger than the song-thrush, with spotted breast rather than speckled.
- Mistletoe**, a parasitic evergreen with white berries used as a decoration at Christmas-time. The familiar mistletoe of Europe is the *Viscum album*, which grows on the boughs of lime, willow, apple, poplar, maple, ash, hawthorn, but seldom on oak-trees. It was sacred to the Druids, and in Norse mythology it was a mistletoe dart that killed the god Baldur.
- Mistral**, a cold dry northerly wind peculiar to the French coast of the Mediterranean.
- Mites**, minute animals related to spiders, but without the well-marked division of the body exhibited by the latter. Some are parasites, e.g., the scab mite and mange mite. The garden pest called the "red spider" is really a mite.
- Mitrailleuse**, a breech-loading machine gun adopted by the French army previous to the Franco-German War of 1870.
- Mitre**, the twofold pointed head-dress of bishops and certain abbots of the Western Church, and occasionally of other ecclesiastics.
- Moa**, the name for several species of ostrich-like extinct birds related to the New Zealand kiwi. One species stood 10-12 ft. high. The Moas became extinct about 500 years ago.
- Moabites**, a race of Judæa, descendants of Lot. They were often in conflict with the Israelites, but were finally subdued by Jehoshaphat, 895 B.C.
- Moabite Stone**, a stone of the 9th century B.C. containing the earliest known inscription in Phœnician characters, and discovered in the highlands of Moab in 1868. It is now in the Louvre, Paris. It records the campaign between Moab and Israel, a different account of which is given in the Old Testament.
- Mocking Bird**, an American bird of the thrush family, widely distributed over the north and south of the western hemisphere. It is renowned as a beautiful songster, and has remarkable mimicking powers.
- Moderator**, a material used to slow down neutrons in an atomic pile. Examples of moderators are pure graphite and heavy water.
- Mohair** is the wool of the Angora goat and used very largely in the worsted trade for the manufacture of dress fabrics.
- Mohammedanism**, the Moslem religion set forth by Mohammed (569?-632) and embodied in the Koran (q.v.). The doctrine includes the unity of God, the immortality of the soul, predestination, a last judgment, and a sensual paradise. It is professed by some 300 million people, mainly in India, Pakistan, Persia, and the Near East. There are 5 millions in Europe. Since the reforms of Kemal Ataturk the Mohammedans of Turkey are no longer orthodox, and polygamy and the segregation of women has been forbidden.
- Molasses**, sugar-cane juice in its uncrystallised form after boiling. The crystallised part is the raw sugar.
- Mole** a small burrowing animal about the size of a small rat, with short legs and forefeet armed with strong claws for digging in the earth. Their subterranean dwellings are of curiously ingenious construction, and they do not often leave them except to make raids on mice, frogs, snails, etc. The earth-worm, however, is the mole's chief item of food.
- Molecule**, the smallest mass of any substance, whether an element or a compound, capable of independent existence, and still retaining the properties of the substance. There are  $27 \text{ by } 10^{23}$  molecules in a cubic centimetre of a gas at ordinary temperatures and pressure.
- Mollusca** designates the soft-bodied invertebrate animals, most of which are protected by a shell. These shells are univalve—that is, of one piece, as in the case of snails; bivalve, as in the oyster; or multivalve, in the mail shells (*Chiton*). The squids, octopus, and nautilus are also molluscs, belonging to the class called Cephalopoda, the distinctive feature of its members being possession of tentacles.
- "**Molly Maguires**," the name of a secret society organised in Ireland in 1843 for revolutionary purposes; also of an American association formed in Pennsylvania about 1854 against mine-owners and their agents. The members of these bands wore women's clothes.
- Molybdenum**, a fairly hard white metal with properties resembling those of chromium. Its commonest ore is the sulphide, molybdenite. The chief use of the metal is in the manufacture of alloy steels; high-speeding cutting steels can contain about 10 per cent. of molybdenum.
- Monazite**, a cerium mineral containing some thorium. Occurs as grains, often as sand ("monazite sands"). Deposits occur in India (Travancore), Russia, Norway, Madagascar, S. Africa, Brazil, U.S.A.
- Mongols**, a yellow race of Central Asia, largely nomadic. In the 13th century, they conquered large portions of Asia, including China, Persia, and India. They founded the Mogul



dynasty in India in 1525, and ruled up to the end of the 18th century, when their empire came under British control.

**Mongoose**, species of mammals related to the civets, feeding on vermin and reptiles. These animals, which have long tails and short legs, occur in Africa and Asia (especially India). The biggest mongoose is the Egyptian ichneumon, and tiffs has been introduced into the W. Indies because of its ability to kill large poisonous snakes.

**Monitor**, a family of lizards noted for their great size. There are about 30 species widely distributed over the tropical parts of Asia, Australia, and Africa. The monitor, which lives on Komodo and other E. Indian islands, is 7 ft. long and known as the "Komodo Dragon."

**Monmouth's Rebellion** was headed by James, Duke of Monmouth, a natural son of Charles II. (1649-1685). He was sent to Scotland to quell the Covenanters in 1675, and succeeded in winning the Battle of Bothwell Bridge 1679; but was banished for aspiring to the throne to the exclusion of the Duke of York, afterwards James II. In 1685 he landed at Lyme Regis, and assumed the title of king, but was defeated at Sedgemoor, and executed on Tower Hill. Judge Jeffreys stamped out the remnant of the rebellion in the "Bloody Assize."

**Monocotyledons**. One of the two sub-classes into which the Flowering Plants (or Angiosperms) are divided. Distinguishing features are: the veins of the leaves run parallel to each other, and the parts of the flower are arranged in multiples of three. Most monocotyledons are herbs; many are cultivated for their beautiful flowers, e.g., lilies, tulip, daffodil, iris, orchids, and cannas. A few are tree-like, e.g., bananas, pineapples, bamboo, and palms. (See p. 167.)

**Monolith**, a column or shaft comprising a single stone. "Cleopatra's Needle," now on the Thames Embankment in London, is an example.

**Monotheism**, the doctrine that there exists but one God. The chief monotheistic religion is Christianity.

**Monotremata**, the name of the order of mammalia comprising the most primitive mammals, which lay eggs. There are only two genera in this order: the Duck-billed Platypus (*Ornithorhynchus*), the Spiny Ant-Eaters or Echidnas.

**Monroe Doctrine**, a principle of American policy declining any European intervention in political affairs of the American continent, outlined by President Monroe in 1823. At the same time interference was disclaimed with existing European colonies in the Western Hemisphere. The American Civil War hampered the application of the doctrine for some time, but afterwards the United States firmly insisted on it. The Doctrine is not international law, but a national policy of the U.S.A.

**Monsoons**, regular persistent winds which blow at certain seasons in middle latitudes, mainly in South and East Asia. Their occurrence is related to the great changes of pressure which take place between summer and winter over the land mass. In India the south-west monsoon (June-Oct.) is moisture-laden from its long passage over the sea and in the higher regions, especially, there is heavy rainfall. Sudden reversal of the wind results in the cold north-east monsoon (Oct.-Mar.) which is dry on account of the shelter afforded by the mountain ranges to the north. Frequently the term "monsoon" is applied to denote the associated rainfall without reference to the actual winds.

**Monstrance**, an ornamental transparent receptacle in which the Sacred Host is carried in procession or exposed for adoration.

**Montessori System** of education was worked out by Dr. Maria Montessori (1869-1952) in the early 20th century. She first experimented on defective children (aged 3-8) in the slum districts of Rome. Her results were so amazing that she began work on normal children. The *Casadei Bambini* (rooms set apart for children in the court-yards of a tenement block) became world famous. Her system is based on free discipline and free movement and not on the annihilation of a child's individuality and its immobility on a bench in a classroom. Dr. Montessori invented apparatus for her pupils which stimulates interest and creates attention. Children in her

schools can learn to read, write, count, and do simple arithmetic before the age of 6. Her method has revolutionised infant education, and it is being used in many countries.

**Month**, the 12th part of the calendar year. A lunar month is the interval of new moon to new moon or full moon to full moon; mean length, 29 days, 12 hours, 44 minutes, 2.87 seconds. A sidereal month represents the time of the moon's revolution from a given star back to the same again, 27 days, 7 hours, 43 minutes, 11.5 seconds. Unless otherwise expressed, a month, in English law, is a lunar month of 28 days.

**Monts-de-Piet **, Government institutions for advancing money for goods left in pledge, were first established in France in 1462. Similar institutions in France in 1777 were suppressed by the Revolution, but restored by Napoleon, and have since been expressly regulated by law.

**Monument of London**, erected in 1671-77 by Wren in commemoration of the Great Fire, is 200 ft. high and cost £14,500. The original inscription upon it ascribed the fire to "the treachery and malice of the popish faction," which stood down to 1831, when the words were erased as objectionable. The black marble staircase consists of 345 steps.

**Moon**, the earth's satellite, is distant from us 238,857 miles. It is a globe of 2,160 miles in diameter and the period from one full moon to another is 29 days, 12 hours, and 44.04 minutes.

**Moorhen**, a bird of the crane family, familiar on the borders of British ponds, rivers, and lakes. Dark-grey plumage, with olive-brown wings edged with white; yellow-tipped red bill.

**Moors**, the name given to the Moslems who live in N.W. Africa and to those who once lived in Spain. In 711 Moorish Arabs invaded Spain and spread beyond the Pyrenees into France, where they were driven back by the end of the century. Spain, however, remained virtually under Moorish domination until the 11th century, and during that period was the most civilised and prosperous part of Western Europe. In the arts and sciences the impact of Moorish culture was profound and lasting. Examples of the brilliant splendour of Moorish architecture are still to be seen in Toledo, Cordoba, Seville, and Granada. During the long struggle for the Christian reconquest thousands were killed and expelled, and in 1492 Granada, their last remaining kingdom, was forced to surrender. They were virtually exterminated by the Inquisition, and the last were expelled in 1609.

**Moose**, the largest members of the deer family. The N. American Moose stands 5½-6½ ft. high, and has huge palmate antlers. There is another New World species, occurring in Alaska. The European species is known as the elk.

**Morganatic Marriage**, a form of marriage, formerly peculiar to Germany but also found in the royal families of other countries, where the contracting parties are of unequal rank. In such marriages the left hand is given instead of the right, and it is stipulated that the children of the marriage are not to enjoy the rank or inherit the possessions of the parent, though such children are legitimate. Morganatic marriage is unknown in English law.

**Morgue**, a repository for dead bodies awaiting identification, the best-known morgue being that of Paris, which was formerly open to the general public.

**Mormons, or Latter-Day Saints**, a religious sect founded in 1830 under the title of the Church of Jesus Christ of Latter-Day Saints by Joseph Smith. The *Book of Mormon*, which with the Bible, the Doctrine and Covenants, and the Pearl of Great Price constitute the standard works of the Church, is alleged to be an inspired translation of sacred records of ancient American history. The Church encountered opposition and persecution, and finally established itself in Salt Lake City in Utah, where it has grown and prospered. Polygamy, introduced by Brigham Young, who succeeded Smith in 1847, was repudiated by the Mormon community in 1890. Utah was recognised as a State of the Union in 1896.

**Morpunkiee**, an Indian pleasure-boat, long and narrow, of considerable capacity, with a high peacock-shape decoration at the stern.

**Morris Dance**, an old English country dance of the reel order.

**Morse Alphabet**, a system of dots and dashes, intended to be used in combination with the indicator in telegraphy; but usually read by sound, the receiving operator writing down the words in the system as transmitted. This system of signals was invented by the American inventor and artist Samuel Finley Breese Morse (1791-1872) of Charlestown, Massachusetts.

**Mortars** are short guns with a large bore and close chamber for throwing bombs. They are said to have been first used in the 15th century at Naples, but were not introduced into England until a century later. The mortars made at the present time are so powerful they can throw shells of nearly 2,000 lb. weight a distance of over five miles.

**Mosaic**, a joining together of small pieces of coloured glass, marble, or other materials in designs to imitate painting. The ancient Greeks and Romans were skilled in this art; it was revived in Italy in the Middle Ages with considerable success, many eminent painters designing subjects for mosaic. It still flourishes, and notable examples occur in some of the principal modern buildings.

**Moscow, the Retreat from**, was one of the most disastrous events in the career of Napoleon I. He entered Moscow on Sept. 14th, 1812, and the next day the Russians set fire to the city, practically burning it down. The French were forced to evacuate, and in the retreat to France Napoleon lost the greater part of his army.

**Moslems**, the European term for Mohammedans. **Mosque**, a Mohammedan church, the greatest being that of St. Sophia at Istanbul, now converted into a museum of Byzantine art.

**Mosquito**, small two-winged flies with long legs and slender body. Their larvae are aquatic. The females of some species are blood-suckers, and thus come to transmit the blood parasites which cause malaria and yellow fever, for example.

**Mosses**. Most mosses live in moist habitats, but there are some species that can withstand desiccation and are adapted to live on rocks and tree-trunks.

**Moss-agate**, a kind of agate characterised by minute grains of oxide of iron or chlorite, forming a moss-like pattern which is very ornamental.

**Moss-troopers** were bands of Scottish marauders who used the mossy regions of the Scotch and English borders as hiding-places, and thence made frequent plundering expeditions, keeping that part of the country in constant unrest. They were put down in the 18th century.

**Motet**, an unaccompanied anthem of the Catholic and Lutheran Churches. Many fine motets which were settings of sacred writings or paraphrases and which were written mostly in the 15th century still survive.

**Moth**. Together with the butterflies, the moths make up the insect order *Lepidoptera*, in which the wings are scaly. In most moths the antennæ taper to a point, and are not clubbed as in butterflies. The majority are nocturnal, and pupate in a cocoon, whereas the pupa of butterflies is naked and usually bright-coloured.

**Motion, Laws of**. According to Newton: (1) A body continues in its state of rest or uniform motion in a straight line except in so far as it is compelled by external forces to change that state. (2) Rate of change of momentum is proportional to the applied force, and takes place in the direction in which the force acts. (3) To every action there is an equal and opposite reaction.

**Movement**, one of the contrasting pieces which together make up a Sonata, Symphony, or Concerto. A typical sonata has three movements, while a typical symphony has four.

**Mule**, a hybrid between horse and ass. Also the name of the spinning machine invented by Crompton in 1779, and so called from its combining the principle of Hargreaves' spinning jenny with the machine invented by Arkwright.

**Mullet**, species of fishes belonging to several different families, and including the red, grey, and striped mullets.

**Mullions** are projecting windows with vertical divisions—forming a highly decorative feature

in Gothic architecture. The horizontal stones forming the crossing divisions between the lights of this class of window of the Elizabethan or Tudor period of Gothic are styled transoms.

**Mummies** are embalmed bodies, found mostly in Egypt, supposed to be those of distinguished people who lived thousands of years ago. Mummies have also been found in Peru, Mexico, and Persia. The embalming process which has enabled the bodies to be preserved can only be conjectured, though it is known that various aromatic substances were used after the viscera and other vital organs had been removed, the cavities being filled with absorbent dust, chip-pings, and cedar wood. A splendidly preserved and magnificently decorated mummy of the Pharaoh Tutankhamen (1350 B.C.) was found and minutely described in 1925.

**Munich Agreement**. In Sept., 1938, Mr. Neville Chamberlain and M. Daladier, British and French Premiers, reached agreement with Hitler at Munich for the dismemberment of Czechoslovakia, primarily for the benefit of Germany. Czechoslovakia itself was not consulted, nor Russia which with Britain and France had jointly pledged themselves to uphold the independence of Czechoslovakia. Hitler had been threatening that country for some time, but every concession had been met by further demands. After three visits to Germany, during which Hitler raised his demands, the British and French statesmen gave way. Mr. Chamberlain declared on return that he had secured "Peace in our Time." The Agreement was the subject of much controversy. Hitler seized Czechoslovakia in Mar., 1939.

**Murder** is the unlawful killing of a human being, "with malice aforethought." In England it is punishable with death. During the passage of the Criminal Justice Bill through Parliament in Apr., 1948, the Commons voted for a suspension of the death penalty for an experimental period of five years. This was rejected by the Lords and the clause was finally dropped. Constitutional responsibility to recommend reprieve rests with the Home Secretary.

**Musk Deer**, a small deer of the Himalayas, standing about 20 in. high. It is grey in colour, slightly brindled, and carries a small pouch in the abdominal region, containing what is commercially known as musk, an article which is of great value in the manufacture of various perfumes.

**Musk Ox**, an animal with characteristics of both sheep and ox, and having a musk odour. It is a native of Northern Canada.

**Muslin**, a fine cotton fabric first made at Mosul, in Mesopotamia, and introduced into England from India about the middle of the 17th century.

**Mussel**, a well-known bivalve mollusc found in great abundance on the rocks of the sea-shores. The freshwater mussels of streams and ponds do not belong to the same genus.

**Mute**, an old legal term signifying that a prisoner on being asked to plead remains mute, that is, makes no answer to the charge, or some answer that is irrelevant. Originally standing mute was equivalent to conviction. In modern times if a prisoner stands mute, a plea of "Not Guilty" is entered. Also a term in music for a pad or specially shaped metal device placed in the bell of a trumpet or horn to soften and modify the tone.

**Mutiny Act**, which provides for the discipline, regulation, and payment of the Army, was passed in 1689, and was re-enacted practically every year until 1878. Its provisions were embodied in the Army Discipline and Regulation Act of 1879.

**Myriapoda**, the class of invertebrate animals including centipedes, millipedes, and many others. They are widely distributed, but the largest species are found in the tropics.

**Myrrh**, a resinous substance obtained from a tree of the natural order *Amyridaceae*, growing plentifully in Abyssinia and Arabia. Its use for embalming, medical, and aromatic purposes may be traced back to the most remote times.

**Mysteries**, Greek, secret mystic ceremonies of the ancient Greeks, religious drama accompanied by dancing, the most well known being the Eleusinian and Orphic ceremonies.



**Mystery Plays** were the mediæval religious dramas performed by the priests at great ecclesiastical festivals, particularly in France and Bavaria, staging the Nativity, Passion, and Resurrection.

**Mythology**, the name given to any collection of traditions and fables concerning gods and goddesses.

**Myxomatosis** is a virus disease that affects only the rabbit family. It was first reported in 1895 from Montevideo, Uruguay, where a stock of laboratory rabbits—a domestic form of the wild European rabbit (*Oryctolagus cuniculus*)—was almost wiped out by it. It is now known that myxomatosis exists as a mild or sub-clinical infection in the native wild rabbits or tapetis (*Sylvilagus brasiliensis*) of Brazil and possibly other parts of South America. In the European rabbit myxomatosis causes almost 100 per cent. mortality, the symptoms including intense swelling and inflammation of the eyelids, which spreads towards the forehead and ears, and may also affect the genital region. Although the appearance is distressing, it is by no means certain that suffering is severe. Many attempts have been made to introduce myxomatosis as a means of controlling rabbit numbers, but these were unsuccessful until January, 1951, when it was reported that the infection was spreading rapidly in parts of Australia. In 1952 it was introduced into France, and caused a marked reduction in the rabbit population. In the autumn of 1953 it reached Great Britain. At the time of writing the final effect cannot be estimated, but it seems likely that the total wild-rabbit population will be reduced, at least temporarily. Domestic rabbits can be given a fair degree of protection through the use of a vaccine which is available at a low cost through veterinary surgeons and pharmacists.

## N

**Naafi**, the name by which the Navy, Army and Air Force Institutes is known to the Services, is the official Canteen Organisation for H.M. Forces at home and overseas and in H.M. Ships. Naafi provides many of the items required for the messing of H.M. Forces at home, and conducts permanent Clubs, some of which are residential in traditional Service centres. It exists for the exclusive benefit of the Serving man and woman, and distributes its profits to the three Services. Its motto is *Servitor Servientium* (the servant of those who serve).

**Nadir**, one of the two poles of the horizon, the other being the zenith. The nadir is the pole vertically below the observer's feet.

**Nagana**, a trypanosome disease of animals which occurs in Africa. It is transmitted by the tsetse fly.

**Nahum Festival**, in commemoration of Nahum, the 7th of the 12 minor Hebrew prophets. It is held on Dec. 24th. Nahum flourished about 713 B.C., during the reign of Hezekiah, and wrote his prophecies a short time after Sennacherib's invasion.

**Naiad**, a water-nymph of classic mythology, beautiful and mystic; celebrated by Virgil, Ovid, Homer, and other ancient writers.

**Nantes, Edict of**, was a decree promulgated by Henry IV. of France in 1598, giving full freedom of worship to the Protestants of the country. It was the revocation of this edict in 1685 by Louis XIV. that drove hundreds of thousands of French Huguenots to this country.

**Naphtha**, a liquid combustible believed to have been one of the ingredients of "Greek fire." Naphtha is a light, highly inflammable oil obtained by distilling petroleum, shale oil, or coal tar. The petroleum naphtha consists of a mixture of paraffins; that from shale contains olefines as well as paraffins. Coal-tar naphtha contains xylol.

**Naphthalene** is procured from coal tar, and its derivatives are much used in the manufacture of colours for dyers and printers. "Moth balls" are made of naphthalene.

**Nardus**, a genus of coarse grasses, growing on bleak upland heaths and hill slopes. *Nardus stricta*, known as "mat-weed," is a British species.

**Narghile**, an oriental tobacco pipe so constructed that the smoke passes through water and up

a long flexible tube before reaching the lips of the smoker.

**Naseby, Battle of**, was fought on June 14th, 1645, between the Royalists under the command of Prince Rupert and the King, and the Parliamentarians under Fairfax and Cromwell. It resulted in a complete defeat for Charles.

**National Anthem**, a musical composition with words, officially adopted for ceremonial use as an expression of patriotism and loyalty to a national cause. The national anthem of the United Kingdom is "God Save the Queen" which has been in use since about the middle of the 18th century. There is some doubt about its origin. It has been variously attributed to Dr. John Bull, Henry Carey, and James Oswald.

**National Assembly**, the name taken by the body responsible for the opening stages of the French Revolution and subsequently by other Sovereign bodies in France and elsewhere.

**National Covenant**, an oath and declaration subscribed to by the Scottish Presbyterians in 1638 to maintain their religion against Charles I.'s Episcopalianising designs.

**National Debt**. (See "Business Dictionary.")

**National Gallery**, established in 1834 at Pall Mall, London, with the Angerstein Collection of 38 pictures, purchased for £57,000 as a nucleus. The existing building was opened in 1838. It has been enlarged several times and was added to and repaired in 1930. The National Gallery at Millbank, known as the Tate Gallery, was given to the nation by Sir Henry Tate in 1897. About £35,000 is spent annually on their upkeep.

**National Guard of France**, a body of citizen soldiers first instituted on the day before the destruction of the Bastille in 1789, and ceased under the Consulate and Empire. It was revived in 1830, but was disbanded after fighting in the Franco-Prussian War.

**National Parks**. Under the National Parks Act 1949 a National Parks Commission was set up to create National Parks in England and Wales. Twelve areas had been recommended in the Hobbhouse Report, and of these several have already been designated. The areas named in the Report were the Lake District, Snowdonia, the Peak District, Dartmoor, the N. Yorkshire Moors, the Pembrokeshire Coast, Exmoor, the Yorkshire Dales, the South Downs, the Roman Wall, the Broads, and the Brecon Beacons and Black Mountains. It is not intended to change the character of these territories but to control their development so as to harmonise with the two dominant principles: (a) that the characteristic beauty of the landscape within the Park area shall be preserved and (b) that the visiting public shall have ample access and facilities for recreation and enjoyment. (See also Long Distance Routes.)

**National Physical Laboratory**, situated at Teddington, is one of the world's largest and best-equipped laboratories. It was first established in 1900, and functions as a central bureau of physical standards and as a research laboratory of industrial physics. In 1918 it became part of the Department of Scientific and Industrial Research and has ten Divisions; Aerodynamics, Electricity, Engineering, Light, Mathematics, Metallurgy, Metrology, Physics, Radio and Ship.

**National Portrait Gallery**, established in 1856, and now located in a building in St. Martin's Lane adjoining the National Gallery. Contains portraits of eminent people in history, literature, art, etc., and a valuable collection of medals and autographs.

**National Service**. (See "A Citizen's Guide.")

**National Trust**, founded in 1895. "A non-profit-making organisation incorporated by Act of Parliament for the purposes of promoting the permanent preservation of lands and buildings of historic interest or natural beauty for the benefit and access of the people." As a consequence of gifts of public-spirited individuals the Trust now owns many acres of magnificent scenery and property, including mediæval castles, bird sanctuaries, ancient monuments, birthplaces and homes of famous men, and classic examples of domestic architecture, preserved for the enjoyment of present and future generations. Since 1946 lands and houses of

interest to the nation may be given to the National Trust in lieu of death duties. (See also pp. 707-8.)

**Nativity.** There are three Nativity-Festivals in the Christian Churches, the Nativity of Christ on Dec. 25th, the Virgin Mary on Sept. 8th, and John the Baptist on June 24th.

**Natterjack**, a curious warty, prominent-eyed, brown toad (*Bufo calamita*), having a bright yellow line down the middle of its back. It utters a muttering sort of croak, hence its name.

**Naturalisation.** (See "Business Dictionary.")

**Nautch Girl**, a native East Indian dancing girl of the professional class.

**"Nautical Almanac,"** published under the authority of the Admiralty, is always issued four years in advance, and contains information specially prepared for the use of navigators and astronomers. It first appeared in 1767.

**Nautilus**, a term now applied only to the pearly-shelled nautilus, the sole surviving example of the four-gilled section of the *Cephalopoda*. Its fossil relatives are called Ammonites. The spiral shell is divided into a number of compartments, the animal living in the last and largest chamber. There are three or four species, all living in tropical seas. The Paper Nautilus is not related to the Pearly Nautilus, belonging to the same order as the octopus.

**Nave** is the body or main open portion of a cathedral or church, and extends from the chief entrance to the choir, or chancel, and is usually flanked by aisles. A nave, in mechanics, indicates the "hub" or central part of a wheel.

**Navigation Laws**, for the protection and encouragement of native shipping, have been passed frequently in England. The first English navigation law of any note was enacted in the reign of Richard II., its leading provision being that merchandise should not be imported into or exported from England except in English ships. This law fell into desuetude, and in 1651 fresh Navigation Acts were passed in favour of English ships, the carrying trade having fallen into the hands of the Dutch. The old Navigation Laws, however, were totally repealed in 1849.

**Navy, The Royal.** On the outbreak of the second world war there were in the Royal Navy 161,000 personnel and slightly more than 700 ships of all types. Steady expansion during the war increased these figures, until, on Aug. 31st, 1945, there were a total of 839,000 personnel (including 65,000 W.R.N.S.); and, 2,965 ships, including 1,155 motor launches, motor torpedo boats, and minesweepers, but excluding minor landing craft. The war losses of the Royal Navy were 51,018 killed and missing, 14,678 wounded, and 730 ships of all types sunk. Two chief developments in naval warfare during the second world war were the extensive use of carrier-borne aircraft, and the perfection of combined operations and invasion technique. The invention of Radar greatly simplified the use of naval aircraft both offensively as well as defensively, and by the end of the war carrier-borne aircraft were able to attack and conquer the metropolitan air force of Japan. The development of combined operations led to the construction of special landing craft, floating harbours, and new assault weapons, culminating in the invasion of Europe, where over 4,000 vessels were used. Principal naval actions in the second world war were: Battle of the River Plate (engagement of German battleship *Admiral Graf Spee* by H.M. cruisers *Exeter*, *Ajax*, and *Achilles*)—13.12.39; First Battle of Narvik—10.4.40; Second Battle of Narvik—13.4.40; French naval squadron at Oran immobilised—3.7.40; H.M.S. *Jervis Bay* lost defending Atlantic convoy from German battleship *Admiral Scheer*—5.11.40; Italian Fleet at Taranto crippled by Fleet Air Arm—11.11.40; Raid on Lofoten Islands—4.3.41; Battle of Cape Matapan—28.3.41; Sinking of German Battleship *Bismarck* and loss of H.M.S. *Hood*—24-27.5.41; Japanese attack on Pearl Harbour—7.12.41; loss of H.M.S. *Prince of Wales* and *Repulse*—10.12.41; Escape through English Channel of German ships *Scharnhorst*, *Gneisenau*, and *Prinz Eugen*—12.2.42; Battle of Java Seas—27.2.42; Battle of Coral Sea—4-8.5.42; Invasion of Madagascar—7.5.42;

Battle of Midway Island—3-7.6.42; Malta convoy action (loss of H.M.S. *Eagle*, *Manchester*, *Cairo*, and one destroyer)—11.8.42; Raid on Dieppe—19.8.42; Battle of Solomons—23-25.8.42; invasion of North Africa—8.11.42; Battle of Bismarck Sea—1-3.3.43; invasion of Sicily—10.7.43; invasion of Italy—3.9.43; landings at Salerno—8.9.43; Second Battle of Solomons—26.11.43; Sinking of German battleship *Scharnhorst*—26.12.43; landings at Anzio—23.1.44; Invasion of Europe (over 4,000 ships in invasion fleet)—6.6.44; Guam captured—21.7.44; First Battle of Philippines—22.9.44; Second Battle of Philippines—28.10.44; invasion of Luzon—11.1.45; invasion of Okinawa—1.4.45; naval air attacks on Japan—28.5.45 and from 10.7.45-9.8.45; Atomic bomb dropped on Hiroshima—5.8.45; Atomic bomb dropped on Nagasaki—9.8.45.

**Nebulae**, luminous celestial masses of gaseous matter enveloping star-like bodies. Some nebulae lie within the Galactic system; the extra-galactic nebulae (e.g., the Great Nebula in Andromeda) are probably universes similar to the Galactic universe of which the solar system is a part. (See p. 154.)

**Necromancy**, "the black art," was in olden times much believed in, and supposed to be an occult power by which its practitioners could converse with the spirits of the dead and learn the future.

**Needles**, according to Stow, were first made in England in the reign of Elizabeth, and in Mary's time "there was a negro made fine Spanish needles in Cheapside, but would never teach his art to any." In modern times the manufacture of this useful article has been vastly improved, and immense numbers are made at Redditch, Birmingham, and West Bromwich.

**Negroes** are the dark-skinned, woolly-headed races, natives of tropical Africa, or descendants of such natives. There are many different racial types, but the most typical Negroes are found in W. Africa—the Ashanti of the Gold Coast, and the Yoruba of Nigeria. There are the Pygmies living in the forests north and south of the equator, the Bushmen of the Kalahari Desert, the Hottentots of South Africa, who however have largely lost their identity, the Bantu peoples, and many others. Their culture is rich in folk-lore, and they have a great gift for music and dancing. About 25 million people of Negro descent are in N. and S. America, the European slave trade having taken them there from their homes in W. Africa.

**Negus**, the name given to any mixture of wine and water, and said to have been named after Colonel Francis Negus about 1714. The sovereign of Abyssinia is styled the Negus.

**Nekton**, term used to differentiate actively swimming aquatic organisms (e.g., fishes) from the "drifters" or plankton.

**Nelson Column**, in Trafalgar Square, London, designed by Mr. William Railton, was chosen from among a number of designs—temples, obelisks and various sculptural groups—sent in as a result of a competition held in 1839. The erection of the column was begun in 1840. Twenty-six years later the lions designed by Landseer were set up at the foot of the completed column. The statue of Nelson himself was made by E. H. Bailey and the bronze reliefs at the base executed by Carew, Woodington, Ternouth, and Watson, representing the Battles of the Nile, St. Vincent, Copenhagen, and Trafalgar. Height 170 ft., executed in Portland stone instead of granite, as originally planned, at a cost of £46,000.

**Nematodes**, the roundworms or threadworms. Some parasitise man and domestic animals.

**Nemean Games** were instituted at Nemea in honour of Archemorus, and revived in 1226 B.C. They were celebrated every third year, and were finally given up in A.D. 396. The conqueror in contests of strength and agility was rewarded first with a crown of olives, and later with wreathed chaplets of parsley leaves.

**Neodymium**, an element belonging to the rare-earth metal group. Discovered by Welsbach in 1885.

**Neogene**, a geological term referring to the later Tertiary formation in contradistinction to the older strata (Palaeogene). The Neogene comprises the Pliocene and Miocene.



**Neon**, inert gas present in air to the extent of about 1 part in 65,000. The crimson glow produced when an electric discharge passes through the gas is familiar in advertising signs.

**Neoplatonism**, a philosophical system current from c. A.D. 190 until 529, and considerably developed in succeeding centuries by Plotinus, Proclus, Hypatia, and others, the first-named being its most famous exponent. In its later phases was largely influenced by Christianity. The Neoplatonists contended that by concentrating the mind exclusively on higher speculations it was possible to achieve a condition of ecstasy in which the Infinite would be revealed.

**Neoprene**, generic name for a class of synthetic rubbers derived from butadiene.

**Nepotism**, is the bestowal of patronage by reason of relationship rather than of merit. It had its origin in the custom of certain Popes to enrich their families out of the offices of the Church.

**Neptune**. Apart from Pluto this is the most distant of the planets, estimated to be about 2,793 millions of miles from the sun, and taking about 165 years to make a revolution round that luminary. Discovered by the German astronomer Galle on Sept. 23rd, 1846, after its existence had been predicted by Leverrier and Adams.

**Neptunium**, element 93, one of the four new elements discovered during the progress of the atomic bomb project in the second world war. Neptunium is formed when a neutron enters a nucleus of Uranium 238, and it decays radioactively to yield plutonium.

**Nests** are, strictly, habitations formed by birds for the reception of their eggs and the hatching and rearing of their young. They are of the most varied character, some being mere resting-places on the ground, while others display a remarkable skill in construction. Thus, the bower-bird and other species show very distinctive peculiarities. The most usual materials for bird-nest building are leaves, twigs, moss, wool, feathers, mud, clay, etc. Some birds burrow in sand-hills. Certain mammals and fishes also build nest-like structures for breeding in.

**Neuroptera**, an order of insects which includes lacewings, alder-flies, ant-lion flies, etc.

**Neutrino**, a particle which is supposed to enter into the constitution of atomic nuclei. This hypothetical particle is considered to have a mass equal to that of an electron, but as its name suggests it carries no electric charge.

**Neutron**, a particle with no electric charge, present in the nuclei of all atoms except hydrogen—the hydrogen nucleus consists of only one particle, a proton. The neutron weighs the same as a proton. (See "Atomic Nuclei," p. 161.)

**New Deal**. The measures taken by President Roosevelt in U.S.A. in 1933 to overcome the great economic crisis which broke out at the end of 1929 and to restore the social security threatened by it. The measures were drawn up by a group of experts called a Brains Trust and they provided for recovery by a programme of public works, including large-scale construction of houses and large-scale assistance to farmers. Loans were granted and authorities formed to stimulate activities which reduced the workless from 17 millions to between 7-10 millions. Unemployment relief was regulated and enlarged; and social insurance (which for decades had been a subject of dispute, being held to be contrary to American principles of self help) was introduced. The President claimed at the beginning of 1939 that the New Deal programme had been successful. The outbreak of the war prevented this being tested. But many of its changes will become a permanent part of American legislation. Certain parts were repealed by the U.S. Supreme Court as being unconstitutional.

**Newgate Prison**, now pulled down and replaced by the Central Criminal Court, opened in 1907, was situated near the point where once stood one of the old London city gates. There is a record of a prison upon this spot in the 13th century. Later a new one was built by the executors of Richard Whittington, but this was destroyed by the Great Fire in 1666. Still another new prison on this site was erected between 1778 and 1780. In the Gordon Riots of the latter

year it was destroyed by fire and re-erected. It was not used as a prison after 1880.

**News Letters** were an early form of newspaper, popular in the time of Charles II. They consisted of items of news and gossip collected at the various coffee-houses and other places of public resort. They often included blank pages on which readers wrote their private letters.

**Newspapers**. The first news-books to be published at regular intervals in Britain appeared in 1662 with news of what was going on abroad translated from German and Italian news-sheets. Licence to print was obtained from the Star Chamber, which until its abolition in 1641 allowed only the printing of foreign news. With the lifting of the ban on domestic news the Press became free. In the reign of Queen Anne English newspapers employed writers of great intellectual power and versatility. Despite the newspaper tax introduced in 1712, the number of newspapers published in London in 1776 had increased to 53, though the standard of writing was below that of earlier times. The development of the Press was greatly assisted in the 19th century by the abolition of the "taxes on knowledge," by the introduction of the cheap postal system, and by improvements in printing, distribution, collection of news, and advertising. The *London Gazette*, founded in 1665 and still appearing twice weekly as the official organ of the Government, is the oldest newspaper living. The *Times*, known throughout the world, began as the *London Universal Register* in 1785, and adopted its present title in 1788. The *Manchester Guardian*, once a provincial but now a national newspaper with a world-wide reputation, began as a weekly in 1821, and became a daily in 1855. The *Scotsman*, founded as a weekly in 1817 and established as a daily in 1855, and the *Glasgow Herald*, which began as the *Glasgow Advertiser* in 1783, are the leading Scottish newspapers. The *London Press*, which is national, publishes 10 daily morning, 3 evening, and 9 Sunday newspapers.

**Newt**, amphibians of lizard shape and mottled markings. There are three British species, the largest being the Great Crested Newt (*Triton cristatus*), which attains a length of 6 in.

**Newton's Rings**. Concentric circular rings, due to the phenomenon of interference, which are seen around the point of contact of a slightly convex lens on a flat plate of glass.

**New Year's Day**, Jan. 1st. The first New Year's festival of which we have record is that constituted by Numa 713 B.C., and dedicated to Janus.

**Nibelungenlied**, the German epic of the 12th century comprising numerous mythical poems or sagas of which several English translations exist. These poems have been utilised with great effect as foundations for Wagner's famous series of operas comprised under the general title *Ring des Nibelungen*.

**Nicene Creed**, a summary of the principles of Christian faith, was first issued in 325 after being drawn up by the Council of Nicea, and was meant to thwart the Arians and assert the god-head of Christ.

**Niche**, a recess or nook constructed for a statue or other special ornament. Such niches are numerous in the older ecclesiastical buildings, and usually contain the figures of saints or historic personages.

**Nickel**, silver-coloured metal, fairly soft though harder than iron. Chief source of the metal is the nickel sulphide in iron-copper pyrites deposits in Ontario. Chief uses are: in electroplating, in coins, as an element in alloy steels.

**Nicol Prism**, a device for producing plane-polarised light. It consists of two pieces of Iceland spar cut and cemented together in a special way.

**Nicolo**, a large brass reed instrument, common in the 17th century, but now superseded by the bassoon.

**Nicotine**, an alkaloid substance contained in the tobacco plant. It is a clear, colourless oil and highly poisonous, paralysing the nerves. In the act of smoking tobacco, however, only an infinitesimal quantity is absorbed in the smoke.

**Niello Work** was in considerable vogue in the Middle Ages, and is said to have suggested the idea of engraving upon copper. It was pro-

duced by rubbing a mixture of silver, lead, copper, sulphur, and borax into engravings on silver, and some highly decorative results were obtained. The process is still largely practised in Russia.

**Night-heron**, a stocky, short-legged heron of black and white plumage, red eyes, and yellowish legs, crepuscular except in breeding season, and an occasional visitor to Britain.

**Nightingale**, a familiar singing bird which visits the southern counties of England every summer, and is sometimes found as far north as Yorkshire. It is a shy bird, not often seen, but the song of the male, usually heard in the late evening or at early morn, is of remarkable sweetness and variety. After its wooing period is over its song ceases.

**Night-jar**, nocturnal insectivorous bird, owl-like in appearance, with mottled brown plumage of "dead leaf" pattern. (See *Goatsucker*.)

**Nihilism**, the name commonly given to the earliest Russian form of revolutionary anarchism. It originated in the early years of the reign of Alexander II. The term was first used by Turgenev in his novel *Fathers and Children* published in 1862.

**Nile**, Battle of the, fought in 798 between the English and French fleets in Aboukir Bay. Nelson annihilated Napoleon's fleet and the latter and his army were stranded in Egypt.

**Nilgau**, or *Nylgau*, an Indian antelope of a blue-grey colour and slightly humped.

**Nimbus**, a circlet of light depicted round the heads of saints or divine personages in ancient art; also name of dense dark "rainy" cloud.

**Nirvana**, in Buddhism, is the condition of supreme attainment, and involves the extinction of every form of desire, ambition, or unrest. It is the holy state. (See *Buddhism*.)

**Nitre** or *Saltpetre*, is now mostly manufactured by the double decomposition of sodium nitrate and potassium chloride. Its chief use is the manufacture of gunpowder and fireworks. It has been manufactured in England since 1625.

**Nitric Acid** or *Aqua fortis*, is a compound of nitrogen, hydrogen, and oxygen, and was first separated by Geber about A.D. 778. It is a ready solvent of many metals.

**Nitriding**, a technique for hardening the surface of steels by heating them in an atmosphere of ammonia. Nitrided steel has improved resistance to corrosion.

**Nitrogen**, a non-combustible gas devoid of taste or smell, and constituting nearly four-fifths of the atmospheric air.

**Nitro-Glycerine**, an explosive yellow fluid produced by mixing small quantities of glycerine with a combination of one part of nitric acid and two parts of sulphuric acid. By itself it is a dangerously explosive substance to handle. In 1867 Nobel produced dynamite, a safe explosive made by absorbing nitro-glycerine in kieselguhr.

**Nitrous Oxide**, a compound of nitrogen and oxygen possessing mild anæsthetic power. It was the first of the inhalation anæsthetics to be used.

**Nobel Prizes**, see pp. 705-6.

**Noble**, an old English gold coin current in the 14th century, and of the value of 6s. 8d.

**Nocturne**, a short piece of music, romantic in character, generally for the pianoforte. The nocturne was invented by John Field, from whom Chopin borrowed the idea. After this the nocturne became popular all over Europe, being known in Italy as "notturmo" and in Germany as "nacht-musik."

**Nominalists**, a sect founded by Jean Roscellinus, Canon of Compiègne, in the 11th century, who maintained the doctrine that general ideas only exist by the names we give them, in opposition to the "Realists," who contended that general ideas are real things with positive existence.

**Nonconformists** or *Dissenters*, are all such religionists as do not conform to the doctrine of the Church of England. Up to the passing of the Act of Uniformity in 1662 they were called "Puritans." At various times the Nonconformists have been rigorously persecuted, but in later times the utmost toleration has been granted to them. The oldest bodies of Nonconformists are the Presbyterians, Baptists, and Independents. The Methodists date from 1739. (See also *Baptists and Methodists*.)

**Nones** were dates of the Roman calendar which fell on the 5th of each month, excepting Mar., May, July, and Oct., when they fell on the 7th.

**Nonet**, a musical composition for nine voices or instruments.

**Nonjurors** were High Church bishops who refused to swear allegiance to William III. in 1689, contending that James II. had been unjustly deposed.

**Non Nobis, Domine!** ("Not unto us, O Lord!"), a musical canon, sung as a grace at public feasts, an old setting (by Birdie, 1618) of part of Psalm cxv.

**Northmen** were the early inhabitants of Scandinavia, famous as sea adventurers and pirates. Their attacks on Britain and other parts of northern Europe prior to the 11th century were often successful, and they established settlements in the islands off the Scottish coasts, and in the north of France, where they founded the duchy of Normandy, from whence came the Normans who conquered England in the 11th century.

**North-East Passage**, from the North Atlantic to Bering Strait has been rapidly developed by the U.S.S.R. in recent years as a northern sea route to render accessible vast areas of northern Siberia. Attempts to find a north-east passage were made by Englishmen and Dutchmen in the 16th century but they were always defeated by the ice, for the sea is completely frozen for some 3,000 miles for 9 months of the year. A Swede succeeded in sailing from Europe to Japan via the Arctic in the late 19th century and several Russian expeditions have been made. (See also *Arctic Exploration*.)

**North-West Passage**, from the Atlantic to the Pacific through the Arctic Seas, has been the dream of navigators for centuries. Attempts to find it were made in the 16th and early 17th centuries by John and Sebastian Cabot, Fro-bisher, Gilbert, Davis, Hudson, and Baffin. Two centuries later Ross, Parry, Franklin, and others made the attempt; but it was not until 1903-5 that Amundsen, discoverer of the South Pole, made the complete voyage. (See also *Arctic Exploration*.)

**"Not Proven,"** a verdict peculiar to Scottish law under which, in criminal cases where, the evidence not being sufficient to fully demonstrate the charge made, a prisoner is given the benefit of the doubt and set free, and cannot be retried even if later evidence of his guilt be discovered.

**Notre Dame**, the famous Paris cathedral, was founded in 1163, and is one of the finest specimens of Gothic architecture in Europe. The best descriptions of the building are to be found in Victor Hugo's "Hunchback of Notre Dame."

**November**, the 9th month of the year originally, but from 713 B.C., when Numa added Jan. and Feb., it became the 11th month.

**Noyade**, a mode of execution by drowning practised during the Reign of Terror in France at Nantes. The victims were set afloat in a boat with a movable bottom.

**Nucleus**, in physics, the central and heavy part of an atom. Its most important component particles are the neutrons and protons. In biology, the nucleus is the chief organ of the cell.

**Numismatics**, the science of coins and medals, has proved a fascinating study to many, and has resulted in the discovery of valuable historic evidence at various times. The difference between a coin and a medal is that the former is a piece of money, while the latter commemorates some person or event. The Royal Numismatic Society, founded in 1838, publishes the *Numismatic Chronicle*, and the British Numismatic Society, founded in 1904 to deal specially with the history of British coins, publishes a *Journal*.

**Nummulites** are fossil foraminifera, coin-shaped, and belonging to the Eocene formation. Nummulitic limestone is the commonest of all the Tertiary rocks in Europe, Asia, and N. Africa. Some of this rock was used to build the Pyramids.

**Nunc Dimittis**, a familiar hymn ("Now lettest thou thy servant depart in peace") forming part of the Evening Service in the various Christian Churches. (Luke ii. 29.)

**Nuncio**, a representative of the Pope sent on diplomatic missions. Nuncios were permanently established during the 16th century.

**Nunneries**, convents for the exclusive residence of



women living under vows a life of religious observance. They are common in Roman Catholic countries, and there are still a few in Britain. The first English nunnery was founded at Folkestone in 830, and up to the dissolution of the monasteries such institutions were numerous.

**Nuremberg Trial.** On Nov. 21st, 1945, an International Military Tribunal, consisting of one American, one British, one Russian, and one French member, began the trial of twenty-four Nazi leaders. There were four counts: the conspiracy of Nazism; wars of aggression; war crimes; and crimes against humanity. Twelve were condemned to hanging of whom ten were hanged on Oct. 16th, 1946. Goering committed suicide and Bormann has never been found. Papen, Schacht, and Fritzsche were acquitted. The rest received varying terms of imprisonment.

**Nuthatch,** name of a number of tree-creeping birds, plump, with short tail, bluish-grey plumage, and black stripe under eye. Nest in holes and wedge nuts in bark of trees, hammering them to get at kernel. One species resident in England.

**Nutmeg,** the kernel of the stone of a tropical fruit, used as a spice and highly aromatic.

**Nyctea,** a kind of snow-owl of large size and white plumage found in the Arctic and Sub-Arctic latitudes of Europe, America, and Asia.

**Nylon,** a generic term for the synthetic chemical compounds called polyamides from which textile fibres can be drawn. The first nylon of commercial interest was discovered in 1935, and the world's first nylon factory—in the United States—began production in 1940.

**Nymphaea,** the white water-lily, dedicated by the Greeks to the water nymphs.

**Nyssa,** the black gum, or pepper-ridge tree of America, possessing a tough, almost unsplitable wood. The sub-acid fruit of one variety, *N. candicans*, is sometimes called the "Ogechee Lime," and used as a substitute for ordinary limes or lemons.

## O

**Oak,** the most valuable of European timbers, remarkable for its strength and durability. Was used for building ships of the British fleet from the days of Charles II. to its supersession by iron. Has always been extensively used in furniture construction and cabinet work. There are about 300 species of oak, two species being native to Britain.

**Oak Boy,** a member of a body of Irish insurgents (who wore oak sprigs in their hats) who rose in 1764 against forced labour on the roads and a stricter exaction of tithes.

**"Oaks,"** the name of a famous race for three-year-old fillies run at Epsom two days after the "Derby."

**Oakum,** loose hemp and untwisted ropes, in the preparation of which prison labour used to be largely used in England.

**Oasis,** the name given to any fertile spot in a desert region. Such spots are fairly numerous on the Sahara and Libyan deserts, and some of them are extensively peopled and successfully cultivated.

**Oates' Plots.** (See Oates, Titus, *Prominent People Section*.)

**Oats,** a well-known cereal product, probably native to Asia, but cultivated with considerable success for many centuries in Scotland and England. The United States also produces large quantities. Cakes and porridge of oatmeal are common articles of food in many countries, especially in Scotland.

**Obligato,** originally, as the name suggests, a part which must be played (= obligatory). Now, by a curious misuse of the word, a part which need not be played, e.g., a "violin obligato"—additional to the pianoforte accompaniment and may be omitted if desired.

**Obelisk,** a tapering monolithic column, square at the base and pyramidal at the top, regarded by the ancient Egyptians as a sacred stone and usually found at the entrance to the sun temples. Twelve were transported from Egypt to Rome and set up at various times; there is one in the Place de la Concorde in Paris, and one on the Thames Embankment in London—Cleopatra's Needle—originally erected at Helio-

polis, centre of the sun-cult, by Tuthmosis III about 1500 B.C.

**Obi,** the Japanese name for a coloured sash commonly worn by Japanese women, and tied with a large bow at the back of the waist.

**Obit,** the date or the anniversary of a person's demise; the term is used also in reference to a service of religious character celebrated on such an occasion.

**Oblation,** a gift offered in worship, referring especially to the bread and wine given by the laity for the Eucharist.

**Oblivion, Act of,** was the act of "free pardon and oblivion" in respect of "all treasons and state offences" committed between 1637 and 1660 (the Civil War and Commonwealth period), excepting from it the "regicides" and certain priests.

**Oboe,** (old spelling: hautbois). A reed woodwind instrument rather similar to the clarinet in appearance, but having a double reed. The tone of the oboe is more thin and penetrating than that of the clarinet. The tenor oboe is called the Cor Anglais, while the bass oboe is the Bassoon. There is also a "double-bass" oboe called the contra-bassoon.

**Obolus,** a silver coin of ancient Athens worth about a penny farthing in English. The name was also adopted for small coins in different parts of Europe in the 14th and 15th centuries; besides being applied to a small weight, equivalent to the sixth part of an Attic drachma. In palaeontology an obolus is a fossil *Limulidae* of the Silurian period.

**Obscurantists,** a term applied to persons who are adverse to the extension of knowledge and view with distrust all measures of reform and the opening up of new lines of thought.

**Observants** were certain members of the Franciscan order who in the 15th century adopted a modified form of monasticism and ultimately were approved by the papal authorities.

**Observatories** existed in ancient Babylon and Egypt. They were erected on tombs and temples. The most famous observatory of Egypt was that of Alexandria, erected by Ptolemy Soter, 300 B.C. It was not until the 16th century, however, that an observatory adequately equipped for astronomical investigations was built. This was at Cassel. Tycho Brahe's observatory at Uraniburg was erected in 1576. The Royal Observatory at Greenwich was completed in 1675. Mount Wilson Observatory in California has had a 100-in. reflector telescope working since 1917 but Mount Palomar Observatory, also in California, has a 200-in. reflector—the largest in the world, completed in 1949—which can reveal remote galaxies out to a limiting distance of 2,000 million light years. It is known as the *Hale* telescope in memory of Dr. George Ellery Hale, the founder of the Mount Wilson Observatory. A 98-in. telescope, the *Isaac Newton*, is being installed at the new Royal Greenwich Observatory at Herstmonceux Castle. A number of observatories are devoted to meteorological and geophysical work, the most important in the British Isles being those at Eskdalemuir (Dumfries), Kew, Lerwick, and Valencia (Eire). (See also *Astronomy and Telescopes*.)

**Obsidian,** a form of volcanic rock of vitreous structure, and usually a silicate of aluminium, lime, magnesium, etc. Produced when acid lavas are rapidly congealed, it is usually black and fractures like pitch.

**Ocarina,** a simple kind of musical instrument usually made of terra-cotta. The whistle mouthpiece is at right angles to the bulbous body, in which are a number of finger-holes. The tone resembles that of a mellow flageolet.

**Occultation,** in astronomy, refers to the concealment of a celestial body by the passing before it of some other heavenly body. The most frequent occultation is that of a fixed star by the moon.

**Occultism,** originally the practice or study of the occult or secret sciences, including alchemy, astrology, magic, necromancy, etc.; but in recent times referring also to theosophy, spiritualism, palmistry, and so forth.

**Ocean** comprises the great body of water which covers five-eighths of the surface of the earth, and has an average depth of two miles. The

principal oceans are the Pacific, Atlantic, Indian, and Arctic. (*See p. 156.*)

**Ocean Currents** are well-defined streams running over certain portions of the ocean and caused mainly by wind-friction, slope of the sea surface and differences in density of the water, all movements being influenced by the deflective forces due to the earth's rotation. The climatic importance of the great ocean currents is that they constitute one of the means whereby heat is transferred from lower to higher latitudes.

**Ocelot**, usually called the leopard cat, is found in S. America. It is about 4 ft. in length, including tail, and of a grey or tawny colour and spotted.

**Ochres**, the name of a number of natural earths impregnated with mineral colourings, chiefly silica and alumina. They include iron ochre, yellow ochre, and plumbic ochre, being respectively oxides of iron and lead. Ochres are largely used in the making of paints.

**Octagon**, in geometry, is a plane of eight angles and eight sides, and is a regular octagon when all the sides and angles are equal.

**Octahedron**, in geometry, consists of a solid figure bounded by eight triangular faces.

**Octane Number**, the index of the knock-rating of petrol.

**Octarch**, the kings of the English heptarchy, Hengist (455) being the first, and Egbert (800) the last.

**Octastyle**, in architecture, is a term applied to an eight-columned portico such as that of the Parthenon of Rome.

**Octateuch**, meaning a collection of eight books, is a term generally applied to the first eight books of the Old Testament.

**Octave**, an interval of an eighth (*see Interval*). The interval between one note and the same note pitched higher. A pure note is an air vibration of fixed frequency. Middle C is thus 256 vibrations per second. The note an octave above middle C is exactly twice this frequency, i.e., 512 vibrations per second.

**Octet**, a musical composition for eight voices or instruments.

**October**, the 10th month, but the 8th in the old Roman calendar. It was held sacred to Mars.

**Octopus**, a genus of marine molluscs with eight tentacles that bear suckers.

**Octrois** are special taxes levied on articles of food before entering a city. They have been established in France from early times, and still exist, though at various periods they have been suspended.

**Odes** were originally extempore compositions sung in honour of the gods by the ancient Greeks and Romans. They were divided into three sections: strophe, antistrophe, and epode. All the most famous ancient odes—of Anacreon, Pindar, Horace—were composed before the Christian era. Among the best-known English odes are those of Milton, Dryden, Collins, Gray, Wordsworth, and Keats.

**Odeum**, a small theatre for the recitation of musical compositions, generally contiguous to a larger public theatre; thus the odeum of Athens in classic days adjoined the theatre of Bacchus.

**Odontograph**, an instrument enabling engineers to derive the shape of gear-wheel teeth.

**Odour of Sanctity**, a phrase which originally expressed the belief that the corpse of a holy person emitted a sweet odour, while that of an unbaptised person gave forth an evil odour; the term is now employed figuratively of the reputation.

**Odyssey**, Homer's famous epic poem setting forth the incidents of the wanderings of Ulysses on his way back to Ithaca after the Siege of Troy.

**Œcumenical Council**, a general council of the Christian Church summoned when important questions of Church doctrine and polity are to be decided. The early councils were predominantly Greek and convoked by the emperor. Those summoned by the Pope are called Lateran Councils and their decisions are not binding on the rest of Christendom. Of the twenty-six councils held in the past, only six are recognised by the Church of England, viz.: Nicea 325, Constantinople 381, Ephesus 431, Chalcedon 451, Constantinople 553, and Constantinople 680-81.

**Œil-de-Bœuf**, a term in architecture denoting openings, usually round or oval, in friezes, roofs, or domes of buildings, designed for the admission of light.

**Ogham**, an ancient style of Irish or Celtic writing, not used later than the 9th or 10th century.

**Ogulian Law**, the passing of which was secured by the two Tribunes Ogulnius, 300 B.C., had the effect of increasing the number of the Pontiffs and Augurs, and conceded eligibility for those offices to Plebeians.

**Ogygian Deluge**, occurred under King Ogyges, the first king of Thebes. It was a great flood by which Zeus was supposed to have tried to destroy mankind.

**Ohm's Law**, was propounded by Dr. G. S. Ohm in 1827 and now usually expressed in the equation: voltage = current (in amps.) × resistance (in ohms). The *ohm* is the practical unit of electrical resistance. (*See also p. 742.*)

**Oidium**, the botanical name for a fungus, a species of which is found on the grape-vine, causing what is known as the "vine disease."

**Oil Cake** is used as food for cattle. It is made from linseed, rape, and cottonseed, after the oils have been extracted, and is very fattening.

**Oil Gas**, a combustible gas obtained by the decomposition of oil, yielding a brilliant light, and largely employed for illuminating purposes.

**Olbers' Comet** was discovered in 1815 by Olbers the German astronomer. Olbers also discovered the asteroids Pallas and Vesta (1802-07).

**Old Red Sandstone**, a synonym for the Devonian system (*vide*).

**Olefines**, a series of hydrocarbons, in which the hydrogen atoms are double the number of those of carbon. The first member of the series is ethylene.

**Oleic Acid**, an important fatty acid present in lard and olive- and cotton-seed oils. Used in soap-making. Olein is the ester formed by the reaction of oleic acid and glycerine.

**Oleographs**, the name given to reproductions of paintings in oils, the colours of the original being more or less faithfully copied. The process is one that closely resembles chromolithography.

**Oleometer**, an instrument for ascertaining the specific gravity of oil. (*See Hydrometer.*)

**Oléron Laws or Judgments**, were a code of maritime laws, introduced into England in the reign of Richard I. in the 12th century. Oléron is an island off the west coast of France, opposite the mouth of the Charente.

**Olibanum**, a resinous gum obtained from trees grown in Somaliland and India.

**Olive**. This small tree, whose fruit yields olive oil, is a native of the eastern Mediterranean countries, but has been introduced into cultivation elsewhere. Its oil is used for cooking, in packing sardines, and in soap making; the green unripe fruit is pickled for table olives.

**Olivenite**, a mineral of an olive-green colour. Scientifically it is an arsenate of copper.

**Olivine**, a chrysolite, is a mineral of a pale green colour, found in volcanic rocks and meteorites. It is essentially a double silicate of iron and magnesium.

**Olla Podrida**, a sort of Spanish "haggis," combining in a stew a number of meats and vegetables.

**Olympiads** were periods of four years which elapsed between each celebration of the Olympic games, instituted in honour of Zeus by the Greeks, and held at Olympus in the Peloponnese. These festivals included competitions in literature, art, drama, rhetoric, music, and gymnastics, and they were continued, with intervals, from 776 B.C. to A.D. 394. Athletic revivals have taken place at Athens 1896, Paris 1900, St. Louis 1904, London 1908, Stockholm 1912, Antwerp 1920, Paris 1924, Amsterdam 1928, Los Angeles 1932, Berlin 1936, London 1948, Helsinki 1952, and it is planned to hold the 1956 Olympiad in Melbourne. (*See p. 966 for "Olympic Results, 1952."*)

**Omega**, the last letter of the Greek alphabet, and widely adopted in literature in its figurative sense as indicating the end of anything.

**Omens** are auguries or presentiments of some coming event, usually something evil. In olden times omens, portents, and signs were seriously regarded, and among the Greeks and



- Romans emanated chiefly from the priests or augurs, who were supposed to be the recipients of the warnings of the gods.
- Ommimeter**, an invention for superseding chain measuring and combining the theodolite and level. It was introduced in 1869, and is the invention of a German engineer named Eckhold.
- Onager**, the wild ass of Central Asia.
- Onus Probandi**, a legal term signifying that the onus of proof rests on the party making the assertion or claim.
- Onyx**, a kind of silica built up of different coloured layers, which are parallel and straight (not curved as in agate).
- Oolite**, a geological term for the Jurassic oolitic limestones existing through a long stretch of country extending from Yorkshire to Dorsetshire. It abounds in fossils of molluscs and reptiles. The term "oolite" derives from the fact that these rocks are made of egg-shaped particles of calcium carbonate.
- Opal**, a mineral consisting of hydrous silica, occurring in numerous varieties and colours. Precious opal displays a beautiful internal opalescence, the result of the interference of light waves on the surfaces of layers differing in their water-content. Opal miners are called gougers. Chief source, the Andamooka and Coober Pedy fields of South Australia.
- Opera** derives, like Drama, from the religious plays of mediæval times. These plays were always accompanied by music, but, whereas Drama has relegated music to the entr'acte, Opera has developed it to the point of being the most important feature of the performance. The first true opera was produced at Florence in 1597. It was written by Rinuccini and composed mainly by Peri and called *La Dafne*. Rinuccini and Peri followed this in 1600 with *Euridice*—the earliest opera of which we have a complete record. The first opera house was opened in Venice by Caralli in 1637. Cardinal Mazarin tried to introduce Italian opera into France, bringing in Caralli in 1660, but the experiment was a failure. Native French opera began in 1672 under the patronage of Louis XIV. with Lulli's *Les Fêtes de l'Amour et de Bacchus*. In England musical plays were being performed at this time, but the first real opera was Purcell's *Dido and Æneas* written in 1689. At this time Scarlatti was writing operas in Naples and shaping the Italian opera into the form in which we know it to-day. Handel produced nearly forty operas in thirty years, his first being *Rinaldo* at the Haymarket, London, in 1711. The comic opera seems to have originated in Naples. The first English comic opera, the *Beggar's Opera* by Gay, was given in London in 1727. Mozart, after producing his magnificent *Idomeneo* at the age of 25, wrote a succession of comic operas: *Seraglio* (1782), *Figaro* (1786), *Don Giovanni* (1788), *Così fan tutte* (1790). These laid the foundations for all future comic opera. *The Magic Flute* (1791) was the first of what might be called "opera for the people." Beethoven made a single excursion into opera: *Fidelio* (1805). Rossini is best known for *The Barber of Seville* (1816), a comic opera, although his reputation was made with a serious opera *Tamcredi* (1813). The operas of Bellini are rarely performed outside Italy, but these had considerable influence on the work of Chopin and Liszt. Bellini's successor Donizetti is best known for his comic operas *Don Pasquale* and *L'Elisir d'Amore*. This period in French opera is best represented by Auber's *Fra Diavolo*. German opera, slow to take root, developed at this time through Weber and Meyerbeer to Wagner, whose first important opera, *Rienzi*, was performed in 1842. The complete *Ring* was first given at Bayreuth in 1876 and Wagner's last opera, *Parsifal*, in 1882. The most successful exponent of comic opera at this time was Offenbach, although Strauss in Vienna and Sullivan in England enjoyed considerable local success. Italian opera underwent a revival with the advent of Verdi. Of his earlier operas, *Rigoletto* (1851), *Il Trovatore* (1853) and *La Traviata* (1853) alone have retained their popularity. *Aida* (1871) is a more mature work, while *Otello* (1887), and *Falstaff* (1893), for which Boito wrote the libretti, are works of high merit. Several French operas of this period retain their popularity: Gounod's *Faust* (1859), Bizet's *Carmen* (1875), Massenet's *Manon* (1884), Saint-Saëns *Samson et Dalila* (1877). In 1890 Mascagni achieved startling success with *Cavalleria Rusticana*. This was followed almost immediately by Leoncavallo's *I Pagliacci* and the two are now inseparable. Of the operas produced in the 20th century, the most popular have been Puccini's *La Bohème* (1896), *Tosca* (1900), *Madame Butterfly* (1904), Richard Strauss's *Der Rosenkavalier* (1911) and Debussy's *Pelléas et Mélisande* (1902).
- Opicleide**, a brass instrument invented in the 19th century. Mendelssohn and Berlioz wrote scores for the opicleide, but the instrument has fallen out of general use.
- Ophidia**, the sub-order of reptiles comprising the snakes.
- Ophiuroid**, an ophiuroid or brittle-star is a member of the *Ophiuroidea*, a class of echinoderms with slender arms.
- Opium** was known to the ancients, and used by them as a medicine. It is obtained from the white poppy, the unripe "head" or seed capsule of that flower yielding a juice which when dried becomes the opium of commerce. The poppy is largely cultivated in India, Persia, Turkey, Macedonia, and China for the sake of this juice, which yields various alkaloids, such as morphine, narcotine, thebaine, etc. Laudanum is a tincture of opium.
- Opium War**, a war (1839-42) between Great Britain and China, due to the dissatisfaction of the former with the treatment of British subjects in China. The immediate cause was the attempt of China to stop the importation of opium. It was concluded by the treaty of Nanking, which established the "treaty ports" of China. Hong Kong was ceded to Great Britain.
- Opossum**, marsupial mammals found in the more southerly of the United States, South America, and Australia. They are arboreal except for the water-opossum, which eats fish.
- Opportunist**, a term which first came into use politically in France after the Franco-German War, and referred to a section of the Republican party of which Gambetta was the leader, who held that the true political policy was not to force opinions upon the people but to wait until circumstances favoured their advocacy.
- Optics**, the branch of physics which investigates the nature and properties of light and the phenomena of colour. Burning lenses were known to the ancient Greeks and Ptolemy wrote a treatise on optics A.D. 150. Lenses as visual aids were known in ancient China but eyeglasses were not in use until the 13th century. Spectacles were in more general use after the invention of printing in the 15th century. The camera obscura was invented in the 16th century and the telescope and microscope at the beginning of the 17th century.
- Optimism**, the theory that everything happens for the best, has been propounded by many fathers of the Church and philosophers from Plato to Rousseau. It is the opposite of pessimism.
- Optophone**, invented in 1914 by E. Fournier d'Albe, is an instrument whereby the blind can read ordinary letterpress. This dispenses with Braille (q.v.). By means of this instrument, in which the light-sensitive element selenium plays the important part, the letters are transposed into sounds, the alphabet of which the blind reader soon learns, and the positions and speed of the instrument can be regulated by him.
- Opus**, a single work of serious music. Most serious composers list their works in this way: e.g., Opus 1, Opus 2, etc. If several pieces are included in a single opus they are listed as follows: Opus 1, No. 1.
- Oracles** were in ancient times supposed to be words spoken by the gods, and it was the custom on important occasions to consult them about the future. The Greeks had the Oracles of Zeus at Dodona, and Apollo at Delphi, while the Romans consulted the Oracles of Mars, Fortune, and others.
- Orange**, a fruit growing in most sub-tropical climates and in universal demand. It is grown on an evergreen tree that attains a height of about 20 ft. at maturity.

**Orangemen**, members of an Irish society formed in Ulster in 1795 to uphold Protestantism. Their name is taken from King William III (Prince of Orange) who defeated James II at the Boyne in 1690. The society has branches in most English-speaking countries but flourishes chiefly in Ulster.

**Orang-utan**, one of the largest of the anthropoid apes, found only in Borneo and Sumatra. When full-grown it stands over 4 ft. in height and weighs about 150 lb.

**Oratorians** were an order of priests founded by St. Philip Neri, about 1564, and received their name from the Oratory of St. Jerome, where they worshipped. They also established themselves in France in the 17th century, and in England the Oratory at Brompton founded by F. W. Faber (d. 1863), commemorates the earlier order.

**Oratorio**, a sacred work for solo voices, chorus, and orchestra. The word applies to a special composition and not to a musical setting for a normal part of the church service.

**Orbit** indicates the course of a planet round the sun. All the planetary orbits are elliptical.

**Orchestra**, a group of instruments and instrumentalists whose playing is under the direction of a conductor. The composition of a typical symphony orchestra is as follows: **STRINGS**: 1st Violin (16), 2nd Violin (16), Viola (12), Violoncello (12), Double Bass (8). **WOOD-WIND**: Flute (3-4), Piccolo (1), Oboe (3), Cor Anglais (1), Bass Oboe (1), Clarinet (3), Bass Clarinet (1), Bassoon (3), Contra-bassoon (1). **BRASS**: Horn (6), Trumpet (3), Trombone (3-4), Tuba (2). **PERCUSSION**: Timpani (3-6), Side Drum (1), Bass Drum (1), Cymbals (1), Harp (2).

**Ordeals**, or Trials by Ordeal, were known in England in the time of the Saxons, and existed down to 1218, when they were abolished. The ordeals were usually of fire, water, or poison. The accused would be set to handle red-hot iron, be cast into water, or made to partake of poison, and unless he could withstand these tests he was condemned as guilty.

**Orders, Holy**, in the Roman Catholic Church are of seven kinds, extending from door-keepers, exorcists, readers, and acolytes, in the minor class, to deacons, priests, and bishops of major rank; while in the Anglican Churches there are only three—deacons, priests, and bishops.

**Orders in Council** are issued by the sovereign on the advice of a few selected members of the Privy Council. They must not seriously alter the law of the land. Another class of Orders in Council are issued by authority of an Act of Parliament for the carrying out of its provisions.

**Ordination**, the ceremony of installing ministers or clergymen in clerical offices, has existed from the earliest times. In the Anglican and Roman Catholic Churches the rites of Ordination are performed by bishops; among Nonconformists the power of ordination rests with the governing bodies of the different Churches.

**Ordinance Office** was an old Government department entrusted with the supply of weapons and materials of war from the time of the archers to the days of guns and explosives. After the Crimean campaign, when the administration of the Ordinance Board was shown to be very defective, the office was abolished, and its duties vested in the War Minister.

**Ordinance Survey**, an authorised survey of Great Britain entrusted to a special body of Royal Engineers and civilian experts, by whom maps and charts are from time to time produced, showing the full details of the geographical, geological, and industrial condition of the country. The scale adopted for counties is 6 in. to 1 mile, and 1 in. to 1 mile for the general map of the kingdom. The Ordinance Survey Department now comes under the Ministry of Agriculture.

**Ordonnances** were special laws enacted by the French kings prior to 1789. They were issued in the name of the king, and had the effect of Acts of Parliament. It was the revival of ordinances by Charles X. that led to the Revolution of 1830.

**Ores** are minerals which are mined for their content of metallic compounds.

**Organ** is a musical wind instrument of ancient

origin whose tones are produced by the vibrations of air in pipes of varying length. Basically, an organ consists of a number of pipes grouped in rows or ranks according to their special tone-character. The air is fed by bellows or, in modern organs, by a rotary fan, electrically driven. Each rank is controlled by a slider, and the knob that controls the slider is called a stop. The organist pulls out the stops to give the tones he wants, the other pipes being kept out of action by the slider. When a particular note on the keyboard is depressed the player may hear, by pulling out the appropriate stop, not only the normal pitch but the note in several octaves. A stop of which the notes are of normal pitch is called an 8-foot stop, a 16-foot stop would give an octave lower, a 4-foot stop an octave higher, and a 2-foot stop two octaves higher. The hand keyboard is called a manual, and the foot keyboard the pedal board. The basic tone of an organ is its diapason tone, and is normally of 8-foot length and pitch. Most large organs have four manual keyboards and one pedal board. The most important manual is the great organ which comprises the majority of basic stops. The next in importance is the swell organ, so called because the pipes are enclosed in a box fitted with movable shutters operated by a swell-pedal. The effect provides a controlled crescendo or diminuendo. The tone of a typical English swell has a reedy character. The third manual controls the choir organ—a collection of stops suitable for vocal accompaniment. The fourth manual controls the solo organ—a group of stops which, singly or in combination, may provide a solo melody which the remainder of the organ accompanies. The pedal keyboard controls most of the bass stops. In some very large organs there is a fifth manual controlling the echo organ. This is a small group of stops usually set high in the roof of the building to give the effect of distant music. Most church organs have two or three manuals. Modern cinema organs may have some normal stops but rely chiefly on a number of effects unknown to the straight organ.

**Orgies** were originally secret celebrations in honour of Bacchus, and noted for the wild licence displayed by the celebrants.

**OrguINETTE**, a musical instrument composed of reeds which are played upon by a bellows. A strip of paper passes over the holes of the reeds, moved by a crank, and the paper is cut into holes to represent the required sounds. As the rollers turn the bellows the melody is "ground out."

**Oriel College, Oxford**, derives its name from a building called "l'Oriole" which stood on its site; was founded by Archdeacon Adam de Brome in 1326.

**Oriel Window** is a window projected from the front of a building, rectangular, triangular, or pentagonal. The ordinary bay window and bow window are varieties of Oriel. When an Oriel window does not reach to the ground it usually rests upon moulded sills supported by corbels.

**Oriflamme**, the name of the original banner of the abbey of St. Denis, and adopted by Louis VI. as his standard. It remained the national emblem of France for three centuries. The flag was of red silk, the outer edge being cut in the form of flames.

**Origenists**, a sect of religionists who were followers of Origen, who lived in the 3rd century. They believed that men's souls were created before their bodies, that the celestial bodies had souls, and that Christ was the Son of God only by adoption and grace. The Council of Constantinople in 553 condemned Origen's doctrines.

**Original Sin**, according to Christian doctrine the corruption that is born with us, as a result of Adam's fall.

**"Origin of Species"** (1859), the title of Darwin's famous work—by many considered to be the most important book of the 19th century.

**Orioles**, brilliantly coloured birds, members of the passerine family *Oriolidae*, found in the tropical regions of Asia, Africa, and Australia. The golden oriole, perhaps the most beautiful of them all, with brilliant yellow plumage, black wings and tail, winters in Africa, visits England, and is known to have nested here.



**Orion**, a famous constellation of the heavens, comprising nearly a hundred stars, all visible to the naked eye. It contains three stars of the second magnitude in a line, and these are called "Orion's Belt."

**"Orlando Furioso,"** the title of Ariosto's 16th-century epic poem, describing the doughty deeds of Orlando and other knights of the Charlemagne period.

**Orleanists**, members and supporters of the House of Orleans (1773-1850), of which King Louis Philippe was a member.

**Ormulum**, a version of the Gospels and Acts made by Orm, an ecclesiastic of the 12th century. It is metrical and exists in manuscript in the Bodleian Library.

**Ormuzd**, the spirit of good according to the Zoroastrian religion, represented as eternally warring against evil and personating purity of life.

**Ornithology**, the branch of Zoology which treats of the structure and habits of birds.

**Ornithorhynchus.** (See Duck-bill.)

**Orphrey**, the name of an ornamental border of gold and silver embroidered on ecclesiastical vestments.

**Orpiment**, arsenic sulphide, a mineral yielding the colour known as "king's yellow."

**Orrery**, an instrument used in the 18th and early 19th centuries which showed the motions of the planets round the sun and the satellites round their primaries. The first orrery made was named after Charles Boyle, Earl of Orrery.

**Orris Root**, the dried root or stem of a species of iris cultivated in Italy. Used in perfumery and dry toilet preparations.

**Orthoptera.** The large order of insects including grasshoppers, crickets, locusts, mantises, stick insects, cockroaches, etc. These insects have biting mouth parts, and wings, if present, are in two pairs, the front pair being thickened to protect the membranous hind wings which are folded under the front ones when at rest.

**Orthotomus**, a genus of warblers including the tailor-birds inhabiting S.E. Asia.

**Osborne House**, near Cowes, in the Isle of Wight. Queen Victoria's favourite winter-residence, and where she died. It was given to the nation by Edward VII., and is now a convalescent home for Service officers. The grounds and State apartments are open to the public on certain days.

**Oscar**, the name of the gold-plated statuette awarded by the Academy of Motion Picture Arts and Sciences, of Hollywood, U.S.A., for the highest achievement of the year in film production.

**Osella or Osela**, a medal yearly struck and distributed by the Doges of Venice from early in the 16th century to the close of the Republic. It was of gold or silver and was a substitute for a present of wild fowl formerly sent to each of the noble families of the Republic on New Year's Day.

**Osier**, a species of willow growing in damp soils and yielding branches utilised in basket-making.

**Osmium**, a very hard, bluish-white metal of the platinum group and one of the heaviest of known metals. It is obtained from certain sands of South America, California, Australia, and Russia. The alloy of osmium and iridium (osmiridium) provides long-wearing tips for gold fountain-pen nibs.

**Osmosis**, the term applied to the diffusion of a solvent through a semi-permeable membrane from a solution containing a low concentration of solute to one with a high concentration of solute. The entry of water into the roots of plants depends on osmosis.

**Osprey**, a bird of prey widely distributed over all northern latitudes and a common visitor to the lakes of Scotland, where it used to build and breed. It is commonly known as the fish-hawk, and feeds almost entirely on fish.

**Ostracism**, a method of proscription adopted by the ancient Greeks, whereby sentences of banishment for ten years were voted. The names of objectionable persons were written on small fragments of pottery and collected in an urn. Ostracism did not take effect unless 10,000 votes were recorded. It was intended to remove anyone who threatened the body politic. The ostracised person was not regarded as a criminal and, on his return, resumed

possession of his property, while his civic status was unimpaired.

**Ostrich**, the largest living bird, related to the rhea, emu, and extinct moa, now found only on the sandy plains of Africa and parts of S.W. Asia. The male has beautiful white plumes on wings and tail. The wings are useless in flight, but the birds have a fleetness of foot exceeding that of the swiftest horse. An ostrich's egg weighs 3 lb.

**Otary**, any seal which has external ears (as opposed to the *true seals* which lack them.) The eared seals make up the family *Otariidae*, which includes the Sea-Lion and the Fur-seal of the N. Pacific.

**Otter**, an aquatic carnivorous mammal widely distributed over Europe, and at one time very common in England and Wales. Otter hunting, indeed, is still a country sport in some districts, and a breed of dogs called otter-hounds is kept for the purpose. The otter averages about 2 ft. in length, exclusive of tail, has web-feet, and is a very expert swimmer.

**Oublette**, secret dungeon with an opening only at the top, as was found in the old baronial castles of the Middle Ages.

**Ounce**, a carnivorous member of the cat family, spotted like a leopard and having a long bushy tail. It is only found at high altitudes on the Himalayas, and is often called the "snow leopard."

**Outcrop**. Where a seam of rock appears at the surface of the ground, there is an outcrop of the particular rock. Outcrop coal is surface coal; the mining of such coal is called open-cast mining.

**Outlawry**, the process of putting a person out of the protection of the law. It existed early in England and was the punishment of those who could not pay the "were" or blood-money to the relatives of the deceased. Abolished in civil proceedings in 1879, and has gradually become obsolete in criminal proceedings.

**Overlord**, a member of the House of Lords appointed to supervise and co-ordinate two or more ministries in the Churchill Government of 1951-53.

**Overture**, introductory piece to an opera or oratorio, often including the main themes to be elaborated later. Many so-called overtures have been composed as separate concert pieces.

**Oviparous**, a zoological term referring to such mammals, birds, reptiles, and fishes as bring forth eggs to be hatched outside the body of the parent.

**Ovipositor**, the organ by means of which the females of certain arthropods deposit their eggs.

**Ovoviviparous**, a zoological term applied to such animals as produce eggs which are hatched in the body of the parent; an example is the viper.

**Owens College**, Manchester, was founded by means of a bequest of £100,000 by John Owens, a Manchester merchant, who died in 1846. The college began in 1851, and formed the nucleus for the Victoria University of Manchester, established in 1880.

**Owls**, nocturnal birds of prey, distributed over the greater part of the world. Their forward-looking eyes, embedded in rings of feathers, give them a characteristic "owl-like" appearance, and their plumage, usually a mottled blend of browns and greys, is so soft that their flight is almost noiseless. Owls live on small mammals, reptiles, birds, insects, and fish, and are very valuable birds to the farmer. British owls include the barn owl (screech owl), short-eared owl, long-eared owl, tawny owl.

**Ox**, the popular name of the mammals included in the genus *Bos*. They are hollow-horned ruminants and hoofed quadrupeds, and include the various classes of domestic cattle as well as the different wild species. The adult male is called a bull, the female a cow, and the young a calf. The best-known breeds of domesticated cattle are the Durham or Shorthorn, the Angus, the Jersey, Ayrshire, Suffolk, and Hereford.

**Oxalic Acid**, an organic acid obtained from numerous plants, such as sorrel and rhubarb, and produced artificially for commercial purposes from sawdust, treated with caustic potash or caustic soda. It combines with metals to form oxalates.

**Oxford Clay**, a geological formation consisting of a bed of blue clay hundreds of feet thick, and

forming the lower portion of the Middle Oolite series of the Jurassic. It makes good bricks.

**Oxford University.** The first indication of organised teaching at Oxford was in 1133 when Robert Pullen, the theologian from Paris, lectured there. Allusions to Oxford as a fully equipped university only occur after 1163. The earliest colleges to be founded were University College (1249), Balliol (about 1263), Merton (1264). In 1571 the university was reorganised and granted a Charter of Incorporation by an Act of Elizabeth. Other colleges with their dates of foundation are: All Souls (1437), Brasenose (1509), Christ Church (1546), Corpus Christi (1516), Exeter (1314), Hertford (1874), Jesus (1571), Lincoln (1429), Magdalen (1458), New College (1379), Oriel (1326), Pembroke (1624), Queen's (1340), St. John's (1555), Trinity (1554), Wadham (1610), Worcester (1714), St. Edmund's Hall (1265), as well as private Halls, Keble (1871), St. Peter's (1947), St. Catherine's Society. The women's colleges are:—Lady Margaret Hall (1878), Somerville (1879), St. Hugh's (1886), St. Hilda's (1893) and St. Anne's Society.

**Oxygen** is the most abundant of all elements. In combination, this gaseous element forms about 46 per cent. of the earth's crust; one-fifth of the atmosphere, eight-ninths by weight of all water. Dr. Priestley in 1774 was the first to separate it from red oxide of mercury. It is colourless, tasteless, and odourless, and forms the chief life-supporting element of animal and vegetable life.

**"Oyer and Terminer,"** a legal term designating a commission directed to the judges of the Supreme Courts, empowering them to hear and determine charges of treasons, felonies, and misdemeanours in the counties to which they are proceeding. Courts of Assize are known as Courts of Oyer and Terminer.

**Oyez!** a phrase used by the ushers of Courts of Justice to proclaim silence. It is the Norman-French word "Oyez" ("Hear ye.").

**Oyster,** a bivalve mollusc, of the genus *Ostrea*, having very numerous species and abounding in nearly all seas. The shell is rough and irregular. Oysters are exceedingly prolific, spawning in May and June. In England and Scotland deep-sea oysters are not allowed to be sold between June 15th and Aug. 4th, and others kinds between May 14th and Aug. 4th. In Ireland, no oysters may be taken between May 1st and Sept. 1st, except in certain waters. The Whitstable oyster beds have existed since pre-Roman times. The first grade is the Whitstable Royal; "clocks" are dead oysters. **Oystercatcher,** a large wading bird with black-and-white plumage and long, orange bill, inhabiting estuaries and sea-shores. Feeds on mussels, shell fish, etc., but not oysters.

**Ozone,** a modified form of oxygen, containing three atoms of oxygen per molecule instead of two. It is prepared by passing oxygen through a silent electric discharge. When present in air to the extent of 1 part in 4 million parts of air it kills bacteria, and has been used for this purpose in ventilating systems, e.g., that of underground railways. It is present in extremely small quantities in the lower atmosphere but is comparatively plentiful at heights of about 20 miles. The belief widely held that seaside air is particularly rich in ozone is untrue. As ozone absorbs ultra-violet light of certain wavelengths spectroscopic methods, involving the analysis of sunlight, are chiefly used in ozone determinations.

## P

**Paca,** a genus of large rodents found in Central and South America, and resembling the guinea-pig. It is of nocturnal habits, has a streaked and spotted fur, and lives on fruits and plants.

**Pacific Ocean.** The first European to recognise the Pacific as distinct from the Atlantic was the Spanish explorer, Vasco Nuñez de Balboa, who discovered its eastern shore from a peak in Panama in 1513. The first European to sail upon it was Magellan, who entered it by the strait that bears his name in 1520. Sir Francis

Drake was the first Englishman to sail upon it in 1577. The world's greatest ocean depth is in the Pacific. (See "Gazetteer," pp. 318, 384.)

**Pæan,** the song of praise or triumph sung by the Greeks on the occasion of great celebrations.

**Pæon,** a foot, in ancient prosody, consisting of one long syllable and three short, the positions of the long syllable being variable.

**Pagans** are heathens or idolaters, people who do not worship God. The word is from Latin, *paganus*, a countryman, an uncultivated person, a savage. In the Middle Ages the term was used largely to describe Mohammedans (Moors, Saracens, etc.).

**Pagoda,** the name given in China, India, and other Asiatic countries to a high pyramidal tower, usually, but not necessarily, connected with a temple.

**Palæontology,** the science which is devoted to the investigation of fossils, animal (palæozoology) and plants (palæobotany). By studying the markings and fossils of living things in the stratified rocks, palæontologists have been able to establish with astonishing accuracy a record of the evolution of life through geological time. The geologist at the same time with the evidence of the fossils has been able to work out the order and the age of the rocks. (See p. 162 *et seq.*)

**Palæotherium,** a genus of extinct tapir-like animals of large size, discovered in the Paris basin and elsewhere, of the Upper Eocene Age.

**Palæozoic,** a geological term indicating the most ancient division of the strata formation of the earth's crust. To this division belong the Cambrian, Ordovician, Silurian, Devonian, Carboniferous, and Permian Periods (though some authorities include the last-named in the Mesozoic). (See p. 164.)

**Palanquin,** an East Indian covered vehicle fastened to a pole and carried on the shoulders of four or six natives, now falling into disuse because of improved methods of conveyance.

**Palatinate,** a term formerly applied to two German electorates or provinces, the Upper and Lower Palatinates. They are now provinces of Bavaria.

**Pale,** the name given to the part of Ireland colonised by the English and comprising portions of the counties of Louth, Dublin, Meath, and Kildare. The Anglo-Saxon rulers were styled "Lords of the Pale."

**Palimpsests** are ancient MSS. or parchments which have been partly effaced and used for fresh writings. Many valuable MSS. were thus lost, but sometimes the second writing has been washed out, enabling the original writings to be deciphered. Among such restorations are a dialogue of Cicero's, a portion of a book of Livy, etc.

**Pallium,** a vestmental ornamentation of white wool presented by the Pope to archbishops on their appointment, and the sign of Papal confirmation.

**Palm,** a large straight-trunked plant or tree common to tropical countries, and usually fruit-yielding, such as dates, coconuts, etc. Many commodities useful to man are obtained from plants of the Palm family (*Palmaceæ*).

**Palmitic Acid** is present in spermaceti, and most oils and fats (vegetable and animal). It is a white tasteless and odourless substance. In combination with glycerine it forms "palmitin." With caustic soda it forms a soap.

**Palm Sunday,** the Sunday before Easter, upon which occasion it is customary to carry palms to the churches in some countries, in commemoration of Christ's entry into Jerusalem for the Feast of the Passover, when the people went forth to greet Him with palm branches.

**Palolo Worm,** a marine worm which swarms in huge numbers at certain fixed times of the year off Samoa and neighbouring islands, where the natives collect it in nets and use it as food.

**Panama Canal.** In 1904 the United States signed a treaty with Panama (which had previously seceded from Colombia) by which rights of sovereignty over a strip of land ten miles in width, extending across the isthmus, were ceded to the U.S. The canal connects the Atlantic and Pacific Oceans, is just over fifty miles long (with sea approaches), and the width of channel varies from 300 to 1,000 ft. at bottom. Transit from sea to sea occupies about eight hours.



The depth varies from 41 to 85 ft. It is constructed above sea-level, with locks. It has been available for commercial shipping since Aug. 3rd, 1914.

**Panda, or Cat-Bear**, is related to the Raccoon and to the Bear. There are two kinds, the Red or True Panda, resembling a large domestic cat, which lives in the eastern Himalayas and S.W. China, and the Giant Panda, which is more like a bear in appearance and inhabits the mountains of western China. Both frequent the dense bamboo forests of these regions.

**Pandean Pipes**, supposed to have been invented or played upon by the god Pan, consist of seven reeds tuned to scale and blown into by breath from the lips of the performer.

**Pandex or Pandects**, a summary of the Roman civil law, prepared by order of the Emperor Justinian in the 6th century A.D. (530-33).

**Pangolin**, the scientific name of the "scaly anteater," a member of the armadillo family, found in Africa and Southern Asia. It has an extensive tongue, covered with glutinous matter, which it uses in catching ants, its chief food. When once caught on the tongue, the insects cannot escape. When attacked, the pangolin rolls itself into a ball, and its scales assume the form of sharp spikes.

**Panorama**, a name given to almost any series of continuous scene pictures exhibited, but strictly pertaining to such scenes when arranged round the inner walls of a circular building and viewed from the centre. Mr. Robert Barker, an Edinburgh artist, was the first to give a panoramic exhibition in 1788, and its success induced him in the following year to show a panorama in London.

**Pantagruel**, the leading character in one of the satires of Rabelais.

**Pantheon**, the famous temple in Rome, built about 25 B.C. by Agrippa and consecrated to the gods, its splendid dome and portico making it one of the most interesting architectural monuments of ancient days. Since the 7th century it has been used as a Christian church. The Pantheon at Paris, built in 1764, is modelled upon it.

**Panther**, a large carnivorous quadruped, akin to the leopard, native to India and other parts of Asia, and found also in Africa.

**Pantomimes** were originally stage representations in which speech was not permitted, all the action being carried on by gesture and movement. The ancient Greeks and Romans favoured them. Later on pantomime became popular throughout Europe, and in the 18th century, with the harlequinade, was adopted as a form of theatrical Christmas entertainment in England. The most famous English pantomime clown of the early 19th century was Joseph Grimaldi.

**Papal Infallibility**, a dogma which was finally promulgated by the Twentieth General Council in 1870. It states that the Pope, speaking *ex cathedra*, possesses infallibility for decisions on doctrines affecting faith or morals, in virtue of his supreme apostolic power. The strongest opposition to the doctrine existed among the followers of Dollinger in Germany.

**Paper** has been known in one form or another from very early times. The papyrus reeds of the Nile swamps served the ancient Egyptians for sheets upon which to inscribe their records. The Chinese and Japanese, centuries later, were using something more akin to modern paper in substance, an Asiatic paper-mulberry, yielding a smooth fibrous material, being utilised. With the spread of learning in Western Europe the necessity of a reader medium made itself felt and paper began to be manufactured from pulped rags and other substances. The first known English paper-mill was Sele mill near Stevenage, built about 1490, which produced the paper for an edition of Chaucer in 1498. Other mills were set up under Elizabeth, using linen and cotton as raw material. Other papermaking staples were later introduced, such as surat, esparto grass, and wood-pulp. The chief raw material in the world paper industry is wood-pulp, the main exporters being the timber-growing countries of Canada, Sweden, and Finland. Canada is the world's chief producer of newsprint and supplies a large proportion of U.S. requirements.

**Papier-mâché** means pulped-paper and is a com-

position of paper pulp and other substances, to which, when moulded into form, coatings of japan, with gilt and coloured inlayings, are added. Elegant and decorative objects are made of papier-mâché. A ceramic papier-mâché is very durable.

**Papyrus**, the earliest known paper made in Egypt at a very remote period from a large species of reed, *Cyperus papyrus*. This plant is to be found all over tropical Africa, especially in the "sudd" region of the White Nile.

**Parachute**, the umbrella-shaped safety device used in emergency by the crew and passengers of aircraft. The first parachute descent was made in 1797 by André Garnerin from a balloon. In 1947 three Russian parachutists beat the international record by jumping from the stratosphere at a height of over 8 miles.

**Parade** (the Holy Ghost, or Comforter), the name used in the English translations of St. John's Gospel, and adopted by Abelard to designate the convent in Champagne founded by him, and of which Heloise became the abbess.

**Paradise**, a Persian word used by the translators of the Old Testament to designate the Garden of Eden, and since meaning any place of happiness.

**Paraffin** was first obtained by distillation of coal, the process being discovered about 1830. About 1848, Mr. James Young procured it from mineral oil, and Irish peat also yielded it. The main source of paraffin supply to-day is crude petroleum. It is largely used in the manufacture of candles, for waterproofing, and numerous other purposes.

**Parcel Post** was established in England in 1883 for inland parcels up to 7 lb. in weight, the maximum being raised to 15 lb. in 1935. The system has since been extended to practically all countries of the world. The British Postal authorities carry about 250 million parcels annually.

**Parchment**, made chiefly from the skins of animals, usually of goats and sheep, was employed in olden times before printing was invented and superseded papyrus as writing material. Vegetable parchment, invented by W. E. Gaine in 1853, though not equal in strength and durability to skin parchment, is about five times stronger than ordinary paper. Vellum is parchment made from the skins of young calves or lambs.

**Parhelia** is the term applied to the very peculiar phenomena known as "mock-suns" seen sometimes in the higher Arctic regions. The sun is then attended by a number of halos crossing each other in various geometrical forms, and said to be due to the refraction of light caused by ice crystals in the upper air.

**Pariah**, a word meaning "social outcast" from the word *Paraiyan*, a very low caste of Hindu, outside the pale of regular castes, and avoided as something unclean.

**Paris University**, also known as the Sorbonne, was founded in 1256 and is one of the greatest educational institutions of Europe.

**Parliament**, is the name given to the supreme legislature of the United Kingdom. It consists of the Queen, the Lords spiritual and temporal, and the Commons. It meets in two houses: the House of Lords (the Upper or Second Chamber) and the House of Commons. It derives from the Anglo-Saxon *Witanas* (see *Witan*). The Statute of Westminster (1275) first uses "parlement" of the Great Council in England, which comes from the French word meaning discourse. (See pp. 125-27.)

**Parliamentary Correspondents** sit in the Press Gallery of the House of Commons and describe its proceedings for newspapers either by impressions or a summary of the debate.

**Parquetry**, the name of a style of flooring consisting of small rectangular wooden blocks laid down according to geometrical pattern.

**Parrakeets**, various small parrots of vivid plumage native to Australia, Polynesia, Asia, and Africa. One of the loveliest of the parrakeets is the Budgerigar of Australia. (See p. 1002).

**Parrot**, the popular name of a widely distributed family of tropical birds, including the African grey parrot, the green parrot of South America—both familiar cage pets in this country—and the various parrakeets, cockatoos, macaws, lorries, etc. Many of these birds possess a re-

- markable gift of imitating sound, especially that of the human voice. (See also p. 1002.)
- Parsec**, unit of distance used by astronomers for expressing distances between stars. It is equivalent to about three and a quarter light-years.
- Parsees**, descendants of the Zoroastrians, or Fire-worshippers of Persia, are now more numerous in India than in the land of the Shah. They are born traders, and many of them not only possess great wealth but are renowned for their charities.
- Parthenogenesis**. The development of animals from unfertilised eggs. The drones of the honey bee are parthenogenetic, and the phenomenon is also common among aphids.
- Partheon**, the famous Temple of Minerva on the Acropolis at Athens, erected about 442 B.C. under the superintendence of Phidias, who there-in placed his renowned statue of the Greek goddess. The Partheon was 227 ft. long by 101 ft. broad, and was in the pure Doric style. The ruins still existing are of considerable extent. The famous sculptured friezes, known as the Elgin Marbles, are now in the British Museum.
- Partridge**, a well-known British game bird the shooting of which forms a considerable attraction to sportsmen in the season, which opens on Sept. 1st. Two species are common in Britain.
- Passionists**, a priestly order founded in the 18th century in Italy by St. Paul of the Cross (1694-1775). In 1842 some Passionists established themselves in England, and the order has now several houses in this country, the leading one being at Highgate; the late Cardinal Manning solemnly blessed this monastery at its institution in 1876.
- Passover**, the Jewish festival commemorating the departure from Egypt and the passing of the Angel of Death over the houses of the Israelites.
- Passport** is an official document issued to a person by his own government, certifying to his citizenship and permitting him to travel abroad. Passports to British subjects are granted by the Foreign Office, authorise bearer to leave the country and guarantee him the state's protection. Valid for 5 years.
- Paten**, the dish used for holding the consecrated bread in the Eucharistic service.
- Patricians**, the aristocracy of ancient Rome.
- Paul's Cathedral, St.**, is the third cathedral church to be built on the site. It was preceded by a Norman building which was practically destroyed by the Great Fire in 1666. This followed a Saxon church which was burnt in 1086. The present building was designed by Sir Christopher Wren. The foundation stone was laid in 1675 and the structure was completed in 1710. It cost a little under £748,000. Its central feature is the dome, crowned by its cupola and lantern with the golden ball and cross. It escaped serious damage during the air raids of the second world war, but many of the surrounding buildings were laid waste.
- PAYE**, a system of income tax collection (Pay As You Earn), introduced in 1944, whereby most wage earners have income tax deducted week by week from their wages.
- Peacock**, a bird of large size and beautiful plumage, its characteristic feature being a tail of brilliant "eyed" feathers, which it has the power of erecting and spreading out, the males possessing resplendent feathering to a much greater extent than the females. It is related to the pheasant; one species is found wild in the forests of India, and another inhabits Burma and the Malayan regions.
- Pea**, a term in heraldry indicating one of the furs borne in coat armour, the ground of which is black, with ermine spots of gold.
- Peanut, Ground Nut or Monkey Nut**. A member of the pea family native to S. America, but now cultivated in many parts of the world. After pollination, the flower stalk bends down and buries the pod containing the peas ("nuts") in the ground. The oil from these "nuts" can be used for margarine manufacture.
- Pearl** is produced by certain shelled molluscs, chiefly the oyster. The inner surface of the shells of the pearl oyster yield "mother-of-pearl," and distinct pearls are believed to be morbid secretions, caused by some external irritation. Many fine pearls are found in the actual body of the oyster. The Persian Gulf, Ceylon, the north-west coast of Western Australia, many Pacific islands, and the Gulf of Mexico are among the most productive pearl-fishing grounds. In ancient times Britain was renowned for its pearl fisheries, the pearls being obtained from a species of fresh-water mussel. Western Australia has produced a 40-grain pearl, the finest the world has seen. The largest pearl ever found was the "Beresford-Hope Pearl," which weighed 1,800 grains, over six times as much as the oyster that produced it.
- Peat**, decayed vegetable matter found mostly in marshy positions, and common in Ireland and Scotland. Peat is coal in its first stage of development. It is burnt for fuel in many cottage homes.
- Peccary**, an animal of the Ungulata order related to the Old World pigs but found only in America. There are two species: the collared peccary and the white-lipped peccary, the latter being a vicious and dangerous animal.
- Pedal**. The pedal keyboard of an organ. (See Organ.)
- Peel Tower**, the name applied to the numerous fortified towers or strongholds which are to be found along the Scottish Border.
- Peep o' Day Boys**, the Irish Protestant insurgents of 1784-95, so-called because they visited the houses of their antagonists at daybreak in search of arms.
- Pelagians** were a sect of the 5th century, founded by a Briton named Pelagius, who was preaching in Rome circa 400. A bitter controversy was aroused over the Pelagian doctrine, which maintained, among other things, that the consequences of Adam's sin did not go beyond himself, and that the general resurrection of the dead was not due to the resurrection of Christ. Pelagianism was condemned by the councils of Jerusalem and Carthage.
- Pelagians**, legendary peoples of ancient Greece who were the first to invade the mainland; settled in northern Greece and moved southward. Most prosperous in the 18th and 12th centuries B.C.
- Pelican**, a genus of bird with long depressed bills pouched underneath so that the bird can hold a number of fish in reserve for future consumption. They have immense wings and webbed feet.
- Pemmican**, venison or other meat, sliced, dried, pounded and made into cakes, used by explorers and others when out of reach of fresh meat.
- Penal Laws** are such enactments as impose a penalty for certain acts of omission or commission.
- Penance**, a punishment prescribed or voluntarily accepted as an atonement for a sin or offence. Public penance was largely exacted in olden times, and in the Roman Catholic Church to-day penance appointed to the sin is imposed at confession.
- Penguin**, a genus of large birds with small wings and webbed feet, existing in enormous numbers in the Southern Ocean and Antarctic Sea. They breed on the rocky coast, and in the season are to be seen in vast numbers standing erect over their eggs. They are facile swimmers, and live on fish.
- Penicillin**. An antibiotic drug produced by the mould *Penicillium notatum*, and discovered by Sir Alexander Fleming in 1928. It has been described as the most effective chemotherapeutic agent known. Bacteria which it kills include the staphylococci, streptococci, pneumococci, gonococci, meningococci.
- Peninsular War** lasted from 1808 to 1814. Fought in Spain and Portugal (the Iberian peninsula) by the British, Spanish, and Portuguese forces, chiefly under Wellington, against the French. The latter were defeated.
- Penitentiaries** are special prisons where convicts are confined and put through a course of training intended to reform and make useful citizens of them. The term is now used to designate places where criminals serve sentences of penal servitude.
- Pentagon**, government office in Washington (the largest in the world), housing many thousands of military and civilian workers in the War Department of the United States (Army, Navy, and Air Force).



- Pentateuch**, the first five books of the Old Testament—Genesis, Exodus, Leviticus, Numbers, and Deuteronomy.
- Pentatonic Scale**, the scale of five notes prevalent in Chinese, Japanese, Javanese, and some Negro music. Music based on the pentatonic scale is almost incomprehensible to an ear accustomed to the diatonic scale.
- Pentecost**, in the Christian Church, the Whitsunday festival in commemoration of the descent of the Holy Ghost upon the apostles during the feast of the Pentecost; to the Jews it is a time of solemn celebration—"the feast of weeks," celebrated on the 50th day, or seven weeks, after the Passover.
- "Pepys' Diary,"** by Samuel Pepys, was first published in 1825. The original MS. is deposited at Magdalene College, Cambridge. The "Diary" gives a picture of the social life of the period between Jan. 1st, 1660, and May 31st, 1669.
- Perch**, a well-known family of sea and fresh-water fish, with dark striped sides. The common perch of British rivers and lakes falls an easy prey to the angler because of its voracity.
- Percussion Instruments**, a collective term covering the instruments of an orchestra that give forth sound when struck, e.g., timpani, drums, cymbals, tambourine, triangle, glockenspiel. In some modern orchestral works the pianoforte is used as a percussion instrument instead of in its usual role as a solo instrument.
- Perfumes** are essences or odours obtained from floral and other substances. The chief flower perfumes are those obtained from rose, jasmine, orange flower, violet, and acacia. Heliotrope perfume is largely obtained from vanilla and almonds. Among the aromatic herbs which yield attractive perfumes are the rosemary, thyme, geranium, lavender, etc., while orange peel, citron peel, musk, sandalwood, patchouli, and other vegetable products are largely drawn upon. In recent times chemistry has been called into play in aid of the perfumer, and many of the popular perfumes of to-day are chemically prepared in simulation of the scents of the flowers or other natural substances the names of which they bear.
- Periclase**, a mineral form of magnesium oxide.
- Perigee**. The moon or the sun is said to be in perigee when it is at its least distance from the earth. The opposite of apogee (which see).
- Perihelion**. That point in a planet's orbit when it is nearest to the sun. The opposite of aphelion.
- Peripatetics** were followers of Aristotle, the name arising from the philosopher's habit of walking up and down while he expounded his theories.
- Peripatus**, an animal which stands as a link between the annelid worms and the arthropods. In appearance it resembles a caterpillar, and it respire by a system of air tubes like those in insects. Certain other points of internal structure point to a relationship with annelid worms. There are some fifty species, the best known being the S. African *Peripatus capensis*.
- Periscope**, an optical instrument which enables the user to observe objects on the other side of an obstacle without exposing himself. In trench warfare the periscope has been invaluable. Another form of periscope is used in submerged submarines to keep watch on surface vessels.
- Periwig**. (See *Peruke*.)
- Perjury**, the offence of giving false evidence. The ancient Romans threw the perjurer from the Tarpeian Rock, and after the Empire was Christianised, those who swore falsely upon the Gospel had their tongues cut out. The usual punishment in England from the 16th to the 19th century was the pillory, fine, and imprisonment. It is now punishable by imprisonment.
- Permian Formation**, a group of rocks lying between the Trias and the Carboniferous strata. It has three subdivisions, Upper, Middle and Lower Permian, all of which are rich in fossil deposits.
- Persels**, meteor showers which are to be seen every August. The first recorded observation of the Persels dates back to A.D. 830.
- Peruke**, the name given to the wigs worn by men in the latter half of the 18th century. The custom of wearing wigs was gradually superseded by powdering the natural hair. Wigs are still worn by the Speaker of the House of Commons, judges, and barristers.
- Peruvian Bark**. (See *Cinchona*.)
- Pessimism**, the theory, as taught by Schopenhauer, that this is the worst of all worlds, that it is better to sleep than to wake, to die than to sleep. The term is also used to express a tendency to look upon the dark side of things.
- Petard**, an instrument of war, invented in the 16th century, consisting of a metal cylinder which was filled with gunpowder, and fired at gates or barriers to blow them up. It is now obsolete.
- Peterloo Massacre**, a result of a conflict between the military and a large concourse of people assembled at a Parliamentary Reform meeting held on Aug. 16th, 1819, on St. Peter's Field, Manchester, involving the loss of many lives.
- Peter's Pence**, the tax levied in England by the Pope from the 8th or 9th century, and subsequently extended to other countries. It amounted to a silver penny per hearth. It was withheld by England in 1366 in order to bring pressure to bear on the Pope to agree to the statute of praemunire, and was abolished by Henry VIII. in 1534, though it has since been revived as a voluntary contribution by Roman Catholics.
- Peter's, St.**, at Rome, as it at present exists, was built in the 16th and 17th centuries, the first stone being laid by Pope Julius II. in 1506, and it was not completed until 1660. The dome was designed by Michelangelo, and Raphael was employed for a time in decorating the building. It is the chief church of Roman Catholic Christendom and in it the Popes are crowned.
- Petition of Right**, passed in 1628, defined unconstitutional taxation, billeting, arbitrary imprisonment, and martial law over civilians as illegal. It was conceded by Charles I. to his Parliament in return for a vote of five subsidies.
- Petrel**, ocean birds of great power of wing, belonging to the order of tube-nosed swimmers, found more especially in the Southern Ocean. They are tireless fliers and return to land only to breed. The storm petrel, called by sailors Mother Carey's chicken, breeds in islands off the British coasts, and its habit of patting the water with its feet while searching for food gives the appearance of walking on water—hence the name petrel (little St. Peter). Related to the petrel are the albatross, shearwater, fulmar, and the mutton-bird of Australia.
- Petroleum**, a mineral oil composed of a very complex mixture of hydrocarbons, occurring naturally in the earth and recovered by pumping or drilling under great pressure. The composition of the crude oil varies according to source and may be divided roughly into two types: paraffinous and naphthenic. The crude oil is subjected to fractional distillation which separates out the various grades of petroleum with their different boiling points. "Cracking" converts, by heating under pressure, oils of high boiling point into more volatile oils suitable for petrol engines. A great industry has grown up around petroleum, and the by-products, which used to be regarded as waste, form the basis of the modern synthetic-chemical industry (rubber, plastics, etc.). Chief sources are: U.S.A., Mexico, Venezuela, Soviet Russia, Persia, Rumania, and Poland. The oil is carried in pipe lines sometimes for hundreds of miles from oilfield to port.
- Pewter**, alloy of tin and lead formerly much used for making household utensils and ornaments.
- pH Value**. Measure of the hydrogen-ion concentration and hence of the acidity or alkalinity of aqueous solutions expressed on a logarithmic scale. Acids: 0-7; alkalis: 7-14. The pH of a solution is defined as the logarithm to the base 10 of the reciprocal of the hydrogen-ion concentration in gram molecules per litre.
- Phalanger**, pouched marsupial mammals. They are arboreal and superficially resemble squirrels. There are two genera of flying phalangers or flying squirrels, which have a remarkable membrane along each side of the body enabling the animals to glide through the air. The members of the phalanger family are confined to the Australasian and oriental regions.
- Phalangid**, a member of the arachnid order Phalangida: popularly known as "harvesters."
- Phalanx**, a name applied by the ancient Greeks to

a body of troops drawn up in close array, with overlapping shields, and eight, ten, or more rows deep. The Macedonians stood sixteen deep. A Greek phalanx consisted of 8,000 men.

**Pharmacopœia**, an official publication containing information on the recognised drugs used in medicine. Each country has its own pharmacopœia. The British Pharmacopœia (B.P.) is published under the direction of the General Medical Council. The Pharmaceutical Society issues the British Pharmacopœia Codex (B.P.C.). **Pharos**, the name of the first lighthouse, built by Ptolemy II. about 280 B.C., on the Isle of Pharos, at the entrance to the harbour of Alexandria. It was about 460 ft. high, and one of the "seven wonders."

**Pheasant**, game-birds allied to the partridges, quails, peacocks and turkeys, distinguished by their brilliant plumage and long tapering tail. First found by the Greeks in Georgia where the River Phasis flows through to the Black Sea.

**Phenol or Carboic Acid**. A colourless solid with a characteristic odour. It is poisonous, and an effective disinfectant.

**Phenology** is the study of the time of occurrence of recurring natural phenomena, such as the flowering of plants and the first appearances of birds, as related to weather conditions.

**Philippics**, the orations delivered by Demosthenes, 352-341 B.C., against Philip of Macedon—remarkable for their acrimonious invective. The word was also used for Cicero's speeches against Antony. In modern use, any impassioned invective.

**Philology**, the study of the literary memorials of different nations. Comparative Philology is more strictly the science of language in its various forms; origins, laws, and alliances.

**Philosopher's Stone**. (See Alchemy.)

**Philosophy** is concerned primarily with the nature of reality (metaphysics) and seeks to determine also the nature of human knowledge with its limitations. It has been described as a sort of "clearing house" of mankind's experience, assessing and evaluating its meaning and significance while examining the beliefs derived therefrom. Enquiry into the nature of "good" and "right"—for the individual (ethics) and for the community (political philosophy)—as well as the nature of beauty (aesthetics) are other branches of the subject. Philosophy has been likened by the great contemporary philosopher, Bertrand Russell, to a No-Man's Land—"something intermediate between theology and science"—since it is concerned with speculations on questions which neither science nor dogma can convincingly answer.

**Phlogiston**. The phlogiston theory of Becher and Stahl postulated that there was a material substance (phlogiston) in all combustible bodies, and that combustion was a release of phlogiston. It was overthrown at the end of the 18th century following the discovery of oxygen, and Lavoisier's conclusive proof that the products of combustion weigh more than the original combustible substance, whereas according to the phlogiston theory they should weigh less.

**Phoenix**, a fabled bird of Egyptian mythology. **Phoenix Park**, the great public park of Dublin, 1,800 acres in extent and containing the Vice-Regal Lodge. It was in this park that Lord Frederick Cavendish, Secretary for Ireland, and Under-Secretary Thomas Burke were assassinated in 1882.

**Phonograph**, an instrument for reproducing sounds and consisting of a wax cylinder, rotated by clockwork or by a handle, and having a mouth-piece into which a person speaks. As the voice reaches the cylinder the vibrations are recorded on the wax, from which what has been spoken into the mouthpiece can be afterwards reproduced as required. Invented in 1877 by Edison, and developed into the gramophone.

**Phosphorus** was discovered by Brandt in urine in 1669. It is found in most animal and vegetable tissues. It is an essential element of all plants and of the bones of animals. In combination with various metals it forms different phosphates, which are largely utilised as manures. The chief commercial use of phosphorus is in the preparation of matches.

**Photo-electric cell or Electric Eye**, an instrument which registers light intensities. Its uses are

numerous, and include measurement of stellar light, daylight illumination, the density of photographic plates, and for converting light waves into sound waves as in the talking pictures.

**Photogrammetry**, the science of measurement from photographs taken from an aircraft. Aerial photography has many uses and is of great value to military intelligence and for map-making.

**Photometer**, an instrument, of which there are various forms, for measuring the intensity of light.

**Photomicrography**, the taking of photographs through a microscope.

**Photosynthesis** is the process by which plants build up food by means of light. The carbon dioxide and water absorbed by plants are converted by photosynthesis into complex food substances, such as sugar and starch, by the green colouring matter *chlorophyll*, helped by the radiant energy of the sun. (See pp. 171-72.)

**Phylloxera**, a kind of plant lice related to aphids, which attack the grape vine, and in some years cause great devastation in the vineyards.

**Physicians, Royal College of**, was constituted in London in 1518, Dr. Linacre, physician to Henry VIII., and the projector of the College, being its first president. The present College in Trafalgar Square was erected about 1825 from designs by Sir R. Smirke.

**Piano-Accordion**, a small, portable reed-organ whose melody is played by the right hand on a short piano-type keyboard. The left hand operates up to 120 stud-like bass keys, each of which produces a standard chord. The instrument is slung from a strap across the shoulders and wind for the reeds is provided by a central bellows operated by the movement of the left arm. The piano-accordion is an Italian development of the older accordion or concertina.

**Pianoforte**. Fundamentally a mechanical dulcimer whose hammers are operated from a keyboard, just as the harpsichord is a mechanical harp whose strings are plucked by quills operated from a keyboard. Historically, however, the pianoforte followed the harpsichord, on which it was regarded as an improvement. The name itself (piano-forte = soft-loud) was chosen to point out that the new instrument gave a much wider control of volume than did the harpsichord. The pianoforte first appeared in the 18th century and its invention is generally attributed to an Italian, Cristofori, who produced an instrument called the "piano e forte" in 1711. England first saw the pianoforte in the 1760's. The pianoforte soon came to be recognised as the ideal instrument for the amateur musician—a fact which nearly led to its undoing. First there arose the atrocious "cabinet-piano" in which an inferior pianoforte movement was incorporated in a piece of furniture designed to fulfil some other purpose. Later, in Victorian times, when no middle-class home was complete without a "piano," the market became flooded with cheap and nasty instruments in whose design size and price were the only considerations. Fortunately, however, the great composers of the 18th and 19th centuries realised the possibilities of the pianoforte and wrote pieces for it that taxed the powers of both performer and instrument. This put a constant pressure upon pianoforte manufacturers to improve their instruments so that these difficult pieces could be played by less expert musicians. The modern pianoforte appears in two main forms: the "grand" in which the frame bearing the strings is horizontal, and the "upright" in which the frame is vertical. The frame is a very heavy iron casting capable of withstanding a string tension of many tons. In older wooden-framed pianos the string tension is lower and the tone consequently less brilliant. The "check action" in which the hammers pivot freely has superseded the "sticker action" in which the hammer is pushed forward by a system of levers. Most pianos are provided with two pedals. The "soft" pedal should move the hammers a little to one side so that they strike only one string instead of two or three, but it may work by shortening the travel of the



- hammers or, in cheap actions, by the application of a light damper to the strings. The "loud" or sustaining pedal removes the main dampers so that a note continues to sound after the key has been released. Probably the most famous makers of pianofortes are Pleyel (France) and Blüthner and Bechstein (Germany). Good English pianos have been made by Broadwood, Collard, etc.
- Plastre**, once a common Spanish silver coin worth 4s. 3d. English. The name of plastre only applies to-day to certain coins of low denomination in Turkey, Egypt, and Cyprus.
- Pibroch**, a type of Scottish bagpipe music consisting of variations on an air.
- Piccolo**, a small flute with a high, piercing note. When required, the piccolo is usually played by one of the flautists in an orchestra.
- Picts**, inhabitants of Scotland in pre-Roman times, are held by some historians to be a branch of the old Celtic race, by others to have been of Scythian origin. They occupied the lowland portion of Scotland, and were subdued by the Scots in the 9th century, Kenneth II. becoming king of the whole of Scotland.
- Pietists** were a body of religious reformers, who, under the leadership of Spener, a Leipzig professor, spread themselves over Germany in the 17th and 18th centuries. Although guilty of some extravagances they were zealous in their aims, and did good work in promoting the practical side of religion.
- Pig**, the popular name for a hog or swine, applied to both sexes, though, when making distinctions, the mature male is styled a boar and the female a sow.
- Pigeon**. See Ring Dove, Rock Dove, and p. 979.
- Pike**, a familiar fresh-water fish abundant in the temperate regions of both hemispheres. It forms good sport for the angler in our rivers and lakes, and sometimes attains a weight of from 20 to 30 lb. It is extremely voracious. Its covered with small scales, and has a ferocious-looking head.
- Pilchard**, a fish of the herring family, but with smaller scales and more rounded body. It appears off the Cornish coasts in vast shoals every summer.
- Pilgrimage**, the undertaking of a journey to a distant place or shrine to satisfy a religious vow or secure spiritual benefit, was resorted to in early Christian times. The first recorded pilgrimage is that of the Empress Helena to Jerusalem in 326. In the Middle Ages pilgrimages became common, and were undertaken by monarchs and people of rank in all Christian countries. The Mohammedans have been making pilgrimages to Mecca since the death of the Prophet, such duty being enjoined by the Koran. Among the great centres of Christian pilgrimages are Jerusalem, Rome, the tomb of Becket at Canterbury, and the holy places of Lourdes and La Salette in France.
- Pilgrim Fathers**, the 101 English Puritans, who, after living some years in exile in Holland, to escape persecution in their own country, set sail in Sept., 1620, for America, landing at Plymouth on Dec. 4th of that year. They founded the settlement of Plymouth, and are regarded as the pioneers of American colonisation although 13 years earlier a small Virginian colony had been established.
- "Pilgrim's Progress,"** Bunyan's famous allegory, written in Bedford gaol. The first part was issued in 1678. It is the greatest work of its kind.
- Pilgrim Trust**, The, was established in 1930 through the generosity of an American, the late E. S. Harkness, who "had many ties of affection with the land (England) from which he draws his descent." A sum, approximately £2,000,000, was placed in the hands of trustees for distribution in Great Britain. The terms of the deed are sufficiently wide to cover charitable, educational, and national institutions, and the disbursements are made at the discretion of the trustees. This generous benefaction is due to the donor's admiration of the part Great Britain played in the first world war, and the financial burden she has since sustained.
- Pillory**, a wooden instrument of punishment in use in England until 1837. It consisted of a pair of movable boards with holes through which the culprit's head and hands were put, and was usually erected on a scaffold. While a person was undergoing this punishment the mob generally pelted him with stones and rubbish, sometimes to his serious injury. People convicted of forgery, perjury, or libel were often condemned to the pillory, but from 1816 to 1837 the only offence for which it could be inflicted was perjury.
- Pinchbeck**, an alloy (5 parts of copper to 1 of zinc) introduced by a London toy-seller named Pinchbeck in the 18th century, and largely used for the making of watch cases and other articles where cheapness was desired. It was intended to imitate gold.
- Pine**, a coniferous tree that flourishes in most northern latitudes, and including about seventy species, which afford valuable timber, and yield turpentine and tar. The "Scotch fir" is the only species native to Britain.
- Pinnacle**, a pointed, spire-shaped structure rising above the roof of a building, serving mainly as ornament, but also of use in giving firmness to the part it rests on. Pinnacles are found in nearly all styles of architecture.
- Pins** were in existence, no doubt, in prehistoric times, and have been unearthed in British barrows. Brass pins were introduced to England from France in 1543. They were manufactured by machinery in England in 1824.
- Pipa**, a species of toad inhabiting Guiana, and not found elsewhere. It is of considerable size, and is remarkable for the fact that the female carries its eggs on its back until they are hatched, herself depositing them in that position. Generally known as the "Surinam toad."
- Pipe-fish**, an eel-like fish with an elongated snout resembling a pipe. It is common in British waters, and there is an American species. It is related to the Sea-horse.
- Pistole**, the name originally given to a Spanish gold coin, worth about 16s. sterling. Other countries—France, Italy, Germany—also adopted the name and altered the value.
- Pistols**, small firearms, were invented at Pistoia in Italy, and adopted by the English cavalry in 1544. To-day pistols are mostly of the revolver pattern.
- Pitcairn Islanders** were originally the mutineers of the *Bounty*. They took possession of the island in 1790, and it was not until 1814 that their whereabouts was ascertained, accidentally, by a passing ship. The mutineers, under their leader, Adams, had settled down to a communal existence, married Tahitian women, and increased so in numbers that in the course of years they were too many for the island to support, and in 1856 they were removed by the British Government to Norfolk Island. A small number returned to Pitcairn.
- Pitchblende** or **Uraninite**, a relatively scarce mineral. It is nearly all uranium oxide, but lead, thorium, etc., are also present. Pitchblende from Joachimstal in Czechoslovakia was the material in which radium was discovered by the Curies. Pitchblende also occurs in Saxony, Rumania, Norway, Cornwall, the Belgian Congo, and at Great Bear Lake in Canada.
- Plague**, a fatal epidemic which spread over Europe and devastated England at different periods between the 10th and the 19th centuries. In the 14th century the devastating outbreak known as the Black Death swept over Europe. The Great Plague of London occurred from 1664-65.
- Plaice**, a familiar British sea-fish, of the flounder family, characterised by the red spots on the upper surface.
- Plaid**, a comprehensive garment of tartan or woollen material checked and coloured in distinctive markings for different Scottish clans and worn by women as well as men.
- Plainsong**, a style of musical composition sung in unison (all voices singing the same tune without harmony), familiar in the Western Church from very early times and still performed, principally in the Roman Catholic Church. Though restrained and contemplative in spirit, it is capable of expressing deep emotion.
- Planets**, the name given to such celestial bodies as revolve round the sun in elliptical orbits. The name was first used by the Greeks to indicate

their difference from the fixed stars. There are nine planets, Mercury, Venus, the Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto. See p. 155.

**Plankton**, a word which first came into biological use in 1836 to describe the usually microscopic plants and animals floating, swimming, and drifting in the surface waters of the sea. To be distinguished from *nekton* (swimming animals like fishes and squids) and *benthos* (plants and animals living on the sea bottom, like fixed algae, sponges, oysters, crabs, etc.).

**Plantagenets**, the kings who reigned in England between 1154 and 1485 and included the Houses of Lancaster and York. More correctly they are styled Angevins, from Anjou, of which Geoffrey, father of Henry II., was Count, and whose badge was a sprig of broom (*planta genista*).

**Plassey**, Battle of, was fought between the British under Clive and the Indians under Suraj-ud-Daula on June 23rd, 1757. The British gained a decisive victory over much larger forces.

**Plastics**, a broad term covering those substances which become plastic when subjected to increased temperatures or pressures. The Plastics Industry is based on synthetic organic examples of this group. There are two classes of plastics: the *thermoplastic*, which become plastic every time they are heated (e.g. cellulose plastics) and *thermosetting*, which undergo chemical change when heated, so that once set they cannot be rendered plastic again (e.g. Bakelite).

**Plate**, the term applied to gold, silver, or plated-ware, such as spoons, knives, forks, dishes, cups, etc. (See Goldsmiths Company.) In recent times it has been the custom to include under the term articles of the baser metals covered with a thin coating of silver and differentiated as "electro-plate."

**Platinum**, a scarce white metal generally allied with iridium, osmium, ruthenium, and palladium. It can only be melted in an oxyhydrogen or electric furnace, but can be rolled out into a film-like sheet, or drawn out to the finest wire.

**Platyhelminths or Flat-worms**, the phylum of the animal kingdom to which the parasitic flukes and tapeworms and the free-living planarians belong.

**Plebeians** were the ordinary citizens of Rome as distinct from the patricians. There was a long struggle between the two orders for political equality.

**Pleiades**, famous cluster of stars in the constellation of Taurus. Of the seven principal stars in the group, one is rather faint, and many myths have sprung up about this "lost pleiad" as it is called.

**Pleistocene**, the geological period that succeeded the Pliocene. It is supposed to have begun more than half a million years ago. During the Pleistocene, also known as the *Great Ice Age*, there were four cold periods, when the ice sheets covered northern Europe and N. America, separated by warm periods when the glaciers drew back into the mountains.

**Pliocene**, the geological period preceding the Pleistocene, and the last major division of the Tertiary strata. It began about fifteen million years ago.

**Plough Monday**, the first Monday after the Epiphany, when in olden times the rustic population returned to work after the Christmas festivities.

**Plover**, wading birds, widely distributed over marshy places of Europe. Several species occur in Britain, including the Golden-plover, which breeds on the moors of Devon, Somerset, Wales, N.E. Yorkshire, and is widely distributed over Scotland.

**"Plug"** Riots were frequent in the manufacturing districts of the North of England about 1842, when there was great distress among factory workers. The rioters attacked mills and, by drawing the plugs from the boilers, stopped the machinery.

**Pluto**, the last planet to be discovered. Its existence was established by C. W. Tombaugh at the Flagstaff Observatory in Arizona in Jan., 1930, from reckonings made by P. Lowell in 1914. It is the most distant of all the known planets; diameter about 3,650 miles. Its mean distance from the sun is estimated at 3,671 million miles.

**Plutonium**, a chemical element capable of nuclear fission in the same way as Uranium 235. Not until after it had been synthesised in atomic piles during the second world war was it shown to occur in infinitesimally small traces in nature. Its synthesis in the atomic pile depends on the capture by Uranium 238 nuclei of neutrons; immediate product of this reaction is the element neptunium, but this undergoes rapid radioactive disintegration to plutonium.

**Plymouth Brethren**, a Nonconformist sect founded about 1830 by J. N. Darby. They are not at great variance with other Protestant Churches, recognise no order of ministers, and receive into communion all who acknowledge Christ.

**Poet Laureate** is the poet attached to the royal household, an office officially established in 1668, though its origins go back to the early Middle Ages, when minstrels were employed at the courts of English kings. Chaucer, Skelton, and Spenser, though not court poets, were all unofficial poets laureate. Ben Jonson has been described as the first "official laureate," but the office was not officially recognised until 1688, when Dryden was formally granted the office of P.L. It is customary for the Poet Laureate to write verse in celebration of events of national importance. John Masefield succeeded Robert Bridges as P.L. in 1930.

**Pogrom**. Russian word meaning "destruction." First used to describe the Czarist attacks on the Jews in 1881 in Russia (where they have vanished since the Revolution). In 1938 Hitler ordered a general pogrom in Germany. All synagogues were destroyed and nearly all Jewish shops and homes, Jewish hospitals and children's homes suffered. During the subsequent war Jews of central Europe were systematically exterminated in cold blood by the Nazis.

**Poitiers, Battle of**, was fought on Sept. 19th, 1356, during the Hundred Years' War, when Edward the Black Prince gained a complete victory over John, King of France, who was taken prisoner and brought to London.

**Pole-Cat**, an animal of a dark-brown colour, about 18 in. in length, exclusive of tail; the ears and face-markings are white or light brown. It is carnivorous and belongs to the weasel family. Like the skunk, it emits an offensive colour.

**Pole-Star** is of the second magnitude, and the last in the tail of the Little Bear constellation. Being near the North pole of the heavens—never more than about one degree from due north—it always remains visible in the Northern hemisphere; hence its use as a guide to seamen.

**Police**, a regular force established for the preservation of law and order and the prevention and detection of crime. The powers they have vary from country to country and with the type of government; the more civilised and democratic the state, the less police intervention. England, compared with countries abroad, was slow to develop a police force, and it was not until 1829 that Sir Robert Peel's Metropolitan Police Act established a regular force for the metropolis, later legislation establishing county and borough forces maintained by local police authorities throughout England and Wales. Up to that time police duties were discharged by individual constables and watchmen appointed by local areas in England and Wales. The efficiency of the Police is the concern of the Home Office, and in Scotland of the Scottish Office. At 31st December 1955, the total establishment of the regular police in England and Wales numbered 75,802 (including 2,379 women); the strength was 65,776 (including 2,060 women). The Metropolitan Police Force had an establishment of 19,967 (including 523 women) and a strength of 15,925 (including 499 women). The Metropolitan Police has approximately 200 horses.

**Polka**, a dance introduced into England from Bohemia in 1843; it won great popularity, but is now seldom danced.

**Poll Tax**, a tax levied on every adult—every head or poll—was first imposed in England in 1380, and led to the "Peasants' Revolt," headed by Wat Tyler. It was reimposed at intervals, notably in 1513 and in the reign of Charles II. The poll tax of 1698 was the last of its kind.

**Pollution of the atmosphere** is due chiefly to the



- incomplete combustion of fuels, especially coal, large particles of soot being deposited fairly quickly close to their place of origin and smaller particles (including smoke) remaining suspended in the air for a long time. Corrosion of exposed objects and damage to buildings result from the production of sulphuric acid. The introduction of more efficient furnaces and the washing of fume gases have assisted in the abatement of smoke and other forms of pollution. Estimation of polluting substances is carried out systematically in Great Britain by the Department of Scientific and Industrial Research, the dust and matter brought down with the rain being collected in large deposit gauges; automatic filters provide continuous records of the variation of the floating solid impurities; and apparatus is employed to measure the concentration of sulphur dioxide. "Smog" (smoke-laden fog), which reduces visibility to zero and affects the respiratory organs, is liable to occur when the air near the earth is cooled below its dew-point temperature by radiation on a still, cloudless night, when an accumulation of smoke over a large city cuts off daylight and produces gloom, and absence of wind or vertical currents prevents the lower layers of the air from getting away. Such conditions are associated with the smoke-laden atmosphere of large industrial towns during a winter anticyclone.
- Polonaise or Polacca**, a musical composition in the style of a traditional Polish dance. Chopin is the best-known composer of Polonaises.
- Polonium**, a radioactive element discovered by Madame Curie in 1898, and named after her native land of Poland.
- Polytheism**, the doctrine of plurality of god-heads.
- Polyzoa or Bryozoa**, the name given to a phylum of invertebrate animals which live in colonies which have the appearance of moss. Hence the name "Bryozoa," or "moss animals."
- Pomander**, the name given to a small ball or box which was formerly carried suspended from the neck or girdle, and contained perfumes and spices which were supposed to be a protection against infection.
- Pomology**, the science of fruit-growing.
- Ponard**, a stabbing weapon somewhat larger than a dagger; very commonly carried about the person by Spaniards and Italians of the 16th and 17th centuries, but never much in vogue in England.
- Pontifex**, the title assigned in ancient Rome to members of the chief College of Priests, whose duties were of a general kind. The "pontifex maximus" was the chief religious official of the State.
- Pontoon**, any temporary floating structure that forms part of a bridge across a river. Pontoons are in various forms, mostly cylindrical and hollow, others take the shape of deck-boats locked together. Pontoon bridges capable of supporting railways are a feature of modern military equipment.
- Poodle**, a well-known variety of domestic dog having a thick curly coat which in France it is the custom to cut close on the lower part of the body. It is an exceptionally intelligent animal, capable of being taught many tricks.
- Pope**, The, the head of the Roman Catholic Church and successor of St. Peter. He is elected by the body of Cardinals; since 1870 when the King of Italy deposed the holder of the office from temporal power, no Pope had left the Vatican between appointment and death until 1929, when peace was made between the Church and State in Italy and compensation was paid to the Holy See for the loss of temporal power.
- Poplin**, a favourite fabric composed of silk and worsted. The industry was introduced into this country from France by Huguenot refugees in 1693.
- Poppy Oil**, a fixed oil obtained from the seeds of the opium-poppy, and used as a food, for illumination, and in a certain class of soapmaking.
- Porcelain**. There are three kinds of pottery: earthenware, stoneware, and porcelain; the marks shown on pp. 746-47 are restricted to those used on porcelain, a word thought to be derived from the Italian *porcellana*, indicating the texture of a piglet. The majority of porcelain made on the continent was of "hard-paste," or true porcelain, similar to that discovered by the Chinese as early as the T'ang Dynasty (A.D. 618-907); it was composed of kaolin (china-clay) and petuntse (china-stone) which when fired at a high temperature formed an extremely hard and translucent material. The recipe of "hard-paste" porcelain remained a secret of the Chinese until 1708, when it was re-discovered in Europe by Johann Böttger of the Meissen factory (popularly known as Dresden). Aided by runaway Meissen workmen factories were soon established at Vienna, Venice and later in many other parts of Germany. During the middle of the 18th century Plymouth and Bristol were the only English factories to make this type of porcelain, elsewhere both in England and France the material used was known as "soft-paste" or artificial porcelain which was made by blending varying ingredients together with the materials of glass. By the nineteenth century hard-paste porcelain was used throughout practically the whole of the continent, but in England a hybrid-paste containing bone-ash was introduced and is still the material used to-day.
- Porcupine**, a rodent whose back is covered with long, sharp, black and white spikes, which form a powerful means of defence. There are two families of porcupines; one is confined to the Old World and the other contains the American porcupines.
- Porphyry**, a form of crystalline rock of many varieties that in ancient Egypt was quarried and used for the decorative portions of buildings and vessels. The term is applied generally to the eruptive rocks of the porphyritic class.
- Porpoise**, a marine mammal of the dolphin family, and a common inhabitant of northern seas. Porpoises travel in shoals, their progression being marked by constant leaping and plungings. Their average length is from 4 to 5 ft. There are several species, nearly all being confined to northern oceans.
- Port**, a special kind of red Portuguese wine, taking its name from Oporto. It was little known in England until the Methuen Treaty of 1703, when it was permitted to be imported at a low duty.
- Portcullis**, a strong, movable timber or iron grating let into the wall of the gateway to a feudal castle, and capable of being lowered or raised at will. It formed an effective protection against attack in the days before firearms.
- Porter** received its name from the fact that it was first drunk by porters in London. (See Beer.)
- Portland Cement** is a mixture of about 20 parts of clay with 80 parts of chalk, specially prepared in kilns, and forming a substance which, after admixture with water, will set hard and solid.
- Portland Vase**, one of the most renowned specimens of Greek Art, long in the possession of the Portland family. In 1810 it was placed on loan in the British Museum, and in 1845 was smashed to pieces with a stone by a maniac; but, having been cleverly restored, it was exhibited in the Jewel room. It was discovered in the 17th century near Rome in a marble sarcophagus, and is supposed to have been the cinerary urn of the Emperor Severus. It was purchased from the Barberini family in 1770 by Sir Wm. Hamilton, subsequently sold to the Duchess of Portland. The vase which is actually a two-handled urn, stands about 10 ins. high, is of transparent dark blue glass, ornamented with figures in relief in white enamel. The vase was removed by the owner from the British Museum in 1929 and sent to Christie's but withdrawn at 29,000 guineas. It was finally purchased by the British Museum in 1945, and restored in 1949.
- Portreeve** in olden times was an official appointed to superintend a port or harbour, and before the name of mayor was used the chief magistrate of London was styled the Portreeve.
- Positivism**, a system of philosophy propounded by Auguste Comte (1798-1857), rejecting all metaphysical conceptions; a species of utilitarianism.
- Positron**, the "positive electron," an atomic particle having the same mass but an electric charge equal but opposite to that of an electron. It was discovered in 1932.
- Post Office**. The mail-carrying system of the British Post Office developed out of the organisation for the conveyance of State despatches by

**Royal messengers.** The first Master of the Post was in office as a Court Official by 1516. In 1635 the State service was extended by Royal proclamation to cater for the conveyance of public correspondence on payment of fixed rates of postage, but the intervention of Civil War delayed the development of the scheme. In 1657, however, Cromwell created the Post Office under the control of a Postmaster-General responsible to Parliament, and Charles II. confirmed this arrangement. Since then the General Post Office has constituted one of the three great revenue-earning Departments. The modern conception of letter post with a uniform rate of postage by weight and irrespective of distance, and prepayment by means of adhesive stamps, dates from 1840, as the result of the great postal reforms of Sir Rowland Hill. The Money Order service was inaugurated in 1792, the Post Office Savings Bank in 1861, the Postal Order service in 1881, and Parcel Post services in 1883. The Telegraph system was taken over and extended in 1870, whilst the Telephone system, apart from the local services still operated under Crown licence by the Hull Corporation and in Jersey and Guernsey, was taken over completely by the Post Office in 1912. The growth of the work of the Post Office since the introduction of Uniform Penny Postage has been phenomenal and has amply justified the measure. The following statistics are the latest available (1954-55):—

Letters etc., posted . . . . .	9,500,000,000
Parcels handled . . . . .	242,796,000
Air Services to 200 countries.	
Telegrams handled . . . . .	47,987,000
Telephones rented . . . . .	6,372,000
Telephone Exchanges (77% automatic) . . . . .	5,927
Telephone calls per annum . . . . .	3,925,115,000
Mileage of wire (mostly underground) . . . . .	32,982,000
Due to Savings Bank depositors (including interest) at December 31st, 1954 . . . . .	£1,727,380,000
Savings certificates—amount remaining invested (excluding interest) at March 31st, 1955 . . . . .	£1,813,577,000
Value of transactions with the public . . . . .	£3,976,878,000
Surplus of income over expenditure . . . . .	£5,156,000

(For London Postal Districts, see "General Compendium.")

**Potassium**, a metal discovered by Sir Humphry Davy in 1807, and now generally obtained by the electrolysis of fused potassium hydroxide or chloride/fluoride mixture. Its principal minerals are carnallite and kainite, and is relatively common in rocks, accounting for about 2½% of the earth's crust. An essential element for healthy plant growth, the ashes of plants are relatively rich in potassium.

**Potoroo**, a marsupial animal so like the kangaroo in shape as to be called the kangaroo rat. Found only in West Australia and Tasmania.

**Potsdam Agreement** was signed by President Truman, Generalissimo Stalin, and Mr. C. R. Attlee in Aug., 1945. By this Agreement a Council of Foreign Ministers was established, representing the five principal Powers: China, France, Soviet Russia, the United Kingdom, and United States of America, with the task of drawing up the peace treaties for submission to the United Nations. It laid down, *inter alia*, that German militarism and Hitlerism should be destroyed; that industrial power should be so reduced that Germany would never again be in a position to wage aggressive war; that surplus equipment should be destroyed or transferred to replace wrecked plant in allied territories: that Germany should be treated as an economic whole; and that local self-government should be restored on democratic lines as rapidly as was consistent with military security.

**Pot-Wallopers**, the name applied to certain electors who, prior to the Reform Act of 1832, were permitted to receive the franchise on producing proof that they had, as the phrase went, "boiled their own pot" (were householders in the constituency).

**Poultry Compter** was one of the old London City

prisons, and stood in what is now called the Poultry. The Poultry Chapel was built on the site of the Old Compter in 1819.

**Prado Gallery**, the great public picture collection of Madrid, containing a superb collection of paintings by Velasquez, Murillo, Raphael, Titian, Dürer, Van Dyck, Rubens, Holbein, etc.

**Præmunire**, a legal term applied to any offence calculated to interfere with, or cast contempt upon, the prerogative of the Crown. One of the chief statutes of this name, intended to prevent the encroachments of papal power in England, was that of Richard II. (1392).

**Prætorian Guards**, a personal bodyguard established by the Emperor Augustus, and employed down to the time of Constantine.

**Pragmatism** is the philosophical school of thought which believes that the test of any theory or belief should be its practical consequences. The American philosopher and psychologist William James (1842-1910) was one of the first Pragmatists. He believed that it was impossible to discover the "real" world outside our senses, and we must therefore concern ourselves primarily with human experience. Since the universe would be a worse place without a belief in human responsibility, morals, and the freedom of the will, it was necessary, he considered, to believe in these concepts. Pragmatism is essentially an American school of thought and has had few supporters elsewhere. John Dewey (1859-1952) has had a great influence on American education and political thought. Dewey believed that we can never know the answer to the fundamental questions of the universe or discover anything outside our immediate experience. Such problems are, therefore, of no importance to us; our main concern must be the practical problems of living.

**Prairie Dogs** are common rodents in Western America and very like the marmot in general structure. They live in communities in burrows.

**Prawns**, crustaceans allied to lobsters, shrimps, and cray fishes.

**Prebendary**, a clergyman who receives a prebend or stipend because of his special connection with a cathedral or cathedral church.

**Predestination**, the Calvinistic doctrine that God from and to all eternity predestined everything to happen as it does and must happen, even to the fixing of the souls to be rewarded and punished.

**Prefect**, chief magistrates in ancient Rome. The title is now applied to the chiefs of administration of the departments of France.

**Prelude**, a piece of music intended to precede another piece, e.g., Prelude and Fugue. The name has been used by many composers (e.g., J. S. Bach, Chopin) to describe short compositions for which no following piece was written.

**Pre-Raphaelites**, a school of artists formed about 1843, and including among its exponents Millais, Rossetti, Holman Hunt, and others, whose ideal was absolute fidelity to Nature. For a time the school kept well together, and exercised much influence upon art developments; but although much of their work still pleases, the movement was out of date by the end of the century. Ruskin in his writings defended their work.

**Press-Gang**, a body of sailors employed to impress men into naval service, frequently resorted to in England, especially during the war with France in the early 19th century. Press gangs were not used after that.

**Primogeniture**, the right of the first-born male child to inherit the real estate of his father in the absence of direction by will or deed to the contrary.

**Primrose League**, founded in 1883 to commemorate Lord Beaconsfield's (Disraeli) political work and to promote the principles he advocated. The anniversary of his death, Apr. 19th, is called Primrose Day.

**Prinos**, the evergreen oak, or Winterberry, a bush the leaves of which are sometimes used in America as a substitute for tea.

**Printing** by movable types was first used by Johann Gutenberg, a citizen of Mainz about 1440. The invention is also claimed for Laurens Koster of Haarlem. It was introduced into England by Caxton, who set up a printing press in Westminster in 1476. Gothic characters



were first used, being superseded by Roman letters in 1518. In 1798 Earl Stanhope replaced the wood printing press by one of iron. In 1814 Friedrich Koenig applied the principle of steam power to the press. Mr. John Walter, of *The Times* newspaper, was the first to use the steam press which printed 1,100 sheets per hour. Improvements were introduced by Applegath and Cowper in 1828 and great strides were made in 1858 when the Hoe machine, which turned out 20,000 impressions an hour, was put on the market. Then came the Walter press in 1866 which printed on continuous rolls of paper from curved stereotyped plates. Modern Hoe machines can print a 43-page paper at 23,000 copies an hour (max. speed 50,000). The Monotype machine casts single letters and the Linotype whole lines. Priors existed in this country from the 8th century to the 15th, and were dependent upon the Abbeys.

**Privateers** were ships of private individuals licensed in time of war to seize and plunder the ships of the enemy. Privateering was abolished by the Declaration of Paris in 1856.

**Privy Council.** (See "A Citizen's Guide.")

**Programme Music.** In Tschakowsky's definition "... such symphonic music, or such instrumental music generally, as illustrates a definite subject placed before the public in a programme and as bears the title of the subject." Thus Beethoven's Pastoral Symphony, Tschakowsky's Romeo and Juliet and his 1812 Overture rank as programme music.

**Proportional Representation (P.R.).** An electoral system devised to make minority votes effective. Candidates are elected according to party lists and votes given to a party in any constituency which prove insufficient to elect a candidate are reserved for a second scrutiny. If the total of these votes are sufficient for the election of one or more candidates they are taken from the national list and become members of parliament without a constituency. The supporters claim that P.R. more exactly reflects the will of the people; its opponents fear the domination of the party machine and the loss of personal contact with constituencies.

**Protestant,** as a denominational term, was first applied to the Lutherans, who, in 1529, protested against the encroaching power of papacy.

**Protocol,** diplomatic term denoting the first draft of any important document to be used for political purposes.

**Protoplasm,** the jelly-like mixture of compounds of which living matter is formed. The elements present in protoplasm in the greatest amounts are carbon, oxygen, hydrogen, and nitrogen. No attempt to make protoplasm synthetically has succeeded. (See *The Cell Theory*, p. 167.)

**Provost,** a Scottish official similar in rank to an English mayor. The Provosts of Edinburgh, Glasgow, Aberdeen, Perth, and Dundee are styled Lords Provost. The title of provost is also given to the heads of various English colleges.

**Prozymite,** a term used in the 11th century to indicate such as used leavened bread in the Eucharist.

**Prud'hommes (Prudent Men), Councils of,** were French trade tribunals, of masters and workmen, formed to decide on disputes. Originally a mediæval institution, they were revived by Napoleon in 1806, and were carried on by the Third Republic.

**Prunella,** a kind of material once largely used for gowns of peasant women, and shoe linings.

**Prussic Acid or Hydrocyanic Acid** is a compound of nitrogen, carbon, and hydrogen, and obtained by distillation of cyanide of potassium with sulphuric acid. It is a rapid poison because of its effect on the central nervous system, and has a sickly almond smell.

**Psalms, Book of,** for many years attributed to David, but present-day scholars are of opinion that the psalms were written by a series of authors at different times and for different purposes, and that few, if any, were written by David. The Holy Scriptures contain 150

**Psychical Research.** It need hardly be said that occult happenings and mysteries have been described from the earliest times. But modern

spiritualism has a much shorter history, dating, to be precise, from Mar. 31st, 1848, when the two Fox sisters of Hydesville, New York, began to produce mysterious rappings which were interpreted as spirit messages. The rapping movement spread like wildfire, and seances became popular, culminating in those of the medium Daniel Dunglas Home (1833-86), who impressed such famous men as Sir William Crookes and Alfred Russel Wallace and so unfavourably impressed the poet Browning. In 1882 the Society for Psychical Research was founded to study the phenomena of spiritualism scientifically, and counted among its members Sir Oliver Lodge, Barrett, Andrew Lang, Myers, and Sidgwick. Many phenomena have been investigated: apparitions, poltergeists, materialisations, telepathy, and precognition, but it is fair to say that no positive proofs of the existence of ghosts or of survival of bodily death have yet been found. Many mediums have been caught out cheating at one time or another—but this does not mean to say that they always cheat. Most moderate enquirers would take the view that many of the phenomena described do occur, but would deny that they are necessarily due to disembodied spirits. (See also *Telepathy*.)

**Psycho-analysis** is the name of the system of psychology devised by Sigmund Freud (1856-1939). Primarily intended as a means of treating neurosis, it resulted in theories as to the nature of mental processes which have, in part, at least, been accepted by the science in general. The basic thesis of the system is that the primitive mind of the child becomes differentiated into three aspects: the unconscious, a reservoir of the instincts and those thoughts and emotions which are unacceptable to the individual or society; the conscious mind or ego, in immediate contact with the world of reality; the superego, which represents the moral traits impressed on the child by its parents in early life. The unconscious is the source of all mental energy, which must, however, be modified in various ways before reaching consciousness by the superego (censor). Thus aggressive desires may be: (1) *expressed*, i.e., allowed expression in their crude form, but on a socially recognised occasion (war, boxing, etc.); (2) *sublimated*, i.e., made "sublime" by expression in a more highly developed form (competition in games, business, etc.); (3) *suppressed*, i.e., held down consciously as being inappropriate; (4) *repressed*, i.e., held down and refused recognition unconsciously. In the latter case the desires are liable to lead to neurotic symptoms, since they will find their way into awareness in a less obvious manner (e.g., a morbid interest in cruelty, murders, etc., or an excessive fear of losing one's temper). Neurosis is due to conflict between the superego and the unconscious. (See also *Neurosis in "Medical Section,"* and *Freudian Theory*, p. 179.)

**Psychology,** usually defined as "the study of the mind," has more recently been described as "the study of behaviour," since the term "mind" is somewhat ambiguous. (See *Mind*.) The first important psychologists (as distinct from philosophers) were the Germans Wundt and Herbart in the 19th century; the science is, therefore, a comparatively new one. Three phases have been evident from quite early days: (1) An Associationist phase during which an effort was made to isolate the units of mental life: at first these were described as "ideas," but later the Behaviourist school made the reflex its fundamental unit. The Associationists and Behaviourists regarded the mind in a somewhat mechanistic way in terms of stimulus and response, rather like a penny-in-the-slot machine. In fact, the Behaviourists denied the existence, or at any rate the value, of subjective data—they considered that psychology should concentrate on the observation of behaviour. Leading members of this school were Pavlov and J. B. Watson. (2) With Freud and, earlier, Herbart, emphasis was on the dynamic aspects of mind. The mind, it was supposed, must have some driving force behind it—the instincts. The Freudian system is based on this concept. (See *Psycho-analysis*.) McDougall was another leader of the dynamic

school with views otherwise widely divergent from Freud. Some of the fundamentals of both these views have been discarded by the most recent school of thought represented by: (3) Field theory. This scheme is based on the denial of the Behaviourists' thesis that the mind can be divided up into units—behaviour, it is claimed, can be understood only in its whole social context. This also brings Field theorists into conflict with the Freudians and their belief that all behaviour comes from within—from the unconscious. The most radical form of this approach is Situationism, which holds, more or less, that an individual is nothing but the social roles he plays; his actions are the resultant of many and perhaps conflicting roles as father, son, Protestant or Catholic, employer or employee. But the views of this typically American school are not generally accepted in their entirety elsewhere. It must be remembered, in face of all these conflicting views, that there are very large areas of agreement between all psychologists, and much of the apparent confusion is due not to disagreement over facts but in the fitting of facts into coherent schemes. (See also "The World of Science," Part III.)

**Parmigan**, birds of the grouse family, one species of which occurs in Britain, inhabiting the Scottish Highlands. In the winter assumes a white plumage.

**Potamines**, organic compounds produced during the putrefaction of proteins of animal origin. Not a cause of food poisoning, as was once generally supposed, which is almost invariably due to certain specific bacteria.

**Publicans**, under the Roman Empire, were people who farmed the public taxes. It is this class of officials that is alluded to in the "publicans and sinners" phrase in the New Testament.

**Public Corporations**. A method of operating large-scale industries transferred from private to public operation. Thus the Port of London Authority is an independent corporation governed by users of the port and representatives of municipal interests and labour. The Forestry Commission, the British Electricity Authority, the British Transport Commission, the National Coal Board, the Gas Council, and the B.B.C. follow a varied pattern.

**Public Schools**. The Public Schools Act of 1864 named nine "public" schools: Eton, Harrow, Rugby, Winchester, Westminster, Shrewsbury, Charterhouse, St. Paul's, and Merchant Taylors. Today the term embraces many more, and can be applied to all those schools which are financed by bodies other than the State and whose headmasters belong to the Headmasters' Conference as distinct from the Headmasters' Association. There are about 200 such schools in Britain, including among others: Bedford Grammar School (founded 1552); Birmingham, King Edward School (1552); Brighton College (1845); Charterhouse School, Godalming (1611); Cheltenham College (1841); Christ's Hospital, West Horsham (1552); City of London School (1442); Clifton College, Bristol (1862); Dulwich College (1619); Eton College (1440); Felsted School (1584); Haileybury College (1862); Harrow School (1571); Malvern College (1865); Manchester Grammar School (1515); Marlborough College (1843); Merchant Taylors' School (1561); Mill Hill School (1807); Radley (1847); Repton School, Derbyshire (1557); Rugby School (1567); St. Paul's School (1509); Sherborne School (1550); Shrewsbury School (1552); Stonyhurst College (1594); Tonbridge School (1553); Uppingham School (1584); Wellington College (1859); Westminster School (1339); Winchester College (1387); and Warwick (1123). Public schools for girls include: Christ's Hospital, Hertford (1552); Cheltenham Ladies College (founded by Miss Beale in 1853); North London Collegiate School (founded by Miss Buss in 1850); Roedean (1885); Wycombe Abbey (1896).

**Puma**, a carnivorous quadruped of N. America, where it is called the "American lion," though smaller than the lion, seldom attaining a greater length than 40 in., exclusive of tail, and a height of 2 ft.

**Pumice**, a light stone of variable substance, utilised for cleaning purposes, for polishing, and for smoothing surfaces and edges of pasteboard

and surfaces of wood, metal, and other material. It is imported from the Lipari Isles.

**"Punch,"** the leading English humorous publication, was established in 1841, and has had among its editors, Mark Lemon (1842-70), Shirley Brooks (1871-74), Tom Taylor (1874-80), Sir F. Burnand (1880-1906), Sir Owen Seaman (1906-32), E. V. Knox (1932-48), C. Kenneth Bird ("Fougasse"), (1949-52). Among its contributors it has numbered Thackeray, Douglas Jerrold, Tom Hood, Gilbert a'Beckett, E. V. Lucas, A. P. Herbert, and its artists have included Richard Doyle, John Leech, Sir John Tenniel, Charles Keene, Sir G. du Maurier, Phil May, Linley Sambourne, Sir Bernard Partridge, E. J. Reed, Harry Furniss, L. Raven Hill, and its late editor C. Kenneth Bird. Malcolm Muggeridge was appointed editor in Dec. 1952.

**Purgatory**, the place where, according to the Roman Catholic doctrine, the souls of the dead find temporary habitation while undergoing purification.

**Puritans**, the name originally given to the followers of Calvin in England in the time of Elizabeth. As a political party they were in the ascendant during the Commonwealth period (1649-59).

**Pylon**, the huge monumental gateways erected in front of ancient temples or other buildings.

**Pyramids of Egypt**, on the west bank of the Nile, are vast stone or brick-built structures with inner chambers and subterranean entrances, built by the Pharaohs as royal tombs and dating from about 3000 B.C. The most celebrated are at Giza built during the 4th dynasty. The largest, originally 481 ft. high, is called the Great Pyramid, one of the seven wonders of the world, built by the Pharaoh Khufu, better known as Cheops, and there he was buried, 300,000 men, according to Herodotus, being employed for 20 years upon it. Chephren, successor of Cheops, erected the second pyramid, and the third was built by Mycerinus, a son of Cheops. The pyramid at Meidum built by King Snefru, founder of the 4th dynasty, is the most imposing of all.

**Pythian Games** were one of the four great Greek festivals in honour of Apollo and Diana, when many contests were held and laurels distributed as prizes. These games took place every fourth year near the temple of Delphi.

**Pythons**, large snakes, non-poisonous, and destroying their prey by crushing it. Some species average 30 ft. in length, and prey upon deer and other small mammals. Found in Asia, Africa, and Australia.

**Quadragesima Sunday** is the first Sunday in Lent, the fortieth day before Easter.

**Quadrant**, an astronomical instrument for measuring altitudes, superseded for navigational purposes in modern times by the sextant. It consists of a graduated arc of 90° with a movable radius for measuring angles on it.

**Quadrille**, adapted from an old French country dance, became fashionable throughout Europe in the early part of the 19th century, but seldom danced now.

**Quadruple Agreement**, an agreement made at the Washington Conference in 1921 between the United States, Great Britain, France, and Japan for the preservation of peace in the Pacific for ten years. (See also Washington Conference.)

**Quadruple Alliance**. The most noted have been that of England, France, Austria, and Holland in 1718, to maintain the Treaty of Utrecht; that of 1814, under which England, Austria, Prussia, and Russia combined against Napoleon; that of 1834 by Great Britain, France, Spain, and Portugal, supporting Maria in Portugal and Isabella in Spain against claimants to their thrones, and those in the first world war between Germany, Austria-Hungary, Turkey, and Bulgaria on the one hand and Great Britain, France, Russia, and Italy on the other hand.

**Quæstor**, a Roman magistrate whose duties were mainly financial, although he was originally concerned with criminal jurisdiction. At first two Quæstors sufficed; then the number was successively increased until under Julius Cæsar



there were forty. Under the Empire there were usually twenty.

**Qual d'Orsay.** An embankment in Paris where the French Foreign Office is situated.

**Quail,** an edible bird of the partridge family, of which only one species, the Common Quail, is found in England. It is not more than 8 in. long. It is found in most of the warmer regions of the world. In England and Wales the Quail is covered by the Wild Bird Protection Acts.

**Quair,** an old name for a pamphlet or little book.

**Quakers,** the popular name for members of the Society of Friends, a religious sect founded by George Fox in the 17th century. In matters of belief they do not differ materially from other Protestant bodies; the chief difference is in worship, Quakers having no prescribed formulas. They assemble in their Meeting Houses, and any one in the congregation speaks when individually prompted, "as the Spirit moves them." Silent meetings are not infrequent. The ordinances of baptism and the Lord's Supper they reject. They object to swear upon oath, and up to 1833 were punishable by law for this refusal; since then they have been permitted to affirm. Until recent times they adopted great simplicity of attire, and in addressing people used the second person singular, but gradually have conformed more to common usage. Many Friends have attained distinction both in public life and in business, and as a body they are highly respected for their honourable dealings. William Penn was one of the most prominent of the early Quakers, and introduced the religion into America. The term Quaker was first applied to the sect because of the founder's frequent use of the word "Tremble" in his exhortations.

**Quantum Theory.** By the end of the 19th century the electrical nature of the atom was being realised and, also, it was accepted that radiations of light and heat both consisted of electromagnetic waves. However, it was impossible, using existing theories, to reconcile the expected uniform frequency distribution of energy radiated from a heated body with the uneven one observed in practice. In 1900 Prof. Max Planck, a German physicist, in attacking this problem, postulated that the energy emitted by the vibrating electrical charges of the atom was transferred not continuously, but in separate units or *quanta* of energy. It was generally assumed that some mechanism within the atom governed the discontinuous nature of the emissions. In 1905, however, Prof. Einstein, in explaining the photoelectric effect, extended the quantum theory by suggesting that radiation is not merely absorbed or emitted but also transmitted in quanta. Light quanta he termed *photons*. The quanta possessed both mass and impulse, a fact eventually demonstrated by experiment. Since 1925 work has tended to relate the "wave" and corpuscular properties of the electron, *e.g.*, by the wave mechanics of Schrödinger (which associates the electron with a packet of waves); and the quantum mechanics of Heisenberg. These theories have revolutionised the approach to interpreting the structure and energy content of the atom, as well as the entire philosophy of natural science. (See "The World of Science.")

**Quare Impedit** ("Why he hinders"), the title of a writ calling upon any person interfering with the rights of the owner of a presentation to a benefice to show cause why he impedes.

**Quarrel,** the old name for a dart or bolt, shot from a crossbow or catapult in war, before the employment of firearms.

**Quarter-Days.** (See p. 750.)

**Quartering,** in heraldry, is the disposition of various escutcheons or coats of arms in their proper "quarters" of the family shield, in such order as indicates the alliances with other families.

**"Quarterly Review,"** the great Tory quarterly was started in 1809, in opposition to the *Edinburgh Review*, the Whig organ, est. in 1802.

**Quartermaster,** a military officer charged with the provisioning and superintendence of soldiers in camp or barracks, and holding the equivalent rank to a lieutenant. The Quartermaster-General is an officer who presides over the provisioning department of the whole army. A Quartermaster in the Navy is a petty officer

responsible to the Officer of the Watch, at sea for the correct steering of the ship and in harbour for the running of the ship's routine.

**Quarter Sessions.** (See "A Citizen's Guide.")

**Quarter-staff,** an old English weapon, consisting of a stout pole some 6½ ft. long, which was grasped in the middle and could be swung with telling force in defence or attack.

**Quartet,** a musical composition for four voices or instruments. If for stringed instruments (*e.g.*, first and second violin, viola, violoncello) it is called a string quartet. If for three strings and another instrument it is called by the name of the fourth instrument, *e.g.*, piano quartet. The name is often misapplied to the musicians instead of to the music. Thus a four-piece string orchestra will be called a string quartet. This misuse is also found with quintet, sextet, etc.

**Quarto,** a sheet of paper folded to make four leaves, or eight pages; usually abbreviated to "4to."

**Quartodecimani,** an early Christian community who celebrated the Paschal festival on the 14th day of the month, when the Jews celebrated their Passover. In consequence of the confusion caused, the practice of the Quartodecimani was condemned by the Council of Nicea in 325.

**Quartz** is a common and usually colourless mineral abundantly diffused, and occurring crystallised and massive. In the first form it is in hexagonal prisms, terminating in pyramids. When pure its specific gravity is 2.66. It is one of the constituents of granite, gneiss, etc. Among the quartz varieties are *rock crystal* (colourless), *smoky quartz* (tinged, as *yellow topaz*, *amethyst*, and *sapphire*), ordinary or false, *milky quartz*, and *rose quartz*. Quartz veins in metamorphic rocks often yield rich deposits of gold. Mining for gold in the rock is termed *quartz-mining*.

**Quasi,** a Latin prefix to other words implying a somewhat false resemblance.

**Quassia,** a genus of plants of the *Simarubaceae* order, with five-lobed calyx. There are two species, the most commonly known being a native of tropical America, the other of Africa. It yields a drug called bitterwood, much valued as a medicine. The negroes use it as a fever remedy. In commerce the product of the bitter-ash and other allied trees is generally substituted for quassia.

**Quaternary Deposits or Post-Tertiary,** are the latest stratified rocks of the earth's crust, and include the Pleistocene ("Great Ice Age") and recent systems.

**Quatrefoil,** in architecture an ornament, piercing, or panel, resembling the four petals of a cruciform flower, largely used in the English Perpendicular style, and less frequently in the Decorated.

**Quaver,** a note of music, equal to one-eighth of a semibreve and one-fourth of a minim.

**Queen,** the title of the wife of the sovereign ("queen consort"), or of a woman who is herself the sovereign ruler of a state ("queen regnant"). The ruling queens of England have been Mary I., who reigned four years; Elizabeth I. (forty-five years); Mary II. (jointly with William III.) (six years); Anne (twelve years); Victoria (sixty-three years), and Elizabeth II., who came to the throne in 1952.

**Queen Anne's Bounty,** established by Queen Anne in 1704 for the augmentation of the maintenance of the poor clergy. Since Apr. 1st, 1948, Queen Anne's Bounty and the Ecclesiastical Commissioners ceased to exist and became embodied in the Church Commissioners for England.

**Queen's (or King's) Speech** is the speech prepared by the Government in consultation with the Queen and delivered by Her Majesty in person or by her deputy, at the opening or closing of a Parliamentary session.

**Quelea,** a name given to the crimson-beaked weaver bird of Africa.

**Quercitron,** the bark of a species of American oak, from which a yellow colouring matter is obtained. It is also used in tanning.

**Quern,** a form of stone hand mill for grinding corn, in use in early times. It consisted of two flat stones, the upper revolving on a pin inserted in the lower.

**Quicksilver.** (See *Mercury*.)

**Quills** for writing with were first used in the 6th century, and superseded by steel pens in the 19th.

**Quince,** a well-known hardy orchard tree of the

pear family, bearing fragrant, yellow, pear-shaped fruit, largely used for preserves. A mucilage is made from the seeds, which also possess medicinal virtues.

**Quindecimvir**, one of the fifteen ancient Roman magistrates appointed to keep charge of the Sibylline books, and called priests of Apollo.

**Quinine**, a vegetable alkaloid obtained from the bark of several trees of the *Cinchona* genus. It is colourless and extremely bitter. The drug, sulphate of quinine, is one of the most valuable medicines, forming a powerful tonic. It is antiperiodic, antipyretic, and antineuralgic. In cases of malaria it is the most efficacious remedy of natural origin known.

**Quintain**, a tilting post, from the top of which a board was suspended horizontally for the tilters to strike at with their lances.

**Quintal Metrique**, a French weight of 100 kilogrammes, or 220 lb. avoirdupois.

**Quintet**, a musical composition for five voices or instruments. If all five instruments are strings the piece is a string quintet. A clarinet quintet, for example, is a piece scored for "four strings" and a clarinet.

**Quintilians**, the name given to certain heretics of the 2nd century, who used bread and cheese for the Eucharist and permitted women to be priests. Their leader was a Roman woman named Quintilia.

**Quirinal**, one of the seven hills of Rome.

**Quisling**, term which came into use during the second world war to denote traitor, collaborator, or fifth-columnist. After Vidkun Quisling, who became head of the puppet government after the German invasion of Norway in 1940.

**Quiver**, a leather receptacle for arrows.

**Quorum**, the number of members of any body or company necessary to be present at any meeting or commission before business can be transacted. Forty form a quorum in the House of Commons. (See also "A Citizen's Guide".)

**Quo Warranto** ("By what authority"), a form of writ which has existed in England since 1278, and is a direction to the proper authorities to inquire into the circumstances under which any office or franchise is held.

## R

**Rabbi**, a Jewish term applied to specially ordained officials who pronounce upon questions of legal form and ritual, and also generally accorded to any Jewish scholar of eminence.

**Rabbit**, a rodent burrowing mammal, a native of Europe, but now common in other countries—where it has been introduced and has multiplied enormously, especially in Australia. (See *Myxomatosis*, p. 648.) In its wild state it has a brownish fur, while in its domesticated varieties it is of many colours—grey, white, black, and pied. Wild rabbits have erect ears, but in some domestic breeds the ears are long and droop, hence the term lop-eared. They breed rapidly, rearing several litters a year. The fur is utilised for clothing and other purposes, and the flesh is a popular article of food. (See *Domestic Pets* Section.)

**Racahout**, a substance made from the acorn of the belote or Barbary oak, and much used as a food and medicament by Arabs. An admixture of the same name, with various added ingredients, is sold in France.

**Race**. In the old text-books anthropologists were much concerned with the differences between the various races of Man: they described the Black Man (Negro), the Yellow Man (Mongol), the Red Man (American Indian), the Brown Man (Indian), and the White Man (European). Those who study Man from this point of view further subdivide each group into others. Thus White Man may be divided into Nordic, Alpine, and Mediterranean; Black Man into Hamitic, Bushman, and so on. Each of these groups tends to have physical traits which its members hold in common, although, of course, there are no pure racial types. All existing races have been fairly thoroughly mixed. What, in view of recent experience, is really important, is that races or even nations do not have psychological traits—at least not innate traits. The man who says that all Indians are stupid or liars or worse forgets that

Indians were highly civilised when our ancestors were dressed in skins and painted blue. Such a man might read with profit what Cicero wrote to a friend in the first century B.C.: "Do not obtain your slaves from Britain, because they are so stupid and so utterly incapable of being taught." Anthropology dismisses all theories of a superior race as unscientific: there is not the slightest evidence that one race differs in any way from another in its psychological potentialities. Jews, Irish, Scots, Italians do differ (so do the inhabitants of Edinburgh and London); but their differences are due to their situation and not to anything inborn. (See *Physical Environment*, p. 175.)

**Raceme**, a botanical term indicating a cluster of flowers, the individual blossoms being borne on simple stalks arranged round a single common axis. The youngest flowers are at the tip of this axis.

**Rack**, an ancient instrument of torture, consisting of a platform fitted with bars, one of which was movable. The feet of the victim were fastened to one bar and the hands to the other; then by means of the movable bar the limbs were stretched to great tension until the tortured one "confessed" or became senseless.

**Rack-work**, a piece of mechanism in which a rack is used; a rack-and-pinion arrangement or the like. A rack in this sense is a toothed-bar, adapted to work into the wheel teeth.

**Raccoon**, plantigrade carnivorous mammals common to the American continent. There are several species. The common Raccoon (*Procyon lotor*) is about 2 ft. long, with a bushy ringed tail and sharp snout. Its skin is valuable.

**Radar or Radiolocation**. A system of locating objects by means of radio signals, brought to perfection in the second world war. As early as May, 1935, a British team of scientists led by Sir Robert Watson-Watt succeeded in tracking aircraft up to about 30 miles distance with an early radar system. By the outbreak of war a chain of radar stations, to give early warning of enemy aircraft, had been built along the East Coast of Britain, and by 1941 this had been extended to embrace nearly the whole of the coastline of England, Wales, and Scotland. Radar was also used to detect submarines from the air, to range searchlights and A.A. guns, etc. It also made blind-bombing possible. Radar techniques developed during and since the war are advancing radio-astronomy and a new radio-telescope is being built in England. (See also *Radio, Television, and Radar* Section.)

**Radcliffe Library**, Oxford, was founded under the will of Dr. John Radcliffe, who died in 1714, leaving £40,000 for that purpose. The Library was opened in 1749.

**Radiation**, transfer of energy by electromagnetic waves, the rate of emission by a body depending upon its temperature and surface. The sun radiates energy in the form of short visible waves of light and longer invisible waves of heat. The principal gases of the atmosphere are transparent to practically all of the solar and sky radiation and also that which the earth re-transmits to space. Carbon dioxide and water vapour, however, strongly absorb certain types, the latter, as clouds, playing an important rôle in regulating the temperature of the globe. The cooling of the ground on a clear night is a result of the outgoing long-wave radiation exceeding that coming down from the sky; at sunrise cooling ceases as the incoming radiation becomes sufficient to compensate for the loss of heat.

**Radioactivity**, a phenomenon exhibited by certain elements of high atomic weight, a discovery made by Henri Becquerel in 1896. The nuclei of the atoms are unstable and disintegrate spontaneously shooting off alpha particles (nuclei of helium atoms), beta particles (electrons), and gamma (electromagnetic) waves at very high speed. A piece of uranium will gradually change into a piece of radium, and finally into lead, taking millions of years to do so. (See also p. 161.)

**Radiosonde**, a weather station in miniature carried aloft by a free balloon to heights normally in the neighbourhood of 10 miles. Signals representative of values of atmospheric pressure, temperature and humidity



- are transmitted simultaneously by radio to receiving apparatus on the ground. The position of the balloon at any instant can be determined by radar, enabling the speed and direction of the upper winds to be deduced.
- Radium**, a radioactive metal discovered by Marie and Pierre Curie in 1898. Atomic weight 226. The Radium Institute, founded and equipped by Lord Iveagh and Sir Ernest Cassel, was opened in Aug., 1911, for the treatment of patients and the prosecution of researches into the effect of radium on the human system.
- Radiu**, in geometry, is the measurement of a straight line marked from the centre to the circumference of a circle or curve.
- Radon**, a colourless radioactive gas formed when radium atoms disintegrate radioactively.
- Rail**, a well-known genus of the *Rallidae* family—one species of which—the Water Rail—is common in various parts of Continental Europe, and also in the fen districts of England.
- Rain**. When moist air rises into lower temperatures and becomes saturated, condensation takes place on the numerous hygroscopic particles present in the atmosphere. If the temperature is above freezing a cloud of small droplets is formed, and as the air continues to rise they grow in size until the weight is great enough to make them fall to the earth as rain. The formation of large raindrops has been attributed to coagulation of smaller drops of different sizes, while another mechanism depends upon the presence in the cloud of ice crystals as well as water drops. In temperate latitudes snowflakes falling from the freezing level melt in the warmer air below, producing large raindrops which grow in their flight through the lower part of the cloud.
- Rainbow**, a beautiful colour effect visible to observer with back to the sun and facing a rain shower, caused by the refraction and reflection of sunlight in minute water-droplets in the air. From high in the air it would be possible to see a rainbow as a complete circle, but from the ground the most that can be seen is a semi-circle when the sun is just on the horizon; the higher the sun is, the smaller the arc of the rainbow. When conditions are suitable two bows are seen, the secondary with the colours of the spectrum reversed.
- Rain gauge**, an instrument consisting of a deep metal funnel whose stem dips into a graduated glass jar from which the depth of the rain water collected can be read. Continuous records of rainfall are provided by self-registering instruments.
- Ramadan**, the time of the Mohammedan Lent, the 9th month of the Moslem year, a movable period fixed according to lunar calculations. It lasts for thirty days, and all good Mohammedans fast in Ramadan from sunrise to sunset each day. During the interval from sunset to sunrise they are at liberty to eat, drink, and make merry.
- "Rambler, The,"** published by Dr. Johnson twice a week between 1750 and 1752.
- Rambouillet**, a royal French chateau (14th cent., rebuilt 18th cent.), near Paris, and the official summer residence of the President of the French Republic. Also the name of the famous literary salon of the Marquise de Rambouillet (1588-1665).
- Rampant**, in heraldry, is a term applied to the figure of an animal with forelegs elevated, the dexter uppermost. When the animal is shown side-faced it is *rampant displayed*, when full-face, *rampant guardant*; when looking back, *rampant regardant*; and when in sitting position *rampant sejant*.
- Rampion**, the common name for plants of the bell-flower family.
- Rampur Chudder**, a kind of fine woollen shawl made at Rampur in India.
- Ranelagh Gardens** was a fashionable public garden at Chelsea for concerts and dancing in the 18th century, and existed down to 1804.
- Ranz des Vaches**, a Swiss herdsman's melody, played on the alpenhorn, as a call to the cows.
- Rape**, a cruciferous plant yielding coleseed or rape-seed, extensively grown in all parts of Europe and India. Rape oil or colza is made from the seeds, and the leaves and refuse are used for sheep-food. Rape oil is a yellow, thick oil, of considerable commercial importance as a lubricant and for other purposes. It was at one time much used as an illuminant.
- Raphides**, crystals of calcium oxalate, found in the cells of many plants.
- Raptore**, an order of birds of prey, of which there are upwards of 500 species, divisible into two main sections, *Falconidae* and *Strigidae*.
- Rastadt Treaty of Peace**, between the French and Germans, signed on Mar. 7th, 1714, closed the War of the Spanish Succession and was a preliminary to the Treaty of Utrecht.
- Rat**, a well-known order of rodent embracing many species. The *brown rat* appeared in Europe early in the 18th century, coming from the East and entering by way of Russia; now it is widespread and met with in Britain and all parts of the Continent. The *black rat*, which was the common rat before the arrival of the brown species, is a smaller animal and now comparatively scarce. There are numerous other kinds, all of them gross feeders, and existing in such numbers in many places as to constitute a pest.
- Ratel**, a carnivorous animal of the badger family, having the lower part of the body black, and the upper part a light grey. It is found in India and at the Cape, and is often styled the "honey-badger" because of its honey-eating propensities.
- Rationalism**. The belief that all matters of fact and all beliefs concerning personal conduct should be founded on reason; that reason should be the guiding factor in life. An apparently simple creed, which, unfortunately, is not so simple. Roman Catholics, for example, who are certainly not rationalists in the ordinary sense of the term, claim to be able to base their religion on rational grounds; indeed, there must be very few people who do not consider their beliefs to be entirely reasonable. The rationalist would say that by "reason" he means the criteria ordinarily accepted as scientific evidence, but he is then faced by the problem whether moral conduct can be based entirely on logic. The most important attempt to do so (Bentham's theory that morals should be based on "the greatest good of the greatest number") has been rather severely dealt with by philosophers in general. Rationalism has something important to contribute to human well-being provided it realises that human beings are not ordinarily rational, and one must be tolerant of what seems illogical in their conduct before beginning (very slowly) to alter their beliefs. Our irrational dreams are, after all, an attempt to make a difficult world easier to live in, and the man in the street may be excused if he says, in effect, to the rationalist, "be careful, you are treading on my dreams." Only by making the world a better place to live in can one begin to convert the superstitious and illogical. The main rationalist body in this country is the Rationalist Press Association, Johnson's Court, Fleet Street, London, E.C.4.
- Ratite**, a bird classification which includes ostriches, cassowaries, and other flightless, flat-breasted birds.
- Rattening**, the act of concealing or taking away workmen's tools to prevent them being used during trade disputes. The word came into use at Sheffield during labour disputes in 1867.
- Rattlesnake**, venomous snakes which obtain their name from the possession of a rattle in the end of their tail, consisting of horny pieces so arranged that when vibrated they make a rattling sound. They are only found in N. and S. America.
- Ravelin**, a detached fortification of triangular shape, with two embankments forming a projecting angle.
- Raven**, a black-plumaged bird of the crow family, with raucous voice and massive bill. Occurs in many parts of Europe, Asia, and America. Ravens are easily domesticated and form interesting pets. Dickens had one which he described in "Barnaby Rudge."
- Ray**, fish with a very flat body and broad and fleshy pectoral fins, related to the sharks. There are about 140 species. In Britain they are generally called *skate*.
- Razorbill**, a sea-bird of the auk family, having a high, furrowed bill and black-and-white plumage. It inhabits rocky cliffs during the breeding season, and at other times is mostly out on the open sea. Razorbills pair for life and return to last year's nesting-place.

**Realgar**, a mineral of a reddish colour formed in crystals and also granular, in China, Mexico, and some parts of central Europe, and is a compound of arsenic and sulphur.

**Rebeccaitees** were a secret Welsh organisation, existing in 1843, whose object was to destroy toll-gates, which were so numerous as to be a burden to the people. They dressed in women's clothes, and called themselves "Rebecca's daughters," with particular reference to the passage, "And they blessed Rebecca, and said unto her, Let thy seed possess the gate of those which hate them." They went abroad in the night-time and caused much destruction. A general relief from highway tolls followed after a commission of inquiry.

**Rechabites**, members of a society of total abstinents from intoxicating drinks. Rechab, father of Jonadab, refused to drink wine, build or live in houses, sow seeds, or plant or own vine-yards. The modern Rechabites do not carry their abstinence further than refraining from intoxicants.

**Recitative**, a style of singing only slightly removed from ordinary speaking, used in the narrative portions of operas and oratorios. In older operas "recitativo secco" (dry recitative) was used, the voice being accompanied by the harpsichord alone. After Scarlatti the orchestra was used to give a more dramatic touch to the recitative, while Verdi introduced a type of recitative that was half-way to an aria.

**Recorder**, a judge of a city or borough having a court of quarter-sessions. The Recorder of the City of London is elected by the Lord Mayor and Aldermen, but other recorders are barristers of eminence appointed by the Crown.

**Record Office**, in Chancery Lane, London, the place where the Public Records of England are now preserved, including Domesday Book, the various Rolls of Charters, and important historical documents from a remote period.

**Rector**, in England an ecclesiastical title of the incumbent of a parish where the tithes are not inappropriate; also the head officer of some of the Universities and Colleges.

**Recusants**, people who refused to attend the Anglican Church or to acknowledge the ecclesiastical supremacy of the Crown in the 16th and 17th centuries.

**Redan**, a fortification consisting of two parapets or mounds of earth in angle form, the apex pointing outward.

**Red Army**. The Army of the Soviet Union, so-called because it bears the red flag of the Soviet revolution. Its official title is the Red Army of Workers and Peasants.

**Redbrick**, a term used to denote a university of modern foundation whose buildings are conceived as being built of red brick in contrast to the stone of the ancient universities.

**Red Crag**, the name given to a strata of gravel or sand, containing certain fossil mollusc deposits, found on the Suffolk and Norfolk coasts.

**Red Cross**. (See Geneva Convention.)

**Rede Lecture**, at Cambridge University, was instituted and endowed in 1524 by Sir Robert Rede, Chief Justice of Common Pleas. These lectures were superseded by an annual oration, which is usually given by an eminent scientist.

**Red-Letter Day**, a Church festival day indicated in the Prayer Book by red letters, now a popular term for any day of special significance.

**Redoubt**, a term applied to enclosed fortified work, especially to a small area temporarily fortified as a place of retreat for a defending force.

**Red Sandstone**, the general name for red sandstone geological formations, chiefly produced by the disintegration of ordinary crystalline or metamorphic schists, oxide of iron forming the colouring factor.

**Redstart**, a small bird of the Thrush family of handsome plumage and striking song. Two species visit Great Britain. The Common Redstart, with bright chestnut rump and tail, white forehead, and black cheeks, favours wooded country, and the Black Redstart, with black breast and throat, chestnut tail and white wing bars, prefers rocky ground or bombed buildings, and has recently begun to breed in S. England.

**Redwing**, a bird of the Thrush family which finds its way to this country for the winter. Re-

sembles the song thrush, but distinguished by smaller size and chestnut flanks and underwings.

**Redwood or Sequoia**. This genus of coniferous tree comprises two species of Redwoods occurring in N.W. America. Specimens of one species, the Giant Redwood, reach a height of over 300 ft. and a thickness of 36 ft. The age of the largest, the General Sherman tree, is put at 3,500 years.

**Reed Instrument**, a musical instrument whose sound is produced by blowing air over a thin reed or wooden or metal plate which is thereby caused to vibrate.

**Refectory**, a dining-hall; usually a dining-hall in a monastery or a convent.

**Referendum and Initiative**, two methods by which the wishes of the general body of electors may be expressed with regard to proposed legislation. It is developed to the highest extent in Switzerland. In a referendum some specific matter is referred to the electors. The Initiative is the means by which the electors can compel their elected representatives to consider a specific matter. When it has been considered by the legislature it must then be submitted to the electorate for approval (i.e., a referendum).

**Reformation**, the great religious movement of the 16th century, which resulted in the establishment of Protestantism. In the previous century Wyclif, Huss, and others had sounded the warning note, and when later on Luther took up the cause in Germany, and Zwingli in Switzerland, adherents soon became numerous. The wholesale vending of indulgences by the Papal agents had incensed the people, and when Luther denounced these things he spoke to willing ears. After much controversy, the Reformers boldly propounded the principles of the new doctrine, and the struggle for religious supremacy grew bitter. They claimed justification by faith, and the use as well as the authority of the Scriptures, rejecting the doctrine of transubstantiation, the adoration of the Virgin and Saints, and the headship of the Pope. Luther was excommunicated. But the Reformation principles spread, and ultimately a great part of Germany, as well as Switzerland, the Low Countries, Scandinavia, England, and Scotland were won over to the new faith. In England Henry VIII. readily espoused the cause of the Reformation, his own personal quarrel with the Pope acting as an incentive. Under Mary there was a brief and sanguinary reaction, but Elizabeth gave completeness to the work which her father had initiated.

**Reformatory Schools**, for the reclamation of juvenile offenders, originated in France in 1839. The Philanthropic Society of London founded such an institution at Redhill in Surrey in 1850. Since then many other schools of this class have been opened, under government authority and inspection. The Borstal System for industrial training and reclamation of prisoners between 16 and 23 was begun at Borstal near Rochester in 1902. These Institutions deal with many cases of juvenile delinquency.

**Reform Bills**. The principal Bills have been passed for the reform of the Parliamentary franchise. The first was that of 1832, which in addition to a sweeping redistribution of seats, granted the franchise to borough householders paying a £10 rental, and in counties to those with a rental of £50. The second Bill was passed in 1867, conferring the franchise on all borough householders paying poor rates, on lodgers paying £10 a year, and to tenants in counties paying £12. A third Bill, passed in 1884, practically gave household suffrage and effected a large measure of redistribution of seats. The Representation of the People (Equal Franchise) Act, 1928, gave women of 21 years of age the right to be registered as Parliamentary electors, thus adding several million names to the register.

**Refraction**. The change of direction which light rays and other rays undergo when passing from one medium to another. The phenomenon is due to the fact that in different media light (and other forms of radiation) has different speeds.

**Regalia**, the ensigns of royalty, such as the crown, sceptre, swords of State, etc., which, in the case of the British insignia, are kept in the Tower of



London. In its stricter sense it means the prerogatives of royalty.

**Regattas**, boat or yacht races, were introduced into this country in 1775, when the Thames was the scene of one of these competitions. Since then they have become popular on the river and round the coast. Henley every year has a fashionable Regatta.

**Regency Acts** were Acts of Parliament passed in the reign of George III., appointing the Prince of Wales (afterwards George IV.) to the Regency during his father's mental incapacity.

**Regicides**, the commissioners who tried and condemned Charles I. They were 135 in number; 59 only could be induced to sign the death warrant.

**Regium Donum**, or royal gift, an annual grant formerly made from the public funds to Presbyterian and other Nonconformist ministers in Great Britain and Ireland. It was withdrawn in 1857.

**Reichsrath**, the name given to the Austrian Parliament until 1918. It comprised an Upper House of princes, nobles, and prelates and a Lower House of elected representatives.

**Reichstag** or **Diet**, the name given to the meeting summoned by the rulers of the mediæval Empire. After the unification of Germany the name given to the popularly elected house of the German parliament. The Reichstag building was destroyed by fire in 1933 by the Nazis.

**Reign of Terror**, a period of anarchy and bloodshed in the French Revolution which began in the spring of 1793 and practically ended with the fall of Robespierre in July, 1794.

**Reindeer**, a genus of deer horned in both sexes, occurring only in northerly regions. It has an average height of 4 ft. 6 in., is very fleet of foot, and the Laplanders utilise it for draught purposes.

**Relativity**, the theory in physics associated with the name of Professor Albert Einstein. The theory was published in two parts—the *Restricted Theory* in 1905 and the *General Theory* in 1915. It is based on the hypotheses that (i) space and time are closely connected and dependent on each other, (ii) the interval of space between two objects and the interval of time between two events are not absolute but relative, changing according to the circumstances of the observer, (iii) matter and energy are fundamentally the same, it being possible to convert one into the other. The laws of relativity have been substantially proved and have revolutionised our ideas as to the nature of space, time, matter, and energy and forced us to think along new lines. In 1949 a new theory by Professor Einstein was announced which sets forth in a series of equations the laws governing both gravitation and electromagnetism, which is said to bridge the gap that separates the infinite universe of the stars and galaxies and the equally infinite universe of the atom. At present the one is explained by relativity, and the other rests on the quantum theory. (See "The World of Science," p. 159.)

**Relief** in sculpture is of three kinds—high relief (*alto-relievo*), in which the figures stand out to the extent of one-half of their natural proportions, low-relief (*basso-relievo*) when the figures project but slightly; and middle-relief (*mezzo-relievo*), when the projection is intermediate.

**Remainder**, a legal term signifying a future condition of an estate, taking effect after its enjoyment by the present tenant is terminated. It does not "vest" until the event which will put an end to the precedent estate is certain of happening.

**Renaissance**, new birth or revival. It was a transitional movement in Europe between the mediæval and the modern which was exemplified by a return to classic ideals in literature, painting, and architecture. It was stimulated by the fall of Constantinople, the invention of printing, and the discovery of America. It took place in the 15th and 16th centuries, beginning in Italy and sweeping over Western Europe. In England the movement was most notable in literature (Colet, More, Erasmus).

**Rennet**, a substance obtained from the fourth stomach of a calf or other suckling quadruped, and used for curdling milk, making junkets, etc.

**Reparations**. The indemnities payable by coun-

tries defeated in war. The Treaty of Versailles did not fix the total damage caused in the first world war and a Reparations Commission was set up to assess it. Failure of Germany to meet demands led to the occupation of the Ruhr by France against the wishes of Great Britain. Thereafter the Dawes Committee set up upon American initiative produced a new scheme which worked well for some years. Mortgages were raised on German railways and industries and there was a certain control of German finance. But the total sum Germany would have to pay was left to the Young Commission (1929-30). Germany ceased payment in 1931 owing to the economic crisis and the Lausanne Conference 1932 abolished reparations altogether. As regards the second world war the Council of Foreign Ministers broke down in London in December, 1947, on the subject of reparations. The Soviet Government proposed that a total sum to be paid by Germany should be decided and that the Soviet share be fixed at 10,000 million dollars to be taken by capital removals to be completed by the end of 1948, with annual deliveries from current production over 20 years.

**Repeater**, the name applied to a watch that will strike the hour, quarters, and minutes last past on the pressure of a spring.

**Representative Peers** are peers elected by their fellow peers to sit in the House of Lords—Scotland has 16, elected or re-elected for each Parliament. The number of Irish representative peers at the date of the establishment of the Irish Free State (1922) was 28. Through deaths this has been reduced to five (1956) and the twenty-three vacancies are unlikely to be filled.

**Reptilia**, the class of vertebrate animals including tortoises, lizards, snakes, crocodiles, etc.

**Republican Party of the United States**, one of the two great parties in U.S.A., the other being the Democratic Party. Sometimes regarded as the more right wing of the two parties but this view must be treated with caution as the parties do not fit a left and right wing pattern. The party before the second world war was predominantly isolationist. Pres. Eisenhower is a Republican and until his election as President in 1952, the Republican Party had not held power for 20 years.

**Requiem**. Properly a mass for the dead, the term is extended to cover musical settings by Palestrina, Mozart, Verdi, and others.

**Reredos**, the ornamental screen at the back of the altar or Communion table. It is often of a highly decorative character and is an architectural feature in many churches in Spain. Other examples are to be found in the following cathedrals in England: St. Paul's, St. Albans, Salisbury, Winchester, Durham, and Liverpool. In All Souls College, Oxford, one is to be seen actually attached to the wall.

**Resins**, natural resins are vegetable compounds largely employed in the industrial arts. They comprise india-rubber, amber, mastic, copal, etc. "Synthetic resins" is a term sometimes used as a synonym for "plastics."

**Rest**, a musical term denoting silence or cessation from playing for the period represented by the character of the rest. Thus there are minim, semibreve, quaver, and other rests, which represent the same lengths of silence as the notes themselves would represent in sound.

**Retina**, the layer of the eye which is sensitive to light.

**Retriever**, a gun-dog primarily, but much in favour as a domestic pet.

**Reuter**, the chief British and international news agency, founded by Baron J. de Reuter in 1849.

**Revolver**, a revolving pistol provided with a number of chambers (six being the usual number), each of which can be fired in succession by the pulling of the trigger. A weapon of this kind existed in the 17th century, but it was not until 1851, when Colt's revolver was introduced, that a really serviceable small arm of this class was available. The principle of the revolver has been adapted to breech-loading guns, as in the mitrailleuse and the mauser.

**Rhætic Beds**, term applied to certain strata which connect the Lias and Trias formations. They abound in fish fossils, and occur at Penarth in Wales and in certain parts of the Alps.

**Rhapsody**, an instrumental composition, not in symphonic form, which suggests that it was composed to express some powerful emotion or ecstasy. Liszt's "Hungarian Rhapsodies" are based on old folk tunes, while it is believed that Gershwin's "Rhapsody in Blue" is intended to express the mood of America at the time it was written.

**Rhea**, a large flightless bird, the "ostrich" of S. America, distinguished from the ostrich proper by smaller size, longer beak, larger wings, no tail and 3 toes instead of 2. There are 2 species.

**Rhenium**, a metallic element discovered in 1925. It occurs in molybdenum.

**Rheostat**, a variable resistance used to control electrical equipment.

**Rhinoceros**, a large hoofed quadruped, of which there are nine existing species; native to the river and marsh regions of Africa, India, Borneo, and Java. It is remarkable for its thick hide and upturned snout, from which springs a long horn. The white rhinoceros, which is scarce, is the biggest species, attaining a length of 10 to 12 ft. and a height of from 5 to 6 ft. The black rhinoceros is the most familiar.

**Rhodium**, a metallic element, discovered by Wollaston in 1804. It is found in platinum ores in small amounts, generally less than 2 per cent. With platinum it gives a very hard and durable alloy. It is also used, instead of silver, in putting the reflecting layer on a mirror.

**Rialto**, a famous bridge that crosses the Grand Canal at Venice, and dates from 1591.

**Ribbon Fish**, is a deep-sea fish, deriving its name from the ribbon-like shape. Though many feet in length, it is only an inch or two thick. By reason of its keeping to the ocean depths, the ribbon fish is rarely met with, most of what is known about it having been learnt from specimens occasionally cast ashore during storms.

**Ribbon Seal**, a kind of seal found in the North Pacific, remarkable for being ornamented with an almost white broad band along its back and around its neck.

**Rice**, a grain-yielding grass, of which thousands of strains are known today, extensively cultivated in China, India, and certain parts of America, and forming the main food of the peoples of China, Japan, India, and the Malayan regions. Some 95 per cent. of the world's rice is produced and consumed in the Orient. The grain in the husk is known as "paddy." Arrack, an alcoholic liquor, is made from fermented rice seeds.

**Richtfest**, a traditional German ceremony held when the framework of a new building is completed; a large crown made of pine branches is decorated with coloured streamers and hoisted to the roof, where it remains until the last tile is laid. Afterwards all the workers employed on the site are invited to a feast.

**Rider**, the popular name of a Dutch gold coin first put into circulation in the 16th century, but not now in use. Its name was derived from its having engraved upon its obverse the figure of a horseman. It weighed about 50 grains. A coin of the same name was issued by James VI. of Scotland, afterwards James I. of England.

**"Rights of Man"**, the title of the declaration of the French National Assembly in 1789, proclaiming that all men have equal rights. Also the title of a famous book by Tom Paine, justifying the Revolution.

**Rinderpest or Cattle Plague**, is a highly contagious disease affecting cattle, sheep, and other ruminants. In Europe the disease has been eradicated, but it was formerly very widespread and caused great loss of life amongst cattle. The disease is caused by a filtrable virus, and is attended by fever and congestion of the mucous membranes.

**Rime**, a crystalline deposit of ice formed on objects exposed to wet fog at the same time as frost.

**Ring Dove or Wood Pigeon**, a blue-grey bird, distinguished from other pigeons by larger size (16 in.), white wing-bar, glossy green-and-purple neck, and white half-collar. It is very common in Britain.

**Riot Act**, The, was passed in 1714, its object being to prevent riotous assemblies. In times of disturbance when a breach of the peace is threatened, if a magistrate, justice of the peace, sheriff, or mayor reads a proclamation commanding a crowd of twelve or more persons to

disperse, anyone refusing is liable to arrest and a term of imprisonment under this Act.

**Ritualists**, the term used to designate an extreme High Church section of the Church of England, who brought into the ceremony of public worship coloured vestments, lighted candles, incense, and other features of Romanist worship, and excited much opposition and contention. A Ritual Commission was appointed in 1904 to receive evidence in regard to ceremonial excesses, and attempts have been made to arrive at a basis by which both High Church and Low Church adherents can agree upon the subject of ceremonial. The report of the Ritual Commission, published in 1906, concluded that the law of public worship in the Church of England had become too narrow for the present generation's religious life, and that the machinery for discipline had broken down. The Commissioners favoured the giving of greater power to Bishops for the suppression of objectionable practices.

**Roach**, a well-known small fresh-water fish of the carp family.

**Roaring Forties**, name applied to the prevailing westerly winds over the oceans in the temperate latitudes of the Southern Hemisphere.

**Rock Dove**, the grey Asiatic pigeon *Columba livia*, ancestor of the domestic pigeons.

**Rockets** for use in war were invented by Sir William Congreve early in the 19th century, and proved very destructive in siege operations. Rocket propulsion was much developed during the second world war. Rockets were used as weapons by aircraft, infantry, etc., and the Germans devised the huge V2, carrying a ton of explosive, which was used near the end of the war to bombard London.

**Rockling**, a marine fish of the cod family, distributed over the coasts of Europe, Iceland, Japan, South Africa, and New Zealand. There are eight known species, five of which are found on the British coast. This fish carries a number of barbels around its mouth.

**Rod**, a measure of length equalling  $5\frac{1}{2}$  yd., also called a pole or a perch. 40 sq. rods equal 1 rood.

**Rodentia**, an order of gnawing mammals, and including rats, mice, squirrels, etc.

**Roe**, the parts of fishes which extend on each side of the ribs in lobes next to the intestines. "Hard roe" is that of the female and consists of eggs; that of the male is the soft roe or milt.

**Roebuck**, a deer that was formerly common in the forests and parks of Britain, but is now only found at large in the northern parts of Scotland. It is met with in many of the temperate regions of northern Europe and Asia.

**Rogation Week** begins with Rogation Sunday, the Sunday before Ascension Day, when extra prayers and supplications are offered as a preparation for the Ascension.

**Rois Fainéants (King Do-Nothings)** were the last seven Frankish kings of the Merovingian dynasty. They were so called because the officials known as Mayors of the Palace assumed all the power.

**Roller**, a tropical Old World bird of the *Coraciidae* family, allied to the hoopoe and bee-eater, of strikingly brilliant blue, chestnut, greenish-blue plumage. There are fifteen species, one of which breeds in the far north and visits the British Isles on its migrations to and from its winter quarters in Africa.

**Roman Catholic Church** is the Christian Church whose head is the bishop of Rome, lawful successor of St. Peter, who was appointed by Christ as head of the Church. Its Creed comprises twelve articles, the seven sacraments of Baptism, Confirmation, Eucharist, Penance, Extreme Unction, Orders, and Matrimony; the doctrines include those of Original Sin and Justification, sanctioned by the Council of Trent; the Mass, as a propitiatory sacrifice; Purgatory; Papal Supremacy, etc. It was the established Church of England until the Reformation, after which many disabilities were imposed upon Roman Catholics, and continued in a more or less severe form until the passing of the Emancipation Act of 1829. There are four Roman Catholic Archbishops in England (Westminster, Birmingham, Liverpool, and Cardiff), two in Scotland (St. Andrews and Edinburgh, and Glasgow), and four in Ireland (Armagh, Dublin, Cashel, and Tuam).



**Romanesque Architecture**, the style of Western European architecture which came into being at the end of the Roman Empire, the outcome of the earlier and simple Basilican form and leading to the later graceful and more complex Gothic. Notable in Romanesque style were the rounded arch and masonry vaulting.

**Roman Roads**, highways constructed by the Romans. They were of great durability. The best known British roads were Ermine Street (London, Lincoln, York), Fosse Way (Lincoln through Leicester, Cirencester, Bath, Exeter), Watling Street (London to Shropshire).

**Roman Walls** were built as frontier barriers under the Emperors Hadrian (76-138) and Antoninus Pius (86-161). Hadrian's works, linking Wall-SEND-ON-TYNE with BOWNESS-ON-SOLWAY, comprised a twenty-foot stone wall, ditches, turrets, "milecastles," fortresses, and a double earthen mound, or "Vallum." Impressive ruins are still visible at Chesters and Housesteads. Antoninus Pius, Hadrian's successor, made a further advance, but the turf wall which he built between FORTH and CLYDE was soon abandoned. Septimius Severus (146-211) restored Hadrian's wall after the assassination of Commodus and the subsequent civil wars. It was finally abandoned between 380 and 390.

**Rondo**, a piece of music in which three distinct airs or melodies occur in a certain order. In the typical Rondo of Beethoven (e.g., third movement of Sonata Pathétique) the order is 1, 2, 1—3—1, 2, 1.

**Röntgen Rays.** (See X-Rays.)

**Roodbok**, a reddish-brown member of the deer family, with large ears and pointed horns, abounding in the forests of southern Africa.

**Rood Screen**, an ornamental partition, separating the choir from the nave in a church, and fronting the rood or crucifix.

**Rook**, a very common bird of the crow family abounding in all parts of Britain. (See p. 1004.)

**Rorqual**, a marine mammal of the whale order. There are several species. The Common Rorqual is a large animal, reaching a length of 80 ft. or more.

**Rosary**, a circular chain of beads, used by Catholics when reciting a particular form of sustained prayer. Each bead represents an entire prayer, and the combined prayers constitute the Rosary.

**Roses, Wars of the** (1455-85), between the rival houses of York and Lancaster, for the possession of the English crown, began in the reign of Henry VI. and ended with the death of Richard III. on Bosworth Field. The emblem or badge of the Lancastrians was the red rose and of the Yorkists the white rose. All rivalry between the Roses ended by the marriage of Henry VII., the Lancastrian, with the Princess Elizabeth, daughter of Edward IV., the Yorkist.

**Rosetta Stone**, discovered in 1799 by the French at Rosetta in Egypt, and deposited in the British Museum. It is a piece of black basalt about 3 ft. long, and contains a decree of the Egyptian priests of Ptolemy V. Epiphanes (205-181 B.C.) in (1) hieroglyphics, (2) demotic, and (3) Greek characters. It was by means of the three different inscriptions on the same stone that hieroglyphic writing was first able to be deciphered.

**Rosewood**, the name given to the timber of various South American trees of the *Leguminosae* order. Its colour is dark brown with red streakings.

**Rotary Clubs**, local clubs of business and professional men, first started in Chicago, 1905, to foster social relations, encourage high ethical standards in business, and advance international understanding, goodwill, and peace. The meetings take place at the headquarters of each club at luncheon, after which an address on a subject relative to the objects of the movement is given. In 1912 the organisation became an International Association.

**Rotifera**, the class of animals known as "wheel-animalcules," microscopic in size, but possessing highly organised structures.

**Rotten Row**, a corruption of *route de roi* (king's drive), the famous riding resort in Hyde Park.

**Rottenstone**, a siliceous limestone made porous by the action of water. In a pulverised form it is used for polishing soft metals.

**Rouble**, a Russian silver coin of the nominal value of about 2s. English.

**Rouge**, a substance obtained by heating copperas to the point of decomposition. This form of rouge is utilised both for polishing purposes and as a pigment. Another rouge used as an artificial colouring matter is obtained from the dried flowers of *Carthamus tinctorius*, mixed with powdered French chalk.

**Rouge et Noir**, a well-known gambling card game played on a table divided into two sections and marked with two black and two red lozenges. Any number of players can take part, and the money is staked on the red or black spaces. The cards are dealt out, first to Noir, until the pips aggregate more than 30; then in like manner to the Rouge, and the packet coming nearest to 31 wins the stakes.

**Roulette**, a gambling game played on a table carrying a revolving wheel divided into 37 compartments. Each compartment bears a number, 0 (zero) and 1 to 36. The numbers are mixed and do not follow any particular order. Of these 37 numbers 18 are black and 18 are red, whereas zero is green. The players stake their money on any compartment colour, or combination of numbers they please. The wheel is whirled round and a ball is set rolling in the opposite direction, dropping finally into one of the compartments, thus deciding the winning number and colour.

**Round**, a musical composition in several parts, taken up by each participator at a different point from the other, and effecting a harmonious combination throughout. A Catch is similar in form, but usually allied to humorous words.

**Roundhead**. In the reign of Charles I. and later, a Puritan or member of the Parliamentary party who wore his hair cut short. It was originally a term of derision applied by the Royalists, who usually wore ringlets.

**Round Towers** are conical erections of considerable height, dating, probably, from some period between the 9th and 13th centuries. These buildings are numerous in Ireland, and three remain in Scotland. It is supposed they were built for ecclesiastical purposes, but there is no direct evidence of this existing.

**Rove Beetles**, beetles with long narrow bodies, and a habit of suddenly curving up their tails when surprised. They are a numerous family.

**Royal Academy** was founded in London in 1768, under the patronage of George III. The early exhibitions of the Academy were held first in Pall Mall, and later in Somerset House, where the exhibitions continued to be held until 1836, when the National Gallery being built, the Academy moved its quarters to that building. In 1869 the present Royal Academy at Burlington House was opened. The Academy numbers 53 R.A.s and about 30 A.R.A.s. List of presidents: Sir Joshua Reynolds (1768), Benjamin West (1792), James Wyatt (1805), B. West (1806), Sir Thomas Lawrence (1820), Sir M. A. Shee (1830), Sir C. Eastlake (1850), Sir F. Grant (1866), Lord Leighton (1878), Sir J. E. Millais (1896), Sir E. J. Poynter (1896), Sir Aston Webb (1919), Sir F. Dicksee (1924), Sir William Llewellyn (1928), Sir E. Lutyens (1938), Sir A. J. Munnings (1944), Sir Gerald F. Kelly (1949) and Sir A. E. Richardson (1954). The Academy holds an exhibition of pictures, statuary, and architectural designs every summer, to which non-members can, subject to selection, send their work.

**Royal Academy of Music**, founded in 1823, has enjoyed a Royal Charter since 1830, and an annual Government grant since 1868. Every form of music is taught there, as well as modern languages. It has valuable scholarships, and has produced many eminent musicians.

**Royal Agricultural Society** was founded in 1838 and incorporated in 1840. It holds an annual show, at which valuable prizes are offered for the best stock and the most important inventions in agricultural implements. These shows were held at different places each year from 1839 until London was fixed upon as what was hoped would be a permanent show place, and a large tract of ground was secured at Park Royal for that purpose. The shows held at the latter place, however, failed to attract the public, and a reversion was made to the old system in 1906.

**Royal College of Music**, at South Kensington, was incorporated in 1883. It has a large number of free scholarships for young musicians of outstanding merit. In association with the Royal Academy of Music it holds annual examinations in several grades all over the country, awarding certificates of proficiency to successful candidates.

**Royal Geographical Society**, with headquarters in Kensington, supports geographical research in all parts of the world.

**Royal Horticultural Society**, established 1804; holds exhibitions in Vincent Square, Westminster, the annual flower display at Chelsea, and has gardens at Wisley in Surrey.

**Royal Hospital, Chelsea**, built by Wren, was opened in 1694 as an institution for invalid soldiers.

**Royal Institution**, established 1799, and incorporated by Royal Charter in 1800 for "the promotion, extension, and diffusion of Science and of Useful Knowledge." It was in the building of the Institution that Faraday conducted his experiments. It supports four professors: natural philosophy, astronomy, chemistry, and physiology. Famous also for its Christmas lectures designed for a juvenile audience.

**Royal Society** was founded by Royal Charter in 1662, Viscount Brouncker being the first president. Its *Philosophical Transactions* date from 1665. The meetings are held in Burlington House. Among the presidents have been Sir Christopher Wren, Pepys, Sir Isaac Newton, Sir Joseph Banks, Sir Humphry Davy, Prof. T. H. Huxley, Lord Rayleigh, Sir Archibald Geikie, Sir J. J. Thomson, O.M., Prof. Sir C. S. Sherrington, O.M., G.B.E., Lord Rutherford, O.M., Sir William Henry Bragg, O.M., Sir Henry Dale, O.M., Sir Robert Robinson, O.M., Lord Adrian, O.M., and Sir Cyril Hinshelwood.

**Rubber**, produced from the juice of certain trees and shrubs of tropical countries, is in such extensive demand now for tyres and other purposes that rubber plantations have been established in almost every part of the world where rubber can be grown, particularly in Malaya and Indonesia. The best kinds come from the Amazon valley. Great advances were made in the production of synthetic rubber during the second world war.

**Rubicon**, a small river falling into the Adriatic, and forming one of the Italian boundaries, the crossing of which anciently involved decisive action and constituted a declaration of war. Thus the phrase "crossing the Rubicon" came into general use, denoting an act from which there is no withdrawal.

**Rubidium**, a metallic element most closely resembling potassium. It is silver-white and very soft, and was discovered in 1861 by Bunsen and Kirchhoff, using the spectroscope. It is rare, occurring in small amounts in the mica called lepidolite and in potash salts of the Stassfurt deposits in Germany.

**Rubrics** are instructions in regard to the ceremonies of the Church, appearing in red in the Prayer Book.

**Ruby** is a deep red kind of Corundum (aluminium oxide); one of the most valued of precious stones. Burma yields some of the finest, and rubies of inferior colour are found in Siam, Ceylon, South Africa, and Brazil.

**Rudd**, a fresh-water fish of wide distribution, plentiful in the rivers of Britain, and found in most other parts of Europe, also in Asia Minor. It is of a reddish-gold colour, with a greenish-blue beard.

**Rudesheimer**, a noted brand of white wine made from grapes grown in the district of Rudesheim on the right bank of the Rhine.

**Ruff**, a bird related to the common sandpiper, at one time very common in the Fen districts. The males have a ruff of feathers round the neck.

**Ruffe or Pope**, a small fresh-water fish common in most parts of central Europe, and similar in appearance to the ordinary perch. It is found in British rivers.

**Rumes**, the name given to a pleated strip of fine linen worn by men in the breast of the shirt, and fashionable down to the early part of the 19th century.

"**Rule, Britannia!**" the national sea-song of England, was written by James Thomson (1700-48), the author of the "Seasons," and set to music by

Dr. Arne about 1740. The poet's words were "Britannia, rule the waves!" but it is usually rendered "Britannia rules the waves."

**Rum**, an ardent spirit distilled from molasses, and containing from 40 to 50 per cent. of alcohol. It is chiefly manufactured in the West Indies, and derives its special flavour from a volatile oil.

**Ruminants**, animals that chew the cud, being provided with a compartmented stomach, enabling them to swallow food, and later to bring it back to the mouth for mastication; e.g., sheep, goats, oxen, etc.

**Runcible spoon**, a kind of fork used for pickles having three broad prongs. The word was used by Edward Lear about 1870 as a nonsense word and may be derived from *Rouncival* meaning large or huge from the bones said to have been dug up at *Roncesvalles* where Roland fell. *Rouncival* peas are the large peas called "marrowfats."

**Runes or Runic Inscriptions**, the description applied to certain characters discovered cut upon stone monuments and implements found in many parts of Europe, including England. In only a very few instances has it been possible to put any distinct and conclusive interpretation upon them.

**Rural Dean**, an ecclesiastical officer whose chief duty is to assist the Bishop in the duties of his diocese.

**Ruskin College, Oxford**, a unique institution founded by Mr. Walter Vrooman, an American, in 1899 to exist for all working men and women.

**Rusts**, parasitic fungi, some common species of which have reddish spores which in a mass have a rusty appearance. A well-known species is the Wheat Rust (*Puccinia graminis*), which has an alternative host in the barberry.

**Ruthenium**, a greyish-white metallic element discovered by Claus in 1845. It is harder and more brittle than platinum, in whose ores it occurs.

**Rutile**, mineral titanium dioxide. It is found in many igneous rocks, and in gneisses and schists. Its commonest colour is reddish-brown.

**Rye House Plot**, formed in 1683 with the object of assassinating Charles II. and the Duke of York (afterwards James II.), in order to secure the succession of the Duke of Monmouth. The plot was frustrated.

## S

**Sabaoth**, a Hebrew word, meaning an army or host, and applied sometimes to the Supreme Being, e.g., "the Lord of Hosts" (Rom. ix. 29).

**Sabbath**, the Bible name for the seventh day of the week, designated as the day of rest in the fourth commandment. It corresponds with Saturday in the modern calendar. The Christian "Sunday" is the first day of the week. It is nowhere in Scripture called the Sabbath, though this name is sometimes erroneously applied to it.

**Sabbatical Year** was instituted by the Jews in ancient times for the purpose of giving the soil a rest from cultivation. This was every seventh year.

**Sabines** were a brave race inhabiting a territory near Rome in early times. The Sabines were absorbed in the Roman people about 290 B.C.

**Sable**, a furred mammal of the weasel family mainly inhabiting Siberia. It is bright brown in colour, and has a long, bushy tail. American sable is a marten.

**Saccharin**, a white crystalline solid manufactured from toluene, 550 times as sweet as cane sugar. It is used as a sweetening agent; as a substitute for sugar when sugar is forbidden, as in certain diseases, or when there is a shortage. It has no value as a food.

**Saccharimeter**, an instrument for determining the amount of sugar in solution by means of polarised light. Used in breweries and distilleries for estimating the specific gravity of worts, etc.

**Sack**, the white dry wines of Spain and Madeira, canary being the most popular.

**Sacrament**, according to the Protestant Church, includes Baptism and the Lord's Supper. In the Roman Catholic Church there are seven Sacraments. (See also Roman Catholic Church.)

**Sacrifice**, the offering up to a deity of some object as an expression of thanksgiving or penitence. The first sacrifice we read of in the Bible was



- that offered to God by Abel. The ancient Greeks and the Romans practised sacrifice.
- Sacrilege** is the breaking into a place of worship and stealing articles therefrom. In olden times this offence was punishable with death, but by Acts passed in the last century it was generally treated as an ordinary burglarious offence. By the Larceny Act, 1916, breaking and entering any place of divine worship and committing a felony therein is punishable by penal servitude.
- Saddles** were used by the ancient Greeks and Romans, and were not known in England probably before the 6th century.
- Sadducees**, a Jewish sect of unbelievers, who held that the soul was mortal, and that there was no hereafter. Alluded to in the New Testament.
- Safety Lamp**, as used in coal mines, was invented by Sir Humphry Davy in 1816. The flame is enclosed in a cage of fine-meshed wire which allows air to enter and promote burning, but conducts away the heat generated in combustion so that no product of combustion escapes at a temperature high enough to ignite explosive gases in the mine.
- Sagittarius or "the Archer,"** one of the celestial constellations situated between Cygnus and Aquila. Sagittarius is another of the zodiacal constellations of sixty-nine stars, which ancient astronomers worked into the representation of an archer. It lies between Scorpio and Capricornus.
- Saiga**, an antelope of Tartary. Western Asia, and Eastern Europe, tawny yellow.
- Sainfoin**, a widely cultivated forage plant, especially adapted for sheep. It is of strong, leafy growth and bears bright red flowers. It belongs to the same order of flowering plants as peas and beans.
- St. Andrew's University**, the earliest Scottish university (1412) and the third oldest in the United Kingdom.
- St. Elmo's Fire**, a glowing brush-like discharge of electricity which takes place from sharp-pointed objects on mountains or the masts of ships exposed to the intense electric fields of thunder-clouds.
- Salamanders** are amphibia superficially resembling lizards, from which they differ in having a moist skin and no scales.
- Salicin**, a white crystalline substance, much used as a medicament, and obtained from the bark of willow-poplar and other allied trees. It is a compound of carbon, hydrogen, and oxygen.
- Salic Law** was probably instituted in France in the 5th century for the purpose of excluding females from inheriting the Crown. The Bourbons introduced the same law into Spain, but this was abolished by decree in 1830 to enable Isabella II. to succeed.
- Salicylic Acid** can be obtained from the flowers of the meadow-sweet, and from oil of wintergreen, but is now usually prepared by the action of carbon dioxide on sodium phenate under pressure. The acid is then prepared from the sodium salicylate. It is used as an antiseptic and has been used as a food preservative. Aspirin is a derivative of salicylic acid.
- Salmon**, a familiar fish notable for its habit of ascending rivers from the sea in the autumn and there depositing its spawn, not returning to the sea until the early spring. The salmon fishing season varies from place to place. (See p. 748.)
- Salt**, one of the oldest of condiments, exists in many substances, and is chloride of sodium, compounded of the non-metal chlorine and the metal sodium. It is obtained from deposits in the earth, from salt-springs, and from seawater. There are salt mines in Galicia which have been worked for hundreds of years. The chief English salt mines are in Cheshire.
- Saltpetre**. (See Nitre.)
- Salvarsan**, the organic arsenical compound arsenphenamine, which Ehrlich discovered was able to kill inside the human body the spirochæte germ that causes syphilis. Also known as "606." It has been superseded by neosalvarsan.
- Salvation Army**, The, commenced in East London in 1865 under the name of the East London Mission, later the Christian Mission. William Booth, a former Methodist Minister, was the founder. In 1878 with the title of the Salvation Army a quasi-military organisation was adopted. Mr. Booth was its first General and
- Commander-in-Chief, the declared object being the promotion of practical religion among the masses. In 1931 an Act of Parliament was passed providing for the election of all future Generals, and for the formation of a Trust Company to control Army Funds and property. In addition to the purely evangelical work the extensive network of Social Welfare endeavour in every country where the Army Flag flies covers all phases of human need from pre-natal clinics for poor expectant mothers to eventide homes for the aged poor. Commissioner Wilfred Kitching, son of a famous former commissioner, was elected to the generalship in succession to Albert Osborn in 1954. International headquarters: 101 Queen Victoria Street, E.C.4.
- Sanatorium**, an institution for people out of health, requiring nursing and medical attendance.
- Sanctuaries** were places where offenders against the law were free from arrest, and previous to 1697, when sanctuaries were suppressed, several parts of London were treated as sanctuaries. The chief of these refuge localities was in Whitefriars. There were others in the Minories, Mitre Court, the Savoy, Westminster, and the Mint. Other sanctuaries were at Beverley and at St. Burian's in Cornwall.
- Sand Blast**, an American invention introduced in 1871, is a method of cutting or decorating glass and other hard substances by means of sand driven by a blast of air or steam.
- Sanderling**, small wading bird of sandpiper family; breeds in tundra regions of far north, and is seen on sandy beaches of Britain as a winter visitor. Conspicuous white wing stripe and, like Curlew, Sandpiper, Knot, Dunlin, and other members of sandpiper family, has marked change of plumage between winter and summer.
- Sandpiper**, small- to medium-sized wading birds of several species whose migratory powers are so great that they are found in most parts of the world. They include the Common Sandpiper, frequently seen in Scotland, a bird about 7 in. long, greenish-brown head and back, white under-parts; beak long and slender. Other species met with in Britain are the Curlew, Green, Purple, and Wood Sandpipers.
- Sanhedrin**, the ancient Jewish Ecclesiastical Council of 70 members, said to have been originated by Moses when he called together 70 elders to assist him as judges. In modern times the Sanhedrin has been summoned only very rarely.
- Sanitation**, the science of health in its application to disease prevention generally, embracing the investigation of drainage, air supply, isolation in infectious disease, and hygienic measures of all kinds. The Public Health Act of 1875 laid down the basic principles of modern sanitation. Sanitary inspectors work under the direction of the local Medical Officers of Health (Local Government).
- Sans-Culottes**, a term first applied by the French aristocrats to the revolutionary leaders in 1790, and adopted by the latter as a title of honour.
- Sanskrit** is the language of ancient India, spoken by the Brahmans, and existing in early Oriental literature. It was the language of literature and government, and its relationship to the modern Indian languages is rather like that of Latin and Greek to modern European languages.
- Saponin**. The term is a generic one applied to a range of organic compounds which produce frothy, soapy solutions. Saponins are extracted from the soapwort root, horse chestnut seeds, etc. Saponin is the basis of the "foam" used for fire fighting; it can be used like soap to make insecticides and fungicides adhere to the leaves of plants.
- Sappers and Miners**, the name given originally to members of the corps of Royal Engineers.
- Sapphic Verse**, a metric form of verse said to have been invented by Sappho, the lyric poetess of Mitylene, who flourished about 600 B.C. This verse consists of five trochees, the second of which is a spondee, and the third a dactyl.
- Sapphire**, a valuable deep blue variety of Corundum (aluminium oxide) found mostly in India, Ceylon, and Northern Italy.
- Saprophytes**. A term applied to plants which feed on dead organic matter. Many fungi are saprophytes.

**Saracen**, the name given in classic times to the Arab tribes of Syria and adjacent territories. In the Middle Ages the current designation among the Christians for their Muslim enemies.

**Sarcophagus**, the name given to a stone coffin, such as was used by the ancient Egyptians, Greeks, and Romans, for receiving the remains of their famous dead. These sarcophagi were often decorated with rich carvings and sculptures.

**Sardine**, the term applied to young pilchards which are preserved by canning in oil.

**Sardonyx**, a kind of chalcedony comprising layers of alternating brown, red, white, and other colours. It is much esteemed as a gem.

**Sarrusophone**, bears the same relation to the Oboe as the Saxophone does to the Clarinet (i.e., it has a metal tube and a double-reed mouth-piece). The Contrabass Sarrusophone is sometimes used instead of the Double Bassoon.

**Sassanides** were a dynasty of Persian rulers descended from Artaxerxes from 226 to 652.

**Satellites** are small planets revolving round the larger ones. The moon is the earth's only satellite. Jupiter has eleven; Saturn, nine; Uranus, four; Mars, two; and Neptune, one.

**Satin**, a silk fabric of glossy surface of a velvety texture, once very fashionable for dresses, but now little used except for trimming purposes.

**Satin-Bird**, the famous "bower bird" of Australia, so named from its habit of constructing a bower-like nest; has a glossy black plumage, with the under parts yellow.

**Satinwood**, the timber of a tree plentiful in India and Ceylon, and valued for cabinet work. It is of fine grain and very hard. Varieties also exist in the West Indies, Florida, and Tasmania.

**Satrap**, the name given in ancient times to a Persian Governor of a Province.

**Saturday**, the seventh day of the week (the Jewish Sabbath), derived its name from Saturn, or, as some hold, is called after the Saxon idol, Saterne, which was worshipped on this day.

**Saturn**, a planet, the sixth from the sun, from which it is distant about 886 millions of miles, and around which it makes a revolution in about twenty-nine and a half years. It is about 71,500 miles in mean diameter, or nine times as large as the earth, and rotates on its axis in ten and a quarter hours. It is surrounded by a series of rings, meteoric in nature which revolve round the planet. It has nine small satellites.

**Saturnalia**, festivals held in ancient Rome in honour of the god Saturnus. They were made the scene of the most boisterous festivities, and were continued for several days at the end of December.

**Savoy Palace**, in London, between the Strand and the Thames, was originally built in the 13th century by Peter of Savoy. It was burnt in the Wat Tyler Rebellion in 1381, and afterwards restored and converted into a hospital in the reign of Henry VII. It was here that the famous but fruitless Savoy Conference was held between the Church and the Presbyterian Party in 1661. The ancient chapel of the Savoy was burnt down in 1864, but rebuilt in 1865.

**Saw**, a tool said, by Pliny, to have been invented by Dædalus, and fashioned in imitation of the jaw-bone of a snake. Saw-mills date from the 15th century, in Madeira and Breslau, but were introduced into England only in the 17th century, when they met with opposition. The circular saw was invented in the 18th century.

**Sawfish**, a large marine ray found in tropical America and Guinea, whose snout often attains the length of several feet, and is provided with saw-like projections. This "saw" is swung from side to side among a shoal of fish which form the food of this ray.

**Sawfly**. These insects are considered to be the most primitive members of the order (*Hymenoptera*) to which the bees and wasps belong. In appearance they resemble somewhat the latter, but there is no waist separating thorax and abdomen. The ovipositor is never used as a sting; usually it is saw-like so that the female can use it to make incisions into tissues of plants where the eggs are laid. The larvae look like caterpillars of butterflies and moths, but they have a great number of legs. One of the commonest species occurs on gooseberry bushes.

**Saxhorns**, large brass instruments on the cornet

model invented by Sax. They are much used in military and other brass bands. The Tuba is the Bass Saxhorn in E flat or F. The Euphonium is the Bass Saxhorn in B Flat. The Contrabass Saxhorn in B flat (i.e., one octave lower than the Euphonium) is called the Bombardon, but this term may be applied to the E flat Tuba.

**Saxons**, a Teutonic race originally inhabiting what is now Holstein. By the 7th century they had, with the Angles and Jutes, conquered and colonised most of England.

**Saxophone**, a musical instrument best described as a metal clarinet with a wide, curved tube. It is rarely used in serious music but is an important component of dance bands and the like. It is also used in French military bands.

**Scale (Musical)**, the series of notes on which a musical composition is built. Most European music is constructed upon the Major and Minor Diatonic Scales (q.v.).

**Scald**, the name of the Norse poets, who were similar to the bards of Wales. They had to celebrate the achievements of their warriors and leaders.

**Scallop**, marine bivalve molluscs of the genus *Pecten*, which is widely distributed. The scalloped edge to the shell results from a pattern of radiating grooves.

**Scandium**, an element classed in the rare-earth metals group. It was discovered in 1879 by Nilson, and occurs in small quantities in certain rarer minerals such as wolframite.

**Scapular**, a vestment hanging from the shoulder to the knees, worn by members of certain Roman Catholic orders. The name is also given to two small pieces of cloth worn over the shoulders by lay members of the Church in honour of the Virgin.

**Scarabæus**, a genus of beetles (Scarabs) widely distributed through Africa and Asia and the inner parts of Europe. It is to this genus that the "Sacred Beetle" of the Egyptians belongs, and numerous representations of it are found on ancient monuments.

**Seal**, a small Anglo-Saxon coin, circulated in the 7th and 8th centuries, and worth nominally a penny; struck sometimes in silver.

**Sceptics**, a sect of philosophers founded by Pyrrho (c. 360-275 B.C.) in ancient Greece. Their philosophy was one of dogmatic doubt. Since nothing can be denied or affirmed, the only attitude to life is one of imperturbability. Pyrrho's doctrines are chiefly known through the works of his disciple Timon.

**Scheelite**, mineral form of calcium tungstate.

**Sceptre**, the staff or rod constituting the symbol of supreme authority. Tarquin, the elder, was the first Roman to assume the sceptre in 468 B.C. The French kings of the 5th century made a golden rod their sceptre.

**Scherzo**. The word signifies a *joke*. It is used to describe a piece of music in light or jocular vein. Beethoven used the Scherzo as a middle movement in a number of Symphonies and Sonatas, since when it has tended to displace the more formal minuet.

**Schiedam**, a kind of gin, commonly called Holland, manufactured at Schiedam, from the juice of the juniper berry and malt barley.

**Schism**, an ecclesiastical term for division in a church. The Great Schism was the separation of the Greek Church from the Latin, finally established in 1054. The Western Schism was the division in the Roman Catholic Church from 1378 to 1417, when there were two lines of popes, one at Rome and one at Avignon, which arose over the election of Urban VI and Clement VII to the papacy and was more a matter of persons and politics than a question of faith.

**Schism Act** was introduced in 1714 by Bolingbroke. It took away from Dissenters the education of their own children, which was to be handed over to persons licensed by bishops of the Established Church. The Act was repealed in 1719.

**Schist**, the geological name of certain metamorphic rocks composed for the most part of minerals with thin plate-like crystals (e.g., mica) so that the layers of a schist are closely parallel. Quartz occurs in schists, and where it preponderates the term "quartz schist" is applied.

**Schoolmen or Scholastic Philosophers**, were a



body who, in the Middle Ages, devoted themselves to the study and exposition of questions of religious inquiry, and attempted to reconcile the teaching of the Church to the dictates of human reason. The chief Schoolmen were Archbishop Anselm, Albertus Magnus, Thomas Aquinas, Peter Lombard, Duns Scotus.

**Scorpion.** The scorpions constitute an order of the arthropods. Distinctive features are the pair of powerful claws at the head and a "sting" at the tail, which curves over the back in attack or defence so that it points forwards. The poison injected by the sting is potent, causing instant death in spiders, centipedes, etc., and acute discomfort to humans. The idea that a cornered scorpion can sting itself to death is a myth; scorpions are immune to their own poison.

**Scorpion Fly.** The scorpion fly, of which there are less than 500 species, constitute a separate order of insects, the *Mecoptera*. They have 2 pairs of membranous wings, and gain their popular name because in some species the end of the abdomen is turned up, though it does not function as a sting.

**Scotists** were followers of the Schoolman, John Duns Scotus, (1266-1308) who propounded certain moral laws and doctrines which were at variance with the teachings of the main body of Schoolmen, including Aquinas. (See Schoolmen.)

**Scotland Yard,** the Metropolitan Police Headquarters from which the Force is administered. The original Scotland Yard was a street near Trafalgar Square, so called because a palace stood there given by King Edgar (10th century) to Kenneth II. of Scotland. New Scotland Yard, the present official name for S.Y., is on the Thames Embankment, and the famous "C.I.D." (Criminal Investigation Dept.) has its headquarters there.

**Scouts, Boy.** This movement, founded by the late Lord Baden-Powell of Gilwell in 1908, "to help boys of whatever class to become all-round men," has been developed with great spirit and success in many countries of the world. Its aim is to develop good citizenship among boys by forming their character—training them in habits of observation, obedience, and self-reliance—inculcating loyalty and thoughtfulness for others—teaching them services useful to the public and handicrafts useful to themselves—promoting their physical development and hygiene.

**Screes or Talus,** the mass of loose, angular rock fragments which accumulate towards the bottom of hill-sides and mountain-sides. These fragments have been detached by weathering processes, in particular frost action.

**Scriber,** a sharp steel rod used for marking metal and wood.

**Scruple,** an English apothecaries' weight, comprises 20 grains, or the third of a drachm. In ancient Rome a scruple was the 24th part of an ounce, and also indicated a surface and time measure.

**Scutage or Shield-money** was a feudal tax levied from Prelates and Barons in lieu of the military service of their knights enfeoffed upon their lands.

**Scyphozoa.** (See Jelly Fish.)

**Scythians,** a nomadic people of ancient times.

**Sea Butterfly,** marine molluscs which propel themselves by two "wings," which represent lobes of the foot. They constitute the order called *Pteropoda*.

**Sea Anemones or Actinaria,** an order of marine animals of the coelenterate class *Anthozoa*. They form a large and varied group of about 1,000 species and occur in many beautiful colours, flower-like in form.

**Sea Cow.** (See Manatee.)

**Sea Cucumbers or Holothurians.** These animals constitute the class of Echinoderms called *Holothuroidea*. They are elongate and worm-like, with a ring of about twenty tentacles round the mouth.

**Sea Eagle,** a genus of eagles, consisting of five species (more closely related to the kites than to true eagles), two of which occur in Europe. They lived on fish and carrion and sometimes seek their prey among living animals.

**Sea Elephant or Elephant Seal,** a curious genus of seal, the males of which possess a proboscis a foot or more in length that suggests an ele-

phant's trunk. They are found on the coast of California and in certain parts of the Southern Ocean; their blubber has a commercial value.

**Sea Hare,** a genus of molluscs (*Aplysia*), so-called because of resemblance to a crouching hare. The shell is thin curved plate largely sunk in the animal's body. They have four tentacles, occur in Britain in the laminaria or ribbon-wrack zone, and discharge a purple fluid when molested.

**Sea Horse,** a sea-fish (*Hippocampus*), very numerous in the tropics and comprising some twenty species. Their bodies are ringed and they have prehensile tails. Their heads are horse-shaped, and they swim in a vertical position.

**Sea Lily.** A class of echinoderms, the sea lilies may be roughly described as "stalked star-fishes." There are about 400 living species, and several thousand extinct species are known. Most of the former lose their stalk at maturity and are then free swimming. Otherwise called *Crinoids*.

**Sea Mouse,** a genus of marine worms called *Aphrodite*. These are of oval shape, some 8 or 9 in. long and iridescent. They are covered with fine bristles.

**Sea Squirts or Tunicates.** These animals are placed in the sub-phylum called *Urochorda*. They are found growing in rounded, jelly-like masses on rocks near low-water level. They get their name through the water jets they discharge.

**Sea Urchin.** The Sea Urchins belong to the class of echinoderms called *Echinoidea*. The body is globular and covered with spines which may be used for both defence and locomotion. The main organs of locomotion are, however, the tube feet, as in starfishes.

**Seals or Signets,** have been in use from the remotest times. Some impressions of seals of Saxon kings are in the British Museum. The Great Seal of England was first used by Edward the Confessor, and is now used on the writs summoning Parliament, and for sealing all State documents of importance. The Lord Chancellor is the official custodian of the Seal.

**Seasons** comprise the four natural divisions of the year, and are due to the inclinations of the earth's axis to the plane of the elliptic. (See Equinox.) The spring season is entered about Mar. 21st, autumn Sept. 22nd. The summer and winter seasons are governed by the solstices (which see), and begin respectively about June 21st and Dec. 22nd.

**Secondary Sexual Characters.** Characters of animals which are distinctive of sex, but have no direct connection with the reproductive process. Examples are: the mane of the lion and the antlers of some deer.

**Secretary Bird,** so called because of the quill-like plumes about its ears, is a bird of prey related to the eagles and vultures; common in Africa, and of considerable service as an exterminator of snakes. It is a large bird about 4 ft. in height.

**Sedan Chairs** were first made at Sedan in France in the 16th century, and introduced into England in the reign of James I. They were in general use in the 18th century, when they were the usual means of carriage for ladies and gentlemen. They were borne on two side poles by a couple of bearers, and accommodated only one person.

**Sedgemoor, Battle of,** the deciding battle of the Monmouth Rebellion, fought on July 6, 1685, at Sedgemoor in Somersetshire. The Duke of Monmouth was made captive, tried, and beheaded.

**Sedition.** In law, an attempt to disturb the tranquillity of the State. It is a common law indictable offence. The principal enactments now in force dealing with seditious offences were all passed during the last twenty-five years of the reign of George III., i.e., the Unlawful Oaths Act 1797, the Unlawful Drilling Act 1819, the Unlawful Societies Act 1799, and the Seditious Meetings Act, 1817.

**Seismology,** the branch of geophysics devoted to the study of earthquakes and other earth movements. The instruments used for the registration of earth tremors are termed seismographs and consist in principle of a pendulum system, the supporting framework following the ground movement and the bob

remaining at rest, thus setting up a relative movement between two parts. In order to record the displacements completely, at one station, three seismographs are necessary to show the two horizontal and the vertical components of the motion. Apart from detection and study of waves from earthquakes, sensitive seismographs are now widely used in geophysical prospecting, particularly in the search for possible oilfields.

**Selenium**, a non-metallic element of a dark red colour, and solid, found associated with sulphur, iron, pyrites, etc., though only in small quantities. Its electrical conductivity is increased when light falls on it, a phenomenon discovered in 1873 by May. Photo-electric cells depending on this property of selenium have been used for automatic control of street lamps that switch on at dusk and off at dawn, etc., but "selenium cells" have now been largely superseded by other photo-electric devices that are more reliable.

**Self-Denying Ordinance** was a measure passed in 1645, providing that no member of Parliament should hold military or civil office, and was forced through the House of Commons by Cromwell in order to deprive the Earl of Essex and other Presbyterians of power.

**Semitic Languages** are divided into two main sections; one including the Assyrian, Aramaic, Hebrew, and Phœnician groups; the other embracing the Arabic and the Ethiopian.

**Semitone**, the smallest interval in music—half a tone in the diatonic scale.

**Senate**, the higher governing Assembly of a Legislature. The word, applied primarily to the Roman council, is also used to denote the upper chamber in the legislatures of France, the United States, and other countries. In certain universities the governing body is also called the Senate.

**Seneschal**, a high official of a royal or noble household. The title originated in France in the 10th century, and was afterwards adopted in England and other parts of Europe.

**Sensitive Plant**. A species of *Mimosa* (*Mimosa pudica*), whose leaves are extremely sensitive to touch, shaking, and burning.

**Separatists**, the name given to the Dissenters in the time of Charles II., who pressed several severe measures against them. The term has also been applied to the Irish Home Rule Party.

**Sephardim**, the name of the descendants of those Jews of Spain and Portugal who left those countries in the 15th and 16th centuries to avoid the persecutions of the Inquisition. (See *Ink Sac*.)

**Sepia**, the "ink" of the cuttlefish. (See *Ink Sac*.)

**September**, the ninth month of the year, and the seventh of the old Roman calendar; hence the name, from *Septimius*. The designation was several times changed by the Emperors, but none of the new names survived for long.

**Septembrists** were participants in the massacre of prisoners in Paris in Sept., 1792, during the French Revolution.

**Septet**, a musical composition for seven voices or instruments.

**Sextuagesima Sunday**, the third Sunday before Lent.

**Septuagint**, the Greek translation of the Old Testament.

**Squin**, a gold coin of Italy, notably of Venice, which circulated from the 13th to the 18th century. It was worth about 9s. 3d. English.

**Serfs**, the name given to the slaves formerly existing in Russia, who answered to the condition of the feudal "villeins" of England. They were attached to the soil and were transferred with it in all sales or leases. Serfdom existed in Prussia until 1807 and in Russia until 1861.

**Serjeants at Law**, the highest degree of barrister rank formerly existing in England; until 1873 it was necessary for all Common Law Judges to be Serjeants before their elevation to the Bench. This qualification was abolished by the Judicature Act of that year. After 1873 appointments ceased and Lord Lindley (*d.* 1921) was the last of them.

**Serpentine**, a mineral; chemically a hydrous silicate of magnesium. Green serpentine is used as an ornamental stone. Fibrous serpentine is called asbestos.

**Serval**, a small carnivorous animal of the lynx

order, with black spots on a tawny ground. It is numerous in Africa, preys upon the smaller animals of the deer family, and is sometimes styled the "Tiger Cat."

**Servitor**. (See *Sizar*.)

**Settlement**, Act of, passed in 1701, assigned the Crown to the House of Hanover in case of Anne's death without children. The decision represented the determination of the squires and the Anglican Church never again to trust themselves to a Roman Catholic king.

**Seven Champions of Christendom**, as set forth in mediæval literature, were St. George of England, St. Andrew of Scotland, St. Patrick of Ireland, St. David of Wales, St. James of Spain, St. Denis of France, and St. Anthony of Italy.

**Seven Churches of Asia**, referred to in the Revelation of St. John, were those of Ephesus, founded by St. Paul in 57, Smyrna, Pergamos, Thyatira, Sardis, Philadelphia (Lydia), and Laodicea (Phrygia), all in W. Asia Minor.

**Seven Sages or Seven Wise Men of Greece**, regarded as the chief philosophers of the age before Socrates, were, according to the best authorities, Solon of Athens; Thales of Miletus; Pittacus of Mitylene; Bias of Priene; Chilo of Sparta; Cleobulus of Lindus; and Periander of Corinth.

**Seven Sleepers**, of the ancient legend, took refuge from the wrath of the Emperor Decius in a mountain cavern, when they were made to sleep for 300 years.

**Seventh-day Adventists**, an evangelical Protestant denomination observing the divinely ordained seventh-day Sabbath of the fourth commandment rather than the first day of the week, for which there is no Biblical authority, and ardently looking for the second coming of Christ to right all earth's wrongs.

**Seven Wonders of the World** were: 1, the Pyramids of Egypt; 2, the tomb of Mausolus, King of Caria (hence the word *mausoleum*); 3, the Temple of Diana at Ephesus; 4, the Walls and Hanging Gardens of Babylon; 5, the Colossus at Rhodes; 6, the Ivory and Gold Statue of Jupiter Olympus; and 7, the Pharos, or Watch Tower, built at Alexandria by Ptolemy Philadelphus, King of Egypt.

**Seven Years' War** was waged by Frederick the Great and England against Austria, France, and Russia, from 1756 to 1763. It resulted in the secession of Silesia to Prussia, of Canada to England, and in the strengthening of our Indian Empire.

**Sewing Machine**, a machine for stitching cloth or other materials, and operated by manual, steam, or other power. Many attempts were made to produce such a machine between 1780 and 1840, but the first really practical invention of the kind was that of Elias Howe, an American, in 1841. Other sewing machines were afterwards introduced, and many improvements have been effected.

**Sextagesima Sunday** is the 2nd Sunday before Lent. **Sextant**, an instrument which has superseded the quadrant as a measurer of angles between distant objects. It is of special importance in navigation and surveying, and contains 60 degrees described on a graduated arc. A small telescope is attached and there are also a couple of mirrors which reflect the distant objects so as to enable them to be accurately observed. The invention is attributed to John Hadley and to Thomas Godfrey independently, about 1730.

**Sextet**, a musical composition for six voices or instruments.

**Shad**, a marine fish belonging to the same genus as the herring. It is found along the Atlantic Coast of the U.S.A., and ascends rivers to spawn.

**Shagreen**, shark's skin; also a leather of peculiar grain made from skins of wild asses, camels, horses, etc., and mostly manufactured in Astrakhan and Asia Minor.

**Shake**, a musical embellishment produced by the rapid alternation of two notes.

**Shakers** were originally an English sect who emigrated to America in 1772, and under the leadership of Ann Lee established themselves in a community at New Lebanon, in New York State. They practise celibacy and oral confession, hold goods in common, and reject baptism and the Lord's Supper. Dancing constitutes a part of their worship.



**Shalloon**, a kind of cloth manufactured from wool and worsted, and used chiefly for women's dresses and coat linings. It gets its name from the fact that it was originally made at Chalons.

**Shamrock**, the three-leaved clover-like plant native to Ireland and its national emblem.

**Shark**, a large and powerful ocean fish, comprising many species, very widely distributed, but most numerous in tropical seas. They have formidable teeth and are the most carnivorous of all fishes. They usually attain a large size, the whale-shark being often of a length of 50 ft. Commercially the shark yields shagreen from its skin, the fins are made into gelatine, and an oil is obtained from the liver.

**Sharp**. (See Flat.)

**Shawls** are loose coverings worn by women over their shoulders and were introduced into Europe from the East. They are made of various materials, wools, silk, cotton, etc., or of mixed fabrics, and those from Cashmere, India are famed for their beauty of colour and design. At one time these were very fashionable, as were the shawls made at Paisley for the great part of the 19th century.

**Sheep**, a well-known family of ruminants of great utility as wool-producers, and for food. From the earliest times sheep have been a source of wealth to England. So much were they valued in the 15th and 16th centuries that their exportation was frequently prohibited. The chief English varieties are the Leicester, Cotswold, Southdown, and Cheviot breeds. Of the foreign breeds the most valued are the Merino sheep of Spain, which yield a fine long wool. Australia, U.S.S.R., Argentina, India, U.S.A., New Zealand, and S. Africa are the chief wool-producing countries in the world.

**Sheldrake**, a handsome genus of surface-feeding ducks, one of which, the common sheldrake, is an inhabitant of this country. It is a beautiful white-and-chestnut plumaged bird with dark-green head and neck and red bill. Another species, the ruddy sheldrake, appears in Britain only occasionally.

**Shellac**. This resin is the secretion of the lac insect (*Coccus lacca*), which occurs in forests of Assam and Siam. It is used for making varnish and in the manufacture of gramophone records.

**Sherardizing**. Process for coating steel or iron parts with zinc to prevent corrosion; this is done by heating the parts in a closed rotating drum containing zinc dust.

**Sheriff**, meaning the reeve or governor of a shire, has existed as an office in England from before the Norman Conquest. These county officials are now called High Sheriffs, and are nominated each year on Nov. 12th. This office has, however, in recent times lost much of its ancient significance, though it is still usually filled by men of prominence and wealth. They are appointed by the Crown upon presentation of the Judges, except in the metropolis, where the citizens retain the right of electing sheriffs for London and Middlesex. Ordinarily the term is applied to officials acting as High Bailiffs. The Sheriffs Act 1887 repealed many old Acts.

**Shibboleth** was the test word which Jephthah used to distinguish the Gileadites, his own men, from the Ephraimites as they passed the Jordan. Such as would not give the word were refused passage. The term is now frequently used to designate any special watchword or party phrase.

**Shield**, a weapon of defence carried on the arm by soldiers before the invention of firearms, mostly made of metal, leather, or wood. In heraldry the term implies a shield-shaped escutcheon forming the ground on which arms are displayed.

**Shilling** has been an English coin from Saxon times, but it was not of the value of 12 pence until after the Conquest. The present style of shilling dates from the time of Henry VII.

**Ships** have existed from prehistoric times. There is mention of one that sailed from Egypt to Greece in 1485 B.C., and in 786 B.C. the Tyrians built a double-decked vessel. No double-decked ship was known in England, however, before the *Royal Harry* was built by Henry VII., and it was not until the 17th century that ship-building was carried on in this country as a prominent industry.

**Ship-worm**. (See Tereido.)

**Shirts** do not seem to have been generally worn in Europe before the 8th century. According to Stow woollen shirts were commonly worn until about 1253, when linen of a coarse kind, then first manufactured in England by Flemish weavers, was adopted.

**Shiva or Siva**, the most worshipped god of the Hindu trinity.

**Shoddy**, the name given to a kind of cloth mainly composed of woollen or worsted rags, torn up and re-fabricated by powerful machinery. It was first made at Batley in Yorkshire about 1813, and in later times has become a very important industry employing many thousands of people at Batley and the neighbouring town of Dewsbury.

**Shoes**, as coverings for the human foot, have been worn from the earliest times. They are referred to in the Bible and early historical records. The shoes of the Jews were made of wood, rush, linen, or leather. Pythagoras directed his followers to wear shoes made from the bark of trees. The Romans were the first to set the example of costly shoes, and introduced various decorative adornments of ivory and precious stones. In the Middle Ages fashion played some fantastic tricks with shoes, and in England about the middle of the 15th century, shoes with such long points were worn that they had to be tied to the knees for convenience of walking, the dandies using silver chains for the purpose. It was about 1633 when shoes of the present form were introduced, and in 1668 the buckle came into use as an ornament. These continued in vogue up to the 19th century, before which period shoes were not made "rights" and "lefts."

**Shooting Star**, popular name for Meteors (*vide*).

**Short Parliament**, that of Charles I. in 1640, lasting only three weeks.

**Shot**, the name given to solid projectiles fired from guns. In the time of Henry V. stone shot was used, later leaden shot, then iron shot, and finally steel shot, introduced by Sir Joseph Whitworth.

**Shrike**, the name of an extensive genus of birds, found on all continents except S. America. The shrike is commonly called the "Butcher Bird," and is of sober plumage. It preys upon small animals and birds and it gets its name from the way in which it impales its food on thorns. The red-backed shrike is a summer migrant to Britain.

**Shrimp**, a edible sea crustacean of the lobster family, is found in great numbers in the shallow places of our coast.

**Shrove Tuesday**, the day before the first day of Lent, receiving its name from the old custom of shriving, or making confession, on that day. In England the day has always been associated with the making of pancakes.

**Sibyls or Sibylls**, women reputed to be inspired, who flourished at different periods in various parts of the world. Pliny, Plato, Ælian, and Varro speak of some of these weird creatures; and an Erythæan Sybil, who offered books of destiny for a large sum to Tarquin II., is famous in classic story.

**Sicilian Vespers**, the term applied to the terrible massacre of French people in Sicily in 1282. The French under Charles of Anjou were then in occupation of the island, and had been guilty of many cruelties. It began at Palermo on Easter Monday at the hour of vespers and resulted in the expulsion of the French king and the introduction of Spanish rule.

**Siderostat**, an instrument invented in 1865 for observing the light of the sun and the stars.

**Siegenite**, a variety of Cobalt Linnaite of a nickeliferous quality, found at Siegen in Germany.

**Signals**, for conveying information or warning to ships at sea, were not in much use in any English fleet before the time of Elizabeth. Radio is now in most general use. Semaphores are the principal signals on railways, in connection with coloured lamps. The block-signal system now in general use—which ensures the safety of a train within a given distance by not permitting another train to be on the same line of rails within that distance—has been of great service in preventing railway accidents. There are also electric, automatic, and pneumatic

signals, and for times of fog explosives called fog-signals are placed on railway metals.

**Sikhs** (disciples), a religious sect established in the 15th century, which gradually developed into a powerful race, and settled mainly in the Punjab. The sect was founded by Nanak (1469-1539) who preached simplicity, equality and rejected idolatry and caste. He was followed by ten *gurus* (spiritual leaders), the last of whom, Gobind Singh (1666-1708), welded the sect into a nation of warriors. They took the name of Singh (lion). After the death of Ranjit Singh in 1839 many fierce battles were fought against the British who finally subdued them and annexed the Punjab in 1849. They proved among the most loyal of Britain's Indian subjects. In the partition of India in 1947 their country was divided.

**Silence, Tower of, or *dakhma***, a tower about 25 ft. high, built by the Parsees for their dead. The corpse is taken inside by professional corpse-bearers and left to be consumed by vultures. Parsees do not burn or bury their dead, and the *dakhma* is to protect the living and the elements from defilement.

**Silhouette**, a form of black profile portrait, invented by Etienne de Silhouette in 1759, and formed by an outline cutting made with scissors or other sharp instrument from cloth, paper, or other flat substance.

**Silicon**, an important non-metallic element. Next to oxygen, it is the most abundant constituent of our globe's crust, of whose weight about 27 per cent. is accounted for by silicon. It occurs in many rocks, and its oxide occurs in many forms (e.g., quartz, sand, flint, agate, chalcedony, opal, etc.).

**Silk**, the name given to a soft glossy fabric manufactured from the fine thread produced by the silkworm. It was known to, and highly prized by, the ancients, being at one time paid for, weight for weight, with gold. The manufacture of silk was carried on in Sicily in the 12th century, later spreading to Italy, Spain, and the south of France. It was not manufactured in England before 1604; but when certain French refugees established themselves at Spitalfields in 1688, the industry was developed and became of importance. In the 18th century the Lombes of Derby achieved great success in this industry. Japan, China, Italy, Korea, and the Soviet Union are the chief silk-producing countries.

**Silkworm**, the larva of a species of moth. It is native to China, and has been cultivated with success in India, Persia, Turkey, and Italy. The silkworm of commerce feeds on mulberry leaves and produces a cocoon of silk varying in colour from white to orange. The cocoon is the silken habitation constructed by the worm for its entrance upon the pupa condition, and to obtain the silk the pupa is killed by immersion in hot water.

**Silures**, an ancient British tribe occupying approximately the counties of Monmouth, Brecon, and Glamorgan. They resisted the Roman conquest fiercely, but were overcome by A.D. 78.

**Silurian**. This geological period is one of the major subdivisions of the Palaeozoic era. Its beginning is estimated at 390 million years ago, and the period lasted about 50 million years. Maximum thickness of the Silurian strata in Britain measures 15,000 ft.

**Silver**, a white precious metal, found in a free state also in certain combinations, and in a variety of ores. The chief silver-producing regions are the Andes and Cordilleras, Peru, Bolivia, and Mexico have yielded vast supplies of the metal since the 16th century, and Colorado and Nevada in the United States have also been very prolific in silver yield. In England standard silver (that used for coinage) formerly contained 92½ per cent. fine silver and 7½ per cent. alloy, but when the price rose to 89½d. per oz. and the coins became worth more than face value, the Coinage Act of 1920 was passed, reducing the fineness to half. To provide silver bullion for industry and for a fund towards the redemption of our silver debt to America, it was decided in 1946 to replace the United Kingdom silver coinage by one made of cupro-nickel (75 per cent. copper, 25 per cent.

nickel). Maundy money, however, is of the original silver standard. (See p. 738.)

**Silverfish**, a primitive wingless insect (*Lepisma*). About half an inch long, with two long antennae in front and three similar feelers at the tail, it is common in kitchens.

**Simmel Conspiracy**, occurred in 1486, when Richard Symonds, an Oxford priest, put forward Lambert Simmel, a baker's son, as heir to the throne. He was claimed to be Earl of Warwick, nephew of Edward Plantagenet. In 1487 Henry VII. defeated the rebels. Henry recognised that Simmel had been a tool in Yorkist hands and took him into his own service as a scullion.

**Simonian**, one who, like Simon Magus (Acts viii. 18), would purchase the gift of the Holy Ghost with money. A trafficker in spiritual things or Church benefices.

**Simony**, the offence of trading in church offices, has been contrary to English law since the time of Edward VI. Elizabeth also promulgated laws against simony. In 1879 a Royal Commission reported on the law and existing practice as to the sale, exchange, and resignation of benefices. The position is now controlled by the Benefices Act 1898, the Amendment Measure 1923, and the Benefices Rules 1926.

**Sin-eaters** were people hired in certain parts of the British Isles in olden times to eat bread over dead bodies at funerals, the idea being that the eaters thereby took upon themselves the burden of the sins of the dead.

**Sinn Féin** is the name of the organisation which supported the Irish Republican Party. This movement remained in existence down to the establishment of Eire in 1937.

**Sino-Soviet Treaty, 1950**. A 30-year treaty of alliance between Russia and China was signed in Moscow on Feb. 14th, 1950, in the presence of Stalin and Mao Tse-tung. The terms of the treaty included the withdrawal of Soviet troops from the jointly-used naval base of Port Arthur and the return to China of the Manchurian railway by 1952. At the height of the Korean war in 1952 the two countries agreed that Port Arthur should remain a jointly-operated base, pending the conclusion of peace treaties with Japan. By the terms of an agreement signed in October 1954, Russia agreed to restore to China full administration over Port Arthur by May 1955.

**Sins, The Seven Deadly or Capital Sins** are pride, avarice, lust, anger, gluttony, envy, sloth.

**Sirius**, the dog-star, so called because of its situation in the mouth of the Dog (Canis Major); it is the brightest of all the fixed stars, and is also one of the nearest to us.

**Sirocco**, a warm southerly, often dust-laden, wind blowing across Mediterranean lands from the Sahara, in advance of an eastward-moving depression over the Mediterranean.

**Siskin**, a small bird of the finch family, common in Northern regions. The common Siskin has a yellow-green colour and is a lively, swift-flying bird with a very acute bill.

**Sistine Chapel**, the chapel of the Pope in the Vatican, renowned for its frescoes by Michelangelo.

**Six Articles**, The Statute of the, was passed in 1539 for compelling adhesion to the chief doctrines of faith: transubstantiation, communion in one kind, vows of chastity, celibacy of the clergy, private masses, and auricular confession; those who refuse to subscribe to the Articles were treated as heretics. The Act was repealed in 1547.

**Sizar**, a student of Cambridge or Dublin University to whom concessions in regard to college bills are made after having passed a certain examination. He formerly waited on the table. Similar students at Oxford are called servitors.

**Size**, a gelatinous substance used as a varnish and made from shreds of parchment, glue, hides, etc.

**Skate**, a genus of sea-fishes, belonging to the Ray family.

**Skilling**, an old Scandinavian and North German copper coin, worth from a farthing to a penny.

**Skink**. The skinks constitute a large family of lizards with large smooth scales, under each of which is a bony plate. The largest species, found in Australia, is about 2 ft. long. Some skinks have adopted a burrowing habit and degeneration of the limbs is associated with this. The Common Skink is a small species



about 5 in. long, living in the deserts of N. Africa and Syria.

**Slippers.** Usually treated as butterflies, they are in some respects intermediate between butterflies and moths. Some authorities put them in separate family (*Hesperiidae*).

**Skua, falcon-like marine birds related to the gulls.** The Great Skua resides in the Shetlands and Orkneys; 25 in. long and brownish in colour, it is known as the "Robber Bird" because of its habit of pursuing terns, gannets, and gulls until these disgorge their fish, which the Skua catches on the wing. The Arctic Skua, a slightly smaller species, brown and white in colour, resides in N. Scotland and the Isles.

**Skunk.** A North American mammal of the weasel family, with short legs and long bushy tail. All fifteen species are black and white, some being striped and the rest spotted. It secretes and ejects at will a foul-smelling fluid. Anything tainted with this fluid retains the odour for days.

**Sky.** The blue colour of the sky on a summer's day is the result of the scattering of light waves by particles of dust and vapour in the earth's atmosphere. Blue light having almost the smallest wavelength in the spectrum (0.00004 cm.) is scattered laterally about 10 times as much as the red (0.00007 cm.).

**Skyscraper;** owing to congestion, lack of ground space, and growth of modern cities, buildings are being made higher than broader; hence the name. The structures are constructed of a steel framework usually clothed in concrete or reinforced concrete. Among the highest examples are the Empire State Building of New York (1,250 ft.) and the Crane Building of Chicago (1,022 ft.).

**Slate,** fine-grained clayey rocks which have undergone metamorphosis. They cleave easily, and it is this property of cleavage which makes them a valuable source of roofing material. Welsh slates are among the best, there being important quarries at Penrhyn, Llanberis, and Ffestiniog.

**Slavery,** in its earlier forms, as in the times of the Romans, in the Feudal Ages, when vassalage and villeinage existed, and in the serfdom of Russia and other northern nations, was attended by many inhumanities and evils; but perhaps in the negro slavery system which prevailed in the British Colonies for upwards of 200 years and in certain parts of the United States up to 1865, it attained its highest point of cruelty. Since 1833 no form of slavery has existed within the British Empire. (See also Serfs.)

**Sleet,** a mixture of rain and snow.

**Slide Rule,** an instrument which in its simplest form consists of two logarithmic scales sliding alongside each other. By its use multiplication, division, extraction of roots, etc., are speedily carried out.

**Slings** as a weapon of attack find prominent illustration in the Old Testament as the instrument with which David slew Goliath. There were bodies of slingers in the Carthaginian and Roman armies, and slings were used as late as the 17th century, when it was necessary to economise powder.

**Sloop,** a fore-and-aft rigged, one-masted vessel, carrying jib, fore-staysail, mainsail, and gaff-top-sail. A sloop of war used to be a gun-carrying vessel of swift motion and great utility.

**Sloth,** a curious family of mammals, only found in Central and South America. They dwell almost entirely in the trees, proceeding from branch to branch with their bodies hanging downwards, their weight being supported by their large hook-like claws. They eat foliage.

**Slow Worm,** a species of lizard found in Britain which lacks legs. Silver with longitudinal brown stripes, it lives almost entirely on slugs.

**Sloyd,** a Finnish system of manual training in which pupils in the elementary schools are taught the use of ordinary tools as a preparation for later technical instruction.

**Slump,** an economic collapse or depression such as occurred after the end of the first world war and, to a more devastating extent, in 1930 and the following years. The depression falls heaviest on the export industries and the industries

producing constructional and production goods. Between 1850 and 1939 there were twelve periods of depression in Great Britain and nineteen in the United States. A world "economic blizzard" occurred between 1931-33. Since the war, however, acute slumps have been avoided by the taking of timely action.

**Smelting.** The process of heating an ore with a reducing agent to convert ore into metal, and with a flux to convert rocky impurities into a slag that will float on top of the molten metal. Slag and metal can then be tapped separately. An example is iron smelting; the reducing agent is coke, and limestone is added as the flux; the smelting is carried out in a blast furnace.

**Snake.** The snakes constitute the important reptilian order *Ophidia*. Snakes have a scaly cylindrical body, without fore-limbs, and only in some instances possessing rudimentary hind-limbs. Their locomotion is accomplished by means of the excessive mobility of their ribs, which are very numerous. All snakes have teeth which only serve for seizing prey, and the poisonous varieties are furnished with poison fangs in the upper jaw. These fangs are hollow-modified teeth and the venom passes into them from a special gland situated behind the angle of the mouth. Snake venom owes its toxicity to two different principles; the first attacks the nervous system, causing paralysis, and the other destroys blood corpuscles.

**Snipe,** a wading bird, long-legged, with long, slender, straight bill and brown plumage. The Common Snipe breeds on boggy moors in Scotland; the Great Snipe and small Jack Snipe are occasional visitors.

**Snow.** When water vapour condenses at high levels at a temperature below freezing, a cloud of ice particles is formed. If these frozen droplets are small, they fall slowly and gradually assume a feathery crystalline structure, reaching the earth as snowflakes if the temperature remains below freezing.

**Soap** owes its cleansing properties mainly to its emulsifying power which removes the grease most dirt contains. Soap is made by the action of caustic soda or potash on animal or vegetable oils and fats, with glycerine as a by-product, which is usually recovered. In the manufacture of Pears Transparent Soap, however, the glycerine is retained and the purity of this soap is enhanced by the unique refining process employed.

**Soapless Detergents** are cleansing agents, having properties similar to soap. The shortage of soapmaking oils and fats after the second world war led to considerable development in their production and they have the advantage of not forming scum in hard water. They can be produced from mineral, animal, or vegetable oils, and many of these products are on the market in the form of soapless washing powders, shampoos, etc. Their use in industry and agriculture is steadily increasing.

**Socialism,** a form of society in which men and women are not divided into opposing economic classes but live together under conditions of approximate social and economic equality, using in common the means that lie to their hands of promoting social welfare. The British Labour Party believes in peaceful and constitutional change to socialism by democratic methods based upon popular consent.

The word "Socialism" first came into general use in England about 1834 in connection with Robert Owen's "village of co-operation" at New Lanark. About the middle of the 19th century Charles Kingsley and others established a form of Christian Socialism, and William Morris, John Burns, and others founded a Socialist League in 1886. With the development of Trade Unions the Socialist movement took a more practical trend. Fabianism, associated in its early days with the distinguished names of Beatrice and Sidney Webb and George Bernard Shaw, aims at the gradual reorganisation of society by creating intelligent public opinion by education and legislation. The first time Labour Party members were returned to Parliament was in 1906, when 29 were elected. Since that date the growth of the Labour Party has been rapid: 393 members were returned to Parliament in 1945, 315 in 1950, 295 in 1951,

and 277 in 1955. A democratic programme of planned economy and public ownership of certain vital industries and services were features of socialist government from 1945-51 together with a comprehensive system of social security.

**Sociology** is the study of society, but the science is so vast that sociologists differ in what they consider to be its subject-matter. One of the leading sociologists, however, Professor Ginsberg of London, lists the problems of the worker in this field as follows: (1) the investigation of the quantity of the population and its quality; the study of the various types of social structure and classification of social groups and institutions; (2) social control—the study of law, morals, religion, convention, and fashion—the regulating agencies of society; (3) social processes—study of the various types of interaction between individuals and groups—co-operation, conflict, etc.; (4) social pathology—the study of social maladjustments and disturbances. Sociology, like psychology, has been for long considered a field for arm-chair philosophy; most of the great philosophers from Plato and Aristotle onwards to Marx and Engels have produced theories on the nature of society, but such theories often tell more about the individual who composed them and his political prejudices than about facts. Recently, however, there are signs that sociology is becoming a science in its own right.

**Soda**, carbonate of soda, is now mainly obtained by certain processes of manufacture from common salt. It was formerly obtained from the ashes of plants. Bicarbonate of soda is the primary product in the Solvay or Ammonia-soda method for commercial manufacture of soda; it is also formed when carbon dioxide is passed into strong soda solution. The bicarbonate is used in medicine and in the preparation of baking powder.

**Sodium**, a metallic element first obtained by Sir Humphry Davy in 1807 from caustic soda by means of the electric battery. Its chloride is *common salt*; the deposits of salt (e.g., in Cheshire and at Stassfurt) have come into existence through the drying up of inland seas. Salt occurs in sea-water to the extent of about 3 per cent.; the Dead Sea contains about 22 per cent. The blood of animals contains some 2½ per cent. of salt.

**Soil**, the upper portion of the crust of the earth, the medium from which all vegetation springs. It consists of decomposed rock and organic matter, and is always characteristic of the rocky formation it covers.

**Solar System**, general term embracing the sun, the planets and their satellites, and all celestial bodies which revolve round the sun. (See p. 155.)

**Solstice**, an astronomical term indicating the point at which the sun is most distant from the equator, which occurs about June 21st, when the Summer Solstice is entered, and Dec. 22nd for the Winter Solstice.

**Somerset House**, a large Government building stretching from the Strand to the Thames at the corner of Waterloo Bridge, and comprising the headquarters of the Inland Revenue and various other offices and registries. It was built towards the end of the 18th century on the site of an old palace which had belonged to the Protector Somerset.

**Sonata**. Properly the instrumental equivalent of a Cantata, i.e., an extended piece for a solo instrument, e.g., pianoforte or violin with pianoforte accompaniment. A typical sonata (e.g., Beethoven's *Pathétique*, Op. 13) consists of three movements. Each movement (see *Movement*) consists of two or more subjects interwoven in a characteristic way. The first movement is longer than the others. A solemn introduction leads to an agitated first subject which is connected by a bridge to the second subject. This is followed by a small coda. This first part comprises the Exposition. There follows a short Development of themes found in the Exposition, this leading to a recapitulation of the first and second subjects, the latter with a change of key. The movement ends with a Coda consisting of themes from the Introduction and first subject. This treatment is typical of sonata form. The second movement is in complete contrast and

is one of the loveliest slow movements ever written. Its form is that of a simplified Rondo, 1, 2, 1-3-1, Coda. The third movement is again in contrast. It is rapid but has not the tragic character of the first movement. The form is that of a full Rondo.

**Sonnet**, a favourite form of short poem in which Shakespeare, Milton, Wordsworth, and Keats especially excelled. It consists of fourteen decasyllabic lines, and is said to have been invented in the 11th century by Guido d'Arezzo.

**Sophists** were the first Athenian teachers of philosophy in the 5th century B.C., who were supposed to base their reasoning on false premises, sacrificing much to mere quibble of rhetoric. They were denounced by Socrates. Plato and Aristotle also rallied against the Sophists and the term "Sophism" has in later times been generally applied to fallacious arguments.

**Soprano**, a female treble (see *Treble*). The highest voice in a mixed choir.

**Sorcerers** were sufficiently numerous in the middle of the 18th century to have severe laws passed against them, and in 1603 James I. made it a capital offence to pretend to gifts of sorcery or witchcraft. The legal definition according to Lord Coke is, "a person who hath conference with the Devil to consult with him or to do some act."

**Soundings at sea**, to determine depth at any point, have been taken in all seas, and with considerable accuracy. A deep reading was that of the *Challenger* expedition in 1873, near St. Thomas's in the North Atlantic, when 3,875 fathoms were sounded. In 1951 H.M.S. *Challenger* recorded the maximum ocean depth in the Marianas Trench (N. Pacific) by echo-sounding as between 5,882 and 5,940 fathoms. Another deep was located in the S. Pacific in 1952-53 of 5,814 fathoms in the Tonga Trench, 180 miles S. of Tonga Tabu. (See also pp. 384 and 156.)

**South Sea Bubble**, a project entered upon in 1711 as a financial speculation by what was called the South Sea Company. Harley, Earl of Oxford, who was then in power, conceived the idea of utilising this project for getting together a sufficient sum to pay off the National Debt, then standing at about £51,300,000. The company contracted to redeem the whole debt in 26 years on condition that they were granted a monopoly of the South Sea trade. The idea fascinated the public, fabulous profits being dreamt of, and there was an immense demand for shares, which ran up in value from £100 to £1,000. All classes joined in the gamble, but by the wise policy of Sir Robert Walpole the fraud was exposed in 1720, when the whole scheme collapsed and thousands of people were ruined.

**Sovereign**, a British gold coin worth 20s. It was first coined in 1489, and remained the principal coin of the realm until its withdrawal in 1914. Its weight was fixed at 123.27447 grains troy, and it consists of 22 parts of pure gold to 2 parts of alloy.

**Soviet**. Russian word meaning "Council." The Russian revolution 1917 was based on workers' and soldiers' councils and they became the organs of the Soviet constitution.

**Soya Bean**. This is the bean of a leguminous plant (*Glycine Soja*) found in Asia. The bean meal, which is rich in protein and oil, is familiar in Britain as "soya flour."

**Spanish Civil War, 1936 to 1939**. The war commenced by a revolt by the Fascist General Franco against the Republic which had succeeded the Monarchy in 1931. Germany and Italy aided the rebels who besieged Madrid for over 2 years. An International Brigade was formed to help the Republic, but the Spanish Government was faced by the greater part of the Army, and very effective assistance from Italy and Germany. Those powers seized the opportunity to have a curtain-raiser to the world conflict which they intended to precipitate. After a total loss of a million men the Fascists overpowered the Republic.

**Sparrow**, name given to finch-like birds found in most parts of the world, of which the House Sparrow, *Passer domesticus*, is the most familiar of British birds. Also native to Britain is the rural Tree Sparrow, distinguished by its chestnut crown. Other European species are the Italian, Spanish and Rock Sparrows.



**Speaker of the House of Commons**, an official who presides over the deliberations of the Lower House of Parliament, and acts as guardian of its privileges. He is elected by his fellow-members, subject to the approval of the Crown, at the beginning of each new parliament, though it is customary for him to serve successive parliaments. The name of a Speaker (Sir Thomas Hungerford) is first recorded in the Rolls of Parliament for Jan. 1377.

**Specific Gravity**, defined as the ratio of the mass of a particular volume of a substance to the mass of an equal volume of water at 4°C.

**Spectacle.** (See Optics.)

**"Spectator."** Addison's famous periodical publication was first issued on Mar. 1st, 1711, the last issue being Dec. 20th, 1714. The bulk of papers were contributed by Addison and Steele.

**Spectroscope**, an instrument for observing spectra. It consists of a tube through which the light, in whose spectrum the observer is interested, enters to a collimating lens, and then through the prism under investigation, a telescope serving the purpose of examination instrument.

**Spectrum.** When light is refracted by a prism the rays of different wave-length are refracted slightly differently. Thus white light is broken down to give its spectrum of colours, ranging from red (longest wave-length) to violet (shortest wave-length). This phenomenon was discovered by Newton.

**Speculum Metal**, an alloy containing one part of tin and two parts of copper. For its high polishing quality it is used for the reflecting surfaces of telescopes.

**Spermatozoa**, microscopic cells about  $\frac{1}{100}$  in. long which are the generative element in male animals, and possess the power of fertilising the female ovum. In shape they resemble a tadpole, their mobility deriving from the long tail each spermatozoon has.

**Sphinx**, in Greek mythology a winged creature with a woman's head and a lion's body. The figure of Egyptian religion, which probably originated in Mesopotamia, represented a king in divine form. The Great Sphinx at Giza, probably built in the reign of Chephren (c. 2900 B.C.) is in the form of a lion with the head of a pharaoh.

**Spiders** were formerly classed as insects, but are now included with the animals of the *Arachnida* class. They have eight legs, breathe through pulmonary sacs, have six to eight eyes, and in most species spin webs composed of a viscid fluid.

**Spinnet**, a sort of boudoir harpsichord popular in the 17th century. The name derives from that of its inventor, Spinetti.

**Spintharoscope**, the simple apparatus, also known as a scintiloscope, devised by Sir William Crookes for detecting alpha particles. The essential element is a screen coated with zinc sulphide, and every alpha particle that hits the screen produces one scintillation.

**Spirituals**, negro melodies with religious inspiration and which are still spontaneously created, but have also passed into art-music. Paul Robeson, the American Negro, is the best-known singer of spirituals to-day.

**Sponge**, a marine organism consisting of a colony of cells, each of which slightly resembles an amoeba. While the sponge lives a current of water circulates through the main apertures. It is the dead skeleton of this mass that forms the sponge of commerce.

**Spoonbill**, a long-legged marsh bird, closely related to the ibis and stork, remarkable for its snow-white plumage and broad, flat, spoon-shaped bill. The European species has not bred in England since the beginning of the 17th century, but is still a regular summer visitor from Holland, where it nests in colonies in reed-beds and islets.

**Sprat**, a sea-fish of the herring order, plentiful on all European coasts. It averages from 3 to 4 in. in length. It frequently does duty for the preparation of "anchovy" paste, as its fry does for whitebait.

**Spurs** have been used by horse riders from ancient times; in the feudal period a knight was allowed to wear gilt spurs, an esquire silver ones.

**Stainless Steel.** The development of stainless steel for cutlery manufacture, etc., began with the discovery of Harry Brearley in 1912 that

steel containing 12 per cent. of chromium is rust-proof.

**Stag**, a large species of deer, still to be found in its wild state in the forest regions of Scotland, and kept as a domestic animal in many parks. It has large curved antlers, and is a noble-looking animal.

**Stakanovite**, a worker who beats the record for production in his industry. Derives from the Russian miner, Alexei Stakanov, who during the Soviet five-year-plan in 1935 became famous for his record output of coal. The term "Stakanovism" is used of the industrial system of increased production.

**Stalactites** are calcium deposits formed on the roofs and sides of limestone caves, and in tunnels, under bridges, and other places where the carbonic acid of rain-water percolates through and partly dissolves the limestone, resulting in the growth of icicle-like forms that often assume groupings. The water that drops from these and rests upon the ground is called *stalagmite*, which accumulates and hardens into a series of sharp mounds or hillocks.

**Stamp Duty**, a tax imposed in Great Britain on written documents which are evidence of legal rights involved. The payment of the tax is denoted by a stamp which is impressed on or affixed to the document. The Stamp Act of 1891 is still the principal Act governing stamp duties, though most were doubled under the Finance Act, 1947, and many were abolished altogether under the Finance Act, 1949.

**"Standard."** A Conservative morning newspaper started in 1827, and an evening issue dating from 1857. In 1905 these papers were acquired by the Pearson Company, when the *Evening Standard* absorbed *The St. James's Gazette*. The morning *Standard* is no longer issued. The evening issue is now controlled by the Beaverbrook Group.

**Starch** is an organic compound occurring in granules in nearly all green plants, and especially in the seeds of dicotyledonous and cereal plants, potatoes, etc. In its pure form starch is a tasteless, odourless white powder, and is a carbohydrate consisting of carbon, hydrogen and oxygen.

**Star Chamber**, an ancient tribunal of State in existence in 1486 and possibly earlier, charged with the duty of trying offences against the Government, unfettered by the ordinary rules of law. It was in effect a Privy Council entrusted with judicial functions, and the present Judicial Committee of the Privy Council to some extent represents the older tribunal. Under Charles I. the Star Chamber was used by the King and his party in the most unjust manner to persecute their opponents, and became such a scandal that in 1641 it had to be abolished. (See Privy Council.)

**Starling**, a well-known insectivorous bird found in Europe, Asia, and N. Africa, one species of which is common in Britain. It nests in holes and crevices. It flies in packs, and these packs of starlings are often to be seen wheeling in an orderly fashion. (See also p. 1004.)

**States General of France** consisted of three Orders: the Clergy, Nobility, and Commons, and constituted the assembly of the realm. Phillip IV. first summoned the States General in 1302 for the purpose of giving him moral support in his quarrel with Pope Boniface VIII. It was not summoned from 1614 until 1789. When Louis XVI. summoned it in 1789 it transformed itself into the National Constituent Assembly, where the three Orders sat together.

**Statute of Westminster, 1931.** An Act of Parliament which gave a basis of equality to the British Dominions. The Dominions as well as the United Kingdom were defined by the Balfour Memorandum of 1926 as "autonomous communities within the British Empire, equal in status, in no way subordinate one to another in any aspect of their domestic or external affairs, though united by a common allegiance to the Crown, and freely associated as members of the British Commonwealth of Nations." The Statute was the sequel. The Dominions are sovereign States governed solely by their own Parliaments and Governments. They have separate diplomatic representation and the

right to secede from any international organisation and from the Empire.

**Steam**, the vapour derived from water heated to boiling point, and of great service as a source of motive power.

**Steam Engine**, a machine whereby steam becomes the active agent of the working of machinery, and of very wide application. The leading types of steam engine are : (a) condensing, or low-pressure engines, where the steam is generated by a boiler; (b) non-condensing, in which the cylinder exhausts its steam into the open air. Engines of the latter type are used where portable engines are required. (See also p. 182.)

**Steam Hammer**, invented by the French engineer Bourdon and James Nasmyth in 1839, which proved of great utility in the development of the iron trade. The hammer itself, which is fixed to the end of a piston-rod passing through the bottom of an inverted cylinder, often weighs as much as 80 or 100 tons, and is so perfectly controlled by the steam power that its action can be so accurately gauged that it could be made to crack the glass of a watch without actually breaking it, or brought down upon a mass of molten iron with a force representing many hundreds of tons.

**Stearin** is the portion of fatty matters and oils which remains solid at an ordinary temperature, and is a compound of stearic acid with glycerine. It is largely used in the manufacture of candles and for other commercial purposes. With caustic soda stearin forms a soap (sodium stearate), which is present in most commercial soaps with contain sodium palmitate and oleate in addition.

**Steel**, an alloy of iron and carbon, has been in general use from the earliest times, but how and where first manufactured remains a mystery. There are many varieties of steel, and these can contain manganese, silicon, copper, phosphorus, and sulphur. Other important alloying elements are nickel, chromium, molybdenum, tungsten, and vanadium. The oldest method, and one now generally adopted for the manufacture of steel, is that known as the "cementation or crucible process," but the most important method of all was introduced by Sir Henry Bessemer in 1855. This is known as the "Bessemer process," which consists in first burning all the carbon out of pig iron, and then putting back into it a sufficient quantity of carbon to produce steel containing the required proportion of this element. The metal produced by this process is called "Bessemer steel," which is of the highest value for structural purposes, rails, etc. For the manufacture of tools and weapons steel is indispensable. The United States, Germany, U.S.S.R., and United Kingdom are the leading countries in the world in steel production. (See also Stainless Steel.)

**Steel Yard**, was a sort of exchange which existed in Cannon Street, London, from the 13th to the 16th century. It was the chief resort of the Hanse merchants and the Flemings, to whom many privileges in regard to the exportation of English goods to the Continent were given.

**Stellite**, an important alloy for the manufacture of cutting tools. It contains chromium, cobalt, usually some tungsten, and a small quantity of carbon.

**Stencil**, a wax sheet or metal plate, on which is cut a pattern or set of words. By placing the stencil on a sheet of paper or other substance and applying ink or paint to the cut-out pattern a copy of the pattern is obtained on the paper. Modern business practice has proved the usefulness of stencils. Cut on wax sheets by a type-writer a good stencil can produce as many as 100 copies or duplicates.

**Stenography**, the art of shorthand writing, was practised by the ancients, but was not in use in England before the 16th century. The systems invented in the 18th century were numerous, but the one that was most widely adopted was that of Mason, as improved by Gurney. In 1837 Pitman's phonographic system was first announced, which was a decided advance on any previous system, establishing a simple series of phonetic signs that was easily learned and admitted of great abbreviation. The average speed is 120 words a minute. This is the system in

general use to-day. Its inventor received the honour of knighthood.

**Stereoscope**, an optical instrument invented by Professor Wheatstone and afterwards considerably improved. It blends into one picture two plane representations of things seen by each eye separately, which has the effect of seeming to throw natural objects into relief. It was only after photography was utilised in connection with the stereoscope that it became of special significance.

**Stereotype**, a metal cast taken from movable type which has been set up in the ordinary way. The first to introduce the process in practical form in this country was William Ged, of Edinburgh, who made stereotype plates in 1730. An impression of the type matter is first taken by means of a mould of prepared plaster of Paris or moistened sheets of specially prepared paper, and when molten stereo metal is poured upon the mould and allowed to cool and harden, the stereo plate is formed, and can be printed from as a solid block for some time.

**Stethoscope**, an instrument by which the action of the heart and other organs of the chest can be heard and gauged. It was invented by Laënnec, of Paris, in 1816, and consists of a cylinder, one end having a funnel-shaped opening which is placed against the chest, while the other end is held to the listener's ear. There is also a binaural stethoscope, which has two india-rubber tubes for the ears.

**Stibnite**, the chief ore of antimony; chemically it is antimony sulphide. Steely-grey in colour.

**Stirrup**, a loop or metal U-shaped strap suspended from the sides of the saddle, used for mounting and to support the horseman's foot. Some authorities allege their use as far back as the early Iron Age, and it is generally believed that they were used in battle in A.D. 378, when the Gothic cavalry defeated the legions of the Emperor Valens at Adrianople. Stirrups relieved the tension on the rider's knees and so enabled him to be armed from top to toe.

**Stoat**, a slender carnivorous mammal with short legs, related to the weasels. The stoat is distinguished from the latter by its longer tail, which has a black tip. The black tip is retained even in the winter when the animal turns white, the fur then being known as "ermine."

**Stocks**, an instrument of punishment, consisting of a framework of wood, with holes through which the offender's feet are put; he was compelled to sit in that position for a prescribed time. Much used in mediæval times, but now abolished.

**Stoics** were the followers of Zeno, a Greek philosopher of the fourth century B.C. They received their name from the fact that they were taught in the Stoa Poikile, or Painted Porch, of Athens. Zeno's doctrine was that since the world is the work of divine wisdom and is governed by divine law, it is man's duty to conform freely to whatever destiny may be his. He conceived virtue to be the highest good and condemned all the passions.

**Stole**, ecclesiastical vestment worn by priests over both shoulders and by deacons over the left shoulder only.

**Stoma**, the term for the microscopic pores on the surfaces of leaves. The plural of "stoma" is "stomata." It has been estimated, for example, that a single maize plant bears 200 million stomata, which are usually closed at night.

**Stonehenge**, a remarkable collection of prehistoric monuments arranged in two circles, 10,000 ft. in circumference, situated on Salisbury Plain. Modern archaeological research dates origin back to the Bronze Age. Presented to the nation by Sir Cecil H. E. Chubb, 1st Bt. of Stonehenge.

**Stool of Repentance**, a seat placed near the pulpit in Scottish churches in former times, on which persons guilty of moral lapse were ordered to sit in expiation during service.

**Stone-Flies**, comprise the order of insects called *Plecoptera*, which includes some 700 species, of which about thirty occur in Britain. The wings are membranous, and two long, thread-like feelers protrude at the tail end. The larvae are aquatic.

**Stork**, a family of heron-like birds with long bills,



freely distributed over Europe, Asia, Africa, and S. America. The White Stork is an occasional visitor to England, and, more rarely, the Black Stork; these are the only two European storks. **Storting**, the Norwegian legislative assembly, is composed of two chambers; the *odelsting*, which originates Bills, and the *lagting*, which has the power to approve or reject Bills, but not to amend them.

**Stratosphere**, a layer of the earth's atmosphere, which begins 6-7 miles above the earth. The attraction of the stratosphere as a medium for air travel rests upon the absence of storms; indeed weather phenomena as commonly understood do not occur, there being no vertical temperature gradient in the stratosphere and no convection currents.

**Strikes**. A strike is a voluntary stopping of work by common agreement of a number of workers in order to force the employer to alter conditions of employment, or to resist conditions which are not approved of.

**Strings**. A collective term for those instruments in an orchestra which are played by drawing a bow across stretched strings, *e.g.*, violin, viola, violoncello, double bass.

**Strontium**. This silver-white metallic element was discovered by Hope and Klaproth in 1793, and isolated by Sir Humphry Davy in 1808. The chief strontium minerals are celestine (sulphate) and strontianite (carbonate). Compounds of strontium give a brilliant colour to fireworks and signal flares.

**Stucco**, a mixture composed of plaster of Paris mixed with a solution of glue, and much used in architectural decoration. It was known to the ancients and freely utilised in Italy in the 16th century.

**Study**, a piece of music written primarily as a practice-piece for perfecting technique. Many of the *Studies (Etudes)* of Chopin have considerable merit as music.

**Sturgeon**, a large fish found in northern seas and rivers with five rows of bony plates along the back and sides and pointed mouth with four barbels. Caviare is prepared from sturgeon ova. Since the reign of Edward II all sturgeon caught off the coasts of Britain, except in certain privileged places, have belonged to the Sovereign.

**Sublimation**, when a solid substance is heated and turns into vapour without passing through the liquid stage, it is said to "sublime" and the process is called "sublimation." Iodine behaves in this way, and sublimation is used as a method of purifying it.

**Submarine**, the first submarine, the *Nautilus*, was designed by Robert Fulton and tried out in the river Seine and in the sea off Brest in 1801. The idea was too revolutionary to find acceptance and it was not until electricity for under-water propulsion became available that the submarine underwent extensive development. Britain became interested about 1900 and the Germans developed it and made it into an instrument of warfare.

**Succession, Acts of**, have been passed at various periods to secure royal descent in a particular line. That under which our present dynasty reigns, and which established the Protestant Succession, was passed in 1689.

**Suez Canal**, connecting the Mediterranean and the Red Sea was first projected in 1852 by Ferdinand de Lesseps. An Egyptian company was formed in 1866, with a capital of 200 million francs. The British Government acquired 176,602 shares (cost £4,080,000, value Mar. 31st, 1953, £26,986,068). The canal was opened in 1869. Its length is 101 statute miles, minimum width 196 ft. 10 in. (navigation channel) and the maximum draught of water allowed for vessels using the canal is 34 ft. The average time for transit through the canal is eleven hours thirty-one minutes. By a convention, signed on Oct. 29th, 1888, the canal was exempted from blockade, and vessels of all nations, whether armed or not, are to be allowed to pass through it in peace or war.

**Suffragette**, name given to a woman who belonged to the Women's Suffrage Movement in the early part of this century. They agitated to obtain the parliamentary vote; many suffragettes were "militant" and caused much destruction, viol-

ence, and disturbance; many suffered imprisonment and went on hunger strike. The movement ended in 1918, when women of 30 were given the vote. In 1928 a Bill was passed which granted equal suffrage to men and women. The leaders of the Women's Suffrage Movement were Mrs. Pankhurst and her two daughters, Sylvia and Dame Christabel, Mrs. Fawcett, Nellie Kenny, and others.

**Sugar**, to the chemist the term is a generic one covering a group of carbohydrates, including cane sugar (sucrose), glucose, fructose, and maltose. In ordinary parlance sugar means sucrose, which is obtained from the sugar cane, sugar beet, or sugar maple.

**Sulphur**, an elementary brittle crystalline solid abounding in the vicinity of volcanoes. It is yellow in colour. It occurs in combination with other elements, as sulphates and sulphides, and allied with oxygen, hydrogen, chlorine, etc., is of great commercial utility. Used in its pure state it constitutes the inflammable element in gunpowder; it is also used for matches.

**Sulphuric Acid**, a compound of great commercial importance, used in a variety of manufactures, and composed of sulphur, oxygen, and hydrogen.

**Sultan**, the title of the Turkish Ruler which was first held by Osman in 1299. The last of the Sultans, Mohammed VI., escaped to Malta in Nov. 1922, and on Oct. 29th, 1923, Turkey was declared a republic by the National Assembly.

**Summer Time**. In 1916 an Act was passed advancing Greenwich Mean Time by one hour during the summer months, calculated to save light and fuel by making use of an extra hour of daylight. This Act was made permanent in 1925, and summer time was to begin on the day following the third Saturday in April, or if that day was Easter Sunday, the day following the second Saturday, and end on the day following the first Saturday in Oct. By the Summer Time Act, 1947, the periods of summer time are now fixed each year by Order in Council. (See Willet, Wm., "Prominent People.")

**Sumptuary Laws**. Both the Greeks and Romans passed laws against luxury. In England regulations against luxury in food were promulgated under Edward II. and subsequently. A series of Acts of Parliament, beginning in 1363, placed restrictions on apparel, graduated according to rank. In 1603, most of these laws, which had already fallen into abeyance, were repealed.

**Sun**, one of the millions of stars in the universe, the centre of the solar system, estimated to be distant from the earth 93,004,000 miles, to have a diameter of 865,000 miles, and a volume a million times that of the earth. It rotates on its axis from east to west, though not as a solid, the solar equator turning once in about 25½ days and the poles in about 34 days. Large spots are observed on the sun—varying in size from 30,000 miles in diameter—which form and disappear at irregular intervals. The area of the disc covered by the spots, however, reaches a maximum roughly every 11 years, when the sun's heat seems rather greater than usual and magnetic storms more frequent. Spectrum analysis shows that the sun is composed of many elements found in the earth. Its surface temperature is about 6,000° C. The apparently inexhaustible heat of the sun, which has maintained life on the earth for millions of years, is derived from the destruction of matter, involved in the transmutation of hydrogen nuclei into helium nuclei, in which process about four million tons of matter is destroyed every second. At this rate of conversion it has been estimated the sun will go on radiating for 30,000 million years. (See also p. 155.)

**Sunday**, the first day of the week. In ancient times it was the day on which the sun was worshipped. In the early days of the Church Christians began to observe the first day of the week in honour of the resurrection in addition to keeping the seventh-day Sabbath of the Decalogue. Gradually the seventh-day Sabbath was abandoned and the first day adopted, though without any Biblical authority, as the Christian rest day. The first Sunday law was that of Constantine the Great in A.D. 321, in which it

was decreed that all should rest from their labours upon the "venerable day of the sun."

**Superconductivity.** This term is applied to the abnormally high electrical conductivity exhibited by certain metals when cooled to very low temperatures. The phenomenon was discovered by Onnes at Leyden in 1911, when he cooled mercury to  $3^{\circ}$  Kelvin ( $-270^{\circ}$  C.).

**Surface Tension.** The surfaces of fluids (e.g., a drop of water) behave as though they were covered by a stretched elastic membrane. This property is called "surface tension."

**Surnames** were not used in England before the Conquest. The elder Normans used the word "Fitz," signifying son, as "Fitzwilliam." The "O" of the Irish meant grandson, as "O'Connor," while the Scottish Highlanders used "Mac" for son, as "MacKenzie," "MacIntosh," etc. Then among the English the word "son" itself was simply added to the father's name, as "Johnson," "Robertson," "Simpson," etc. When surnames came into use they generally had reference to occupation, places of residence, or personal characteristics, and this style of naming is responsible for the great majority of existing surnames. Smith, Taylor, Butler, Baker, etc., are of the occupation type; Hill, Dale, Brook, Beck, etc., and place-names generally, belong to what may be called the geographical type; while personal peculiarities are denoted in such names as Savage, Redman, Black, White, Brown, etc.

**Suttee**, the practice prevalent in parts of India, until specially prohibited by a law of 1829, of self-burning of widows on their husband's pyre, the idea being, according to the religion of Brahma, that widows thus immolated passed direct to heaven.

**Swans**, large, graceful birds which together with the ducks and geese form the family Anatidae. There are three European species with white plumage; the Mute Swan, distinguished by its orange bill with black knob, being the best known and a familiar sight on the rivers and ornamental lakes of this country. Two wild swans are winter visitors here; the Whooper and Bewick's Swan. The "pen" (female) and "cob" (male) mate for life and the young swans are called "cygnets."

**Swan-upping.** The annual marking of the Thames swans which takes place during the third week of July. This ancient ceremony dates back to the 15th century when all the Thames swans were declared to be Royal birds owned by the Crown. Two city guilds—the Vintners' and Dyers' Companies—own one third of the 600 swans now on the Thames. This privilege was granted to them by King Edward IV. in return for money grants. Vintners' birds are marked with a nick on each side of the bill, the Dyers' with a nick on the right side only. The Queen's birds are unmarked.

**Sweet Potato.** This plant (*Ipomoea Batatas*) which is a climbing perennial belonging to the convolvulus family, has thick roots that are rich in starch, and are eaten like potatoes. A native of the W. Indies and Central America, new varieties of sweet potato have been bred which stand cooler climates and can be grown as far north as Cape Cod.

**Swift**, a bird so-called from the extreme speed of its flight, resembling a swallow but related to the humming-bird. It has long, scythe-like wings, sooty-black plumage and greyish-white chin. There are several species inhabiting most parts of the world, particularly the tropics. The British breeding bird is among the latest to return from Africa and the earliest to go. Swifts are the only birds to use saliva for their nests. One oriental species builds its nest entirely from saliva, and this jelly-like substance is much prized by the Chinese for their birds'-nest soup.

**Swords**, from 20 to 30 in. long, were used by the Romans. The most famous swords of the Middle Ages were those made of Damascus and Ferrara steel.

**Symbiosis.** When two organisms live together and both derive mutual benefit from the association, the partnership is known as symbiosis. An example is the symbiosis of algae and a fungus in lichens; another is the

ordinary pea plant and the bacteria which live in the nodules on the pea's roots.

**Symphony**, a "sonata for full orchestra," usually consisting of four movements. In Beethoven's Third Symphony the first movement is in typical sonata form, consisting of an exposition of two subjects followed by a development. The second movement is a funeral march on a ternary plan (i.e., 1-2-1). The third movement is a Scherzo on two subjects, while the fourth movement is an air with variations.

**Syncopation**, a displacement of the accent in music. For instance, in four-beat time the accent is normally on the first beat. If it were on any of the other beats the music would be syncopated. This device has occasionally been used in classical music, but it is the very essence of jazz.

**Synoptic Charts.** These are meteorological charts on which a synopsis of observed weather conditions is recorded using symbols of the international weather code.

**Syndicalism**, a labour movement which demands that industries shall be controlled by those who work them.

**Synods**, assemblies of heads or representatives of state and ecclesiastics for settling disputes relating to Church authority and government. (See also Ecumenical Council.)

## T

**Tabard**, a cloak or outer garment worn in mediæval days by the peasantry. The name was also applied to a garment worn by knights over their armour.

**Tabernacle**, a place of worship; a sacred place; specifically in Hebrew history the Temple of Solomon which housed the Ark of the Covenant. "Spurgeon's Tabernacle" in London, built for the famous Baptist preacher in 1861, is a familiar non-Jewish example of the application of the name. The Mormon T. in Salt Lake City, Utah, holds several thousand and has an odd-shaped roof.

**Tailor-Bird**, name of a small group of warblers, familiar in India and China, and remarkable for their habit of sewing leaves together to enclose their nests. The bill is used as needle, vegetable fibre as thread, and a knot is tied to prevent it slipping.

**Taiping Rebellion**, 1850-65, revolt to overthrow the Manchu dynasty. It was suppressed in 1864 by the aid of Colonel Charles Gordon ("Chinese" Gordon).

**Taj Mahal**, the white marble mausoleum built at Agra by Shah Jehan in memory of his favourite wife who died in 1629. Over 20,000 men were occupied for over twenty years in its erection.

**Talc**, mineral magnesium silicate. It has numerous industrial uses, and the "chalk" used by tailors is talc.

**Talisman**, a charm, consisting of a magical figure, engraved under superstitious observance of the configuration of the heavens, to which wonderful potentiality for averting evil was anciently ascribed.

**Tallage**, in Norman times, were taxes levied by the Crown upon lands of the royal demesnes. The levying of tallage was taken away by a statute of 1340 which required the consent of Parliament for all direct taxes.

**Tallow**, the more solid portions of animal fat, and prepared from beef, mutton, and other fats by melting at a low temperature. Stearin is its chief constituent. Used for making candles, soap, etc.

**Tally Office**, in the Exchequer, was the department of the Government in which tallies were kept, representing the acknowledgement of moneys paid or lent; in 1834 the Houses of Parliament were burnt down through the overheating of a stove with discarded Exchequer tallies.

**Talmud**, the book containing the civil and canonical laws of the ancient Jews, comprising the Mishna (in Hebrew), a compilation from oral tradition, and the Gemara (in Aramaic), a collection of criticisms and comments of the Mishna by eminent Jewish Rabbis. There are two Talmuds—the Palestinian (or Jerusalem) finished at the beginning of the 5th century, and the Babylonian, at the beginning of the 6th.



**Tamarind**, a tree of great utility, of which there are two varieties, one in the West Indies and the other in the East Indies. Its wood makes good building timber, its bark has tonic properties, its leaves yield a valuable dye, and its fruit is used in the making of sauces and cooling drinks.

**Tambourine**, a light, small, single-headed drum with loose metal discs let into the side of the hoop so that they jingle when the tambourine is shaken. An older name for it is the timbrel.

**Tammany**, a New York democratic organisation, sprang out of an old benevolent society named after an Indian chief, and has exerted a powerful influence over political movements in New York. The leaders of the organisation have used their power when their party has been successful at the polls to appoint their nominees to every prominent office, and have exacted bribes for concessions and privileges, and generally Tammany rule has meant wholesale corruption. Of this there is ample evidence in the disclosures of the Tweed and other Tammany frauds, and in the fact that the "Boss" for the time being usually contrives to make himself wealthy.

**Tanistry**, a system of land tenure which once prevailed among the Celts. It was abolished by a legal decision in the reign of James I. The tanist was a holder of lands or honours for life only, his successor being chosen by the adult males of the tribe or clan from among his blood relatives.

**Tank**, a heavily armoured car fort impervious to bullets and moving on "caterpillar" bands enabling it to travel over the roughest ground. First used by the British as a complete surprise to the enemy in the first world war in Sept. 1916. The Royal Tank Corps of the British Army was re-designated Royal Tank Regiment in 1939.

**Tannins** are chemical substances obtained from a variety of plants and trees, from oak-bark, and from galls. They are used in the leather trade, the tanning process making the skins resistant to decay.

**Tantalum**, a scarce bluish metallic element discovered by Ekeberg in 1802. Chemically related to vanadium and columbium, it is usually associated with the latter in nature. For several purposes it can be used in place of platinum, and it finds application in the making of surgical instruments.

**Taoism**. When Confucius (also founder of a world religion) was, about 530 B.C., a public servant to the prince of Chow—the "Middle Kingdom" of China—he met Lao-Tzu, who was treasurer to the state. Lao-Tzu was the founder of a religion very dissimilar to Confucianism; for, whereas Taoism is metaphysical, Confucianism is practical. Taoism is concerned with the individual, Confucianism with our relationships with others. *Tao*, the goal of the striver, is "Ultimate and Unconditioned Being" similar to the state of Nirvana of Buddhism. Lao-Tzu taught that one must be benevolent and compassionate; in particular, all forms of violence and compulsion are wrong. Idolatry was wrong and foolish, and, like Buddhism, there is little reference to a deity. Man must save his own soul by resignation and non-striving in order to reach the state of perfect Tao. After Lao-Tzu's death, however, the religion became corrupt, Lao-Tzu himself was deified, and various gods were worshipped—of war, weather, stars, seas, learning, etc. The greatest of Taoist scriptures, the *Tao-te-ching* may be read in Arthur Waley's translation *The Way and its Power*—it is one of the world's great devotional books.

**Tapeworms or Cestodes**. These are parasitic flat worms, so-called because they resemble lengths of tape. Several species parasitise man, and when the infestation is heavy severe anaemia results.

**Tapestry**, a fabric largely used in former times for wall decoration and hangings. It was known to the ancient Greeks, but in its modern form came into prominence in the 15th and 16th centuries, when it was manufactured in a marked degree of excellence by the weavers of Flanders, especially those of Arras. The manufacture was introduced into England early in the 17th century, and was attended by considerable success. At the present day the term is applied

to worsted cloths for furniture coverings, and there are also various kinds of tapestry carpets now made. The most famous tapestries of olden times were the Aubusson Tapestry and the Savonnerie. The Gobelins Tapestry factory, originated in Paris in the reign of Francis I., is still a national establishment. (See also Bayeux Tapestry.)

**Tapioca**, a food-substance yielded by the tuber of a tropical plant, called the manioc or cassava plant, poisonous in its raw state, but purified by roasting.

**Tapirs**. The tapirs constitute a family close to the horse family in the Ungulate order. They have four toes on the front feet and three on the hind. The snout is drawn out into a short trunk. The largest tapir is the Malayan tapir, which stands 3½ ft. at the shoulder. Four species occur in Central and S. America.

**Tar** is a dark viscid product obtained from the destructive distillation of wood, coal, peat, etc. Wood tar is acid owing to the presence of acetic acid ("pyroligneous acid"). The highest proportion of coal tar goes into road making. Distillation of coal tar yields many valuable compounds, including benzene, phenol (carbolic acid), naphthalene, and creosote; the final residue after distillation is pitch. Based on the chemical manipulation of compounds from coal tar is the preparation of many perfumes, food essences, drugs, antiseptics, and plastics.

**Tarantula**, the name given to a large range of big hairy spiders. Music was supposed to cure their sting, hence the Tarantella dance.

**Targums**, certain Aramaic paraphrases of portions of the Old Testament, first made orally and then written down about A.D. 100.

**Tarlatan**, a thin transparent muslin fabric.

**Tarpeian Rock** at Rome received its name from the tradition that Tarpeia, the daughter of the Governor of the Citadel who betrayed the fortress to the Sabines, was crushed to death by their shields and buried beneath the rock. From this height persons guilty of treason were hurled to death.

**Tartan**, a cloth of woollen or worsted plaid; formerly each clan of the Scottish Highlanders had its own tartan.

**Tartars (or Tatars)**, an Asiatic race who overran parts of Asia and Europe in the 13th century. Tartar is also a term used to denote a person of irascible temper, a vixen or shrew; to "catch a tartar" was to encounter more than was bargained for.

**Tartaric Acid** is prepared from tartar (potassium hydrogen tartrate) deposited in wine vats during fermentation. "Cream of tartar" is purified potassium hydrogen tartrate, which is incorporated in baking powders. Tartaric acid is also used in the manufacture of effervescent salts, and in medicine (e.g., "tartar emetic").

**Tate Gallery**, named after its founder, Sir Henry Tate, at Millbank, S.W., was opened in 1897; Sir Henry Tate bore the cost of the building (£80,000) and also contributed the nucleus of the present collection. "The Turner Wing," the gift of Sir Joseph Duveen, was added in 1910. The collection is thoroughly representative of British art and has been extended several times to include modern foreign art.

**Tattersall's**, a famous horse-market at Knightsbridge, originated by Richard Tattersall in 1770, and since carried on by his successors with success, the sale of thoroughbreds being the chief business.

**Taverns** were not known before the 13th century. In Edward III.'s time there were only three in London; "one in Chepe, one in Walbrook, and the other in Lombard Street."

**Taxonomy**, the science of classification of animals and plants.

**Tay Bridge** spans the Tay at Dundee, is over two miles in length, and was opened for traffic on June 20th, 1887. A previous bridge, completed in 1877, was blown down on Dec. 28th, 1879, as a railway train was passing over it, and upwards of eighty people perished.

**Tea** was introduced into England about the middle of the 17th century, when it was a great luxury, and fetched from £6 to £10 a pound. It is an Asiatic plant, native properly to China, Japan, and India. Up to about 1885 the greater por-

tion of the tea imported into this country came from China; the bulk is now obtained from India and Ceylon.

**Teal**, the smallest of the European ducks and next to the Mallard the commonest British species. It is a handsome bird and a very swift flier, but not as swift as the Garganey or Summer Teal.

**Te Deum**, the song of praise ("Te Deum laudamus"—"We praise Thee, O God"), is supposed to have been the composition of St. Ambrose in the 4th century. It is used in the services of the Roman Catholic and English churches.

**Telecommunications.** The sending of messages over a distance. The term is now generally applied to the sending of messages by telegraph, telephone, or wireless, or by a combination of such means. The possibilities of the electric *Telegraph* were outlined in an anonymous letter to the *Scots Magazine* in 1733. Experiments in electricity and magnetism by the European scientists Ampere, Gauss, Weber, and Steinheil, and those by Morse in America, made communication by telegraph practicable by the middle of the 19th century. Gauss and Weber acted upon Faraday's discovery of the induced current produced by passing a magnet through a helix of wire forming part of a closed circuit. Steinheil found that half the circuit might be formed of the conducting earth and suggested that the remainder might be dispensed with, as in wireless telegraphy. In 1837 Steinheil devised an electro-magnetic machine in which messages were recorded by a needle either striking two bells of different tone or else marking ink dots on a strip of paper. In England, Cooke and Wheatstone produced an instrument in 1840, of the type later used by the Post Office, whose monopoly the telegraph service became. At first the electric telegraph (as distinct from the old semaphore, or optical telegraph) was used only by railway companies; under the patent of Cooke and Wheatstone, the first public line was laid from Paddington to Slough in 1843. The first submarine telegraph cable between England and France was laid in 1851 and, following Hertz's investigations into the production of electric waves, Marconi's invention led to this country being linked with Europe by wireless telegraphy in 1899. Nearly all inland messages are now transmitted by teleprinter, the "long distance typewriter." Overseas telegrams are sent by electric cable or by wireless. The electro-magnetic *Telephone* was invented by Alexander Graham Bell, a Scottish-born American, in 1876. Elisha Gray of the Western Union registered his patent only a few hours after Bell, and Thomas Edison was also active in the development of the telephone. In America the Edison-Bell interests were soon merged, but in Britain there were two rival companies until 1912, when the Post Office telephone system was established. In order to speak by telephone between two points an electric current is necessary, with a transmitter and receiver at each end. The human voice, impinging on a thin metal disc, causes this to vibrate, and the vibrations produce corresponding variations in the electric current. These variations are communicated to the other end of the wire and reproduced by a second disc, whose vibrations strike the ear of the person receiving the message. Each inland telephone subscriber is provided with a pair of wires; these form a closed circuit and are run to an exchange, where they are connected with the wires of other parties. The first submarine telephone cable to span the Atlantic was laid in 1955 and speech can now be transmitted over a distance of 2,000 miles. Before that, transatlantic communication was by radiotelephone, the first circuit being opened in 1927, and ship to shore telephonic communication in 1930. London is an international switching centre, through which telephonic communication is maintained by land lines, submarine cables, and wireless channels combined. During the second world war great strides were made in the development of wireless communications, the scope of which ranged from world-wide broadcasts of news and propaganda to the transmission of code messages by

secret agents, from the linking of headquarters to units, to the carrying of small "walkie-talkie" sets by individual soldiers. In peace, as in war, ships and aircraft are now largely controlled by wireless signals; broadcasts of weather reports help shipping, aircraft, and farmers. Communication by short-wave radio is an important aid to modern police work.

**Telepathy.** The alleged ability of minds to communicate other than through the ordinary senses—"thought-transference." For a long time this was thought to be a mysterious process accepted by many laymen but denied by the scientist; it still remains mysterious, but is accepted by a certain number of scientists who have studied the matter. The first serious work on telepathy was done by the Society for Psychical Research (see *Psychical Research*), but a new era in discovery was ushered in by the publication of the book *Extrasensory Perception*, by the American scientist J. B. Rhine. Dr. Rhine claimed to have demonstrated the faculty of telepathy in many normal people in a series of prolonged experiments in the laboratory. His method was to use a pack of cards ("Zener cards"), with four simple designs; the cards were lifted off the pack one at a time by the operator, and the person experimented on was asked to call out the name of the card being looked at by the operator. The results were surprising; one student guessed nine cards in succession out of the pack of twenty-five (a two million to one chance); a child of twelve guessed the whole pack correctly (something like six hundred million, million to one). Most results were, of course, less striking, but certainly seemed to justify the claim that telepathy was proven fact. Unfortunately, matters are less simple than this, and other workers have by no means always obtained such satisfactory results.

**Teleprinter**, a telegraph transmitter with a typewriter keyboard, by which characters of a message are transmitted electrically in combinations of 5 units, being recorded similarly by the receiving instrument, which then translates the matter mechanically into printed characters.

**Telescope**, an optical instrument for viewing objects at a distance, "the astronomer's intelligencer." Lippershey is credited with construction of the first in 1608; Galileo constructed several from 1609 and Newton was the first to construct a reflecting telescope. The ordinary telescope consists of an object-glass and an eyepiece, with two intermediates to bring the object into an erect position. A lens brings it near to us, and the magnifier enlarges it for inspection. A refracting telescope gathers the rays together near the eye-piece and is necessarily limited as to size, but the reflecting telescope collects the rays on a larger mirror, and these are thrown back to the eye-piece. The world's largest reflectors are at Mount Palomar Observatory, California (200 in.), Mount Wilson Observatory California (100 in.), the McDonald Observatory at Mount Locke, Texas (82 in.), and the Victoria, B.C. Observatory (72 in.). At Herstmonceux Castle (the new Royal Greenwich Observatory) a 98 in. *Isaac Newton* telescope is being installed. The *Hale* 200 in. telescope at Mount Palomar is the largest ever made and has revealed objects never before photographed; it is able to probe space and photograph remote galaxies out to a limiting distance of 2,000 million light years. The *Schmidt* telescope at Mount Palomar is to be used to make a huge photographic map of the universe. Manchester University are constructing at Jodrell Bank, Cheshire, a completely steerable radio-telescope with a paraboloid aerial 250 ft. in diameter. This will be the largest of its kind in the world and is expected to yield important discoveries. See also *Observatories*, and pp. 185-86.

**Television**, or the transmission of images of moving objects by radio. The first demonstration of true television was given by J. L. Baird at the Royal Institution in London in 1926. The B.B.C. began television broadcasts in 1930. (See also "Radio and Television Section.")

**Tellurium**, a relatively scarce element discovered in 1782 by Reichenstein. Chemically it behaves rather like sulphur; its salts are known as tellurides. It occurs chiefly combined with metals in ores of gold, silver, copper, and lead.



**Temperature of the Body.** See "Medical Section." Templars were soldier knights organised in the 12th century for the purpose of protecting pilgrims in their journeyings to and from Jerusalem, and obtained their name from having had granted to them by Baldwin II. a temple for their accommodation. At first they were non-military, and wore neither crests nor helmets, but a long wide mantle and a red cross on the left shoulder. They were established in England about 1180. During the crusades they rendered valuable service, showing great bravery and devotion. In the 12th century they founded numerous religious houses in various parts of Europe and became possessed of considerable wealth. It was this that caused their downfall. Kings and Popes alike grew jealous of their influence, and they were subjected to much persecution, and Pope Clement V. abolished the Order in 1312. Edward II. in 1308 seized all the property of the English Templars. The English possessions of the Order were transferred to the Hospitallers of St. John, afterwards called the Knights of Malta. The London Temple is on the site of the chief seat of the Order in this country. (See also Hospitallers, Knights, Teutonic Order.)

**Temple,** a building dedicated to the worship of a deity or deities. Those built by the ancient Greeks at Olympia, Athens, and Delphi were the most famous. The Temple of Diana at Ephesus was another. The Temple of Solomon at Jerusalem was destroyed and rebuilt several times; Herod's Temple was destroyed by the Romans in A.D. 70.

**Temple Bar,** an historic gateway that until 1879 stood at the western entrance to Fleet Street, near the bottom of Chancery Lane. In olden times it was the custom to impale the heads of traitors over this gateway. It has been at Theobalds' Park, Cheshunt, since 1888.

**Tempo,** a musical expression referring to the pace at which a composition is to be played, and generally used in combination with a qualifying word, as "Tempo Ordinario," ordinary time.

**Tench,** a familiar fresh-water fish of the Carp family, averaging some three pounds in weight, and of a mingled green and olive colour.

**Tenor,** the third voice in a male voice choir, i.e., between alto and bass. The name is also applied to instruments of equivalent pitch, e.g., tenor saxophone.

**Terbium,** an element, discovered in 1842 by Mosander, belonging to the group of rare-earth metals.

**Teredo,** the scientific name of the ship-worm, a peculiar bivalve mollusc, which lodges itself when young on the bottoms of wooden ships, and bores its way inwards, causing much injury.

**Termites,** also known as *White Ants*, though they are not related to the true ants and are placed in an entirely different insect order (*Isoptera*). They abound in the tropics and also occur in temperate countries, though only two species are common in Europe. There is no British species. They live in colonies and their nests take the form of mounds of earth and wood, cemented together with saliva, and up to 20 ft. in height. Five separate castes are recognised, three of them being capable of reproduction, and the other two are sterile.

**Tern.** This slender, gull-like bird has long, pointed wings, a deeply-forked tail, white plumage, black cap, and is a very graceful flier. There are several species, most of which are summer migrants to Britain. The Arctic tern winters in the Antarctic, returning to find a nesting place in the spring.

**Terrapin,** a kind of fresh-water tortoise. There are several species widely distributed in the Northern Hemisphere.

**Territorial Army.** The Territorial Force of the British Army came into being on Apr. 1st, 1908, when the Volunteer Force and the Imperial Yeomanry combined; later in 1921 it was renamed the Territorial Army. This citizen army was administered by the various County Associations, voluntary bodies responsible for recruiting, clothing, quartering, and mobilising the T.A. units. On Sept. 1st, 1939, the strength of the T.A. was 420,000 officers and other ranks, and thousands were ready to man the anti-aircraft, coastal defence, and searchlight stations

at the outbreak of war. During the war the T.A. lost its independent existence and became merged into the Regular Army. Since the war the Territorial Army has been reorganised and the new T.A. came into being on Jan. 1st, 1947. In addition to its six infantry divisions, it now has two armoured divisions, an airborne division, anti-aircraft and coastal defence formations, and independent armoured and infantry brigades. National Service men after their 2 years' service now pass from their Regular units to Territorial units for 3½ years of compulsory part-time service.

**Tertiary.** The geological era comprising the Paleocene, Eocene, Oligocene, Miocene, and Pliocene periods, which came in that order, the Pliocene being the youngest.

**Terylene,** the newest of the synthetic fibres, discovered by two British scientists, J. R. Whinfield and J. T. Dickson. The first yarn of commercial interest was produced in 1944 and large-scale production in this country began in 1954. Terylene has unique qualities and textiles made from it are very strong, crease-resistant and mothproof and as the fibre is also resistant to chemical action and abrasion, it is finding a wide use in industry.

**Tesla Coil,** a type of induction coil.

**Test Act,** passed in 1673, prescribed that all government officers, civil and military, should be compelled to receive the sacrament according to the forms of the Church. It was repealed in 1828.

**Testudo,** the name given to a military movement in use by the ancient Roman soldiers. It consisted of a defensive screen formed by troops standing close together and massing their shields above their heads.

**Teutonic Order,** of German military knights, was founded in the Holy Land at the end of the 12th century for succouring the wounded of the Christian army before Acre. They were dispersed in the 15th century but the Order continued to exist until 1809, when Napoleon I. confiscated its properties. In 1840 the order was resuscitated in Austria as a semi-religious knighthood. (See also Hospitallers, Knights, Templars.)

**Thaler,** a German silver coin which has existed since the 16th century. The dollar is its derivative.

**Thallium,** a blue-grey metallic element discovered by Crookes in 1861. It is obtained from the flue dust resulting from the burning of pyrites for sulphuric acid manufacture.

**Thallophytes or Thallophyta,** the second largest division of the Plant Kingdom, which includes fungi, algae, and bacteria. These plants are not differentiated into roots, stems, and leaves, such an undifferentiated body being called a *thallus*.

**Thames,** the principal river of England, rising in the Cotswold Hills, and passing through Wiltshire, Berkshire, and Oxfordshire, and pursuing its ever-broadening seaward course through Reading, Windsor, Richmond, London, Greenwich, and Gravesend. It is about 210 miles long, and at the Nore, where it joins the sea, six miles wide. Commercially, it is the most important river of Great Britain. The tidal portion of the river is administered by the Port of London Authority and above Teddington by the Thames Conservancy, the lighthouse and pilotage by Trinity House. In the winter of 1683-84 the Thames was frozen for such a long spell that a frost fair was held upon the ice.

**Thane or Thegn,** a title of nobility used in Anglo-Saxon times, and in the reign of Athelstan conferred upon any free man who possessed five hides of land.

**Thaumaturgy,** the working of miracles.

**Theatres** are buildings in which plays are performed. The theatres of the ancient Greeks and Romans were generally circular, with tiers of stone seats around them, and roofless. The first authorised theatre in England was that of Burbage, built in Shoreditch in 1574. Other theatres were erected at Bankside, in Southwark—the Globe, where some of Shakespeare's plays were first produced, and the Blackfriars. From 1642 to 1660 all London theatres were closed, but at the Restoration they were opened again, and for the first time women were allowed to appear on the stage; female

parts having previously been played by young beardless men.

**Theism**, belief in a personal Deity.

**Theobromine**, an alkaloid diuretic drug found in the seeds or beans of the Cacao plant (*Theobroma Cacao*) and a chief constituent of the cocoa and chocolate of commerce.

**Theodolite**. The instrument used by surveyors for measuring angles in the horizontal and vertical planes. A *transit theodolite* is one which can be completely rotated around its horizontal axis.

**Theosophists**. The Theosophical Society, which has its headquarters in Madras, was founded by Mme. Blavatsky and Col. Olcott in 1875, in New York, and has now over 1200 branches in fifty different countries. Its professed aims are (1) to form a nucleus of the universal brotherhood of humanity; (2) to encourage the study of comparative religion, philosophy, and science; (3) to investigate the unexplained laws of nature and the powers latent in man. Among other things, theosophy claims to "restore to the world the science of the spirit," while its bond of union is "not the profession of a common belief but a common search and aspiration for Truth."

**Therapeutics**, the science which treats of the healing of diseases and the laws of health.

**Therm.** The charges for gas for lighting and heating (formerly reckoned at per cubic foot) are now based on the calorific, or heat, value of the gas, and the unit used is termed a therm. The therm is 100,000 British thermal units.

**Thermite** is the name of a mixture of granulated aluminium and oxide of iron in atomic proportions, and was developed by Dr. Hans Goldschmidt, of Essen, Ruhr. It is used for welding purposes.

**Thermodynamics**, a term first applied by Joule to designate that branch of physical science which treats of the relations of heat to work. What is called the first law of thermodynamics is thus stated by Clerk Maxwell: "When work is transformed into heat, or heat into work, the quantity of work is mechanically equivalent to the quantity of heat." The second law asserts that "the heat tends to flow from a body of hotter temperature to one that is colder, and will not naturally flow in any other way."

**Thermo-Electricity** is the electrical current resulting from the heating or cooling of two or more dissimilar metals at the point of union. Such a metallic couple is called a thermo-couple.

**Thermometer**, an instrument by which the temperature of bodies is ascertained. The most familiar kind of thermometer consists of a glass tube with a very small bore, containing, in general, mercury or alcohol. This expands or contracts with variation in the temperature, and the length of the thread of mercury or alcohol gives the temperature reading on a scale graduated in degrees. Various forms of thermometer are used for particular purposes.

**Third Force**, The. The body of moderate political opinion in France which kept both the communists and General de Gaulle out of power during the period 1951-5 when parliamentary institutions seemed threatened. The basis of this third force is the Socialist Party, the Christian Democrats, and some Radicals.

**Thirty-nine Articles**. (See Articles.)

**Thirty Years' War**, between the Roman Catholics and Protestants in Germany (1618-48). Before its termination involved most of the countries of western Europe. Concluded by the Treaty of Westphalia.

**Thistle**, Order of. (See Knighthood.)

**Thorium**, a scarce, dark grey metal discovered by Berzelius in 1828. All substances containing thorium are radioactive. Chief source of thorium is monazite sand, big deposits of which occur in Travancore (India), Brazil, and the U.S.A. Considered important as a potential source of atomic energy since the discovery that it can be transmuted into U233, which is capable of fission like U235. (See Uranium.)

**Thorough Bass**, a musical term applied to a voice part accompanied by numerals, showing the chord applicable to each note. The term also refers to the entire science of harmonic composition.

**Thrips**. These tiny insects, which constitute a

separate order called *Thysanoptera*, are common on flowers, foliage, dead leaves, fungi, etc. Several are of economic importance; e.g., Corn-thrips.

**Thrush**, a large family of song-birds related to the warblers, distributed all over the world. The British species include the robin, redstart, nightingale, song-thrush (or mavis), blackbird, missel-thrush, ring-ouzel of the mountains, and large numbers of migrant fieldfares and redwings from northern Europe are winter visitors.

**Thumb-Screw**, an instrument of torture used in olden times to extort confessions from prisoners. It consisted of a frame of three upright bars, between which the thumb of the victim was inserted; then a screw was turned on with sufficient force to give intense pain without jeopardising life.

**Thunder**, the sound heard after the occurrence of a lightning flash. It is due to vibrations of the air along the path of the flash, which are set up by the sudden heating (and expansion) followed by the rapid cooling (and contraction) to which the air is subjected. It is unusual for thunder to be heard more than 10 miles away, the distance being estimated roughly by allowing 1 mile for every 5 seconds which elapse between seeing the flash and hearing the thunder. Continued rolling of thunder results from the zig-zag nature of the flash and the multiple strokes of which it is composed, variations in the energy developed along the path, and echo effects. Thunderstorms are caused by powerful rising currents of air within towering cumulonimbus clouds and are most frequent during the afternoons and evenings of sunny summer days.

**Thursday**, the 5th day of the week, named after Thor, the Scandinavian deity. To the ancient Romans Thursday was *dies Jovis*, or Jupiter's day.

**Thyrsus**, a staff carried in ancient Greece by the Bacchantes during their festivities. It frequently appears in ancient sculptures.

**Tiara** was the name originally given to a head ornament worn by the ancient Persians. The name was afterwards applied to the Pope's Triple Crown. The tiara of the first French kings was a high round cap. At the present day any coronet or frontal head ornament is styled a tiara.

**Ticks**, blood-sucking parasites related to spiders and mites. A gorged tick may reach a length of  $\frac{1}{2}$  in.

**Tides**, the periodical rise and fall of the waters of the ocean and its arms, are due to the attraction of the moon and sun. Newton was the first to give a general explanation of the phenomenon of the tides. He supposed the ocean to cover the whole earth, and to assume at each instant a figure of equilibrium, under the combined gravitational influence of earth, sun, and moon, thus making and controlling the tides. At most places there are two tides a day, and the times of high- and low-water vary according to the positions of the sun and moon relative to the earth. When earth, moon, and sun are in line (at full moon and new moon) the gravitational pull is greatest and we get "spring" tides. When sun and moon are at right angles (first and third quarters of the moon's phases) we get the smaller "neap" tides.

**Tiers Etat**, the lowest of the three estates of the realm as reckoned in France—nobility, clergy, and *tiers Etat*—prior to the Revolution.

**Tiger**, a powerful carnivorous animal of the cat family, which occurs in India and certain other parts of Asia. Its skin is of a tawny yellow, relieved by black stripings of great beauty of formation. The tiger is hunted in India, and its ferocious disposition renders the sport both exciting and dangerous. The prey of the tiger includes buffaloes, antelopes, and occasionally human beings, though the man-eating tiger is the exception rather than the rule. Some tigers attain a length of from 9 to 12 ft.

**Time** based upon the sun being exactly south at noon is referred to as local apparent time (L.A.T.). As the apparent solar day is, however, of variable length the interval between successive transits of an imaginary "mean sun" is adopted as the unit, being designated local mean time (L.M.T.). The latter is



derived from the former by adding or subtracting the so-called "equation of time" which varies from + 14 $\frac{1}{2}$  minutes in the middle of Feb. to - 16 $\frac{1}{2}$  minutes at the beginning of Nov. By common consent the meridian of Greenwich is accepted as the prime meridian; local mean time at Greenwich (G.M.T.) is the standard to which other mean times are usually referred. One degree of longitude corresponds with 4 minutes of time. Countries east of Greenwich keep their clocks in advance of G.M.T., countries to the west keep them slower. To avoid the inconvenience of local time variations, Standard Time has been adopted by most countries, whereby clocks are adjusted to an hourly system of changes based on a geographical succession of the meridians, 15° apart.

**"Times"**, The, daily newspaper founded in 1785 by John Walter (1739-1812), as *The Daily Universal Register*, renamed *The Times* in 1788. The business was transferred to the younger son, John Walter (1776-1847), in 1803 and his enterprise, ability and independence made the paper world-famous. Considerable changes took place in 1908 and Lord Northcliffe took over financial control. On his death in 1922 the paper came under the control of John Walter, great-grandson of the founder, and Col. the Hon. John Astor (now Lord Astor), who is now chairman of the Times Publishing Company. Sir William Haley was appointed editor in 1952.

**Timpani**, the kettledrums in an orchestra. (See Drums.)

**Tin** is a white metal, whose commonest ore is cassiterite (tin oxide), which occurs in Malaya, Indonesia, Bolivia, Belgian Congo, Nigeria, and Cornwall. It protects iron from rusting, and the tin coating on tinplate is applied by dipping the tin steel sheet in molten tin or by electrolysis. Tin alloys of importance include solder, bronze, pewter, Britannia metal, etc.

**Tinplate** is tin-coated steel plate, largely used for domestic utensils and other purposes. The chief centre of the trade in this country is South Wales.

**Tit or Titmouse**, a small insectivorous bird of the woodlands and forests, bright of plumage and very active and agile, often seen hanging upside down searching for food. There are over fifty species, eight of which occur in Britain: the Great and Blue Tits, familiar in gardens and countryside, the Cole Tit, Marsh Tit, Willow Tit, Bearded Tit, Long-tailed or "Bottle" Tit, and the Scottish Crested Tit.

**Titanium**, a scarce metal difficult to extract from ores, found in association with oxygen in rutile, anatase, and brookite, as well as with certain magnetic iron ores. It combines with nitrogen at a high temperature. Discovered by the Rev. William Gregor in 1791. Titanium alloys, being very resistant to stress and corrosion, are likely to find wide application in marine and chemical engineering.

**Tithes**, an ecclesiastical tax consisting of a tenth part of the annual produce known to the ancient Jews, and first imposed by Christian authorities in the 4th century, although not made compulsory in England before the 9th century. Tithes derived from land are termed "predial," those derived from cattle being styled "mixed," while others are personal. After the passing of the Tithes' Commutation Act of 1836, tithes were gradually converted into rent charges, and to-day the old form of tithes exists only to a small degree. Consult Tithe Act of 1936.

**Toad**. The frogs and toads are grouped together in the same category of amphibians, and the two terms are not based on any sharp scientific distinction between them. As a rough guide it can be said that toads have a more squat appearance and their skins are warty. Two toads occur in Britain, the Common Toad and the Natterjack. The latter can be identified by the narrow light stripe running down the middle of the back.

**Tobacco** is made from the leaves of various narcotic plants of the *Nicotiana* family, which contain a volatile oil and an alkaloid called nicotine. Tobacco is largely grown in America, India, Japan, Turkey, Greece, Canada, Italy, Indonesia, Bulgaria, Philippines, France, Belgian Congo, China, S. and N. Rhodesia, S. Africa, S. America, and other countries of a warm

climate. It undergoes various processes of preparation. The leaves are first dried, then cut into small pieces, moistened and compressed, and in this form is known as cut or "shag" tobacco; when moistened with syrup or treacle and pressed into cakes, it is Cavendish; when twisted into string form, it is "twist" or "pig-tail." For cigars the midribs of the dry leaves are removed, and what is left is moistened and rolled into cylindrical shape. For snuff, the tobacco leaves are moistened and allowed to ferment, then dried, powdered and scented.

**Toc H**, an association that originated during the first world war of young men pledged to help one another and study social conditions. Toc H promotes clubs and hostels. The name is from the Expeditionary Force's telegraphic abbreviation of Talbot House, Poperinghe, Belgium, a Church Institute named after a fallen officer, G. W. L. Talbot.

**Toga**, an outer robe worn by the ancient Romans and corresponding to the pallium of the Greeks. It was white and made of wool.

**Toleration Act** was passed in 1689, to relieve Protestant dissenters from the more serious of the disabilities under which they had previously laboured.

**Tolls**. Payments for privileges of passage were first exacted in respect of ships passing up rivers, tolls being demanded on the Elbe in 1109. Tolls for land passage are said to have originated in England in 1269, toll-bars being erected at certain distances on the high-roads in the 17th century, where toll had to be paid for all vehicles passing to and fro. After about 1825 they began to disappear, but still linger on some country roads and bridges. Tolls on London river bridges ceased in 1878-79.

**Tomahawk**, an axe-like weapon formerly nimbly used by the North American Indians.

**Tone Poem or Symphonic Poem**, a musical work of a serious nature and of symphonic dimensions in which the composer has not adopted the forms and conventions of the true symphony.

**Tonic Sol-Fa**, a system of musical notation in which monosyllables are substituted for notes. Thus the major diatonic scale is represented by Doh, Ray, Me, Fah, Soh, La, Te, Doh. The system was invented by a Miss Glover of Norwich in about 1840 and has proved of great assistance in the teaching of music in schools.

**Tonsure**, the shaven part of the head of a Roman Catholic ecclesiastic, dates from the 5th or 6th century. In the Roman Catholic Churches only a circle, or a crown, is shaved, while in the Greek Church shaving is forbidden.

**Topaz**, a transparent mineral gem, being a silicate and fluoride of aluminium and generally found in granitic rocks. Its colour is yellow, but it also occurs in pink and blue shades. The best kinds come from Brazil.

**Tornado**, a violent whirlwind, characterised by a black funnel-shaped cloud hanging from heavy cumulonimbus. Usually tornadoes are only a few hundred feet in diameter and occur frequently in the Mississippi region of the U.S.A., where it has been estimated that the wind speeds within them may exceed 200 m.p.h. In West Africa the term is applied to thundery squalls.

**Tortoises or Turtles**, are cold-blooded reptiles, four-footed, and encased in a strong shell protection, the shells of some species being of beautifully horny substance and design, in much demand for combs, spectacle frames, and ornamental work. It is the custom to designate the land species as tortoises and the aquatic kinds as turtles. The green turtle, so called because its fat has a green tinge, is in great demand for soup. Together the tortoises and turtles make up the reptilian order called *Chelonina*, the biggest representatives of which are the giant land tortoises of the Galapagos Islands, reaching a weight of 500 lb. and living a century. Some of these giant tortoises are even said to have reached 200 or 300 years of age. (See also p. 993.)

**Torture**, as a form of punishment, was in use among the Romans, though only upon the persons of slaves. In the Middle Ages it was commonly resorted to, especially in connection with charges of heresy. It was held that torture would make a guilty person confess, but not an

innocent one. It was not inflicted in England after 1640.

**Totalisator or Pari-mutuel**, is a mechanical device now in universal use on all important racecourses which indicates the amount of money staked on each runner, and it is altered every time a fresh deposit is made, so that a backer can see at any time his position in the event of a win by the horse or dog he has backed. It is legalised by the Racecourse Betting Act, 1928.

**Toucan**, a South and Central American family of brilliantly coloured birds, remarkable for their huge bills, which often attain a length of from 6 to 8 in. Toucans live on fruit, are of arboreal habits, and nest in holes.

**Touchstone**, a kind of jasper called by the ancients "Lydian stone," of economic value in testing the quality of metal alloys, especially gold alloys. The testing process is very simple. The alloy is drawn across the broken surface of the Touchstone, and from the nature of the mark or streak it makes the quality of the alloy can be ascertained.

**Tourmaline**, a mineral occurring in different colours in prismatic crystals, and remarkable for its action on light, having the power of polarising light rays under certain conditions. It is a double silicate of aluminium and boron, and occurs in Cornwall, Devon, South America, and Asia.

**Tournaments** were equestrian contests between military knights and others armed with lances, and frequent in the Middle Ages. The Normans introduced them into England.

**Tower of London** was a royal palace from the time of the Conqueror, who began the building of the White Tower in 1078. Later kings made considerable additions. Between the 15th and 18th centuries many princes and nobles were executed or imprisoned here, and here Henry VI., Edward V., and his brother were put to death. The Crown Jewels are kept at the Tower, and in the Armoury a fine collection of armour of various dates is preserved. The attendant staff are called Yeomen Warders of the Tower. Their style of dress is of the Tudor period.

**Tractarianism**, a term that came into use from about 1833 in reference to a religious movement (the Oxford Movement) headed by Pusey, Keble, Newman, and other Oxford high churchmen, who published "Tracts for the Times." Among other things, they advocated a higher degree of ceremonial in worship, and their enthusiasm put new activity into the Church, although the secession to Rome of some of their more prominent members showed the tendency of the movement.

**Trade Winds** form part of the circulation of air round the great permanent anticyclones of the tropics and blow inwards from north-east and south-east towards the equatorial region of low pressure. Atlantic trades are more regular than those of the Pacific. The belts may extend over 1,500 miles of latitude and, together with the Doldrums, move north and south in sympathy with the seasonal changes in the sun's declination, the average annual range being about 5 degrees of latitude. The discovery of the regularity of the trade winds is usually credited to Columbus.

**Trafalgar, Battle of**, was fought off Cape Trafalgar on Oct. 21st, 1805, between the British under Nelson and the French and Spanish under Villeneuve and Gravina. It was a complete victory for the British, but Nelson was killed.

**Trafalgar Square**. The site has often been referred to as the finest in Europe. It was conceived originally as a square by John Nash (1752-1835) when the project was considered of linking Whitehall with Bloomsbury and the British Museum. It was to be named after the new monarch as King William the Fourth's Square but on the suggestion of George Ledwell Taylor (a property owner near the site) alteration to the more popular name Trafalgar Square was agreed to by the King. On the north side the National Gallery was planned by Nash and erected by William Wilkins on the place of the Royal Mews—a work of William Kent a century before. The lay-out was the idea of Charles Barry but he did not approve the erection of the Nelson column (which see).

His idea was for the square to have a grand flight of steps from the north side with sculptural figures of Wellington and Nelson but the Commons decided otherwise and the column as designed by William Railton was begun in 1840. The two fountains by Barry were supplanted in 1948 by ones designed (1938) by Sir Edwin Lutyens. Executed in Portland stone they are flanked by some bronze sculptures. In the same year memorial busts of Lords Jellicoe and Beatty were placed by the north wall.

**Transcendentalism**, a term applied to a system of philosophy which transcends ordinary experience. It originated in Germany, and had for its chief apostles Richter, Fichte, and Schelling. In America Emerson propounded transcendental theories.

**Transept**, the portion of a church which extends across the interior between the nave and the choir. The terminal portions are called respectively the north and south transepts. Some of the older churches have two transepts.

**Transmigration of Souls** was a doctrine expounded by Pythagoras, and forms part of the Brahmin and Buddhist religions. The ancient Greeks termed it metempsychosis, and the theory is that after death the soul of a man passes into the body of some other man or animal.

**Transpiration**, the term applied to the loss of water vapour that occurs from the aerial parts of plants. In most plants about 90 per cent. of transpiration occurs through the *stomata* (*vide*), and at night, when these pores are closed, transpiration is low. The balance between water uptake and transpiration is upset when a plant is transplanted owing to some of the roots being broken, and this can be corrected by reducing transpiration losses by removing some leaves or covering the plant.

**Transubstantiation**, a term which first came into recognised use in the controversy between Berengarius and Lanfranc in the 11th century, indicating the supposed conversion of the bread and wine of the Eucharist into the body and blood of Christ, and called the doctrine of the "Real Presence."

**Trappist**. (*See* Cistercians.)

**Treadmill**, a large cylindrical machine provided with a series of steps, and maintained in rotary motion by the pressure of men's weight. A rail is fixed outside the wheel, and to this the workers of the treadmill hold by their hands, while their feet are kept continually in motion from step to step, the weight of their bodies keeping the machinery revolving. It is no longer used in prisons as a form of punishment.

**Treasure-Trove**, a legal term applying to money, plate, or bullion found hidden in the earth, or elsewhere, and for which there is no owner. The treasure legally belongs to the Crown, but it is the practice to reward the finder with the full value of the property on its being delivered up. Coroners Act, 1887, provides that inquests may be held, but not as to title as between the Crown and any other claimant.

**Treble**, the highest voice in a male voice choir. This is, of course, a boy's voice, the highest adult male voice being the alto. In a mixed choir the treble part is sung by sopranos.

**Tree frog**. The true Tree-frogs occur most commonly in America and Australasia. The Common European Tree-frog is a brilliant green animal, and the adhesive discs at the tips of its fingers and toes enable it to cling to trees, etc., with ease.

**Tree of Heaven**. A species of *Ailanthus*, native to China and Japan, which is commonly cultivated throughout the world. The leaves resemble those of the ash.

**Tree Shrews**. These arboreal insectivorous mammals, which constitute the family *Tupauidæ*, are related to the shrews, though in appearance they resemble squirrels except for their sharply pointed snout. They occur in Borneo, Siam, China, and Malaya.

**Trematodes or Trematoda**, the class of flatworms comprising the parasitic flukes. The liver fluke of sheep is the best-known species.

**Trent, Council of**, first sat in 1545, the last sitting being in 1563. At this Council the general policy, principles, and dogmas of the Roman Catholic Church were authoritatively settled.



**Triangle**, in music a metal percussion instrument in the form of a triangle which, when struck by a metal rod, emits a sound of no particular pitch.

**Triassic or Trias**, the earliest geological period in the Mesozoic era, which began some 200 million years ago and lasted about 50 million years. Triassic formations 25,000 ft. thick occur in the Alps. The predominant plants of the period were ferns, cycad, and conifers. Modern insects were appearing, and also small reptile-like mammals. Other important Triassic animals were: dinosaurs, ichthyosaurs (marine reptiles), and pterosaurs (flying reptiles).

**Tribunes**, name assigned to officers of different descriptions in ancient Rome. The original tribunes were the commanders of contingents of cavalry and infantry. The most important tribunes were the tribunes of the plebs, first elected in 494 B.C. as the outcome of the struggle between the patrician and the plebeian orders. They held the power of veto and their persons were sacred.

**Trichoptera**. This is the insect order comprising the Caddis-flies. These are moth-like insects, having hairs on the wings. They are usually found fluttering weakly near water. The larvae are aquatic and are remarkable for the cases (caddis cases) which they build out of sticks, small stones, sand grains, and shells.

**Tricolour**, the flag of the French Republic since 1789, consisting of three nearly equal vertical bands of blue, white, and red (ratio 90:99:111).

**Triennial Act**, which fixed the duration of Parliament to three years, was passed in 1641. Charles II. repealed this Act, it was re-enacted in 1694; in 1716 the Septennial Act was passed. In 1911 it was made five years' duration.

**Trilobites**, extinct aquatic arthropods, most abundant in the Cambrian and Ordovician systems. Their appearance may be roughly described as resembling that of a woodlouse, and like that animal the trilobites were capable of rolling their bodies up into a ball.

**Trimmer**, a time-server, a name that came into use in English politics in the latter part of the 17th century, being specially applied to the party headed by the Marquis of Halifax, who was charged with adapting himself to both Whigs and Tories.

**Trimurti**, the Hindu triad, Brahma, Vishnu, and Siva, symbolised as an entity. In the depictions of the Trimurti three distinct heads are represented, the theological unity combining Brahma, the creative power, Vishnu, the preserving element, and Siva, the destroying principle, in one supreme unification.

**Trinity**, the term applied to the Godhead, "three persons and one God," as it is expressed in the Litany—Father, Son, and Holy Ghost. The doctrine of the Trinity has general acceptance among Christian communities, and has been explained in different ways. One of the earlier statements of it is the Athanasian: "We worship one God in Trinity, and Trinity in unity: neither confounding the Persons, nor dividing the substance."

**Trinity House**, on Tower Hill, London, was incorporated in 1514 as an association for piloting ships, and has ever since been entrusted with various matters connected with the regulation of British navigation. Since 1854 the light-houses of the country have been under its supervision. The acting Elder Brethren act as Nautical Assessors in Marine causes which are tried by the High Court of Justice.

**Trio**, strictly a musical composition for three voices or instruments. The third movement, of a classical symphony is usually in three-beat time and the second subject of the movement, which is of ternary form, is often called the Trio. Thus, Minuet and Trio, Scherzo and Trio.

**Triple Alliance**, name given to any alliance between three countries. The most famous is the one between Germany, Austria, and Italy in 1882, which was broken when Italy refused to join in the war against France, Russia, and Great Britain in 1914.

**Triptych**, a picture, carving, or other representation, with two swing doors, by which it could be closed in; frequently used as an altar-piece. Also a writing tablet in three parts, two of which folded over the one in the centre.

**Trireme**, an ancient vessel with three rows of oars, of great effectuality in early naval warfare. Mentioned by Thucydides. It was a long, narrow vessel propelled by 170 rowers. The Romans copied it from the Greeks.

**Trisagion** ("thrice holy"), an ancient Jewish hymn, still regularly sung in the service of the Greek Church. A version of it—"Tersanctus"—also forms part of the Anglican Eucharistic service.

**Triumvirate**, a term used to denote a coalition of three persons in the exercise of supreme authority. The first Roman triumvirate was that of Pompey, Julius Cæsar, and Crassus, 60 B.C.; the second was that of Mark Antony, Octavian, and Lepidus, 43 B.C.

**Trogon**, a tropical forest bird of exceptionally brilliant plumage, found in South and Central America, tropical Africa, and S.E. Asia.

**Trombone**, a brass wind instrument which has a tube of variable length. By moving the slide, which shortens or lengthens the tube, the player causes the trombone to emit different notes.

**Tropic-Bird**, a long-tailed sea bird, of which there are 3 species, frequenting the tropical regions of the Atlantic, Pacific, and Indian oceans. One species has a bright red bill and tail.

**Troposphere**. The atmospheric layer which extends from the earth's surface to the stratosphere. As a general rule the temperature in the troposphere falls as altitude increases. (See Atmosphere.)

**Troubadours**, lyric poets who flourished from the 11th to the end of the 13th century, chiefly in Provence and the north of Italy. They were often knightly amateurs, and cultivated a lyrical poetry intricate in metre and rhyme and usually of a romantic amatory strain. They did much to cultivate the romantic sentiment in days when society was somewhat barbaric and helped considerably in the formation of those unwritten codes of honour which served to mitigate the rudeness of mediæval days.

**Trout**, a fresh-water fish of the *Salmonidæ* family.

**Trouvère or Trouveur**, mediæval poet of northern France, whose compositions were of a more elaborate character—epics, romances, fables, and chansons de geste—than those of the troubadour of the south. Flourished between the 11th and 14th centuries.

**Truffles** are subterranean edible fungi much esteemed for seasoning purposes. There are many species, and they are found in considerable quantities in France and Italy, less commonly in Britain. They are often met with under beech or oak trees, and prefer calcareous soils, but there are no positive indications on the surface to show where they are, and they are not to be cultivated. Hogs, and sometimes dogs, are used to scent them out, the former, by reason of their rooting propensities, being the most successful in the work.

**Trumpet**, a brass wind musical instrument in which different notes are produced by the operation of three "valves."

**Trunk-hose** was the part of the hose which covered the trunk or body, and extended in bag form from the waist to the middle of the thigh, enclosing the hips. In vogue in the 16th and 17th centuries.

**Tsetse**, an African dipterous fly belonging to the same family as the house-fly. It is a serious economic pest as it transmits the protozoon causing African sleeping sickness when it pierces human skin in order to suck blood, which forms its food.

**Tuatara or *Sphenodon punctatum***, a primitive lizard found in New Zealand. It has a rudimentary third eye on the top of the head; this is called the pineal eye and corresponds to tissue which in mammals forms the pineal gland.

**Tuba**, an alternative name for the Bass Saxhorn in E flat or F. (See Saxhorn.)

**Tube Foot**, the characteristic organ of locomotion of starfishes and kindred animals. They are arranged in pairs along the underside of the arms, and their sucker-like ends can grip a surface very tightly. The action of the suckers depends on hydraulic pressure.

**Tudor Period** extends from 1485 to 1603. The first Tudor sovereign was Henry VII., descended from Owen Tudor; then followed Henry VIII.,

Edward VI., Mary, and Elizabeth, the last of the line.

**Tuesday**, the third day of the week, named from the Saxon deity Tuisto, Tiw, or Teusca. To the Romans it was the day of Mars.

**Tuileries**, a French royal and imperial palace dating from 1564. It was attacked by insurgents during the outbreaks of 1793, 1830, and 1848, and was burned down during the Commune of Paris in 1871.

**Tulle**, a delicate kind of silk lace, originally made at Tulle in France. It was much used for the ornamentation of ladies' garments, hats, etc., and for veils.

**Tumulus**, a mound of earth raised over the bodies of the dead. The mound of Marathon, enclosing the bodies of the Athenians who were killed in the famous battle with the Persians, is a celebrated tumulus. Such mounds were commonly raised over the tombs of the distinguished dead in ancient times, and sometimes enclosed heavy structures of masonry. The Roman "barrows" were tumuli. Evidences of such mounds are frequent in prehistoric remains.

**Tun**, a liquid measure formerly in general use, but now obsolete. A tun of ale was 216 gallons.

**Tuna or Tunny**, a large marine fish belonging to the mackerel family, frequenting the warm waters of the Atlantic, Pacific, and Mediterranean. Tuna fisheries are an important industry.

**Tundra** is the name of a vast treeless plain of Northern Russia with small lakes and morasses scattered here and there, but almost devoid of vegetation. It is a cold, bare region, where only the reindeer can find sufficient sustenance.

**Tungsten**, a hard, brittle metal, silver to grey in colour. Its chief ores are wolframite (iron and manganese tungstate) and scheelite (calcium tungstate). Tungsten is alloyed in steel for the manufacture of cutting tools; also in the non-ferrous alloy stellite (*vide*). Electric lamp filaments are made from tungsten. Tungsten carbolide is one of the hardest substances known and is used for tipping tools.

**Turban**, a head-dress worn by men in Oriental countries, and consists of a scarf wrapped round the turboosh or cap. Turbans vary in material, colour, and folds, according to the rank of the wearer.

**Turbines** propelled by steam provide power for the propulsion of many ships, and on land steam turbines are a principal source of power, being used in large central electricity stations, for instance, to convert heat energy into electrical energy. Gas turbines have recently come into use in aeroplanes, and gas-turbine railway locomotives are being developed. The first gas-turbine ship had its trials in 1947, just half a century after the first steam-turbine ship.

**Turbot**, a large flat fish, highly valued as food. It often attains from 30 to 40 lb. in weight. Its flesh is white and firm. It is confined to European waters, and is caught by line or trawl.

**Turkey**, a fowl of American origin, brought to Europe from America soon after the discovery of that country. It was a domesticated bird in England in the first half of the 16th century. (*See also* Poultry Section.)

**Turmeric**, a yellow dye substance obtained from an East Indian plant of the ginger class, which is cultivated in other warm climates also, for commercial purposes. Turmeric, in its commercial form, comprises the root of the plant dried or powdered. Used in curry powder and to detect presence of alkali.

**Turpentine**, an oily substance obtained from coniferous trees, mostly pines and firs. It is widely used especially in making paints and varnishes, and also has medicinal properties.

**Turquoise**, formerly called Turkey Stone, is a blue or greenish-blue precious stone, the earliest and best specimens of which came from Persia. It is composed of a phosphate of aluminium, with small proportions of copper and iron. India, Tibet, and Silesia yield turquoises, and a variety is found in New Mexico and Nevada. It derives its name from the fact that the first specimens were imported through Turkey.

**Turtle Dove**, a beautiful fan-tailed pigeon, a summer visitor from Africa to southern England. It is a small, slender bird with reddish-brown upper parts, pinkish throat, black tail with white edges.

**Tweed**, A rough-surfaced fabric of the twilled type, usually all-wool, though cheaper kinds may include cotton. Of a soft, open, flexible texture, it may have a check, twill, or herringbone pattern. Harris, Lewis, Bannockburn, and Donegal tweeds are well known. "Tweeds" is said to have been written in error by a clerk for "twills."

**Twelfth Night** is the eve of the feast of the Epiphany, and in olden times was made the occasion of many festivities. It was the most popular festival next to Christmas, but is now little observed.

**Twilight** is the light which is reflected in the atmosphere when the sun is below the horizon before sunrise or after sunset. The term is most usually understood to refer, however, to the evening light; the morning light we call dawn. The twilight varies in duration in different countries, according to the position of the sun. In tropical countries it is short; in the extreme north it continues through the night.

**Tyburn**, a former small tributary of the Thames, which gave its name to the district where now stands the Marble Arch, Hyde Park. Here public executions formerly took place.

**Tycoon**, a title often used by foreigners to designate the Emperor of Japan, but not used or recognised by the Japanese. The title seems to have been coined in 1854 by those concerned in concluding the treaty between the United States and Japan. In Japanese Tycoon simply means "great prince."

**Tympanum** is, in architectural phraseology, the triangular space at the back of a pediment, or, indeed, any space in a similar position, as over window or between the lintel and the arch of a doorway. In ecclesiastical edifices the tympanum is often utilised for sculptured ornamentation.

**Tynwald**, the title given to the Parliament of the Isle of Man, which includes the Governor and Council (the Upper House), and the House of Keys, the representative assembly. This practically constitutes Home Rule, the Acts passed by the Tynwald simply requiring the assent of the Sovereign.

**Typhoon**. (*See* Cyclone.)

**Tyrolienne**, a Tyrolean dance of a waltz character.

## U

**Uhlán**, a light cavalry soldier armed with lance, pistol, and sabre and employed chiefly as skirmisher or scout. Marshal Saxe had a corps of them in the French Army; and in the Franco-German war of 1870 the Prussian Uhlans won fame.

**Ultramarine**, a sky-blue pigment obtained from lapis lazuli, a stone found in Tibet, Persia, Siberia, and some other countries. A cheaper ultramarine is now produced by grinding and heating a mixture of clay, sulphur, carbonate of soda, and resin.

**Ultramontanism** is the term applied to the views of Roman Catholics who desire that absolute authority in religious affairs should be vested in the Pope, subordinate only to the Ecumenical Council.

**Ultrasonics or Supersonics**, the term applied to waves of frequencies greater than those of audible sound waves and less than those of radio waves. The first instrument for producing supersonic waves was Galton's Whistle; this showed that cats and dogs, for instance, can hear "sounds" which are inaudible to humans. The commonest type of supersonic generator depends on the piezo-electric effect of crystals, which start vibrating when an alternating current is applied to them. (The crystals usually used are of quartz, Rochelle salt, or tourmaline.) Supersonic echo-sounders have been used for detecting submarines, wrecks, shoals of fish, etc., and they are invaluable instruments for measuring the depth of the sea. The term "ultrasonics" is superseding "supersonics" owing to the increasing use of the word "supersonic" in aeronautics, where it is applied to speeds exceeding the velocity of sound. (*See also* Mach Number.)

**Ultra-Violet Rays**. These are invisible rays whose wave-lengths are less than 3,900 Angstrom units



(this unit is one hundredth of a millionth of a centimetre). The sun's radiation is rich in ultra-violet light, but much of it never reaches the earth, being absorbed by molecules of atmospheric gases (in particular, ozone) as well as by soot and smoke particles. One beneficial effect of ultra-violet light on human beings is that it brings about synthesis of vitamin-D from certain fatty substances (called sterols) in the skin. The wave-lengths which effect this vitamin synthesis also cause sun tan and sun burn. Ultra-violet lamps (which are mercury-vapour discharge lamps) are also used for sterilising the air inside buildings, their rays being lethal to bacteria. Many substances fluoresce under ultra-violet light; for instance, zinc silicate glows green, while cadmium borate throws out red light. This phenomenon is applied practically in fluorescent lamps, the light of requisite hue being secured by judicious mixture of the fluorescent materials which coat the lamp. (See Electric Light.)

**Uncials** were a form of written characters used in times prior to the 10th century; while smaller than capitals they were larger than the later minuscule. The term uncial was a misappellation of St. Jerome's *litterae uniciales*, "inch-high" letters.

**Unction**, the act of anointing with oil, a symbol of consecration practised in the Roman Catholic, Greek, and other Churches, but not in the Protestant. *Extreme unction* is the rite of anointing a dying person with holy oil. This function consists in anointing the eyes, ears, nostrils, mouth, the palms of the hands, and the soles of the feet.

**Underground Gasification**, the process of converting coal into gas underground. Briefly an "underground gasworks" comprises two approximately vertical shafts connected by a gallery through the coal seam, which is ignited. Air is led down one of the shafts, and the gas produced is drawn off from the second shaft. The technique was worked out by the British chemist, Sir William Ramsay, but it was not until 1933 that it was tried seriously—in the Donetz coalfield in Russia. America, Italy, and Belgium are also experimenting with underground gasification.

**UNESCO.** (See "A Citizen's Guide.")

**Unicorn**, a fabulous single-horned animal. In heraldry its form is horse-like, with the tail of a lion and pointed single horn growing out of the forehead.

**Union Jack.** (See p. 752.)

**Union of Great Britain and Ireland** was proposed in the Irish Parliament in Jan. 1799 after the 1798 Rebellion and came into force on Jan. 1st, 1801. The troubled history of Ireland, associated with the questions of self-government, nationalism, land, and religion, culminated in the Easter revolution of 1916. A treaty giving the 26 southern counties independence in 1921, as the Irish Free State, was followed by a period of internal dissension. In 1937 a new constitution was enacted in Eire in which no reference was made to the Crown. This, however, left in force the External Relations Act of 1936 and with its repeal in 1948, Eire separated itself from the British Crown and thus severed the last constitutional link with the Commonwealth, and became an independent Republic.

**Union, Treaty of**, was the treaty by which Scotland became formally united to England, the two countries being incorporated as the United Kingdom of Great Britain, the same Parliament to represent both, Scotland electing sixteen peers and forty-five members of the House of Commons. Uniformity of coins, weights, and measures was provided for, Scottish trade laws and customs were assimilated to those of England, and as regards religion and the practices of the law, Scotland was to continue as before. This Act was ratified on May 1st, 1707.

**United Nations.** (See "A Citizen's Guide.")

**Universe in astronomy** means not only the star system of which the sun and planets are a small part but all the countless star systems or nebulae which may be separated from each other by millions of light-years. (See "The World of Science.")

**Universities** are institutions of higher education

whose principal objects are the increase of knowledge over a wide field through original thought and research and its extension by the teaching of students. Such societies existed in the ancient world, notably in Greece and India, but the origin of the University as we know it today lies in medieval Europe, the word *universitas* being a contraction of the Latin term for corporations of teachers and students organised for the promotion of higher learning. The earliest bodies to become recognised under this description were at Bologna and Paris in the first half of the 12th century; Oxford was founded by an early migration of scholars from Paris, and Cambridge began with a further migration from Oxford. Other Universities sprang up all over Europe, including three in Scotland—St. Andrews (1412), Glasgow (1451), and Aberdeen (1494)—which were followed by Edinburgh in 1582. These six bodies remained the only Universities in Great Britain until the foundation in 1826-29 of University and King's Colleges in London (resulting in the establishment of the University of London in 1836) and of the University of Durham in 1832. The period since 1850 has been a great century of academic growth, in which the new Universities of Belfast, Birmingham, Bristol, Hull, Leeds, Liverpool, Manchester, Nottingham, Reading, Sheffield, Southampton, and Wales were founded, the latest creation being that of Exeter in 1955. There are now twenty-one Universities in the United Kingdom and two University Colleges (Leicester, and North Staffordshire). The Republic of Ireland has Trinity College, Dublin (founded in 1592), and the National University of Ireland, with its three constituent University Colleges at Dublin, Cork, and Galway. The 19th century also saw a wide extension of the University movement throughout the British Empire, the early important foundations being McGill (1821), Toronto (1827), and Laval (1852) in Canada; Sydney (1850) and Melbourne (1853) in Australia; New Zealand (1870); South Africa (1873); Bombay, Calcutta, and Madras in 1857 in India; and the University of the Punjab (1882) in the present Pakistan. There are now seventy-nine Universities of full status in Commonwealth countries outside the United Kingdom: three of these are in the Colonies (Hong Kong, Malaya, and Malta), and since the war University Colleges have been instituted in the West Indies and in East and West Africa and Rhodesia. In the U.S.A. the development of higher education has left the Universities less sharply defined than in Europe and the Commonwealth, but there are nearly 1,800 institutions of higher education covering 2,297,000 students, the best-known Universities being Harvard, Yale, Princeton, Columbia, and Chicago. The range of studies that may be pursued at a University covers humanities and sciences, and includes training for the liberal professions. It is customary for Universities to confer degrees on students who reach certain educational standards, the principal titles being those of Bachelor, Master, and Doctor in the particular discipline. In England a certain emphasis has always been placed on the provision of residential facilities for students; the ancient Universities of Oxford and Cambridge are entirely collegiate in character, while the modern Universities have halls of residence for a growing proportion of their students. In Great Britain in 1952-53 there were 81,474 full-time University students, including 19,688 women and 7,468 from overseas countries; 70% held scholarships or other financial awards. Through the University Grants Committee H.M. Treasury subsidises the recurrent expenditure of Universities to the extent of more than £20 million per annum, but they are self-governing institutions free from State control. An International Association of Universities was founded under UNESCO auspices, with headquarters in Paris, in 1950. The Association of Universities of the British Commonwealth, established in 1912, holds quinquennial Congresses (the most recent at Cambridge in July 1953) and publishes the *Commonwealth Universities Yearbook* as a detailed work of reference; its office is in London. (See *Hoods of Academical Robes*, pp. 754-57.)

**University Boat-race.** (See p. 966.)

**Upas**, the poisonous sap of certain trees growing in

Java and the Malayan and Philippine Islands. The natives use the sap for arrow-poison. Strychnine is yielded by one of these trees, the *Strychnos Nux-vomica*.

**Ur** of the Chaldees, and probably the site of Abraham's early home, is an ancient Sumerian site where important excavations have been conducted by Taylor in 1854 and by Hall and Woolley in this century. The excavated graves and other discoveries have thrown valuable light on the period subsequent to the "Flood" and have added much to modern archaeology.

**Uraeus**, the sacred serpent of the ancient Egyptians, always represented on the head-dresses of divinities and royal personages. It was the symbol of supreme power, and was in the form of an asp.

**Uralite**, a mineral produced when a pyroxene rock is metamorphosed into hornblende.

**Uraninite.** (See Pitch-blende.)

**Uranium**, a metal discovered by Klaproth in 1789 in pitch-blende. It is a white metal which tarnishes readily in air. Great developments have followed the discovery that the nucleus of the uranium isotope Uranium 235 undergoes fission, and uranium minerals have become very important since it was found that atomic energy could be released controllably by taking advantage of fission. (See Atomic Bomb, Atomic Pile.) Previous to the second world war the uranium content of all the uranium ores that were mined was estimated at 1,000 tons. Since then uranium mining has been surrounded by military secrecy, and no figures are being published. Before atomic energy work began to take the major part of the world's output of uranium minerals, the chief users of uranium compounds were the ceramics and textile industries.

**Uranus.** This planet was discovered by Herschel in 1781. Its diameter is 32,000 miles and its average distance from the sun is 1,783 million miles. It has four small satellites.

**Uriconian**, the name given to a series of volcanic rocks occurring in Shropshire near Wroxeter, the site of the old Roman station of Uriconium.

**Ursa Major**, the Greater Bear, or "Charles's Wain," a constellation familiar to all observers because of the brilliance of the seven stars forming its outline. It never sets in these latitudes.

**Ursa Minor**, the Lesser Bear Constellation, has, like Ursa Major, seven prominent stars, of which the pole star is the brightest.

**Usquebaugh**, is the old Celtic name for spirit, distilled originally from barley. The name is still used in Scotland. Burns, in *Tam o' Shanter*, wrote, "Wi' usquebae we'll face the de'il."

**Utilitarianism** is a term that originated with the Italian philosopher Beccaria, and has for its aim "the greatest happiness of the greatest number," and insists that this should be the sole aim of all public action. Jeremy Bentham was the chief propounder of the philosophy, and in more recent times John Stuart Mill advocated it with much acceptance. Herbert Spencer's exposition of the theory represented a still higher development of it.

**Utopia** was the imaginary island of Sir Thomas More's ideal state, where the conditions of life and government were perfect. The work, published in 1516, was the forerunner of a host of such books by Bacon, Lytton, Bellamy, and, of the 20th century H. G. Wells.

**Utrecht, Treaty of**, was the treaty which concluded the war of the Spanish Succession in 1713.

**Uvarovite**, an emerald-green variety of garnet. It contains chromium sesquioxide. Named after Uvarov, the Russian statesman.

**Uvula-wort** or **Throatwort**, the nettle-leaved Bell-flower (*Campanula Trachelium*), found plentifully in English copses, and has the reputation of being of service medicinally in the treatment of pains and swellings in the throat.

**Uzema**, a Burman linear measure equal to about 12 English miles.

## V

**Vaccination**, a system of inoculation against small-pox discovered by Dr. Jenner in the 18th cen-

tury. In Great Britain it is usual for all infants within 6 months of birth to be vaccinated unless the parent conscientiously believes that it would be harmful to the infant's health. (See p. 816.)

**Vagrancy** was the subject of stringent punishment under the old English laws. Various penalties were branding, setting in the stocks, mutilation of the ears, and transporting to the Colonies. The Vagrancy Act of 1824 repealed all former laws. Many Acts have since been passed.

**Valentine's Day**, the 14th Feb., is a festival in celebration of St. Valentine, one of the Christian martyrs of the 3rd century. A sweetheart or Valentine is chosen on that day and letters or tokens sent secretly to the object of affection.

**Valhalla**, in Scandinavian mythology, is the special Paradise to which the souls of warriors slain in battle were transported. The term is also generally used to designate a burial place of great men.

**Valkyries**, the chosen handmaidens of Odin, appointed to serve at the Valhalla banquets. Their most important office, however, according to the Norse mythology, was to ride through the air at a time of battle and point out the heroes who were to fall. It is one of these Valkyries who is made the heroine of Wagner's opera "Die Walküre."

**Vampire or Werewolf**, according to ancient superstition, was a spectre in human form which rose from its grave in the night-time and preyed upon the living as they slept, sucking their blood, and then returning to the grave.

**Vampire-Bats**, blood-eating bats of tropical America. They puncture the skin with their incisor teeth, leaving a wound that bleeds profusely. The blood is lapped up by the bat, not sucked.

**Vanadium**, a scarce metallic element whose chief ores are carnotite and patronite. Some iron ores contain it. Most of the vanadium commercially produced finds its way into vanadium steels, which are used for tools and parts of vehicles, being hard, tough, and very resistant to shocks.

**Vandals** were a Teutonic race who ravaged Gaul, Spain, and North Africa in the 5th century, and finally attacked the city of Rome, drawing down upon themselves universal opprobrium for their wanton destruction of beautiful objects and monuments.

**Vanilla**, a climbing orchid of tropical America, found also in Asia; the dried fruit of certain species furnishes the agreeable aromatic vanilla of commerce, though most vanilla essence now used is prepared synthetically.

**Varnish** is of two leading kinds; spirit varnish, made from resinous substances dissolved in spirit; and oil varnish, in which the dissolving agent is linseed oil and turpentine.

**Vatican**, the Papal residence at Rome, a famous palace on the hill adjacent to St. Peter's. Its museum is a rich treasure-house of literary and artistic objects.

**Vauxhall Gardens**, a famous London pleasure resort from the early part of the 18th to the middle of the 19th century. It was here that many great singers appeared, where the earliest balloon ascents were made, and where there were fine displays of fireworks.

**Vedas**, the sacred writings of the ancient Hindus, comprising hymns, sacred formulae, and prayers, and the oldest books in existence.

**Vehmgericht**, a mediæval tribunal said to have been founded by Charlemagne in the 9th century. It dealt with cases in which the penalty of death was involved. The last of these courts was held in 1568, by which time the suppression of the tribunal had become a public necessity.

**Velvet**, silk fabric that is woven with a fine pile on one side only. When the piece is made entirely of silk it is styled silk velvet; when cotton is mixed with the silk, it is cotton-velvet or velveteen.

**Ventilation** is a process of supplying fresh air to and removing contaminated air from rooms and buildings. It is a science that has been much studied in recent years and has led to the adoption of methods of air renewal by which the public health has been greatly improved. A recent development of the study of ventilation



- is air-conditioning. Being independent of outside atmospheric conditions, the air can be kept pure and at a suitable temperature.
- Ventriloquism**, the art of speaking in many voices and at apparent different distances, without seeming motion of the lips. The art was practised by the ancient Greeks and Romans.
- Venue**, a legal term designating the place where an action is to be tried or from which a jury is to be summoned.
- Venus**, the planet second in order from the Sun and distant from that orb 67,200,000 miles. It is 7,700 miles in diameter. At wide intervals Venus passes between the earth and the sun, when what is called the "Transit of Venus" takes place. The last transit was in 1882. There will not be another until 2004.
- Venus' Fly-trap**, a well-known insectivorous plant (*Dionaea muscipula*) occurring in Carolina in damp mossy places. It is related to the Sundew. The leaf is the organ that catches the insects. The leaf blade is in two halves, hinged along the centre line. Each half bears three sensitive hairs called "trigger hairs." When an insect touches a trigger, the two halves of the leaf clap together, trapping the insect between them, when it is digested by a secretion from the leaf, which afterwards absorbs the soluble products.
- Verd-Antique**, a peculiar kind of stone found chiefly in Italy, and to some extent quarried in Cornwall and certain parts of Scotland, Ireland and the United States. It is highly-ornamental stone, vari-coloured, beautifully veined and capable of high polish.
- Verdigris**, a green deposit formed upon copper when exposed to the air. Verdigris is used both as a mordant and as a pigment.
- Verjuice**, an acid liquid formerly much used in cooking. It is derived mostly from sour grapes, crab-apples, and other acid fruits.
- Vermilion**, a pigment obtained from cinnabar, but generally made artificially from a mixture of one part of sulphur with four of mercury. It yields a bright red colour.
- Vernalization**. Seeds which, after being exposed to a low temperature, produce plants that flower earlier than usual are said to have been "vernalized." This technique of seed treatment devised by Lysenko is called vernalization. It is claimed to have been widely used in Russia to obtain cereal crops in places where climatic conditions are favourable for only a short season.
- Versailles, Treaty of** The Peace Treaty, 1919, ending the First World War. The first half was devoted to the organisation of the League of Nations. Among the territorial changes Germany ceded Alsace-Lorraine to France, Posen and the Corridor to Poland. Germany undertook to disarm, to abolish universal military service, to keep only a small army of 100,000 and a small navy. Her colonies were to be shared out among the Allies under League Mandates. Reparations were to be paid, but were gradually reduced and entirely ceased in 1932. Hitler took unilateral action against the Treaty especially in regard to rearmament and the annexation of Austria. Hitler's attempt to change the eastern frontiers was the immediate cause of the Second World War.
- Verst**, a Russian measure of length equal to 3,500 ft., i.e., about two-thirds of an English mile.
- Vertebrate**, the zoological division comprising such animals as have a backbone.
- Vesta**, a minor planet or asteroid discovered by Dr. Olbers of Bremen in 1807. It revolves round the Sun between Mars and Jupiter.
- Vestals** were priestesses of ancient Rome, appointed to guard the perpetual fire consecrated to Vesta, goddess of hearth and home. They were required to take vows of chastity, and during the thousand years from Numa, 710 B.C., to Theodosius, A.D. 394, when the order was abolished, only 18 vestals were condemned for incontinence.
- Vaticum** (literally "provision for a journey"), an expression designating the ministering of Holy Communion to one on the point of death.
- Vicar of Bray**, the original of the ballad of that name was Simon Alleyn, vicar of Bray between 1540-85, who was "twice a Papist and twice a Protestant," as Fuller asserts, serving under four monarchs, Henry VIII., Edward VI., Mary I., and Elizabeth.
- Victoria and Albert Museum**, in Kensington, London was begun in 1852 as the Museum of Ornamental Art at Marlborough House. The present building was completed in 1909, and has the following nine departments; Architecture and Sculpture; Ceramics; Engraving, Illustration and Design; Metalwork; Paintings; Woodwork; Textiles; Library (of books on art) and Book-production; and the Dept. of Circulation. The Bethnal Green Museum is a branch of the V. and A.
- Victoria Cross**, an order of merit for conspicuous valour, awarded to members of the Army, Navy, and Air Force, was established in 1856. To non-commissioned holders, the V.C. carries with it an annuity of £10, plus 6d. a day to their pensions. The standard payment in respect of posthumous awards is £50.
- Vicuña**, a large mammal of the camel family, found wild in the mountain regions of Bolivia and Chile. It yields a wool which is made into dress fabrics.
- Vienna Congress**, sat at Vienna from Sept. 1814 to June 1815, and settled the delimitation of the territories of the various European nations after the defeat of Napoleon. The Treaty of Vienna which resulted gave Ceylon, Mauritius, Cape Colony, Heligoland, Malta and part of Guiana to England; France was not permitted to hold more territory than she had possessed at the outbreak of the Revolution in 1789; Austria took Northern Italy; Russia part of Poland; and Prussia, part of Saxony and the Rhenish province. Except for one or two changes the clauses of the treaty were maintained for over forty years.
- Viet-Minh**, the Indo-Chinese (Annamite) national movement led by Ho Chi-Minh which resisted French rule from 1945 to 1954, when agreement was reached at the Geneva Conference.
- Vikings** were Scandinavian sea-plunderers who from the 8th to the 10th centuries were the terror of northern waters.
- Vinegar**. This condiment and preservative is a weak solution of acetic acid, usually containing brown colouring matter. It is made by allowing a weak solution of alcohol (e.g., poor wine, sour beer, etc.) to trickle through beech-wood shavings that are covered with a kind of bacteria which is able to convert alcohol into acetic acid.
- Viola**, a stringed instrument of the violin type but rather larger than the violin. Music for the viola is written mainly in the alto clef, though the treble clef is used for the higher notes.
- Violin**, a stringed instrument rather smaller than the ancient viol from which it derives. It is held under the chin for playing, the right hand bowing while the left hand "stops" the strings. The violin has been used in its present form since the 16th century, the most famous maker being Antonio Stradivari of Cremona.
- Violoncello**, a member of the violin family of stringed instruments whose pitch corresponds with that of the bass voice. It is played while between the knees as was the old *viol da gamba*.
- Viper**, a family of poisonous snakes of which there is one example in Britain, the common viper or adder, only found in very dry localities.
- Virginal**, an English keyboard instrument of the harpsichord type greatly in vogue during Elizabethan times.
- Virgo**, the 6th constellation of the Zodiac, lying between Leo and Libra. It has seven prominent stars ranged in the form of the letter "Y." One of these stars is of the first magnitude, the other six being of the third magnitude.
- Virtues, Cardinal**. See Cardinal Virtues.
- Visibility** is defined by the distance at which the farthest of a series of objects, specially selected to show against the skyline or in good contrast with their background, can be distinguished. Visibility depends chiefly upon the concentration of water or dust particles suspended in the air. Instruments are available to measure the obscurity of the atmosphere more directly, including that at night. A large lapse rate of temperature and a strong wind are favourable to good visibility; a small lapse rate, calm or light wind favourable to bad visibility. Fog is when the visibility is less than 1,100 yds.; mist or haze when it is between 1,100 and 2,200 yds. (See Pollution.)

**Viscount**, a title of rank coming between that of Earl and Baron. The title originally stood for deputy-earl. The first English Viscount was Viscount Beaumont, created in 1440.

**Vishnu**. The second person of the Hindu Trinity, representing a principle of stability, to whom the creation of the world is sometimes attributed.

**Vitamins**. (See "Medical Section.")

**Vitriol**, the old name of sulphuric acid, represented in its pure form by oil of vitriol. Sulphate of copper forms blue vitriol; sulphate of iron, green vitriol; and sulphate of zinc, white vitriol.

**Vivandière**, a female camp follower informally attached to French military regiments, and acting as vendor of liquors, fruits, etc.

**Vivisection**, the dissection for scientific purposes of living animals. The practice has been strongly opposed by humanitarians, and Acts have been passed for restricting vivisection to authorised persons.

**Vizir**, more correctly **Vizir**, literally "burden bearer" or helper, originally the chief minister of the Abbasid (second of the two great dynasties of the Mohammedan empire) Caliphs.

**Volcanoes** are mountains or mounds beneath which, in the depths of the earth, there is a continual fire that at intervals throws up flame, molten rock (lava), ashes, etc. The most active volcanoes of modern times have been those of Etna, Vesuvius, and Stromboli, in Italy; Hekla in Iceland; and Mont Pelée in Martinique. The last-named was in violent eruption in 1902, when the chief town of St. Pierre was completely destroyed and many lives were lost.

**Vole**. There are three species of British vole: the Field-vole, the Bank-vole, and the Water-vole.

**Volt**, the electro-motive force unit, named after Volta, and defined in terms of the ohm and the ampere. (See p. 742.)

**Voltmeter**, instrument for measuring voltages.

**Volunteers**, a general term for soldiers who are not professionals nor permanently embodied under arms in peace. The idea of an organised volunteer force seems to have originated in England at the time of the Militia Bill of 1757. The Volunteers were re-formed as the Territorial Force in 1908. The British army has been recruited from volunteers in times of peace, and largely in wartime for several centuries. Conscription was used in the first and second world wars. The Home Guard (Local Defence Volunteers), recruited in the last war, was initially a volunteer organisation, but became compulsory in Mar. 1942.

**Vulgate**, a term used to designate the Latin version of the Scriptures sanctioned by the Council of Trent.

**Vulpine Phalanger**, an Australian marsupial mammal, resembling a small fox, and called also the Brush-tailed Opossum.

**Vulture**, a famous bird of prey of two distinctive groups; that of the Old World, which has the nostrils divided by a mass of bone, and the New World vulture, which has no such division. Vultures feed on carrion and are the great scavengers of tropical regions. The European species are the Griffon Vulture and the Egyptian Vulture, which, however, have seldom been known to visit England. Vultures have no feathers on the head and neck.

## W

**Wading Birds**, an order of migratory, long-legged, long-billed birds, frequenting marshes and shallow waters. They include the plovers, avocets, stilts, oystercatchers, curlews, phalaropes, godwits, dunlins, sandpipers, redshanks, greenshanks, snipe, woodcocks, the pratincole of the Mediterranean, and the sun bittern of tropical America. Many species breed in Britain.

**Wagram, Battle of**, was fought on July 5th and 6th, 1809, when Napoleon defeated the Austrians.

**Wagtail**, a familiar long-tailed small bird, of which four species are British, the Pied (or Water), Grey, Yellow, and White Wagtails, while the Blue-headed Wagtail also occasionally makes his appearance. Wagtails nest in ruts, and are active of habit.

**Waits**, the night minstrels who sing carols at Christmas in the open, a remnant of the old-

time minstrels attached to Courts and feudal dwellings.

**Wakes** were originally parish festivals in celebration of the patron saint's day and the dedication of the church in the all-night vigil. Regulated by law in 1536, they gradually fell into desuetude, or became divorced from their former significance; also vigils for the dead before interment.

**Waldenses**, the name given to an heretical Christian sect which arose in the south of France in the second half of the 12th century in protest against the worldliness of the clergy. Their leader, Peter Waldo of Lyons, had a translation of the New Testament made into Provençal, and his teaching stirred men to lead more holy lives. They were persecuted but not destroyed and survive to this day in the valleys of Piedmont. Cromwell interceded and obtained for them increased toleration, and Milton used his pen on their behalf. Since 1848 they have had full freedom of worship, and membership has steadily increased. They have a theological school at Florence.

**Walloons**, name given to the French-speaking population of the southern provinces of Belgium, in contrast to the Flemings or Dutch-speaking population of the northern provinces. The Walloon areas contain the mining and heavy industries of the country; the Flemish regions are more agricultural. The number of Walloons is estimated at about 3 millions; the number of Flemings at about 5 millions.

**Walpurgis Night**, the night before May 1st, when witches and creatures of evil are supposed to have liberty to roam. Named after St. Walpurgis, an English nun, who went on a mission to Germany in the 8th century. There is a famous Walpurgis night scene in Goethe's *Faust*.

**Walrus**, a very large marine mammal, related to the seals but having in the upper jaw two large curved tusks, which average in length from 15 in. to 2 ft. It lives on fish, and inhabits the Arctic seas. An adult walrus can exceed 12 ft. in length and weigh over a ton.

**Waltz**, a popular round dance, danced in couples, introduced into England from the Continent in 1813.

**Wapentake**, the ancient name given in the northern counties to territorial divisions corresponding to the Hundreds of southern counties.

**Wapinschaw**, an ancient Scottish custom of assembling the people for the purpose of testing their capacity for bearing arms and their readiness to take the field.

**Wapiti**, a large North American deer, often, but erroneously, styled the elk, once abundant, but now surviving only under protection.

**Warblers**, a family of small, lively song-birds, closely related to the flycatchers and thrushes. Represented in Britain by many species, including the chiffchaff, one of the earliest spring visitors, willow-wren, wood-warbler, blackcap, garden-warbler, whitethroats, sedge- and grass-hopper-warbler.

**Washington Conference** was convened in 1921 by President Harding (U.S.A.) for the purpose of discussing the limitation of armaments and Pacific and Far Eastern problems. (See also *Quadruple Agreement*.)

**Wasps**. Some wasps are social insects, others are solitary. The former build nests of papier mâché, produced by chewing wood. The solitary wasps either build nests of mud or burrow in the ground. The sting of wasps, found only in females, is acid and needs to be neutralised with an alkaline substance, e.g., the traditional "blue bag," baking soda, etc.

**Water Boatman**, a common aquatic bug which rows with its oar-shaped hind legs.

**Water Deer**, the Chinese musk deer, an animal of small size and aquatic habits, and hornless.

**Water Flea**, a small crustacean provided with several pairs of legs, carrying gills which enable it to swim rapidly to and fro on the water.

**Water Frame**, the name given to the spinning frame invented by Arkwright, driven by water-power. In Lancashire, where it was most used, it was known as the "throstle."

**Waterlander**, a sect established in Holland as an offshoot of the Mennonites. They were more tolerant than the original sect, and did not



regard the Bible as necessary to salvation. Ultimately they became reconciled with their opponents, with whom they are now united.

**Waterloo, Battle of**, was fought on June 18th, 1815. The Allies (British, German, and Dutch) under Wellington and Blücher defeated the French under Napoleon. This ended Napoleon's career.

**Waterloo Bridge**, crossing the Thames, was built by Rennie, and opened in 1817. It had nine arches, each of 120 ft. span, was built of granite, and had a length (including approaches) of 2,456 ft. The present bridge, completed in 1942, and formally opened Dec. 10th, 1945, is a fine example of reinforced concrete construction. (Architect, Sir Giles Gilbert-Scott.)

**Water-Spider**, an interesting little animal which spins a sac of silk on a water-plant, which it uses as sort of diving bell. Into this bell it introduces bubbles of air, one at a time. Thus the spider is enabled to remain below the surface a considerable time.

**Waterspout**, whirling tornado-like cloud occurring at sea. It begins as a cone of cloud tapering slowly downwards, the sea surface becoming disturbed; on reaching the centre of the cloud of spray the spout takes on the appearance of a column of water. A number of these voracious may form fairly close together at about the same time, their duration ranging up to 30 minutes.

**Watling Street**, the name of the old Roman road which ran from the Channel ports by way of London to Shropshire. (See also Roman Roads.)

**Watt**. A metric unit of electrical power equivalent to 1 joule (10 million ergs) of work per second. 746 watts equal 1 horse-power, and the kilowatt (1,000 watts) is about 1½ horse-power. (See p. 742.)

**Wavellite**. This mineral is an aluminium phosphate.

**Wax**, the name applied to certain plant substances or mixtures, and used for various purposes, such as the making of wax candles, bleaching, and making artificial flowers, anatomical models, etc., also in pharmacy for blending in the composition of plasters, ointment, etc. The best-known natural wax is beeswax, and there are others, such as spermaceti, obtained from the sperm whale, and Chinese wax which is a cerotyl cerotate.

**Waxbill**, a small Oriental and African bird of the *Ploceidae* family, with wax-like bill and beautifully variegated plumage. The Java sparrow, the South African Grosbeak, and the Blue-breasted waxbill are attractive, and often find their way into cages.

**Wayz-Goose**, the name generally given to a festive gathering of people employed in printing and other works, so called from the fact that in earlier times a goose was the principal dish of the feast.

**Weasel**. A carnivore mammal found in Britain, smallest member of the group including the Stoat, Polecat, and Pine-marten, about 8 in. long. Its fur is reddish on the upper side of the animal, white on the under side; it may all turn white in winter with the exception of the tail.

**Weather**, the factors determining to-morrow's weather are so manifold, variable, and complex that the task of the meteorologist is no easy one. There are still people who cling to the idea that weather is determined by the phase of the moon, but their predictions have no scientific backing, and can be dismissed. Changes in temperature, humidity, and speed of air masses can best be measured by instruments designed for the purpose. Weather forecasts are now a regular feature of the B.B.C. broadcast, the information being supplied by the meteorological staff of the Air Ministry. By taking into account the peculiar character of any part of the country, whether coastal, high- or low-lying, industrial, sheltered, precise forecasts for that particular region can be made up to twenty-four hours ahead and sometimes longer. Great strides were made (particularly in obtaining regular upper air observations) during the recent war when accurate forecasts were indispensable for the safety of aircraft and ships, for strategic purposes, and for the assistance of farmer and fisherman. The British Isles lie in the path of depressions moving north-eastward across the Atlantic.

It is the frequency, intensity, and speed of these centres of low pressure, which give these islands such changeable weather. On the other hand, when an anticyclone builds up and embraces the British Isles, settled weather is fairly certain, the type of weather, whether dull or cloudless, warm or cold, depending mainly on the direction of the wind in the particular area concerned and the time of year.

**Weather Lore**. Before instruments were invented to measure atmospheric conditions, man relied on his own observation of wind and sky, behaviour of birds and animals, and came to associate certain phenomena with types of weather. Many popular weather rhymes have survived the centuries, and as long as forecasting is confined to the next twenty-four hours there is perhaps something to be said for them, particularly those dealing with the winds. What is very unlikely is that next year's summer can be predicted from this year's winter, or that one month's weather is related to that of another. The study of past records reveals too many exceptions for such predictions to be of much use in forecasting.

**Weaver Bird**, the popular name for a large group of finch-like birds belonging to the family *Ploceidae*, found principally in Africa but also in Southern Asia and Australia and remarkable for their habit of building nests formed of blades of grass dexterously interwoven and suspended from the boughs of trees. (See p. 1001.)

**Weaving** has been practised since before any times of which we have record. The Egyptians credit the invention to Isis, the Grecians to Minerva. The main principle of the weaving loom is the same to-day as it was thousands of years ago; a warp extends lengthwise through the loom, the threads being held in separate regular order by being passed through a reed or "slay," while the weft is crossed through alternating threads of the warp by means of a shuttle which holds the weft. Thus the fabric is built up. Weaving was done by hand up to the early part of the 19th century, when Cartwright's steam-power loom was introduced, and is now in universal use. The Jacquard loom for weaving figured designs dates from 1801.

**Wedding Anniversaries** are: first, Cotton; second, Paper; third, Leather; fourth, Fruit and Flower; fifth, Wooden; sixth, Sugar; seventh, Woolen; eighth, Salt; ninth, Copper; tenth, Tin; twelfth, Silk and Fine Linen; fifteenth, Crystal; twentieth, China; twenty-fifth, Silver; thirtieth, Pearl; fortieth, Ruby; fiftieth, Golden; sixtieth, Diamond.

**Wednesday**, the 4th day of the week, derived its name from Woden or Odin, the Norse god of war.

**Weever**, a species of sea-fishes which possess the power of inflicting stings by means of the dorsal fin and a spine on the gill cover.

**Weevil**. The term is applied to members of a group (called Rhynchophora) of beetles with a snout at the end of which is the mouth. Certain weevils are serious pests in granaries, while the cotton-boll weevil does enormous damage.

**Weights and Measures**. Crude standards of weights and measures existed in the ancient world, and the degree of standardisation increased as civilisation progressed. Weight was taken from the grain, which is still the smallest unit. Ancient measures were based on the natural proportions of the human body, the digit or breadth of the middle part of the first joint of the forefinger being taken as the lowest unit. Under Richard I. standards of weights and measures had to be provided for the whole kingdom by the sheriffs of London. Today the Standards Department of the Board of Trade is responsible for the national standards of weights and measures. (See pp. 740-42.)

**Wenlock Group**, in geology, a sub-group of the Upper Silurian series, 4,000 ft. in thickness, consisting of limestone and shale.

**Werewolf**, a man or woman, who according to medieval belief, could be turned by witchcraft or magic into a wolf, eat human flesh or drink human blood, and turn into himself again. This belief was widely held in Europe, and similar superstitions prevail among most primitive peoples, e.g. the "leopard man" of certain African tribes. Lycanthropy (from Gr., a wolf-

man) is a form of madness in which the patient imagines himself a beast.

**Western Church**, the catholic church (Rome), as distinct from the eastern or orthodox church (Constantinople); 1054 marks the date of the final separation of eastern and western Christendom.

**Westminster Abbey** stands on the site of an old church and Benedictine foundation of the 7th century. It was rebuilt under Edward the Confessor, and again under Henry III., and important additions were made by Edward II., Edward III., Richard II., Richard III., and Henry VII., the latter erecting the beautiful eastern chapel in the perpendicular style which bears his name. The western towers and front were rebuilt by Wren in the 18th century. It contains tombs of many sovereigns, of the Unknown Warrior, and many other illustrious men are commemorated by monuments.

**Westminster Cathedral**, seat of the Roman Catholic Archbishop of Westminster. It was designed by J. F. Bentley and built between 1895 and 1910. It is of red brick, in early Christian Byzantine style with a domed campanile, 283 ft. high and a decorative interior.

**Westminster Hall**, adjoining the Houses of Parliament, was built as a Banqueting Hall by William Rufus, and many courtly festivals were held there in succeeding centuries. King John established the Law Courts there. It now forms a gigantic hallway, leading to the Houses of Parliament, but was used as a Banqueting Hall in Aug. 1905, when the then Prime Minister, Mr. Balfour, entertained the officers of the French Fleet there. Many famous people (Charles I., Sir Thomas More, Warren Hastings) have been tried there.

**Whale**, a completely aquatic mammal; the fore-limbs are modified to form fin-like paddles and there is virtually no external trace of the hind-limbs. There are two major groups of whales—the *Toothed Whales*, including the Sperm-whale (Cachalot), Dolphins, Killer-whales, and Porpoises; and the *Whalebone Whales*. In the latter a series of whalebone plates grow down from the roof of the mouth, and, being frayed at their edges into a hairy fringe, together constitute a filtering mechanism. The animal takes in sea water containing minute organisms on which it feeds; the mouth is then closed and the tongue raised when the water is forced out through the filter, on which is left the food. As the tongue is lowered, the whalebone plates straighten up, flicking the food on to the tongue, which transfers it to the gut. Most whale oil is obtained from the thick layer of fat under the skin (blubber), but in the Sperm-whale there is a large reserve of oil in the head. The oil is used for making candles, margarine, and soap. Ambergris used in perfumery comes from the intestine of whales. The number of whales that may be killed in a Season is limited by International Convention.

**Whelk**, a molluscous univalve with a spiral shell, and comprising some 20 species. The common Whelk is abundant on the British coasts, and is captured in large quantities and sold as food.

**Whigs**, a political name which came into use in the time of Charles II., and designated the progressive party down to the passing of the Reform Bill of 1832, when it was superseded by the term Liberal.

**Whimbrel**, a bird of the Curlew family, more common in Scotland than in England.

**Whinchat**, a small migratory bird, which is seen in Britain from Apr. till Sept., and has a bright brown plumage, spotted with darker brown.

**Whip**, an M.P. responsible to his Party for the organisation of the voting of M.P.s. He is responsible for ensuring the presence of (or whipping up) a sufficient number of members to carry the vote through.

**Whip-poor-Will**, the name of the American night-jar, which gets its name from its three-syllable call-note. It is a nocturnal bird, catching its insect food on the wing.

**Whirlpool**, a circling current of water often of great power, capable of drawing into its centre and submerging small vessels. The most famous whirlpool is the maelstrom on the Norwegian coast.

**Whirlwind**, a sudden circular rush of opposing winds, which often causes much damage.

**Whisky**, an ardent spirit distilled from malt or other grain, and containing a large percentage of alcohol. It has a greater consumption than any other spirit, and is of many kinds, Scotch and Irish whiskies being chiefly consumed in this country, and being of pot still or patent still production, or a blend of the two. Whisky is the most heavily taxed product; in 1661 a duty of 4d. a gallon was imposed, today the duty is £10 10s. 10d. on a proof gallon. American whiskies are mostly distilled from corn or rye.

**Whistler**, a kind of marmot found in the mountains of Northern and Western America.

**White Elephant**, a term in common use to designate a gift that causes the recipient more trouble or cost than it is worth; derived from an old-time custom of the Kings of Siam who presented a white elephant to a courtier whom it was desired to ruin.

**Whitehall Palace**, erected within sight of Westminster Abbey in the 13th century, was the residence of the Archbishops of York until Henry VIII. took possession of it in 1530. Thenceforward to 1697, when it was burned down, it continued to be the favourite town residence of royalty, and to the Stuarts especially it was a great centre of court festivities. In those days, with its grounds, it extended from the Strand to the river. The only portion of Whitehall now standing is the Banqueting Hall built by Inigo Jones, on a scaffold projected from the front of which Charles I. was beheaded. A block of new government buildings has recently been built on part of the site of the old Palace.

**White House**, the official residence at Washington of the President of the United States.

**Whiting**, a sea-fish of the cod family, very plentiful around our coasts, much used as food.

**Whitsuntide**, the festival celebrating the descent of the Holy Ghost and occurring seven weeks after Easter.

**Whole-tone Scale**, a musical scale all of whose intervals are tones. This scale has been popularised by Debussy.

**Whydah Bird**, the widow-bird of Equatorial Africa. The Paradise Whydah is remarkable for the long tail and handsome black-and-scarlet plumage of the male during mating season.

**Widow Bird**, certain species of African weaver birds with predominantly black plumage. In the breeding season the male birds are strikingly beautiful, with scarlet and buff markings and long tail feathers. (See also p. 1002.)

**Wigeon**, a surface-feeding duck which breeds in northern Europe, visiting British shores in the winter. The male has chestnut head with creamish crown, grey body, and pinkish breast.

**Willow**, a waterside-loving tree of the genus *Salix*, to which the osiers belong. The White Willow makes the best cricket-bat blades and its wood is useful in carpentry also; while the bark of nearly all the species is of considerable commercial importance, especially for tannery purposes.

**Wimple**, an antique outdoor covering for the neck, chin, and sides of the face, of silk or linen, worn by women in Anglo-Saxon and Norman days; and still retained as a Conventual dress for nuns in some places. It was bound on the forehead of females of quality by a golden and jewelled fillet.

**Wimhurst Machine**. A friction machine for producing charges of high-voltage electricity. It consists of two coaxial glass, mica, or plastic discs which rotate in opposite directions; each disc bears metal strips on which the charges are induced, to be conducted away by fixed collecting brushes.

**Winchester College**, a famous school for boys, founded by William of Wykeham in 1387.

**Wind**, air set in motion by special atmospheric conditions, is of various degrees, from a slight rustling breeze to a hurricane. Winds are constant, as in trade winds or anti-trade winds; periodic, as in monsoons and other wind-visitations occurring according to influences of season; *cyclonic* and *anti-cyclonic*, when their motion is spiral; *whirlwinds*, *hurricanes*, and *tornados*, when high temperature and great density induce extreme agitation. Ordinarily, a wind is named from the point of the compass from which it blows, or it may be expressed in



- degrees from true north. The *sirocco*, the *mistral*, and the *simoom* are local forms of winds of great velocity. A *blizzard* is a biting blast of icy temperature.
- Windmills** were in use in the East in ancient times, but were not much seen in Europe before the 13th century. Wind sawmills were invented by a Dutchman in the 17th century, and one was erected near the Strand in London in 1633. Great improvements have been made in these mills in recent years, especially in the United States, where, by the application of the wind-shaft principle, much space is saved and the mills can be used for pumping, grinding, and other purposes.
- Windows**, originally apertures for the admission of the wind into dwellings, began to be made of glass and used only for the admission of light in very early times. There is evidence of glass windows having been used at Pompeii, but they did not become common in England before the 12th century. A window tax was imposed in 1697 and again at later dates for special revenue purposes. It was repealed in 1851 and a tax on inhabited houses substituted.
- Windsor Castle**, the famous British royal residence on the banks of the Thames, as it now stands, was mainly built by Henry III., though a royal residence had existed there from the time of the Conqueror. Additions were made by Henry VIII., Elizabeth, and Charles II. Windsor Park and Forest comprise over 13,000 acres.
- Wine**, the fermented juice of the freshly-gathered grape. There are innumerable varieties, each obtaining its distinctive character from the species of vine producing the grape, the locality of the vineyard, method of cultivation, etc. Wines are of three main kinds; *sparkling*, as in champagne, due to their having been bottled before fermentation is complete; *beverage*, when the must has been fermented out before bottling. Such wines include the famous red and white wines of Burgundy, Bordeaux and the Rhone valley and the white wines of the Rhine, Moselle and Loire valleys. Wines are *fortified* by the addition of brandy before fermentation is complete, examples being Port and Sherry. The principal wine-producing areas of the world are: France, Italy, Algeria, Spain, Portugal, Rumania, Argentine, Yugoslavia, U.S.S.R., Greece, Germany, Hungary. (See also Cookery Section, p. 843.)
- Wireworm**, the larva of the click beetles. Wireworms are a serious pest of grass, cereal crops, potatoes, etc.
- Witchcraft**, the practice of sorcery or magic based on superstition and flourishing where people are ignorant of the causes of natural phenomena. Belief in witches takes many different forms, varying with time and place. In Europe witchcraft flourished from the 14th to the 18th century and gradually decayed with the spread of scientific knowledge. Johann Weyer (1515-88), a German physician, showed that the majority of "witches" were mentally ill but his views were denounced by the catholic church. Heresy was confused with sorcery and many thousands were persecuted and suffered death under the Inquisition, including those interested in scientific experiment. In England and Scotland all witchcraft acts were repealed in 1736, in Ireland not until 1821. See also Sorcerers and Magic.
- Witan** or **Witenagemot**, the name given to the Great Council of the Anglo-Saxons, "the Council of the Wise Men," and composed of the leading nobility.
- Witherite**, Mineral barium carbonate.
- Woad**, a plant (*Isatis tinctoria*) that in olden days was largely used in England for the blue dye obtained from it. It is a biennial plant belonging to the same natural order of flowering plants as the wallflower, and is still cultivated in some parts.
- Wolframite**, one of the chief ores of tungsten; chemically it is a mixture of iron and manganese tungstates.
- Wolverine** or **Glutton**, a carnivorous mammal belonging to the weasel family inhabiting the more northerly parts of the United States, and somewhat resembling the Polar bear in shape and structure, though of a dark colour.
- Wolves**, well-known carnivorous animals still found in many parts of Europe, but not existing in Britain since the middle of the 17th century.
- Woodcock**, a wading bird, greatly valued for its flesh. It is a member of the snipe family, and winters in this country. The parent bird is able to carry its young between its thigh and body when flying to and from the feeding spots. It is one of the birds protected by the Game Laws.
- Wood-Louse**, any terrestrial isopod crustacean of the *Oniscidae* family. They have segmented bodies and many legs, and feed mostly on decaying matter, animal and vegetable. The best known is the Pill Wood-louse (*Armadillidium*), which rolls itself into a ball when touched.
- Woodpecker**, a familiar tree-climbing bird of conspicuous plumage, of which three species are found in Britain, the green woodpecker or yaffle (because of its harsh cry), the great and lesser spotted woodpeckers. It builds in the hollows of trees and feeds on insects which it obtains from the trunk of trees by digging into the wood, for which purpose it has a strong chisel-shaped beak and a tongue which it can shoot out to catch the insects. The metallic drumming sound made by the birds in spring is thought to be caused by their beaks hammering away at some hard resounding substance.
- Wood's Metal**, an alloy with a very low melting point (65° C., which is under 150° F.) so that a spoon made of it will melt when used to stir a cup of tea. Contains bismuth 4 parts, lead 2 parts, tin 1 part, cadmium 1 part.
- Wool** has been largely grown and used in the manufacture of cloth in England since before the Roman invasion. It is grown on the backs of sheep, and is of various kinds, according to the breed of sheep from which it is derived. Wool differs from hair in that it has a wavy, serrated fibre, its curl being a notable characteristic, whereas hair has a smooth surface comparatively free from serratures. Long wools are mostly used for the manufacture of worsted goods, and short wools for woollen clothes, though the improvements in machinery in recent years have enabled manufacturers to utilise short wools to a great extent for dress fabrics as well as for woollens. The finest wools are obtained from the fleece of the Spanish merino sheep. Australia, New Zealand, and the Argentine are the greatest wool-producing countries.
- Woolsack**, the name given to the seat occupied by the Lord Chancellor in the House of Lords. It is a large square bag of wool, without back or arms, covered with red cloth. At the time when it was first used, in the reign of Edward III., wool was the great staple commodity of the country and, it is said, chosen for the seat of judges as a constant reminder of the main source of the national wealth. The Lord Chancellor is said to be "appointed to the woolsack."
- Worcester, Battle of**, was fought on Sept. 3rd, 1651, between Cromwell and his forces and the Scots army under Charles Stuart (afterwards Charles II.), when the latter was defeated.
- Work** is the transference or conversion of energy. Movement against resistance, the giving of acceleration to a body, or the change from one energy state into another, all require the expenditure of work. It is measured by the product of the force and the displacement of its point of application in the line of action in units of ft.-lb., erg, or joule. The ft.-lb. is the work done in moving 1 lb. through 1 ft. The erg, the unit in the c.g.s. system, is the work done by a force of 1 dyne acting through a distance of 1 cm. and the joule is the work done in 1 second by a current of 1 ampere flowing through a resistance of 1 ohm, equal to 10<sup>7</sup> ergs, 1 watt-second or 0.737 ft.-lb. In a rotating body work done is measured by the product of the moment and the angular displacement.
- Worsted**, a fabric made from long wools or wools mixed with cotton or other fibrous material. It was first manufactured at, and derived its name from, Worstead in Norfolk, in the 14th century. Norwich was, until the latter part of the 18th century, the headquarters of this industry, but now for more than 100 years the worsted manufacturing centre has been Bradford.
- Wrasse**, a sea-fish of the *Labridae* family. The family has numerous species, all of which are

thick-lipped. The British species are the balloon wrasse and the red wrasse.

**Wren**, a class of small passerine birds possessing upturned tails and most abundant in South America. The British species is an interesting singing bird with a surprisingly loud note for its size.

**Wroth Silver**, certain annual payments made by tenants of the Duke of Buccleuch on Nov. 11th of each year at Knightlow Hill, in Warwickshire.

**Wryneck**, a tree-creeping bird related to the woodpecker, of grey-brown plumage. It is a summer visitor to Britain, and gains its name from the snake-like way it curves its neck.

## X

**Xanthia**, a genus of moths with brilliant yellow markings found in America and the West Indies.

**Xanthura**, a genus of American jays, green in colour, mingled with yellow, blue, and white, and attaining a length from 12 to 14 in.

**Xebec**, a light three-masted vessel much favoured in former times by Algerian corsairs.

**Xema**, a snow-white sea-gull, with a forked tail, inhabiting the northern shore of the American Continent.

**Xenops**, a lively small bird of the tree-creeper family, common in South America and peculiar in having an upturned bill.

**Xenurus**, one of the Armadillos of tropical America.

**Xerus**, an African ground squirrel with a rather bristly fur and an enormous bushy tail.

**Xoanon**, the name given to sculptured wooden images of the time of the ancient Greeks.

**Xonaltite**, a Mexican mineral, tough and greyish-white, found associated with bustamite and apophyllite.

**X-Rays** were discovered in 1895 by Professor Röntgen, of Wurzberg, while experimenting with a Crookes vacuum tube, when the fact was accidentally revealed that a photographic plate, contained in a dark box and exposed to its rays, was affected. To the X-rays the box was transparent. X-ray photographs are now commonly taken to obtain information about objects enclosed within solid bodies; they enable bullets and any solid bodies of metal, as well as bones, etc., in the body to be perfectly located and investigated. The discovery has proved of great advantage in surgical operations.

**Xylem**, the woody tissue of higher plants. The function of the xylem is to conduct water and mineral salts upwards, and to provide mechanical support.

**Xylograph**, the name given to an engraving on wood or an impression thereof.

**Xylophone**, a musical instrument consisting of a series of tuned wooden bars of varying dimensions. It is played by striking the bars with wooden hammers held in the hands.

## Y

**Yacht**, a light vessel now much used for pleasure trips and racing. The first yachting club was the Cork Harbour Club, started about 1720; and in 1812 the Royal Yacht Squadron was founded at Cowes. The Royal Thames Yacht Club dates from 1823. The most famous international yachting trophy is *The America's Cup*, which was won by America in every contest between 1851 and 1937. The most famous English challengers were Sir Thomas Lipton and T. O. M. Sopwith.

**Yak**, a curious, long-haired ox, found in Tibet, and there employed as a beast of burden.

**Yale University** was established in 1701, and is one of the leading universities of the United States. It received its name from Elihu Yale, who endowed it largely in 1716.

**Yam**, the root of the 150 species of dioscorea, which grows in Asia, America, Africa, and Australia; used as a substitute for the potato, roasted or boiled. It also furnishes a flour for bread or pudding making.

**Yard**, a standard measure of 36 in., the word being derived from the Saxon *yrd*, or rod. The yard was anciently regarded as the circumfer-

ence of the body, but Henry I. decreed it should be the length of his arm.

**Yarn** is the textile thread or fibre spun into the form of weft or warp ready to be woven into fabrics.

**Yawl**, the jolly boat of a ship; also the name given to any small yacht of the cutter class.

**Year**. (See Calendar.)

**Year-Books**, containing annual reports of legal cases, were issued in England as far back as the 11th century, and formed the first attempt to establish legal reports. In modern times the title has been given to almost any kind of annual publication.

**Yearling**, a young horse or other animal in the second year of its age.

**Yeast**, a unicellular fungus which sets up fermentation. In brewing and wine-making the yeasts are important. The baker uses yeast to make bread rise; yeast is incorporated in the dough and ferments some of the starch present, yielding carbon dioxide gas which expands and aerates the bread in the baking process.

**Yellowhammer**, a common British bird of the bunting family, of lemon-yellow and brown plumage. Nests on the ground.

**Yeomen of the Guard** are a body of Foot Guards established in the reign of Henry VII. for the protection of the Royal Person. Yeomen are now about 100 in number, and their duties consist in being present on ceremonial State occasions, the yearly distribution of Maundy Money, and the searching of the vaults of the Houses of Parliament on Guy Fawkes' day. "Beefeater" is the nickname of both Yeomen of the Guard and Yeomen Warders of the Tower, and they both wear the style of dress of the Tudor period, but with one distinction, the Yeomen of the Guard wear a cross belt, the Warders do not.

**Yew**, an evergreen tree, the wood of which was in former days in very great demand for bow-making.

**Yezdegird**, the name of the old Persian era which began in 632, when Yezdegird was made king of Persia. The Parsees of India still use the term.

**Yoga**, one of the leading systems of Hindu philosophy which proclaims the emancipation of the soul through union with the universal spirit.

**Yogi**, a Hindu religious ascetic who practises Yoga.

**York Minster**, one of the oldest and finest of English cathedrals, is 524 ft. long, its nave is 240 ft. broad, and the central tower is 216 ft. high. The present edifice, in parts, dates back to the 12th century, but a church stood on the site in the 7th century. In 1829 it was set on fire by a lunatic named Jonathan Martin, and the destruction that then took place cost £60,000 to restore.

**Young England Party**, a term applied to a number of young Tory politicians of the Corn Law days, who opposed the repeal of the Corn Laws and sought to revive the manners and spirit of mediæval times. The party was short-lived. It was led by Benjamin Disraeli and Lord John Manners.

**Ytterbium**, a chemical element discovered by Urbain in 1907. It is one of the group of rare earth metals.

**Yttrium**, a chemical element discovered by Mosander in 1842. It is found in a few rare minerals such as gadolinite, xenotime, fergusonite, and euxenite. One of the group of rare-earth metals.

## Z

**Zaibatsu**, great and powerful family trusts, including the Mitsui, Mitsubishi, Sumitomo, and Yasuda, who held a position of unparalleled influence in Japan before the second world war, for in their hands was concentrated almost the entire economy of the Japanese nation. It was a major war aim of the Allies to break these trusts, but their economic power has been largely restored.

**Zalophus**, a genus of eared seals, which includes the common sea-lion of the Californian coast.

**Zamboni Pile**, a dry galvanic battery, which can provide small amounts of high-voltage current over a very long time. At Oxford a couple of Zamboni Piles have kept a bell ringing for over a hundred years. These Piles in the second



world war were perfected and produced in quantity, being the most convenient source of current for infra-red signalling devices.

**Zebra**, an African quadruped of whitish-grey colour, with regular black stripings, perhaps the most beautiful member of the Equine family. Rather larger than an ass and smaller than the horse, it has a tufted tail, is of light build, wild, and fleet of foot; there are several species, and the Quagga and Burchell's Zebra (ground colouring yellow), as well as the True Zebra, belong to the group.

**Zebu**, a species of oxen having a large hump on the shoulder and short horns. In India and some parts of Africa these animals are domesticated and used as beasts of burden. They are of a light grey colour and very docile. Their flesh makes good food-meat; the Hindus, however, do not slay them but regard them with much veneration.

**Zemstvo**, a local territorial assembly in Russia for dealing with matters of taxation, schools, roads, etc., under the control of the provincial governors. They were abolished by the Bolsheviks in 1917.

**Zenana**, the portion of a dwelling in India where the female members of the family are kept, and to which strangers are not admitted.

**Zend-Avesta**, the name given to ancient sacred books of the Zoroastrians or Parsees. They originally numbered twenty-one, but only three survive.

**Zenith**, the highest point in the heavens above an observer's head, the opposite pole to the Nadir.

**Zeolite**, natural hydrated silicate of calcium and aluminium; also term applied to hardwater softener.

**Zeriba**, or **Zareeba**, a military enclosure of prickly brushwood, used by the British in Egypt in 1884.

**Zero**, the cypher signifying nothing. The West is indebted to the Arabs for it, who probably got it from the Hindus and passed it to European mathematicians towards the end of the Middle Ages. The Greeks had no such symbol, which hindered the development of their mathematics. The use of zero led to the invention of decimal fractions and to the later developments in astronomy, physics and chemistry. Absolute Zero on the temperature scale is the lowest temperature theoretically possible (when no heat whatever is present) and equal to  $-273.16^{\circ}\text{C}$ .

**Zeta**, the name given in former times to the closet or room, above a church porch, where the sexton lived and guarded the documents of the church.

**Zinc**, a familiar metal, known to the ancients, and used by them in the making of brass. It occurs as the sulphide, carbonate, etc. The ores of zinc are crushed, roasted, and reduced with coal. In combination with copper it constitutes the familiar alloy called brass, and zinc itself is much used for roofing and other protective purposes. Zinc ores are mined in Canada, the U.S.A., Mexico, Poland, Australia, Russia, Italy, Spain and many other parts of the world. Zinc smelting is carried on in most industrial countries, including Great Britain.

**Zion, Protocols of.** These are a series of lectures purported to have been given by an "elder of Zion" revealing a Jewish plot for international domination. They have been extensively published in Europe since 1900, but conclusive evidence was produced in 1921 to show they were a forgery.

**Zionism**, the name of the movement, whose object has been to re-establish a Jewish National Home in Palestine. The movement was founded in 1897 by Theodor Herzl, a Viennese journalist and playwright. The Balfour Declaration promising facilities for the realisation of its objects was issued by the British Government in 1917. Thanks to the activity of the Zionist Organisation, largely under the leadership of Chaim Weizmann, the Jewish population in Palestine has considerably increased and many agricultural settlements have been established in various parts of the country. The Hebrew University was inaugurated in 1925, and great developments have taken place in all branches of industrial and commercial activity as well as in agriculture. Until 1948, when Britain handed the mandate to U.N.O., the country was

administered by a High Commissioner appointed by the British Government. Since then the Jews have proclaimed a State of Israel and the Zionists' aims have been realised.

**Zippeite**, a mineral found at Joachimsthal, in Bohemia, as an alteration product of uraninite; it is essentially a hydrated sulphate, shaded yellow, of sesquioxide of uranium.

**Zirconium** was discovered by Klaproth in the sand of the rivers of Ceylon in 1789. The crystalline metal is white, soft, and ductile; in its amorphous condition it is a blue-black powder. Zirconium is used in atomic reactors.

**Zither**, an ancient musical instrument consisting of strings stretched on a frame which is held in the left hand. The right hand plucks the strings with a plectrum.

**Zodiac**, the belt of the firmament enclosing the circuit over which the principal planets travel. It is divided into 12 equal spaces of 30 degrees each, comprising respectively the 12 signs of the Zodiac—Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricornus, Aquarius and Pisces.

**Zodiacal Light**, a faint cone of light occasionally seen stretching along the Zodiac from the western horizon after evening twilight or the eastern horizon before morning twilight. It is believed to be due to the scattering of the sun's light by some rare gas which extends outwards from the sun and rotates round it.

**Zoetrope**, an optical instrument of a cylindrical shape, exhibiting pictures in such a form that the figures in them seem to be endowed with motion.

**Zollverein**, any of the customs unions successively formed under the leadership of Prussia among certain German states for maintaining uniform duties and tariffs against foreign countries and free trade among themselves. The administration was finally merged in the German Empire of 1871.

**Zonda**, a warm moist wind in Argentina of great velocity blowing from the north or northwest, and, like the Sirocco in Southern Europe, causes much discomfort. It happens when a depression is moving across the pampas, bringing with it a mass of air from the humid tropics. It is followed by a refreshing wind from the south-east.

**Zone**, an imaginary geographical belt encircling the earth. There are five zones—the Torrid Zone, from tropic to tropic; two Temperate Zones, from the tropics to the Polar Circles; and two Frigid Zones, from the Polar Circles to the North and South Poles respectively.

**Zoolatry**, animal worship, which in ancient times prevailed among the Egyptians and other primitive races. The zebu is still an object of adoration amongst the Hindus, and snake-worship survives on the African west coast.

**Zoological Gardens of London** were opened in 1828, and belong to the Zoological Society of London. They contain one of the largest and most varied collections of living animals in the world. The Society maintains an open-air zoo at Whipsnade, on the edge of Dunstable Downs; this was opened in 1931.

**Zoology**, the science of animal biology, treating of the structure, classification, and distribution of the various members of the animal kingdom.

**Zoophyte**, the name applied to invertebrate animals which have a plant-like appearance or mode of growth, e.g., sea anemones, corals, sponges. The term Zoophyta was used in old classifications to include all such animals, but is now obsolete.

**Zorilla**, a small African quadruped of the Skunk order, usually striped or spotted, and possessing the power of ejecting a noxious odour.

**Zouaves**, a body of French soldiers first organised in Algeria, and then consisting exclusively of Berber natives. As now constituted, the Zouave regiments are almost exclusively French.

**Zulus**, a native African people occupying Zululand, which later became part of Natal, Union of S. Africa. They are a brave race, and in a war with Great Britain in 1879 inflicted severe defeats upon our troops. The Zulu king, Cetewayo, was finally defeated and taken prisoner, and his country annexed.

## NOBEL PRIZE WINNERS (1901-1955)

These prizes, founded by the will of Dr. Alfred B. Nobel (1833-96), are five, and are awarded each year for the most important discovery or development in (1) physics (2) chemistry, (3) physiology and medicine, (4) the most distinguished literary work, (5) the best effort towards the promotion of peace.

Year.	PHYSICS.	CHEMISTRY.	PHYSIOLOGY AND MEDICINE.	LITERATURE.	PEACE.
1901	W. C. Roentgen (G).	J. H. van't Hoff (D).	E. v. Behring (G).	R. F. A. Sully Prudhomme (F).	H. Dunant (Sw), F. Passy (F).
1902	H. A. Lorentz (D), P. Zeeman (D).	E. Fischer (G).	R. Ross (B).	T. Mommsen (G).	E. Ducommun (Sw), A. Gobat (Sw).
1903	H. Becquerel (F), P. Curie (F), Marie Curie (F).	S. Arrhenius (S).	N. R. Finsen (Da).	B. Björnson (N).	Sir W. R. Cremer (B).
1904	Lord J. W. S. Rayleigh (B).	W. Ramsay (B).	I. P. Pavlov (R).	F. Mistral (F), J. Echegaray (Sp).	Institut de Droit International.
1905	P. Lenard (G).	A. v. Bayer (G).	R. Koch (G).	H. Sienkiewicz (P).	Bertha von Suttner (Au).
1906	J. J. Thomson (B).	H. Moissan (F).	C. Golgi (I), S. R. v. Cajal (Sp).	G. Carducci (I).	T. Roosevelt (A).
1907	A. A. Michelson (A).	E. Buchner (G).	C. L. A. Laveran (F).	Rudyard Kipling (B).	E. T. Moneta (I), L. Renault (F).
1908	G. Lipmann (F).	E. Rutherford (B).	P. Ehrlich (G), E. Metchnikoff (R).	R. Eucken (G).	K. P. Arnoldson (S), F. Baier (Da).
1909	F. Braun (G), G. Marconi (I).	W. Ostwald (G).	T. Kocher (Sw).	S. Lagerlöf (S).	A. M. F. Beernaert (Be), Baron d'Estournelles de Constant de Rebecque (F).
1910	J. D. van der Waals (D).	O. Wallach (G).	A. Kossel (G).	P. Heyse (G).	The Bureau International Permanent de la Paix, Berne.
1911	W. Wien (G).	Marie Curie (F).	A. Gullstrand (S).	M. Maeterlinck (Be).	T. M. C. Asser (D), A. H. Fried (Au).
1912	G. Dalén (S).	V. Grignard (F), P. Sabatier (F).	A. Carrel (A).	G. Hauptmann (G).	E. Root (A).
1913	H. Kamerlingh Onnes (D).	A. Werner (Sw).	C. Richet (F).	R. Tagore (In).	H. la Fontaine (Be).
1914	M. v. Laue (G).	T. W. Richards (A).	R. Bárány (Au).	B. Zolander (F).	—
1915	W. H. Bragg (B), W. L. Bragg (B).	R. Willstaetter (G).	—	—	—
1916	C. G. Barkla (B).	—	—	V. von Heidenstam (S).	Comité International de la Croix-Rouge, Geneva.
1917	—	—	—	K. Gjellerup (Da), H. Pontoppidan (Da).	—
1918	M. Planck (G).	F. Haber (G).	—	C. Spitteler (Sw).	W. Wilson (A).
1919	J. Stark (G).	W. Nernst (G).	J. Bordet (Be).	K. Hamsun (N).	L. Bourgeois (F).
1920	C. E. Guillaume (F).	F. Soddy (B).	A. Krogh (Da).	A. France (F).	K. H. Branting (S), C. L. Lange (N).
1921	A. Einstein (G).	—	—	J. Benavente (Sp).	F. Nansen (N).
1922	N. Bohr (Da).	F. W. Aston (B).	A. Hill (B), O. Meyerhof (G).	W. B. Yeats (Ir).	—
1923	R. A. Millikan (A).	F. Pregl (Au).	F. G. Banting (C), J. R. Macleod (C).	W. Reymont (P).	—
1924	M. Siegbahn (S).	R. Zsigmondy (G).	W. E. Einthoven (D).	G. B. Shaw (B).	—
1925	J. Franck (G), G. Hertz (G).	—	—	—	Sir A. Chamberlain (B), C. G. Dawes (A).
1926	J. Perrin (F).	T. Svedberg (S).	J. Fibiger (Da).	G. Deledda (I).	A. Briand (F), G. Stressemann (G).
1927	A. H. Compton (A), C. T. R. Wilson (B).	H. Wieland (G).	J. Wagner-Jauregg (Au).	H. Bergson (F).	F. Bulson (F), L. Quide (G).
1928	O. W. Richardson (B).	A. Windaus (G).	C. Nicolle (F).	S. Undset (N).	—
1929	L. de Broglie (F.).	H. v. Euler-Chelpin (S), A. Harden (B).	C. Bjrkman (D), F. G. Hopkins (B).	T. Mann (G).	F. B. Kellogg (A).



# NOBEL PRIZE WINNERS (1901-1955), continued

YEAR.	PHYSICS.	CHEMISTRY.	PHYSIOLOGY AND MEDICINE.	LITERATURE.	PEACE.
1930	C. V. Raman (In).	H. Fischer (G).	K. Landsteiner (Au).	S. Lewis (A).	L. O. J. Söderblom (S).
1931	—	F. Bergius (G), K. Bosch (G).	O. Warburg (G).	E. A. Karfeldt (S).	Jane Addams (A), N. M. Butler (A).
1932	W. Heisenberg (G).	I. Langmuir (A).	C. S. Sherrington (B), E. D. Adrian (B).	J. Galsworthy (B).	—
1933	P. A. M. Dirac (B), E. Schrödinger (Au).	—	T. H. Morgan (A).	I. Bunin (R).	Sir Norman Angell (B).
1934	—	H. C. Urey (A).	G. Minot (A), W. Murphy (A), G. Whipple (A).	L. Pirandello (I).	Arthur Henderson (B).
1935	J. Chadwick (B).	F. Joliot (F), I. Joliot-Curie (F).	H. Spemann (G).	—	C. von Ossietzky (G).
1936	V. F. Hess (Au), C. D. Anderson (A).	P. Debye (D).	Sir H. H. Dale (B), O. Loewi (G).	E. O'Neill (A).	C. de S. Lamas (Ar).
1937	C. J. Davisson (A), G. P. Thomson (B).	W. N. Haworth (B), P. Karrer (Sw).	A. v. Szent-Györgyi (H).	R. Martin du Gard (F).	Viscount Cecil of Chelwood (B).
1938	E. Fermi (I).	R. Kuhn (G).	C. Heymans (Be).	Pearl S. Buck (A).	Office International Nansen pour les Réfugiés.
1939	E. O. Lawrence (A).	A. F. Butenandt (G), L. Ruzicka (Sw).	G. Domagk (G).	F. E. Sillanpää (Fi).	—
1940-42	—	—	—	—	—
1943	O. Stern (A).	G. Hevesy (H).	H. Dam (Da), E. A. Doisy (A).	J. V. Jensen (Da).	Comité International de la Croix-Rouge, Geneva.
1944	I. I. Rabi (A).	O. Hahn (G).	E. J. Erlanger (A), H. S. Gasser (A).	G. Mistral (Ch).	Cordell Hull (A).
1945	W. Pauli (Au).	A. Virtanen (Fi).	Sir A. Fleming (B), Sir H. Florey (B), E. B. Chain (B).	H. Hesse (Sw).	Emily G. Balch (A), J. R. Mott (A).
1946	P. W. Bridgman (A).	J. B. Sumner (A), J. H. Northrop (A), W. M. Stanley (A).	H. J. Muller (A).	André Gide (F).	American and British Quaker Organisations.
1947	Sir Edward Appleton (B).	Sir Robert Robinson (B).	B. A. Housay (Ar), C. F. Cori (A), G. T. Cori (A).	Lord Boyd-Orr (B).	Lord Boyd-Orr (B).
1948	P. M. S. Blackett (B).	A. Tiselius (S).	P. Müller (Sw).	T. S. Eliot (B).	Ralph Bunche (A).
1949	H. Yukawa (J).	W. F. Giauque (A).	W. R. Hess (Sw), A. E. Moniz (Po).	W. Faulkner (A).	Leon Jouhaux (F).
1950	Cecil F. Powell (B).	Otto Diels (G), K. Alder (G).	E. C. Kendall (A), P. S. Hench (A), R. Reichstein (Sw).	Lord Russell (B).	A. Schweitzer (F).
1951	Sir J. Cockcroft (B), E. T. S. Walton (Ir).	E. M. MacMillan (A), G. T. Seaborg (A).	M. Thellier (A).	F. Mauriac (F).	Gen. G. Marshall (A).
1952	E. Purcell (A), F. Bloch (A).	A. J. P. Martin (B), R. L. M. Synge (B).	S. Waksman (A).	Sir W. S. Churchill (B).	U.N. High Commission for Refugees.
1953	F. Zernike (D).	H. Staudinger (G).	H. A. Krebs (B), F. A. Lipmann (A).	E. Hemingway (A).	—
1954	M. Born (B), W. Bothe (G).	L. Pauling (A).	J. F. Enders (A), F. C. Robins (A), T. H. Weller (A).	Halldor Laxness (Ic).	—
1955	W. E. Lamb (A), P. Kusch (A).	Vicent du Vigneaud (A).	Hugo Theorell (S).	—	—

A = American	B = British	Ch = Chilean	F = French	H = Hungarian	In = Indian	N = Norwegian	R = Russian
Ar = Argentine	Be = Belgian	D = Dutch	Fi = Finnish	I = Italian	Ir = Irish	P = Polish	S = Swedish
Au = Austrian	C = Canadian	Da = Danish	G = German	Ic = Icelandic.	J = Japanese	Po = Portuguese	Sp = Spanish
							Sw = Swiss

## PLACES OF HISTORIC INTEREST AND NATURAL BEAUTY

The following list includes some of the houses and places of special interest owned by The National Trust in England. (Times of opening have not been included as they are subject to alteration, and intending visitors should telephone Whil. 0211 for latest information, or write to 42, Queen Anne's Gate, S.W.1, for a List of Properties, price 2s. 9d. post free.) Houses are closed on Christmas Day and Good Friday.

### BERKSHIRE

*Buscot Park*, 3 m. N.W. of Faringdon. 55 acres of park and gardens laid out by the late Harold Peto, with a house built in 1780 and subsequently altered. The house contains Burne-Jones "Briar Rose" paintings, pictures by Rembrandt, Murillo and Reynolds, and fine furniture.

### BUCKINGHAMSHIRE

*Ascott*,  $\frac{1}{2}$  m. E. of Wing, 2 m. S.W. of Leighton Buzzard. The greater part of the Anthony de Rothschild Collection of pictures, furniture, and porcelain. House and grounds (261 acres); French and Chippendale furniture, pictures by Rubens, Hogarth, Gainsborough, Hobbema and other Dutch painters, and an exceptional collection of Oriental porcelain containing examples of the Ming, K'ang Hsi periods, and Chun ware of the Sung dynasty.

*Cliveden*, 4 m. upstream from Maidenhead. The home of the Astor family; 263 acres, comprising Cliveden House, with pictures and tapestries, gardens, hanging woods and the famous Cliveden Reach of the Thames.

### CAMBRIDGESHIRE

*Peckover House*, Wisbech, on N. brink of the River Nene. Built in 1722; interior contains fine rococo plasterwork and carving possibly executed by French artists.

### CHESHIRE

*Little Moreton Hall*, 4 m. S.W. of Congleton, a moated building which took its present shape between 1559 and 1589; one of the most perfect specimens of the "black-and-white" style in this country.

*Lyme Park*, on W. outskirts of Disley,  $6\frac{1}{2}$  m. S.E. of Stockport, of Elizabethan origin; for 600 years in the possession of the Legh family.

### CORNWALL

*Cotehele*, on right bank of the Tamar, 6 m. S.W. of Tavistock; 1,279 acres, including Cotehele House, one of the best-preserved mediæval houses in W. England, dating chiefly from 1485-1539.

*The Dodman*, 4 miles S. of Mevagissey, 10 miles S. of St. Austell. 196 acres of cliff and farmland on E. point of Verran Bay, with wonderful views. The "Dead Man's Rock" of "Q's" novel.

### CUMBERLAND

*Buttermere Valley*, between Barrowdale, Keswick, and Cockermouth. A large, well-wooded property with fine lake and mountain scenery.

### DERBYSHIRE

*Dovedale*, N. of Ashbourne, W. of Alsop-en-le-Dale station. 821 acres of this lovely glen on both sides of the valley, with many remarkable rock formations, including Jacob's Ladder and the Twelve Apostles.

### DEVON

*Buckland Abbey*, 6 m. S. of Tavistock, a 13th-century monastery, with tithe barn, granted by Henry VIII in 1541 to Sir Richard Grenville. Bought in 1851 by Sir Francis Drake.

*Watersmeet*, 69 acres astride the East Lyn river, from Woodside to Wilsham Wood, up to its junction with Hoar Oak Water. The meeting of the streams is of great beauty.

### ESSEX

*Paycocke's*, Coggeshall, on S. side of West Street,  $5\frac{1}{2}$  m. E. of Braintree. A merchant's richly ornamented house, dating from about 1500, with exceptionally fine panelling and wood-carving.

### GLOUCESTERSHIRE

*Snowhill Manor*, 3 m. S. of W. end of Broadway. 14 acres. Tudor house, with front of about 1700. Interesting collections of musical instruments, Japanese armour, weavers' and spinners' tools, toys, clocks, and bicycles. Terraced garden.

*Chedworth Roman Villa*, 3 miles N.W. of Fossbridge, which is on the Cirencester-Northleach road. One of the best preserved villas (A.D. 180-350) in the country, in a beautiful woodland setting. There is a museum with recent discoveries.

### HEREFORDSHIRE

*Brockhampton*, E. and S.E. of Bromyard, 10 m. W. of Worcester, about 2,000 acres of typical Herefordshire farmland, and woods of remarkable beauty. *Lower Brockhampton*, a comparatively unspoiled late-14th-century moated manor house in half-timber work, with rare detached gate-house 100 years later.

### HERTFORDSHIRE

*Ashridge Estate*, 3 miles N. of Berkhamsted. 3,802 acres of wood, heath, and down; the estate includes viewpoints, such as Ivinghoe Beacon, Clipper Down, and Moneybury Hill, many copses and open spaces, and splendid beech-trees.

### KENT

*Knole*, Sevenoaks, one of the largest private homes in England. Begun in 1456, it was greatly extended about 1603 by Thomas Sackville, 1st Earl of Dorset, to whom it was granted by Queen Elizabeth. The State Rooms contain a large number of historic pictures and rare furniture and are among the best known of England.

*Old Soar Manor*,  $1\frac{1}{2}$  m. E. of Plaxtol, between Ightham and Mereworth, a remarkably unspoilt example of part of a late-13th-century knightly dwelling.

*Chiddington*, 4 miles E. of Edenbridge,  $1\frac{1}{2}$  miles N.W. of Penshurst. Most of this well-known village, containing a row of 16th- and 17th-century houses and the Castle Inn.

### LANCASHIRE

*Rufford Old Hall*, 5 m. N. of Ormskirk, at N. end of Rufford, an early Tudor building of timber and plaster panels; wings added in 1662 and 1821. The great hall is remarkable for its hammer-beam roof, unusual "spere" disposition and massive movable screen.  $14\frac{1}{2}$  acres of gardens.

*Coniston Water*, many properties surrounding the lake, including High Arncliffe Farm, Monk Coniston Estate (which includes Tarn Hows and Yew Tree Tarn as well as the Hall, several farms and cottages), Nibthwaite Woods, and Peel Island.

### LINCOLNSHIRE

*Gunby Hall*, 1 m. N.W. of Burgh-le-Marsh station, 7 m. W. of Skegness, built in 1700 of red brick and stone dressings (Tennyson's "haunt of ancient peace"); fine oak staircase and wainscoted rooms.

*Tattershall Castle*, 9 m. S.W. of Horncastle,  $3\frac{1}{2}$  m. S.E. of Woodhall Spa, built about 1440, is one of the finest examples of East Anglian brick-work.



## LONDON

*Fenton House*, The Grove, Hampstead, N.W.3. A late 17th-century house with a walled garden. It contains a collection of porcelain, pottery, furniture, and early keyboard instruments, including Handel's harpsichord lent by Queen Elizabeth the Queen Mother.

## MIDDLESEX

*Osterley Park*, N. of Osterley Station on Great West Road. 140 acres of Park. House one of the finest examples of the work of Robert Adam, who also designed the furniture.

## NORFOLK

*Blickling Hall*, 1 m. N.W. of Aylsham, 10½ m. S. of Cromer; 4,523 acres, including deer park, woodlands, farms. The great Jacobean house is of red brick, built 1619-24 for Sir Henry Hobart. Large park contains magnificent trees and artificial lake.

## NORTHUMBERLAND

*Lindisfarne Castle*, on Holy Island, 5 m. E. of Beal across the sands. Motors may be hired. 7 acres. Built, with its solid bastions and thick walls, about 1550. Romantically situated on a high rock, with splendid views. Made habitable by Sir Edwin Lutyens after 1900. Walled garden laid out by Miss Gertrude Jekyll.

*Hadrian's Wall*, Housesteads and Hotbank, 4 miles N.E. of Haltwhistle, 2½ miles N. of Bardon Mill Station. 919 acres including Housesteads (Borricovium, a fort), several mile-castles, 3½ m. of the Wall, along the top of which visitors can walk, and a museum.

## NOTTINGHAMSHIRE

*Clumber Park*, 2½ m. S.E. of Worksop, 4½ m. S.W. of East Retford. 3,784 acres. A good example of late 18th-century landscape design, created by the Dukes of Newcastle out of heathland bordering Sherwood Forest. The stables of the demolished house survive, with pleasure grounds along the lake and a fine neo-Gothic church.

## SHROPSHIRE

*Attingham Park*, 4 m. E. of Shrewsbury, home of the Berwick family. 4,300 acres. The house, distinguished for its interior decoration, was built in 1785.

## SOMERSET

*Lytes Cary*, on the Fosse Way, 2½ m. N.E. of Ilchester. About 300 acres. A typical Somerset stone-built manor-house; chapel of 14th and the great hall of the 15th century; home for 500 years of the Lyte family.

*Montacute*, 4 m. W. of Yeovil, a magnificent house begun in 1530 and completed about 1600, built of Ham Hill stone; the home until 1931 of the Phelps family and later of Lord Curzon.

## STAFFORDSHIRE

*Wightwick Manor*, 3 m. W. of Wolverhampton just N. of the Bridgnorth road, from which a lan. leads past the Mermaid Inn and underneath a

wooden bridge: the drive is just beyond on the left. Begun in 1837, Wightwick Manor, with its contents and 16 acres of gardens, is an example of the influence of William Morris. The collection of Pre-Raphaelite works of art includes a number of pictures lent by Mrs. Rossetti Angell.

## SURREY

*Polesden Lacey*, on N. slope of North Downs, 3 m. N.W. of Dorking. 910 acres. The house contains the Greville collection of pictures, tapestries, furniture, and other works of art.

*Claremont Woods*, on the S. edge of Esher, on the E. side of Portsmouth road. 49 acres. The gardens, with a lake, fine woods, and specimen trees, were laid out about 1730 by William Kent.

## SUSSEX

*Nymans Gardens*, on S.E. edge of Handcross, 4½ m. S. of Crawley. 600 acres. The garden of about 30 acres has many rare conifers, shrubs, and plants, including fine eucryphias, hydrangeas, magnolias, rhododendrons, camellias, and roses; the other 570 acres are woodland and farmland.

*Petworth House and Park*, 5½ m. E. of Midhurst. Rebuilt in 1686-96 by the 6th Duke of Somerset; S. front reconstructed in 1869-72 to the designs of Anthony Salvin. The W. front is 320 ft. long. The house has a mid-18th-century Percy chapel. The galleries and state rooms contain one of the largest and finest private collections of pictures in England. 735 acres of park-land. One of the state rooms was decorated by Grinling Gibbons.

## WARWICKSHIRE

*Charlecote Park*, 4 m. E. of Stratford on Avon, originally built in 1558. Home of the Lucy family since the 12th century.

*Upton House*, 1 m. S. of Edgehill, 7 m. N.W. of Banbury. 31½ acres. N. and S. fronts of house express the character of William and Mary's reign; 18th-century furniture, many masterpieces of British, Dutch, Flemish, German, Italian, and Spanish schools.

## WILTSHIRE

*Ilcock Abbey*, 3 m. S. of Chippenham, in one of the most beautiful villages of S.W. England. The Abbey was begun in the early 13th century; in about 1530 a Tudor mansion was built around the monastic remains; later additions were made in 18th-century "Gothic."

*Stourhead*, Zeals, among the finest examples in England of 18th-century landscape designing. Collection of works of art, notably furniture designed by Thomas Chippendale, the younger.

## YORKSHIRE

*York: Treasurer's House*, at N.E. corner of Minster. Of exceptional interest. Mainly 17th-century, with 13th-century work in the undercroft. Fine furniture.

*Mount Grace Priory*, 6 m. N.E. of Northallerton. 10 acres. The greater part of the 14th-century Priory, the most important Carthusian ruin in England, and a 17th-century house.

## THE COUNTRY CODE

**GUARD AGAINST THE RISK OF FIRE.** Great damage is done every year to crops, plantations, woodlands, and heaths. A match or cigarette thrown away or a pipe carelessly knocked out, picnic fires not properly put out or lighted near dry crops, can quickly start a blaze.

**FASTEN ALL GATES.** If animals get out of a field they stray. As a result they may do serious damage to crops, suffer injury on the roads, or eat food that is harmful.

**KEEP DOGS UNDER CONTROL.** Animals are easily frightened, even by small, playful dogs. Stillbirths may be the result.

**KEEP TO THE PATHS ACROSS FARM LAND.** Crops are damaged by treading; flattened crops are difficult to harvest. Grass is a valuable crop.

**AVOID DAMAGING FENCES, HEDGES, AND WALLS.** If these are damaged, gaps will be caused. Where a man goes, an animal may follow.

**LEAVE NO LITTER.** Litter is not just unsightly, but often a danger as well. Broken glass and tins may injure animals and harm machinery.

**SAFEGUARD WATER SUPPLIES.** Countrymen often depend on wells and streams for water for themselves and for their animals.

**PROTECT WILD LIFE, PLANTS, AND TREES.** Wild animals should not be disturbed, plants uprooted, or trees treated roughly.

**GO CAREFULLY ON COUNTRY ROADS.** If there is no footpath, walkers are generally safer on the right, facing on-coming traffic. Care and patience are needed by motorists when passing farm animals.

**RESPECT THE LIFE OF THE COUNTRYSIDE.** Many of the machines and much of the business stock on which the farmer depends for his livelihood have to be kept in the open. Take care not to damage them.

# *Business Dictionary and Legal Notes*



Terms relating to trade, shipping, finance, law, etc.,  
alphabetically arranged

Legal Notes	726-32
Landlord and Tenant	726
Husband and Wife	728
Intestacy	731



# Business Dictionary

**Abandonment** in marine insurance is the act of cession by which in the case of the constructive total loss of a vessel or goods, the owners give up to the underwriters what remains of the vessel or goods on condition of receiving the whole sum for which insured.

**Above Par**, a price above nominal value.

**Abstract of title** is a summary of the recent history of the title to a piece of land resulting from the legal transactions affecting the title.

**Acceptance** is the signification by the person on whom a bill of exchange is drawn of his assent to the order of the drawer. It is effected by the drawee writing "accepted" across the face of the bill and appending his signature.

**Acceptance for Honour supra protest**, where a bill has been protested for dishonour either for non-acceptance by the drawee or for better security any person not already liable may with the consent of the holder accept the bill for the honour of any party to the bill.

**Acceptance General**, the acceptance of a bill of exchange without any qualification of the terms upon which it is drawn.

**Acceptance Qualified or Special**, varies in express terms the effect of the bill as drawn. The qualification may relate to the time or place of acceptance, the fulfilment of some condition, or the acceptance of responsibility for only part of the sum mentioned.

**Accommodation Bill** is a bill of exchange accepted by one person or firm for the accommodation of another person or firm, as a matter of convenience or friendship without the acceptor having received any consideration.

**Accord and Satisfaction** takes place when the parties agree to discharge their contract by substituting a new and different agreement.

**Account**. The Stock Exchange year is divided into, usually, 24 periods of 14 sometimes 21 days each called the account. If shares are bought and sold within the same account no stamp duty is payable, and no commission is charged on the sale.

**Account Day**, sometimes called settling day, is a week after the close of the account, and is the earliest day on which payment is due in respect of bargains made in the account.

**Active Bonds** are bonds bearing a fixed rate of interest payable in full from the date of issue, and include most bonds negotiable on the Stock Exchange.

**Act of Bankruptcy**, an act or default on the part of a debtor deemed to be evidence of his insolvency, and one which enables a creditor to present a petition against him in a Court of Bankruptcy. A debtor commits an act of bankruptcy (a) if he makes an assignment of his property for the benefit of his creditors generally, (b) if he makes a gift or transfer of his property with the intention to prevent its distribution in accordance with the laws of bankruptcy, (c) if he fraudulently prefers one creditor to another in the transfer of his property, (d) if he leaves the country or remains out of it, or absents himself from his house with a view to delaying or defeating the creditors, (e) if, as a result of an action in court, the sheriff seizes his goods and holds them for twenty-one days, (f) if he files a declaration of inability to meet his obligations, (g) if he falls within seven days to comply with a bankruptcy notice, (h) if he gives notice to any creditor that he intends suspending payment of his debts.

**Act of God**, any event beyond human prevention or foreseeing, such as earthquake, lightning, etc., loss in respect of which cannot be enforced unless expressly provided for.

**Actuary**, a statistician whose duties are chiefly concerned with applying the doctrine of mathematical probability to such matters as life insurance, annuities, reversionary interest, and the like.

**Adjudication Order**, the order of Court declaring the bankruptcy of an insolvent debtor and vesting his property in a trustee.

**Advance Freight**, an advance payment for freight of sea-carried goods, payable on shipment, and not recoverable in case of loss of goods in transit, unless otherwise provided.

**Advice**, any notification of a business transaction, apprising an agent, correspondent, or customer that a certain thing has been done. In the neglect of the advice of a bill of exchange, the bill may be dishonoured "for want of advice."

**Affidavit**, a statement on oath for use as evidence in judicial proceedings. It must bear a 2s. 6d. stamp.

**After Sight**, a phrase indicating that the period for which a bill is drawn does not begin to run until presented for acceptance by the drawee, or from the date of noting or protest.

**Alien**, a person who, resident in one State, is subject to another. Nationals of a country at war with the United Kingdom are enemy aliens. All other aliens are friends and have certain rights as well as duties and disabilities. Every alien must obtain leave of an Immigration Officer before landing in the U.K. and, being a resident in the U.K., must fulfil registration requirements. An alien is prohibited from owning or having shares in any British ship and from holding any parliamentary or other public office. After residential qualification he may apply to the Home Secretary for a grant of naturalisation. (See *Nationality and Naturalisation*.)

**Allotment**, the allotting of shares, stock, or bonds in a company. No allotment of shares can be made unless the minimum subscription mentioned in the memorandum or articles of association and in the prospectus, as that upon which the directors would proceed to allotment, has been subscribed, and the sum payable on application has been received by the company, or the entire share capital has been subscribed and paid for, conditions which must be carried out within forty days of the first issue of the prospectus, otherwise all moneys received on share account must be returned.

**All Rights Reserved**, a printed intimation in any book or literary work, notifying that the owner of the copyright has legally protected his rights against infringement.

**Amalgamation, or Combination**, the association of companies with a view to taking advantage of the economies of large-scale production, eliminating competition, and, in general, controlling production and, therefore, prices. Amalgamations may be *horizontal* or *vertical*, the former taking place between firms engaged in the same industry and working for the same markets, and the latter between firms carrying on distinct processes, the finished products of one process being the raw materials of another.

**Amortisation**, the redemption, reimbursement, liquidation, or repayment of a debt, the term usually being applied to the drawing and repayment of Government and debenture bonds. Amortisation may be effected by redemption at par at some predetermined future date, by means of a sinking fund, or by means of drawings.

**Ancient Lights** are rights of light enjoyed by a property owner over adjoining land. Such a right is obtained either by uninterrupted enjoyment for twenty years, or by written authority, and once legally established cannot be upset, no building being permissible that would seriously interfere with the privilege.

**Annual Return**, a summary to be rendered once a year by a Company to the Registrar of Companies. It must contain a list of shareholders and shareholdings, particulars of the Company's office, Directors, and Secretary, and a copy of the balance sheet.

**Annuity**, a fixed sum of money paid yearly or in certain portions at fixed periods of the year, and which may be certain (or terminable) or life (or perpetual) annuities. The former is a fixed periodical payment for a specific time only, and

the latter is an annuity calculated upon the probable duration of the life of the person to whom it is payable.

**Appraiser**, a valuer of real and personal property. Appraisements or valuations may be subject to stamp duties.

**Arbitrage**, the process by which operators on markets or exchanges make a profit out of the difference in prices existing at the same time for the same thing upon different markets.

**Arbitration**, a method of settling a dispute by a reference to disinterested parties, frequently resorted to in order to avoid law suits, and sometimes, where technical or other special difficulties present themselves, recommended by a court of law. Disputes between employers and employed are often settled by arbitration.

**Articles of Association** are the rules and regulations detailing the scope and method of conducting the internal business of a limited company. They must be printed in consecutively numbered paragraphs, and are supplementary to the Memorandum of Association, the terms of which they must not exceed.

**Assessment**, the official valuation of property or income for the purpose of taxation; the term is also used to represent the amount of tax which has been determined as payable by a certain person.

**Assets** are property of any kind available towards the discharge of the liabilities of a testator. Intestate debtor, or company.

**At sight**, a form of notification written on bills or notes denoting that they are payable on demand, without allowance of days of grace.

**Attachment**, a legal term applying to the seizure of a person or goods before a court under process of law, and has special reference to the writ of attachment authorising such seizure.

**Attestation** is the formal witnessing of the signing of any deed or document and the subscribing of the witness's name in proof thereof. Two witnesses, who are not interested, are required to a will, and they must append their signatures at the request and in the presence of the testator.

**Attorney, Power of**, a document under seal authorising the person to whom it is given to act in all respects as the agent of the grantor of the power in relation to matters specified in the document. When the power is general it applies to everything in which the grantor is interested, when special it applies to specific matters, such as the power to sign cheques, bills, transfers, deeds, to receive moneys, to effect sales, etc.

**Auction**, is a public sale at which goods or properties are offered for sale by an auctioneer, and sold to the highest bidders when the sale is without reserve.

**Auditor**, the person who carries out an audit of accounts. He is liable to be proceeded against for damages if by his omissions or neglect any loss arises. It is no part of his duty, however, to criticise the actions of principals, or to concern himself with the prudence or imprudence of transactions disclosed by the books. His chief duty is to ascertain the true financial position of the business and get out a balance sheet in which this is accurately set forth. The employment of auditors is compulsory in regard to the accounts of most public bodies and companies, but no director or officer of a company may hold the position of auditor.

**Authorised Depository** is an institution or person authorised by the Bank of England to hold, under the Exchange Control regulations, on behalf of the owners, foreign stocks. Banks, and since January 1955, solicitors and stockbrokers, are instances.

**Average**, a marine insurance term denoting loss or damage at sea. It may be *Particular average*, a loss or damage suffered by one of the interests risked in the voyage—ship, cargo, freight—and borne by such interest alone; or it may be *General average*, a loss suffered for the common good and borne rateably by all. Average in the ordinary commercial sense denotes a mean proportional between two or more figures.

**Award**, the decision of an arbitrator or arbitrators, or their umpire, on matters in dispute that may have been referred to them. Unless otherwise stated, or by consent for extension of time, an award must be delivered within three months of the arbitration.

**Back Bond**, a term in Scots Law equivalent to a trust deed in England. It is a deed which qualifies or attaches a condition to an absolute disposition.

**Back Freight** occurs when from causes beyond a captain's control goods cannot be landed at the port of destination, and have to be conveyed back to the place of shipment, freightage thus becoming chargeable against the owner for the return voyage.

**Bail**, the security given to effect the release of one arrested or imprisoned, on the understanding that he shall appear for trial at a fixed time and place.

**Bailment**, the delivery of goods into the trust or custody of a person.

**Balance Certificate**. (See *Certification of Share Transfer*.)

**Balance Sheet**, a statement prepared from the accounts of a concern, setting forth on the debit side the capital, its debts and other liabilities, and on the credit side all the assets, including cash, stock-in-trade, property, plant, goodwill, and so on.

**Baltic Exchange**, commonly called the Baltic, is the London market for grain imports, and in which grain imports are officially graded.

**Bank of International Settlements** exists to increase co-operation between the central banks of different countries. Its share capital is held by the central banks of the United Kingdom, the United States, France, and other countries. It was established in 1930, and undertakes the financial work involved in the European Payments Union set up in 1950.

**Bankers' Commercial Credits** are provided to finance exports. The buyer arranges with the bank in the exporter's country to make payment on presentation of the shipping documents. The credits may be *unconfirmed*, being revocable at any time, *confirmed*, meaning irrevocable before a given date; *revolving*, used for recurrent purchases being a standing order to hold credit up to a given maximum available at all times; *packing*, payable on production of some documents which like warehouse receipts precede shipment; *countervailing*, where a merchant proposing to re-export imported goods uses the foreign buyers' confirmed credit as security for opening a commercial credit in the country of his supply.

**Banking**, in its modern significance, dates from the foundation of the Bank of England in 1694. During the 18th century banking developed to a great extent and many private banks were started. General conditions of banking were greatly improved by the Bank Charter Act of 1844, which divided the functions of the Bank of England into the business of banking and the business of note issue, limited the fiduciary issue, and provided for the centralisation of note issue in the hands of the Bank of England. The Bank of England, which was brought under public ownership in 1946, is the Government's banker and manages on behalf of the Government the National Debt, the note issue, and administers the exchange control regulations.

In general terms the business of a bank consists of issuing notes, receiving deposits as interest, keeping current accounts for customers, discounting bills of exchange, advancing money to customers upon security and acting as business and financial agents for customers, as, for example, in the purchase of stocks and shares, as trustee or executor.

**Bank of Deposit**, a bank receiving money at a specified rate of interest, deposits being only withdrawable after a prescribed previous notice has been given. The bank, being thus guarded against emergency calls, is able to invest its money more favourably than ordinary banks, and to pay higher interest.

**Banks, Joint Stock**, banks whose capital is subscribed by shareholders, and now, with very few exceptions, limited liability companies, whose liability for note issue is, however, unlimited.

**Bank Rate**, the rate at which the Bank of England discounts first-class bills of exchange. Raised from 4½ to 5½ per cent. on 16 February 1956.

**Bank Stock**, strictly the Bank of England's banking capital, the rate of interest being regulated according to the Bank's profits. The capital of other banks is also called bank stock.

**Bankers' Cheques**, a cheque drawn by one bank on another.

**Bankrupt**, a debtor who has committed an act of bankruptcy, and has been adjudicated a bankrupt by a court of justice.



**Bear**, a Stock Exchange operator who sells for future delivery shares which he does not possess in the hope that he will be able to purchase them before the date of delivery at a lower price. If the bear is unable to meet his obligations on the day of delivery he is said to be "cornered."

**Bearer**. The term "or bearer," or "to bearer," on bills or cheques, denotes that any person holding the same has the same right in respect of it as the person specifically mentioned.

**Bearer Bond**, a bond for money loaned made payable to the bearer or holder of it.

**Bid**, a price offered at an auction or other sale, withdrawable at any time before it has been acknowledged by the auctioneer or seller.

**Bill Broker**, one who buys and sells bills of exchange or promissory notes, selling bills drawn on foreign countries, and buying bills for remitters to those countries.

**Bill of Credit**, a letter authorising the advance of money to a specified person, and undertaking, or implying the obligation, on the part of the writer, to reimburse the person acting on the letter.

**Bill of Entry**, a written description of goods entered at the Custom House, either for intended exportation or importation. Since 1939 most goods cannot be exported without prior notification to the Customs' Authorities and approval by them: a bill of entry is then required. In the case of an importer being unable (from insufficient advice) to make out a complete Bill of Entry, he may apply for a Bill of Sight, which contains a general description of the goods, and on that the goods are landed for further examination. Perfect entry must be made within three days by indorsing the Bill of Sight with the necessary particulars.

**Bill of Exchange** is an unconditional order in writing addressed by one person to another signed by the person giving it, requiring the person to whom it is addressed to pay on demand or at a fixed or determinable future time a certain sum in money to or to the order of a specified person or to bearer.—Bills of Exchange Act, 1882.

**Bill of Health**, a certificate signed by a consul or other official delivered to masters of ships when they leave places, showing (in the case of a *clean* bill of health) that when the ship sailed, no infectious disorder was known to exist at the port of sailing or on board. A *suspected* or *touched* bill implies that there were rumours of infection; and a *foul* bill, the absence of a clean bill, indicates that the ship sailed from an infected place.

**Bills of Lading**, a receipt from a ship's captain to the shipper undertaking to deliver goods to some person whose name is expressed or endorsed thereon by the shipper. In the hands of the consignee it serves as a document of title to the goods. A *shipped* bill acknowledges goods loaded on board ship, a *received* bill merely confirms delivery into shipper's custody. Bills may be *clean*, when the shipowner affirms that he received them in apparent good condition, or *clauséd* when he only qualifiedly affirms this.

**Bill of Sale**, a document giving evidence of sale or mortgage of personal chattels when such transaction has not been followed by the immediate transference of such chattels to the custody of the purchaser or mortgagee. A bill of sale must be presented to the Registrar within seven days.

**Bill of Store**. Goods of British origin which can be proved by documentary evidence to have been exported to a foreign country can be re-imported within five years without being liable to importation duties, and when that takes place the particulars are entered in what is termed a bill of store.

**Bill of Suffrance** is an official permit to a ship to proceed from one British port to another, with dutiable articles on board, and trade, without paying Customs dues until the goods are landed or placed in a bonded warehouse.

**Blank Acceptance**, a term used when the acceptor of a bill of exchange signs the acceptance without naming the amount for which it is drawn, in which it is open to the drawer to insert afterwards any amount up to the limit covered by the stamp.

**Blank Transfer**, a transfer of shares or stock in which the name of the transferee and the date of execution are omitted, the transfer usually being deposited with a bank as security for money lent, or with the real owner of the shares by a nominee in whose name they are registered. The company concerned will not recognise a blank transfer.

**Blue Chip**, a phrase originating in America and now widely used to denote ordinary shares of the highest investment calibre.

**Board of Trade**, a department of the Government, forming a permanent committee of the Privy Council, presided over by a member of the Cabinet. It deals with commercial policy generally, commercial relations and treaties, and questions affecting British trade with especial emphasis on export production. The administration of statutes relating to key industries, trading with and property in ex-enemy territories, price regulations (other than food), raw material control, the issue of import and export licences for goods, weights and measures, patents, designs, trademarks, registration of joint stock companies, and matters relating to bankruptcies are also dealt with.

**Bona Fides**—"good faith"—is required of any holder of a cheque or bill of exchange. Unless he acquired the document honestly and without any knowledge of fraud or theft in its prior history, he cannot cash it.

**Bond**, an obligation by deed, whereby the person giving the bond binds himself in a penalty to the obligee, either to pay a sum of money or to do or refrain from doing some act. The penalty is usually double the sum secured. The bond becomes void on its obligation being discharged.

**Bonded Goods** are goods stored in a bonded warehouse, and not chargeable with duty until required to be removed. The owner is required to enter into a bond to pay the duty on removal of the goods. Bonded goods can be moved by bonded vehicles and still remain in bond.

**Bonded Warehouse**, a building set apart for the storage of dutiable goods, the duty on which is not payable until they are removed. The warehouse is in the entire charge of revenue officers.

**Bond Note**, a note authorising the removal of bonded goods for exportation or to another warehouse, and requiring the signature of a Customs House official.

**Book Debts**, the debts standing in a trader's books in the ordinary course of business.

**Bottomry**, the act of mortgaging a ship.

**Bretton Woods**, an international agreement was signed on 8 July 1944 at a United Nations conference on currency and finance at Bretton Woods, setting up the International Bank for Reconstruction and Development and creating an International Monetary Fund (which see).

**British Ship**, a vessel owned exclusively by British subjects, or by a corporation or company established in British dominions according to British laws, and registered as a British ship, except in cases of vessels of small tonnage.

**Broker**, an intermediary agent in the purchase and sale of any goods, his remuneration being derived from commission or brokerage charged on a percentage basis for such transactions.

**Brokerage**, the commission, percentage, or fees paid to the broker for his work in connection with any business carried through by him.

**Bucket Shops** are the offices of outside brokers who are not members of the Stock Exchange, and are unable themselves to carry out Stock Exchange transactions, but get members to act for them.

**Budget**, an estimate of income and expenditure: the National Budget is presented to Parliament by the Chancellor of the Exchequer early in April of each year. An account is given of the revenue and expenditure of the past year to April 1st, followed by estimates for the coming year, giving separately the expected expenditure on the Consolidated Funds and the Supply Services. Provision is made for raising the required sums by taxation.

**Building Scheme** is an arrangement, whereby land is laid out in plots sold to different persons each of whom for the common good covenants not to use his plot for certain purposes. Later owners of such land will be bound by the covenants.

**Building Society**, a society formed for the purpose of raising, by the subscription of its members, a fund to be used for making advances to members upon security of freehold or leasehold estate by way of mortgage.

**"Bull,"** one who buys, or contracts to buy, shares in the expectation of a rise in price, with a consequent realisation of profit on them by settling day.

**Bull Account**, refers to the account of a "bull"

who, finding himself with more stock than he can settle for, pays what is called "contango" for the privilege of having the account "carried over" to the next settlement.

**Bullion Market** is the market in which gold and silver is dealt in as a commodity and not as currency. London is the leading gold bullion market.

**Burden**, a ship's carrying capacity reckoned by tonnage.

**Buyer's Market**, an area in which the supply of certain goods exceeds the demand, so that purchasers can drive hard bargains.

**Buyers Over**, a term indicating buyers are in excess of sellers.

**Bye-Laws** are special rules and regulations made by any company or corporation for the carrying on of its affairs, but they must neither contravene the powers conferred by Parliament nor the laws of the land.

**Call**, an instalment due on shares not fully paid, payable according to the terms of the prospectus or Articles of Association of the company. The term is also used in respect of the option of exercising a call to buy or sell specified securities during a certain period and at a certain price.

**Called Bond**, a bond concerning which a notice or "call" has been sent out that it will be redeemed on a date named.

**Call Money**, money lent to bill-brokers and repayable on demand or "call."

**Call of More**, or "option to double," is the privilege to double the amount of one's present buying at a future-named date on the same terms.

**Capital** is that portion of wealth which is set aside for future production and is either fixed or circulating. The former is represented by land, houses, factories, workshops, machinery, lease, goodwill, or other things necessary for the carrying on of business, and not of a nature to be sold or exchanged. Circulating or floating capital is money provided for the purchase of raw material, the remuneration of employees, and other working expenses in the ordinary course of business. In a general way, the term capital signifies the money and money-value invested in a business undertaking. The actual capital of a limited liability company is the amount that its shareholders may have subscribed for the carrying on of the undertaking. The term, however, has a varied application. Thus the full sum named as capital in the Memorandum of Association is called the "nominal," "authorised," or "registered" capital, while the sum represented by the shares actually taken up is called the "subscribed capital," the portion remaining unpaid or uncalled up being styled "unpaid" or "uncalled" capital. The principal sum of a loan is also called "capital."

**Capital Issues Committee**. A committee set up as the result of the report of the Macmillan Committee on Finance and Industry in 1931. Public offers of shares exceeding £50,000 for any single undertaking in any one year require the consent of the Committee acting on behalf of the Treasury.

**Capital Levy**, a tax assessed on a person's property and payable out of his capital.

**Capital Redemption Reserve**, a fund required to be set up out of profits upon the redemption of preference shares.

**Carat**, a term used in assessing the value of gold and precious stones. In connection with gold, it represents the proportion of pure gold contained in any gold alloy, and for this purpose the metal is divided into 24 parts. Thus 24 carats indicates pure gold, and any lesser number of carats show the proportion of gold contained in the alloy. The carat as a measure of weight is now obsolete, having been replaced by the metric carat of 0.2 grams.

**Cargo Registration Forms**, forms required to be submitted to shipowners before goods can be sent forward to ports for loading to steamer.

**Carriage Forward**, a term used in connection with the delivery of goods sold. The seller must arrange transportation, but the cost and risk of it are borne by the buyer.

**Carrier**, any person or company engaging to convey goods or passengers for hire and reward in the regular way of business. Thus railway companies are common carriers so far as concerns their carriage of goods. So long as goods are in the custody of a carrier, he is responsible for their safety, being exempted, however, when damage results

by the "act of God," from the acts of the Queen's enemies, or from "inherent vice," that is, natural deterioration, bad packing, etc. A carrier of passengers differs from a common carrier of goods in that he does not warrant the safety of his passengers, or that his carriage is absolutely free from defect at all events. His duty is to take care.

**Cartel**, a combination of trading concerns to work together for common objectives, e.g., limitation of output, price rings, apportionment of markets.

**Cart Note**, the Customs note authorising the transfer of dutiable goods from one bonded warehouse to another, or from import ship to bonded warehouse.

**Cash**, a term applied to coin and bank-notes as distinct from bills, drafts, or securities. Generally speaking, however, "cash" includes negotiable instruments that can readily be converted into coin or bank-notes.

**Caution Money** is money deposited as security for the fulfilment of a contract or obligation.

**C.D.3**, document upon which particulars are stated of currency to be received from abroad from sale of goods. It also stipulates how the proceeds of the foreign currency so obtained will be disposed.

**Certificate**, an authorised or official document certifying title, right, or verification, respecting its subject-matter.

**Certificate of Damage**, a dock certificate testifying that certain goods on being landed from shipboard are in a damaged condition.

**Certificate of Incorporation**, a certificate issued by the Registrar of Companies on the registration of the Memorandum of Association of a limited liability company.

**Certificate of Origin**, a document authoritatively indicating the place of origin of the goods, materials, or manufactures mentioned therein.

**Certification of Shares Transfer** is when shares represented by one certificate are sold in batches, and the company takes the certificate, and certifies on the transfer that the shares therein enumerated are in their custody. If only a part of the holding be sold, a "Balance Certificate" is given to the owner for what remains unsold.

**Chamber of Commerce**, an association of merchants, manufacturers, traders, and others, organised for promoting the interests of trade; and exercising a very beneficial influence in obtaining and spreading statistical information, aiding commercial legislation, and otherwise.

**Charter**, a government or Crown grant of concessions, powers, or privileges to individuals, companies, or institutions.

**Charter-Party**, a hiring contract whereby the owner of a ship grants to another person (the charterer) the right of using the ship for a specified voyage or period.

**Chattels**, things deemed to be personal property, and divided into chattels *real* and chattels *personal*, the former being interests in land less than freehold, and the latter any kind of property other than interests in land.

**Cheque** is a written order addressed by a person called the "drawer" to a banker to pay a sum of money generally to some third party known as the "payee," but may be to "bearer." In the former case it requires endorsement by the payee before payment, but in the latter case it is payable by delivery. A cheque now requires a stamp value 2d. A banker is liable to his customer for cheques paid with a forged signature of the drawer.

**Cheques Crossed**. A cheque is crossed for protection. The crossing is usually done by the drawer, who writes "& Co." between two parallel transverse lines across the face of the cheque, after which the cheque can only be realised by being passed through a bank. The simple "& Co." crossing is called "general"; when the name of a particular bank is added it is called "special." (See also *Not Negotiable*.)

**Cheque to Bearer**, a cheque payable to the person holding it without requiring endorsement. The word "or Bearer" after the name of the payee is sufficient, but if the cheque be crossed it must be paid into a bank.

**Cheque to Order**, one having the words "or Order" printed or written upon its face, to follow the name of the person in whose favour it is drawn, who must endorse the cheque before payment can be obtained. If crossed it must be paid into a bank.



**Chose in Action**, a commercial-law term denoting a thing in respect of which one has a right of action as distinct from a thing in actual possession. For example, mortgages, bonds, warrants, policies of insurance, and debts. Such rights are now assignable; prior to 1873 they were not.

**C.I.F.—Cost, Insurance, Freight**—signifies that the seller of goods will supply the goods and arrange contracts of transportation and insurance.

**Clause Paramount**, the statement in bills of lading that the provisions of the Carriage of Goods by Sea Act 1924 are to apply to the carriage. Any terms in the bill inconsistent with these provisions must give way to them.

**Clearing a Bill**, procuring cash to satisfy a bill of exchange.

**Clearing Bank** is a bank affiliated with the London Bankers' Clearing House.

**Clearing House**, the place at which clerks from each clearing bank attend daily bringing with them all bills paid into their bank on that day drawn on each one of the others. The bills are then exchanged and differences outstanding settled. The Bankers' Clearing House in London is in Post Office Court, Lombard Street.

**Closed Shop**, the demand of a trade union that employment in a business or factory shall be open only to its members.

**Collateral Security** is additional security given by a debtor to secure fulfilment of an obligation.

**Committee of Inspection**, a committee of creditors appointed by the whole body of creditors to supervise the winding-up of the affairs of a bankrupt or of a company. It should consist of not more than five or less than three persons.

**Commonwealth Citizen** is a person of British nationality. The term can be used as an alternative to "British subject" and was created by the British Nationality Act, 1948.

**Companies Liquidation Account**, an account kept by the Board of Trade with the Bank of England into which all moneys collected in the course of liquidation of companies must be paid.

**Company, Joint Stock**, a company having a permanent paid-up or nominal share capital of fixed amount divided into shares, also of fixed amount, or held and transferable as stock or dividend, and held partly in one way and partly in the other, and formed on the principle as having for its members the holders of those shares or that stock, and no other persons; and such a company when registered with limited liability under the Companies Act, 1948, shall be deemed to be a company limited by shares.

A company may be formed by seven or more (or in the case of a private company, two or more) persons subscribing to a Memorandum of Association, and otherwise complying with the requirements of the Companies Act, 1948, regarding registration. Companies so constituted may be of three kinds. (1) Limited by shares. This is the common form of joint stock company, and is divided into public and private companies. (2) Limited by guarantee. (3) Unlimited.

**Compounding with Creditors**, an agreement whereby creditors agree to accept, and a debtor undertakes to pay, or secure payment of, a certain sum in each £ in full settlement of indebtedness.

**Compulsory Winding-up** is the winding-up of a company's affairs by the order and under the supervision of the Chancery or County Court.

**Conditions of Sale**, stipulations in a contract for sale, which are of the essence of contract. Failure by one party to fulfil these conditions justifies the other party repudiating the contract.

**Confidence Indicator** is a factor whose movements are proportionate to the ratio of fixed interest yield (e.g., irredeemable 2½ per cent. Consols) to ordinary share yield, and shows to what extent changes of price are due to psychological factors as compared with interest rates or dividends. It is high in booms and low in slumps.

**Consignment Note**, a form requiring to be filled up for the despatching of goods by rail or other common carrier.

**Consolidated Fund** consists of several separate government funds, pledged for the payment of the interest of the National Debt, cost of Army and Navy maintenance, government salaries, etc.

**Consols (Consolidated Annuities)** form a large portion of the Funded National Debt of Great Britain, and represent stock at a fixed rate of interest.

**Constructive Total Loss** is a marine insurance loss entitling the insurer to payment of the full amount for which he is insured, or agreed figure, on abandonment of his ship and its contents. (See Abandonment.)

**Consular Invoices** are invoices of goods requiring to be declared before and certified by the consul of a country to which they are being exported.

**Contango**, a term of the Stock Exchange denoting the charge made for carrying over a transaction from one settling day to the next.

**Contango Day**, otherwise "continuation day," or "making-up day," is the second day before settling day, when arrangements are made as to carrying over transactions.

**Contingent Liability**, a liability which may be discharged without any liability accruing; the liability of a banker who accepts bills for a customer of substantial position is not likely to accrue.

**Contract**, an agreement enforceable at law between two or more parties, and implying both an agreement and an obligation. There must be offer and acceptance, legal capacity to contract, consideration, and genuine consent, otherwise the contract is not valid.

**Contracting Out**, the right of individuals to agree that certain parliamentary enactments shall not apply as between them.

**Contributories**, persons liable to contribute to the amount unpaid on their shares in a limited company in case of that company being wound up. Those who have been shareholders within a year of the winding up are liable to be called upon as contributors to the extent to which the present member of the company has failed to pay for his shares.

**Convertibility** is the term used to denote the attribute of a currency the holders of which have the right to demand gold in exchange at a fixed rate from the central bank. In recent years national currency regulations have either totally abrogated or severely curtailed this right, and the word is frequently applied to denote the right to exchange into other currencies.

**Conveyance**, a formal document transferring property.

**Cooperage**, a term used in sea transport to describe repairing defects in the packing or crating of goods to make them fit for continued transportation.

**Co-operative Societies**, associations for mutual benefit in manufacture and wholesale and retail trading. Interest on shareholders' capital is limited to a fixed rate, and after meeting this, the surplus on trading is distributed as dividends to members in proportion to the value of their purchases.

**Copyright**. Under the Copyright Act, 1911, copyright subsists in every original literary, dramatic, musical, and artistic work, if: (a) in the case of a published work, the work was first published in the United Kingdom; and (b) in the case of an unpublished work, the author was at the date of the making of the work a British subject or resident in the United Kingdom. The Act provides that, except in certain special cases, the author of the work shall be the first owner of the copyright, and there are no formalities, such as registration or payment of fees, to be accomplished. Copyright includes the right to produce or reproduce the work or any substantial part thereof in any material form whatsoever; to perform the work or any substantial part thereof in public, or, if the work is unpublished, to publish the work or any substantial part thereof. A work which enjoys the protection of the Act is automatically protected in those countries which are parties to the Berne Copyright Convention. The United States of America is not a party to this Convention but has, however, ratified the Universal Copyright Convention. It is anticipated that legislation will be introduced to enable the United Kingdom to adhere to this latter Convention. This would necessitate an amendment of the provisions under which copyright can be secured in the United Kingdom. The Government Department responsible for matters in connection with copyright is the Industrial Property Department, Board of Trade, 25, Southampton Buildings, London, W.C.2. See also p. 572.

**Corner**. (See Bear.)

**Cost Accounts**, a system of recording in accounts the materials used and labour employed in the

manufacture of a certain commodity or execution of a particular job.

**Cost and Freight**, a term used in respect of goods sold at a price covering cost and carriage.

**Counsel**, in legal usage, means a barrister. It originated from early times, when barristers, unlike solicitors, acted as unpaid counsellors or advisors of the litigant. Hence Q.C. (Queen's Counsel), an eminent lawyer who would be asked to tender legal advice to the Queen.

**Counterclaim**, any cause of action which the defendant in a law suit can bring against the plaintiff.

**Country Notes**, the bank notes of any bank of issue other than the Bank of England.

**Covenant**, in law, means a promise made under seal.

**Cover**, a deposit of cash or securities ensuring the depositee against loss in Stock Exchange or other operations carried out on the depositor's behalf.

**Credit, Letter of**, a letter from a bank, firm, or one person to another, authorising payment to a third person named of a specified sum, for which the sender assumes responsibility.

**Credit Note** is an acknowledgment, by a seller, of a sum due to the purchaser on accounts of packages, short weight, etc.

**Credit Sale**, an agreement for the sale of goods, the price to be paid in five or more instalments. It is governed by the same rules as hire purchase.

**Cumulative Preference Shares** are shares the dividend on which is at a fixed rate and in default of payment in one year, or in any number of years, the amount accumulates until payment can be made. Such dividends take priority over other dividends, though not over debenture interest.

**Currency Bonds** are bonds guaranteeing the repayment of principal and interest in the currency of the country of their issue.

**Current Account**, the amount of money a person has deposited at a bank, and which he can draw from or add to as may be desired, no interest as a rule being chargeable on either side.

**Customs Declaration**, a form that has to be filled up and signed by one who sends goods abroad, stating the nature, weight, value, and customs classification of the goods.

**Customs Duties**, the name given to taxes on the imports and exports of commodities. These duties rank among the most common modes of raising revenue for public purposes, and have been charged since Anglo-Saxon times.

**Customs Entry**, a statement of particulars of the nature, value, weight, and customs classification of imported or exported goods furnished to the customs officials.

**Day to Day Loans**, money borrowed for a day at a specified rate of interest, and renewable from day to day by mutual agreement.

**Days of Grace**, a period of three days allowed by custom of law beyond the fixed day of payment for a bill of exchange or note. Should the last day of grace fall on a Sunday, or other non-business day, the bill or note is due on the preceding day. These days are not allowed on bills payable on sight or on demand.

**Dead Freight**, the amount charged for empty space to one who having chartered or contracted to load a full cargo falls short of requirement.

**Dead Weight**, cargo that pays freightage according to weight, irrespective of measurements, such as iron, coal, etc.

**Debenture**, a document, or certificate, signed by a public officer, corporation, or company, acknowledging indebtedness for money lent and guaranteeing repayment with interest.

**Debenture Bonds** are the bonds of a government, company, or corporation, engaging to repay a specified borrowed sum, with interest, at a time named, the interest being payable periodically by coupon until the bond matures and is paid off.

**Debenture Stock** differs from debenture bonds in that it is usually irredeemable. The principal sum is registered in the owner's name, and the interest, which takes priority of dividends, is paid by warrant to the owner's order.

**Debit Note** is a note giving particulars of an allowance claimed in respect of defective or damaged goods.

**Deed** is a written or printed document under hand and seal. It must be signed in the presence of a witness or witnesses, must bear a seal, and must have formal "delivery"—that is, the signer must either give constructive delivery by

placing his finger on the seal and saying, "I deliver this as my act and deed," or actual delivery by handing over the deed. Without "delivery" the deed is inoperative.

**Deed of Arrangement**, a written document whereby a debtor conveys property, effects, goods, or other assets to a trustee for the benefit of his creditors generally. Such a deed is void unless registered with the Registrar within 7 days and assented to by the majority of the creditors within 21 days. (See Deeds of Arrangement Act, 1914.)

**Deed Poll**, a formal document under hand and seal of one person only.

**Deferred Annuities** are such as do not come into effect until such a specified later period as agreed upon. Such annuities are purchasable at any post office. In case of death before a deferred annuity begins, the purchase-money is not returnable.

**Deferred Bonds** are bonds issued by a government, corporation, or company, entitling the holder to a gradually increasing rate of dividend or interest, until a fixed maximum rate is reached, when they become converted into ordinary bonds.

**Deferred Stock or Shares** are such as do not rank for dividend until after the ordinary, preference, and guarantee dividends have been provided for.

**Deflation**, the process of increasing the buying value of money. It may be caused deliberately by a cut in the amount of currency in circulation or accidentally by production of goods in excess of requirements.

**Del Credere Agent** is a broker who not only finds purchasers but also guarantees their ability to pay the price.

**Delivery Order**, an order signed by the owner of specified goods, addressed to any person or official having charge of them, and requesting delivery of them to the person named in the order. It is negotiable to the extent that it can be placed with a banker to secure any advances he may make on the goods.

**Demand Draft**, a bill of exchange payable on demand.

**Demurrage**, a charge to which the charterer of a ship is liable by neglecting to load or unload within the time named in the charter-party. The term is also used in connection with delays in removing goods after being conveyed to the station of destination.

**Deposits**, in the commercial sense, comprise deposits of money for employment in business, deposits of negotiable securities with a banker for safety, deposits of similar documents as security for loans, deposits of money or bills in a bank in the ordinary course of business on current account, and deposits of sums at interest.

**Deposit Account** represents money which has been placed with a banker at interest, and which cannot be withdrawn without previous notice.

**Deposit Receipt**, bankers' receipt for monies deposited, specifying the terms of the deposit.

**Depositions** are the sworn evidence of a witness in a judicial hearing, which is written down and signed and may be used at subsequent proceedings.

**Derelict**, a vessel abandoned by its crew, and in respect of which salvage accrues to those who save it or what it contains.

**Despatch Money**, money allowed by a shipowner when a charterer does not utilise all the time allowed by the charter-party for loading and for discharge.

**Development Charge**. A charge based on the increased Capital Value of the land or buildings following permission by planning authorities to carry out extensions, alterations to, or change of use of land and buildings. The charge was imposed under the Town and Country Planning Act, 1947, but abolished by later legislation.

**Deviation**, a marine insurance term indicating an alteration of course from that set down in the policy, a departure which, unless made for avoiding perils, annuls the risk of the underwriters.

**Discounting a Bill**, the act of purchasing at a certain deduction or discount, a bill of exchange not yet due.

**Dishonour**, the refusal to accept a bill of exchange on presentation for acceptance, or to pay it at maturity.

**Disinflation**. A disinflationary cause or tendency is one which increases the value of money in terms of goods, and disinflation is the progressive increase in such value.



**Dissolution of Partnership**, the discontinuance of a partnership from any legal cause, a notice of which must be inserted in the *London Gazette*, and also specially intimated by letter or notice to all with whom the firm have had dealings.

**Distress**, or **Distrain**, a taking without legal process of a personal chattel from the possession of the occupant. Thus a landlord may recover rent in arrear; or a rate-collector or tax gatherer for recovery of rates and taxes; or by Justices of Peace for the recovery of fines due on summary conviction.

**Dividend**, (i) a periodical payment of interest on an investment; and when declared upon the capital of a company undertaking it must be out of profits alone. (ii) A composition or part payment in respect of a claim on the estate of a bankrupt, or a company in liquidation.

**Dividend Warrants** are written orders to a banker authorising the payment of dividends, and are negotiable.

**Dollar gap**. A colloquial term used to describe the excess of a country's payments to the dollar area over its receipts from that area.

**Domicile**, in a legal sense, is the home of a person where he has his permanent residence and to which he intends to return when absent. A company is domiciled where it has its registered office and its acts will normally be governed by the law of its domicile.

**Donatio Mortis Causa**, a gift of personal property on prospect of death.

**Dow Theory**, a method, named after the inventor, of determining the major trends in the prices of stocks and shares.

**Draft** (i) in financial dealings, a bill drawn by one person on another; an order in writing to pay money, a bill of exchange; (ii) in trade, a special allowance for dirt, dust, and similar matters deducted from the price of goods sold in bulk by weight.

**Drawback Goods**, goods on which imported duties have been paid but are due to be refunded when the goods are re-exported. The exporter's drawback claim must be contained in the shipping bill and at least twenty-four hours special notice must be given to the Customs officers to enable them to examine the goods on the exporter's premises before packing.

**Drawee**, the person on whom a bill is drawn, his liability on which does not come into force until he signs and accepts it, after which he is the acceptor.

**Drawer**, the person who draws a bill, who in case of dishonour is liable to the holder or any indorser, who is compelled to pay it.

**Duress**, a legal term meaning improper pressure by threats to induce a person to make a contract.

**Dutch Auction**, the "cheap-jack" method of starting the sale of an article at a price, and gradually lowering it to an amount at which a sale is effected, or the article withdrawn.

**Duties**. (See Customs, Excise and Purchase Tax.)

**Earnest**, consists of any coin or small article of value given in token of a bargain and in proof of good faith.

**Easement**, a legal term applied to a privilege enjoyed by anyone over another's property, such as right of way, ancient lights, etc.

**Ejectment**. When a tenant after the termination of his tenancy, either as the result of a notice to quit or otherwise, continues in possession of premises, an action at law can be commenced, and what is now termed writ for recovery of land issued. If the rent be over £100 a year the action must be in the High Court, otherwise the County Court must be appealed to.

**Embargo**, a Government order issued in wartime, prohibiting vessels from entering or leaving port for a time specified.

**Embargo (Rail)**, a restraint placed by the Railways on the reception of goods, which otherwise they are compelled to carry. Normally due to congestion on the Railways or in the Goods Yard.

**Endorsement**, the signing of one's name on the back of a bill, an act which transfers the right in it to the endorsee.

**Endowment Policy** is one on which premiums are payable only for a prescribed period, after which the insurer has no other liability, and may either receive the amount for which he is insured, let it remain to accumulate with interest, the whole to be paid at his death, or take an annuity based on the policy value, as may be stipulated in the policy.

**Entail**, a settlement of landed property so that it can no longer be freely sold or bequeathed.

**Entry for Warehousing**, an entry made at the Customs House giving particulars of dutiable goods to be stored on import in a bonded warehouse, and not liable to duty until taken out for consumption.

**Equity** is that branch of the law which was originally developed by the Lord Chancellor and is now administered chiefly by the Chancery Division of the High Court. Most mercantile subjects are within the equitable jurisdiction.

**Equity Shares** entitle the holder to whatever dividend the directors may declare, there being no fixed maximum. Usually all the issued capital except the preference shares are equity shares.

**Errors and Omissions Excepted** (*E.E. or E. and O.E.*), when written at the foot of invoices or accounts indicate that they are open to after-correction if any mistakes should be discovered.

**Estate Duty** is the duty payable upon the value of all property which passes or is deemed to pass on the death of any person. As from July 30, 1954, not exceeding £3,000, nil; £3,000—£4,000, 1 per cent.; £4,000—£5,000, 2 per cent.; £5,000—£7,500, 3 per cent.; £7,500—£10,000, 4 per cent.; £10,000—£12,500, 6 per cent.; rising gradually to 80 per cent. on estates exceeding £1,000,000.

**Estimate**, a written statement specifying the amount of money for which a contracting party will perform certain work, or supply certain goods.

**Estoppel**, a legal term indicating that a person is barred from a legal remedy because of some former act which precludes him of the right. Estoppel may be by record, *e.g.*, a judgment, by deed, or by conduct.

**Excess Profits Tax**, introduced as a war measure in 1939 to prevent war profiteering. Business profits above normal standard profits were taxed at 100 per cent. Terminated on 31.12.46. An Excess Profits Levy was introduced in the 1952 Budget but abolished a year later.

**Excess Shares**. When shareholders have a right to apply for new shares in the same company and do not take up their rights by the appointed day, the shares not taken up are termed excess shares, and may be applied for by other shareholders of the company.

**Exchange**, name given to building in which merchants, bankers, and brokers meet for the transaction of business in commodities, stocks, bills, etc.

**Exchange Control** has been in operation since 1939 to prevent capital moving from the United Kingdom to countries outside the Sterling Area.

**Exchequer**, which derives its name from the checkered table on which accounts were calculated in early Norman times, is a term connected with the revenues of the Crown. The Court of Exchequer Division existed up to 1881. In former times it had jurisdiction in all revenue matters. The term Exchequer is now mainly applied to the Governmental department which deals with the public revenues, and is presided over by a Chancellor, who is also a Cabinet Minister.

**Exchequer Bills**, Bills issued by the Treasury for sums varying from £100 to £1,000, and bearing interest at the rate current on the day of issue. They form part of the unfunded debt. They are made repayable, at par, in a year from date, but can be renewed annually.

**Excise Duties** are inland taxes imposed on articles of home production for home consumption, or on their manufacture or sale, and were first established in England in 1643, and made on vendors of ale, beer, cider, and perry.

**Execution**, (i) a process of court whereby, default having been made in satisfying a judgment, a writ or order of execution is issued authorising the sheriff or bailiff to seize and sell the goods of the debtor, or such portion of them as may be necessary, to discharge debt and costs; (ii) the formal act of signing a deed before witnesses.

**Exempt Private Company**, a private Company which by the Companies Act, 1948, is exempted from some of the duties of companies, *e.g.*, to annex a balance sheet to its annual return. In addition to qualifying as a private company, such companies must not have more than fifty debenture-holders, must not have any other company as a director, and no one other than the holder must have any interest in the shares or debentures.

**Export Credits Guarantee Department.** A non-profit-making Government Department founded in 1919 to insure U.K. exporters against such risks as buyer's insolvency, import cuts abroad, exchange blockages or delays, and similar "credit risks."

**Export Licence,** document granted by Board of Trade permitting goods to be exported from this country to overseas destinations.

**Ex-Ship,** goods sold on these terms are delivered free of cost to consignee as far as putting alongside wharf or quay. From there all costs and responsibility of removal falls on the purchaser.

**Extra-territorial Rights** are enjoyed by aliens who though residing in a foreign country are not subject to its laws. This privilege is enjoyed by those in the diplomatic service and by U.N. officials while performing their duties and has also been extended to resident foreigners not occupying diplomatic or official positions. Exterritoriality was entirely abolished in Egypt in 1949 and in China was voluntarily surrendered by Great Britain and the U.S.A. in 1943.

**Face Value,** the nominal value marked on the face of a security—the par value.

**Factor,** in mercantile law, an agent who is authorised in the normal course of his business to sell, forward for sale, buy, and pledge goods.

**F.A.S.—Free Alongside Ship**—means that the seller of goods shall at his expense deliver the goods to the quayside by the ship.

**Fiduciary Loan,** a loan granted without any security being given.

**Fiduciary Note Issue,** an issue of bank-notes without the provision of a money reserve.

**Fixed Capital.** (See Capital.)

**Fixtures** are legally such movable additions to a building or land as when actually secured become part of the freehold. There are three exceptions to the rule that tenant's fixtures secured to the freehold pass to the landlord, viz.:—(a) in favour of trade; (b) for agricultural purposes (see Agricultural Holdings Acts, 1923); (c) for ornament and convenience, such as tapestry, chimney-pieces. (See also Tenant's and Trade Fixtures.)

**Floater,** a Stock Exchange term referring to what are called Bearer Securities, on which loans are readily raised, and as the loans on them are called in by one bank they are passed to another, and so on, hence the name "floaters."

**Floating Policy,** an insurance policy which covers certain specified goods which are distributed over a certain area.

**Floating Security,** a term used in regard to the security of a limited company, and forming a charge on its assets, but not enforceable unless there is default in payment of principal or interest.

**Flotsam,** a legal term applied to goods lost at sea and found floating on the water. Flotsam does not belong to the finder, but must be delivered up to the rightful owners, or, if no owner appears within a year and a day, becomes forfeit to the Crown. The finder, however, is entitled to a reward proportionate to the value of the goods.

**F.O.B.—Free on Board**—signifies that the seller of goods has borne the expenses of putting them on board ship. Custom of port and whether shipment is made by charter or liner vessel, however, must be taken into consideration.

**Folio,** a term of four different meanings: (1) in bookkeeping it means two pages facing each other; (2) in ordinary legal documents 72 words constitute a folio; (3) in Parliamentary documents there are 90 words to the folio; and (4) in printing the folio is the number of any single page.

**For the Account,** Stock Exchange transactions included in current account for settlement on the next settling day.

**Force Majeure** is a phrase often found in insurance policies. It means the same as Act of God.

**Franchise,** generally means a right or privilege, particularly the right to vote. In marine insurance, franchise is the percentage proportion which the loss bears to the total value of the goods. Most policies exclude liability to make good losses below a fixed franchise.

**Franco,** a term used in certain trades to show that goods are sent pre-paid and free of expense.

**Freeboard,** a shipping term, describing the height of the side of a ship above waterline. Freeboard is needed to resist rolling in heavy seas and to prevent seas breaking over the deck and endangering the crew.

**Free Overside,** goods sold on these terms are delivered to quay or into barge at cost of seller. From quay or barge the cost and responsibility falls on purchaser.

**Freight,** charges paid for carriage of goods or merchandise by ship or rail; a term still used in the older sense to denote the goods themselves. (See London Clause Charge.)

**Freight Note,** statement giving particulars of freight charges.

**Freight Release.** When goods have been shipped "freight forward," a note of "freight release" showing that all freight charges have been paid must be produced to the master of the ship before they can be taken away.

**Funded Debt.** (See National Debt.)

**Funding,** the operation whereby a floating debt is converted into stock.

**G.A.T.T.,** sometimes referred to as Gatt. The initials of the General Agreement on Tariffs and Trade signed at Geneva in 1947 providing for tariff reductions between the member nations. Subsequent meetings of the Gatt countries have extended the policy.

**Garnishee Order,** an order of court attaching money or goods belonging to a judgment debtor but in the hands of another person, the object being to prevent such money or goods being handled by the debtor instead of applied for the benefit of his creditors.

**Gentlemen's Agreement,** an informal agreement based on good faith.

**Glit-edged** is a term denoting stocks sponsored by or having the backing of the British Government, e.g., Conversion Loans, War Loans, Consols.

**Give On,** the paying of contango.

**Godown,** a storage warehouse in the Far East.

**Gold Standard.** A country is said to be on the gold standard if holders of its currency have the right to exchange that currency at the central bank of the country for gold at a fixed rate and there is no restriction on the right to export or import gold.

**Good Delivery,** a Stock Exchange term indicating that a security is in proper form and condition.

**Goodwill,** is the benefit acquired by a business by the patronage from constant customers.

**Graving,** the cleansing of the bottom of a ship.

**Gresham's Law** states that if good money, i.e., money with the higher intrinsic value, and bad money are in circulation together, the bad money will tend to drive out the good money from circulation. For instance, the good money is more likely to be melted down or demanded in payment by foreign creditors.

**Groundage,** the charge for space occupied by a ship while in port.

**Ground Rent,** a rent charged in respect of land only, and not in respect of the buildings to be placed thereon.

**Hall Marks** are official marks impressed upon gold and silver articles, testifying to their genuineness and value. (See pp. 608, 743-5.)

**Hammered,** the procedure on the Stock Exchange for declaring a member who is unable to meet his engagements to be a defaulter.

**Hard Currency** is the currency of a country in relation to which there is an adverse balance of trade, or an adverse balance of payments, and therefore scarce and difficult to obtain.

**Haulage,** charges for the use of trucks, wagons, or carriages, from one point to another, exclusive of loading and unloading them.

**High Seas** are the seas that are open to all, and represent the entire sea-space beyond three miles of the shore. Of recent years, however, some nations have sought to impose a much wider limit than three miles.

**Hire Purchase,** a system for the purchase of goods, by which they are obtained on hire and each payment is also treated as part payment of the purchase price. If the goods cost £100 or more the agreement must be in a specified written form. Ownership does not normally pass until the last instalment is paid, but the seller cannot recover the goods for default without leave of the court. (See Hire Purchase Act, 1938.)

**Holder** is the payee or indorsee of a bill of exchange or note who is in possession of it, or the bearer thereof. Bills of Exchange Act, 1882, s. 2.

**Holding Company,** one that, although not itself trading, own shares in a company that is. Often used as a means of amalgamating two or more



companies without either of them losing its identity.

**Holding Over**, the act of refusing to quit possession of premises after the expiration of the term of a tenancy, or of legal notice to quit. If the tenancy is protected by the Rent Acts, the occupier becomes statutory tenant.

**Home Consumption**, a term relating to (1) goods consumed in the country of their production, (2) imported goods stored in bonded warehouses until duty is paid and they are brought into consumption.

**Imperial Preference** is the system of maintaining customs duties on the importation of Commonwealth and Empire goods at lower rates than in the case of similar imports from foreign countries. This system was the basis of the Ottawa Agreement of 1932 between the United Kingdom, the Dominions, and India.

**Import Licence**, document granted by Board of Trade permitting goods brought from abroad to be landed and used in this country.

**In Advance of Calls**, a phrase referring to payments made by shareholders prior to call being made on their shares.

**In Ballast**. A ship is in ballast when, not having sufficient cargo, she carries some weighty substances for stability.

**Income Tax**, a tax of so much in the pound sterling of income from whatever source, all persons resident in Great Britain and Northern Ireland, and all persons not resident in, but deriving income from property, trade, or employment in Great Britain and Northern Ireland being liable to assessment. Income is classed under five schedules: (a) from the ownership of land, buildings, etc.; (b) from the occupation or use of land; (c) from Government or public stocks; (d) from trade, profession, or vocation, remittances from abroad, bank interest, etc.; (e) from salaries, pensions, and emoluments of officers of the Armed Services, Civil Service, Ecclesiastical bodies, Corporations, Public Companies, etc.

The income-tax year is from April 6 to the following April 5. Rates of tax on taxable income for the year 1956-7 are as follows:—on the first £60, 2s. 3d. in the £; on the next £150, 4s. 9d.; on the next £150, 6s. 9d.; and on the balance 8s. 6d. in the £. Taxable income is found by deducting from Total income certain allowances.

- (1) *Earned Income* allowance of two-ninths on net earned income, up to a max. of £450.
- (2) *Personal* allowance of £140 to single persons and married women in employment; to married man living with his wife, or if wife though not living with, is wholly maintained by means of a voluntary allowance, £240. If the wife is maintained under a Court Order or under a binding legal agreement the allowance is reduced to £140.
- (3) *Child* allowance of £100 for each child under 16 years of age or receiving full-time education, provided child does not earn more than £85 a year.
- (4) *Dependent Relative* allowance of £60 for each relative or wife's relative maintained whose own income does not exceed £105. If this income is £165 or more, there is no allowance. Relief reduced by £1 for every £1 by which relative's own income exceeds £105.
- (5) *Daughter's Services*, necessary owing to old age or infirmity, allowance of £40.
- (6) *Housekeeper* allowance of £60 (certain restrictions).
- (7) *Age* allowance of two-ninths of unearned income where taxpayer (or his wife) is over 65 and total income does not exceed £600.
- (8) *Life Insurance*. Subject to certain restrictions, an allowance for the premiums paid for life insurance of tax-payer and his wife, but not on life of his child or any other person, to a maximum of two-fifths on premiums over £25.

Pensions qualify for the *earned income* relief of two-ninths, as do all investment incomes below £300 a year.

Surtax is paid on all incomes exceeding £2,000 on a sliding scale.

**Indemnity**, a formal legal acceptance of responsibility against damage or loss in such circumstances as may be expressed.

**Indenture**, any sealed agreement between two or more persons; originally the counterparts were

drawn up as one document and cut apart with indented edges.

**Inflation** is the progressive reduction in the buying value of money due to too much money chasing insufficient goods. Post-war inflation has been prevented partly by high taxation absorbing surplus money and partly by pegging prices of all vital commodities.

**Injunction**, an order or judgment of Court restraining some person or persons from doing certain things, not amounting to a crime, which are detrimental to the interests of another or others.

**Inscribed Stock** is stock in respect of which holders are simply registered, no certificates being issued to them. No one can deal with such stock except actual holders or persons appointed by the power of attorney of holders.

**Inspecting Order**, a written order authorising goods in dock, bonded warehouse, or other place to be shown to the holder.

**Insurance**, a provision or contract securing against loss by fire, tempest, or other contingency; insuring compensation for accident; allowance during ill-health; or payment of a stipulated sum at death to beneficiaries indicated. Insurances are usually effected with insurance companies, who take the hazard in consideration of annual premiums paid to them by the person insuring. The rates are based on a system of averages.

**Interest**, in its commercial sense, is payment made for the loan or use of money, and is calculated according to a specified rate. Interest is either *simple* or *compound*. When simple interest is paid, the principal sum remains the same; in case of compound interest, each year's interest is added to the principal, and succeeding interest calculations are on the increased amounts.

**Interlocutory**, a legal term describing proceedings and orders in the preliminary stages of a law suit. They deal with matters incidental to the action, but not with the actual dispute.

**International Monetary Fund** is a fund set up in 1946 as a result of plans formulated in 1944 at the Bretton Woods Conference. Membership is open to countries who subscribe to the fund, the purpose of which is the preservation of stability of currency exchange rates.

**Intestacy**. See Legal Notes, p. 731-32.

**Inventory**, a list of all goods, effects, fixtures, etc., in possession.

**Invisible Exports** consist of services rendered by the business community of one country to foreigners resulting in payments being received by that country, e.g., for shipping services to foreigners, insurance and banking facilities, including the provision of capital on which interest is paid. Conversely, payments of interest on capital borrowed from abroad, expenditures abroad for services, e.g., tourist travel, constitute invisible imports.

**I O U**, an informal written and signed acknowledgement of indebtedness, requiring no stamp, and, though not a promissory note, can be sued upon. The letters stand for "I owe you."

**Issue of Shares and Loans**. Shares are issued by the sending out of certificates in return for subscription payments, and declare the holders entitled to so many shares. A loan issue consists of bonds with a similar declaration.

**Issuing House**, a firm carrying on the business of placing new issues of shares of companies on the markets.

**Jetsam**, a turn in navigation law signifying goods thrown into the sea for the safety of the vessel. Such goods belong to the Crown in default of other claimants.

**Jettison**, the act of throwing goods overboard to protect the ship or its cargo. The liability to make good property so lost is apportioned according to average.

**Jobber**, a dealer on the Stock Exchange who is forbidden by its rules to deal with anyone outside the Exchange; he deals only with brokers and fellow-jobbers.

**Joint Stock Company**. (See Company.)

**Joint Tenancy**, the occupation or possession of land by persons jointly and equally entitled.

**Judgment Creditor**, one who had obtained a Court judgment against a debtor.

**Judgment Debtor**, one against whom a Court judgment for payment of debt has been obtained.

**Keep House**, a term applied to a debtor who

denies himself to creditors calling at his house. This constitutes an act of bankruptcy.

**Kentledge**, permanent ship-ballast, and generally consisting of pigs of iron.

**Knock-for-Knock Agreements** are commonly made between two motor insurance companies. They agree that in case of a collision between motorists insured by them each pays its own assured without inquiring who was responsible for the accident, and that they will not bring actions against each other.

**Knock-Out Agreement**, the offer of a reward for abstaining from bidding at an auction sale. It is illegal for a dealer to enter into such an agreement.

**Leaches**, a term of commercial law denoting negligent delay or failure to enforce a legal right.

**Lagan**, or **Ligan**, goods thrown from a ship and sunk in the sea, but secured to a buoy so as to be found again.

**Landing Order**, a Customs document authorising the chief officer of a ship, after dues paid, to hand over goods for landing, during which process the waiter or searcher examines the goods and finally signs the orders as correct.

**Larceny**, the unlawful taking and carrying away of things personal with intent to deprive the rightful owner of the same. (See Larceny Act, 1916.)

**Lastage**, sand or gravel used for ballasting a ship.

**Law Merchant**, the mercantile law, which embodies the customs and usages ordinarily sanctioned between merchants and traders, and is recognised as part of the common law.

**Lay Days** are days allowed for loading or unloading ships according to agreement.

**Leakage**, an allowance made for losses on liquids by leaking.

**Lease**, a letting or the documents setting forth the letting of lands, tenements, machinery, or other property for a specified consideration and time. A lease for a longer period than three years must be by deed.

**Legal Day** is the whole of the twenty-four hours of a day, from one midnight to the next.

**Legal Aid**. See p. 130.

**Legal Tender**. See p. 738.

**Letter of Credit** is a letter written by one correspondent to another requesting him to credit the bearer with a certain sum of money. It may be "general" to all persons or "special" to particular persons by name. It is not negotiable.

**Letter of Indemnity**, a letter undertaking to be responsible for any loss or damage sustained in circumstances specified.

**Letters of Administration** are the authority granted by the Probate Division to a person to act as administrator to the estate of a deceased person, either with or without a will.

**Liabilities by Indorsement** are contingent liabilities incurred by the indorsement of bills or other negotiable instruments whereby the indorser becomes responsible or payment should the other parties to the document make default.

**Libel** is a defamatory publication upon a person by writings, pictures, images. Contumelious matter that tends to degrade a man in his neighbour's opinion on publication constitutes a libel. Libel differs from slander as the latter is oral defamation whilst libel must be matter published. Libel may also in certain cases be punished criminally.

**Licence** is a permission given to do some act, which, without such permission, it would be unlawful to do. It usually refers to permits issued on payment of excise duty. Licences are required for keeping carriages, dogs, for operating a television or wireless set, for driving a motor vehicle, for shooting game, for setting up as a bookmaker, for hawking and peddling, for selling beer, ale, wines and spirits, tobacco, patent medicines, etc.

**Lien**, the right by which a person holding personal property of another can retain possession of it until some claim that he has against the original owner is satisfied.

**Light Dues** are charges levied on ships for the maintenance of lighthouses, beacons, etc., around the coasts.

**Limitation Act**. (See Statutes of Limitation.)

**Limited Liability**. When the Memorandum of Association of a joint-stock company states that the liability of its members is limited (the word "limited" will then appear in the name of the

company) no member, i.e., shareholder, can be called upon to contribute any sum beyond the nominal value of the shares he holds. Thus when the shares are fully paid the shareholder can be under no liability to contribute to the discharge of the debts of the company.

**Limited Partner**, a partner who is not liable to contribute to the payment of the firm's debts beyond his share in the firm's capital. He must take no part in the business.

**Liquid Assets** consist of readily realisable property such as coins, notes, Consols, and other high-class securities.

**Liquidated Damages**, an agreed amount of damage in case of breach of contract: or, in an action, the definitely ascertainable amount that may be indisputably due.

**Liquidation** is the termination of the existence of a company by the distribution of all the assets first in payment of creditors and then among the shareholders. The liquidation may be compulsory, under the orders of a court, or voluntary, under control of the shareholders or creditors.

**Lloyd's**, started as a meeting-place for merchants and shipowners at a coffee-house in Abchurch Lane, London, kept by Edward Lloyd, gradually developed into a very powerful association, and from 1774 to 1930 had its offices in the Royal Exchange, now situated at Leadenhall St. The members of Lloyd's mostly engage in the business of insuring or "underwriting" ships and their cargoes, but almost any risk can be covered there.

**Lloyd's Register** forms a full record and classification of all British ships, and of foreign ships classed in the register, and is published yearly. The surveyors of Lloyd's make periodical surveys of vessels, and keep a systematised inspection over ships intended for classification. The first-class mark for ships is A1.

**Loadline**. (See Plimsoll Line.)

**Lock-Out**, the act of an employer, who by reason of trade disputes, or other cause, closes his factories or workshops against his employees.

**Log-Book**, the book in which the chief incidents of a voyage are entered by the master of a ship or his mate.

**London Clause Charge**, a charge payable to shipowners giving consignees the right to ask for delivery into consignee's lighter or land conveyance. The charge varies according to class of goods.

**Long-Dated Bill**, a money-market term denoting a bill of exchange for a longer than ordinary period.

**Making-Up Price**, the price at which stocks or shares are closed for the current settlement.

**Mandamus**, an order commanding the performance of certain acts or duties. It is issued from the Queen's Bench Division of the High Court, and may be addressed to any person, corporation, or inferior court requiring them to do something specified.

**Manifest**, document giving particulars of the consignor, consignee, destination, markets, etc., of the various packages comprising the cargo of a ship.

**Margin**, a covering deposit with a broker, accompanied by instructions as to prices that are not to be exceeded.

**Maritime Lien**, a claim for salvage, damages, wages, or payments for necessities made in respect of any maritime adventure and constituting a direct charge upon the ship, freight, or cargo enforceable by arrest and sale.

**Market Overt**, in open market, i.e., a place sanctioned by law or custom for selling and buying and open to the public. All articles bought in market overt, even if stolen property, become the property of the purchaser.

**Mate's Receipt**, receipt given by the mate of a ship when goods are delivered to a ship for loading.

**Memorandum of Association**, the document to which at least seven members subscribe in the formation of a public company, or two in the case of a private company, and which states (in the case of a limited company), (i) the name of the company, (ii) the situation of its registered office, (iii) the objects of the company, (iv) that the liability of its members is limited, (v) the amount of its share capital. Clause (iii) limits the activities of the company, as any act done in excess of these powers is null and void (*ultra vires*).

**Merchant Banks**. The business carried on by merchant bankers consists, *inter alia*, of raising



loans in the United Kingdom for foreign governments and local authorities abroad, arranging capital issues of foreign public undertakings, the making and collecting of payments due on foreign trade transactions, and the acceptance of bills in the course of foreign trade.

**Mint Price of Bullion** indicates the number of coins for a given weight of bullion.

**Mixed Currency**, a currency partly of coins or the precious metals and partly of convertible paper, but both must be of legal tender quality.

**Mixed Policy** is a marine insurance policy combining time and distance conditions—a voyage and a period.

**Monopoly**, the exclusive possession of a certain commodity or the sole right to trade in it.

**Mortgage** is a transaction by which an owner (called "a mortgagor") of an interest in property borrows on the security of that interest from a lender (called "a mortgagee"). The safest form of mortgage of land is a legal mortgage now effected by (a) a lease for a term of years subject to cesser on repayment, or (b) a charge by way of legal mortgage. A mortgage of chattels is effected by means of a Bill of Sale. No action may be brought to recover any principal sum secured on land after the expiration of 12 years from the date when the right to receive the money accrued. A mortgage of a British ship must be effected in accordance with the Merchant Shipping Act, 1894.

**Mutual Life Insurance**, a system of life insurance carried on by members of a company having no shareholders and no subscribed capital and dividing the whole of its profits amongst its policyholders.

**National Debt** constitutes the financial obligation of a state, and amounted in Great Britain at March 31, 1956, to a total of £27,040 million, an increase of £106 million over 1954-55. The National Debt is divided into *funded* and *unfunded* debt, the former representing debt in respect of which there is no fixed date for repayment, and taking the form of Consols and debts due to the Bank of England, while unfunded debt consists of Government loans, repayable at a fixed date.

**Nationality, British**. A British subject or Commonwealth Citizen is a person who is a natural-born British subject: a person to whom a certificate of naturalisation has been granted; a person who has become a subject of Her Majesty by reason of any annexation of territory or who, subject to certain exceptions, is the wife of a British subject. A natural-born British subject is one born within Her Majesty's Dominions and allegiance or if born out of Her Majesty's Dominions whose father was at the time of such person's birth a British subject. A married woman does not necessarily lose her British nationality either by virtue of her marriage to an alien or of her husband's subsequent change of nationality (see also Alien). The British Nationality Act, 1948, replaced the British Nationality and Status of Aliens Act of 1914 as the basis of the law of British citizenship.

**Nationalisation**, the process of transferring property or industries into public ownership. In 1945-49 the Bank of England, the coal industry, civil aviation, telecommunications, inland transport, electricity undertakings, public hospitals, gas, and iron and steel were nationalised. The Iron and Steel Act, 1949, was repealed in 1953.

**Naturalisation**, the grant of British nationality to an alien. Before an application can be made to the Secretary of State for the grant of a certificate an alien must have qualified by 5 years' residence in the U.K. or service under the Crown, during the 8 years immediately passed.

**Navicert** is the name given to a pass issued by the Royal Navy in war-time permitting a neutral vessel to proceed with its cargo through blockaded areas.

**Negotiable Instruments and Negotiable Paper**, such as bills, notes, cheques, warrants, bonds, and other documents as are by common usage on transfer by delivery from one person to another, convey a legal right to the property therein, free from all claims. A bill of lading is not a negotiable instrument.

**Net or Nett Weight**, actual weight of goods after every allowance has been made for package, waste, etc.

**Nominal Exchange**, the state of the exchanges which depend upon the par value of moneys of the

countries, and not on the current demand for them at any given time.

**Nominal Partner**, one who permits his name to be used in the title of a business, although having no actual interest in the concern, as in the case of one who has retired from it. He may be liable for the debts of the business if he holds himself out as a partner.

**Nominal Price**, an approximate or designated price of issue of shares, or price quoted in respect of goods and securities in which dealings are infrequent.

**Notary Public** is an officer who may certify deeds and other documents, usually a solicitor appointed to certify signatures to documents intended for use abroad, and to put marks of protest on bills of exchange and promissory notes, foreign and inland, which have not been met.

**Noting a Bill**, the memorandum of a notary public written upon the face of or attached to a returned bill, after being presented by him a second time and not accepted or not paid.

**Not Negotiable**. When a cheque or bill has these words written across its face they do not limit the transfer of it from one to another, but, in the case of a transferor not having a good title to the document, the transferee is merely in the same position as the transferor, and cannot go back upon the original drawer for satisfaction.

**Novation** is the act of replacing a debtor by another who assumes the responsibility, to which there must be the assent of the original debtor and creditor as well as of the substitute.

**Nudum Pactum**, an agreement without consideration. Not capable of being sued upon except under seal.

**Official Receiver**, a person appointed by the Board of Trade to carry out prescribed duties under the Bankruptcy Act, 1914, in connection with the winding up a bankrupt's estates, and having the powers of a trustee in bankruptcy.

**Official Referee**, a High Court official appointed to deal with actions concerning disputed accounts.

**On Call**, money lent, either repayable on demand or at short notice.

**On Demand**, a term in general use to denote bills of exchange in which these words have been written. They need no acceptance and are payable on presentation.

**Open Cheque**, an uncrossed cheque payable on presentation to "bearer" or "order," as the case may be.

**Open Cover**, a general insurance policy for recurring shipments, details of which are not yet known.

**Open Credit**, credit given by a banker to a customer without guarantee of security. A letter of credit authorising payment of money to another person without condition also comes within the term "open credit."

**Open Policy**, a marine insurance policy, the full amount of which is not declared until the value of the property has been ascertained.

**Option**, a right granted to a person to buy or sell certain stock or shares at a specified price within a stated period or on an indicated day.

**Ordinary Stock or Shares**, such as have no special privilege or right attaching to them, but which receive dividends representing the profits after paying interest on preference shares and debentures and providing for reserve, etc.

**Original Bill**, the first of a duplicate or triplicate set of foreign bills. The term also applies to a bill which has been discounted before endorsement.

**O.T.C.**—Organisation for Trade Co-operation, a permanent organisation set up in 1955 to administer and strengthen G.A.T.T. It has an Assembly which meets annually, an Executive Council of 17 members elected by the Assembly and a permanent Secretariat.

**Outward Bill of Lading**, the documentation of a shipment from any port in the U.K. These are subject to the special rules of the Carriage of Goods by Sea Act, 1924.

**Overheads** are those costs of a commercial concern which are not directly attributable (like the cost of the raw materials or of labour) to the manufacture of the product, e.g., rent, insurances, research expenditure, or general administration.

**Overriding Commission**, the commission paid to a broker or other agent for securing underwriting contracts for an issue of shares or debentures.

**Over-Tonnage**, denotes the providing of a

greater tonnage of ships than is required for the freight to be shipped.

**Par**, a price that is equivalent to nominal value.

**Partners** are persons associated in the carrying on of a trade, industry, or business jointly with a view to profit; active, as when employing themselves in the conduct of the enterprise; sleeping, when providing capital but taking no active part; or nominal, when only lending their name.

**Partnership**, an association of not more than twenty and not fewer than two persons for trading purposes, whose interests, relationship, and responsibilities are usually defined in a deed of partnership. All partners are liable jointly for all the debts of the firm to the outside public, and the firm is bound by the action of any one partner. By the Registration of Business Names Act, 1916, when the partnership is carried on in a name which does not consist of the true surnames of all the partners it must be registered and the names of all partners be exhibited on all business letters, catalogues, show cards, etc.

**Passing Off** is the wrong committed where one trader by improper use of trademarks or deliberate imitations represents his goods as those of another. The injured trader can sue for damages.

**Passive Bonds and Shares**, bonds on which no interest is paid but which confer some future accruing advantage on the holder.

**Patents**. A patent is an exclusive right granted under the Patents Act to the inventor of a new and useful technical invention. An application for a patent must be filed in the Patent Office and be accompanied by a Provisional or Complete specification. The former need only describe the general nature of the invention, while the Complete must give a detailed description of the invention and of the manner in which it is to be performed and must end with a distinct statement of what the applicant desires to claim as his exclusive right. Where the specification accompanying the original application is a Provisional it must be followed by a Complete within one year. Complete specifications are examined as to form and novelty by the Patent Office and after acceptance by the Office are open to opposition. If there is no opposition or if the opposition is rejected, a patent will be granted on payment of a sealing fee. The grant is made for sixteen years, subject to payment of annual renewal fees after the first four years but this term may be extended in very exceptional cases, for example, on the ground that the patentee has been inadequately remunerated by the patent or has suffered loss by reason of hostilities. The grant of a patent is no guarantee of its validity, and patents may be attacked on certain grounds specified in the Act and may be revoked or declared invalid by the Courts. Many patents are for improvements on prior patents which they may infringe if such prior patents are still in force. A patentee may bring a civil action against infringers of his patent, and if his action is successful may recover damages and obtain an injunction against further infringement. Articles protected by patent should be marked with the number of the patent to warn the public of the existence of the patent. Penalties are prescribed for making false claims to patent rights. A patentee may assign or license his patent and may have his patent endorsed "Licenses of Right" which will enable any person to obtain a licence on terms settled by agreement or fixed by the Comptroller of Patents. For patents so endorsed the renewal fees are halved. In certain cases, particularly if the patented invention is not adequately worked in this country, the Comptroller may order the grant of a compulsory licence for the use of the patent and may determine the royalties to be paid to the patentee. All assignments and licences must be registered in the Patent Office.

Patent law and practice is difficult and complex, and it is advisable to consult a Patent Agent on the drafting of specifications and on all matters relating to the patents.

**Pawnbroking**, the business of lending money on security of goods taken in pledge. In the 18th century pawnbroking grew to be a regular business and was regulated by Acts of Parliament. A licence is required by every pawnbroker, for which he pays £7 10s. per annum, with an additional duty of £5 15s. if he deals in plate. The three balls which hang over the pawnbrokers' shops are

the ancient arms of Lombardy, the Lombards being the first money-lenders in Europe. (See *Monts-de-Piété, General Information Section*.)

**Pay Day**, the day on which Stock Exchange settlements are concluded. Used also to denote the particular day of each month on which a firm pays its accounts.

**Payee**, the person or firm to whom a bill of exchange, promissory note, or sum of money is made payable.

**Payer**, one who pays a bill of exchange, promissory note, or account.

**Payment under Protest**, a payment made after protest has been made denying all or part liability.

**Per Capita**, per head.

**Per Procuracionem** signature means that the subject of the correspondence has been put into the writer's care by his principal for him to use his personal judgment in the matter, and that he is authorised to sign on behalf of his principal. Normally contracted to *per pro* or *p.p.*

**Personal Property**, or **Personalty**, everything that is possessed apart from that which is freehold land.

**Petitioning Creditor**, one who files a petition in bankruptcy against a debtor.

**Plimsoll Line or Loadline** is a mark on the side of a ship indicating the maximum depth to which she may be loaded without danger to herself or the crew. (See *Freeboard*.)

**Pool Betting Duty**, at the rate of 30 per cent., is levied on all moneys staked on football pools; totalisator bets are taxed at 10 per cent.

**Post-Date**, to make out a cheque, bill, or document giving a date later than that on which it is written. Such a cheque would not become payable until the date given.

**Post Obit Bond** is a bond given for a loan, undertaking to repay the lender the sum borrowed, with interest, after the decease of another person from whom he expects to receive money; often may be set aside by a Court of Justice.

**Poundage**, a commission or fee fixed at a rate of so much per £.

**Preference Bonds** are such as are issued at a fixed rate of interest, and payable before dividends are declared on ordinary shares.

**Preference Shares and Preference Stock** are shares or stock entitled to their fixed dividend before any division of profits can be made amongst the holders of ordinary shares or stock. Preferential rights may be cumulative or non-cumulative.

**Preferential Payments in Bankruptcy** are such as have to be made before the claims of ordinary creditors are considered, and include rates and taxes which may have become payable within twelve months preceding the date of the receiving order; salaries and wages of clerks, servants, labourers, and workmen for services during the preceding four months, and not exceeding in any one case £200.

**Premium** has several meanings: (1) a prescribed periodical (usually annual) payment on a policy of insurance; (2) the advance in price of stock or shares above par value; (3) a bounty; (4) a payment in respect of a loan in addition to or in place of interest.

**Price Current**, a list of articles of merchandise with their prices, the duties payable (where necessary), etc., with prices and statements, duties, drawbacks, etc., if any.

**Primage**, a percentage added to the freight and paid by the shipper or consignor to the master of a ship for the loading of goods.

**Prime Cost**, in cost accounting, is the cost of labour and raw materials with all the charges thereon, such as carriage inwards, freight, etc.

**Private Company**, a small limited company privately formed by members who subscribe the whole of the capital among themselves. By the Companies Act, 1948, the number of members is limited to 50. No invitation can be issued to the public to subscribe.

**Probate** is the authority granted by the Court to a person appointed under a will to act as executor to the estate of the deceased.

**Profit**, the surplus that remains after all expenses of production and sale have been paid. *Gross profit* is the excess of selling price over cost price; *net profit* is the excess of gross profit over the selling and management expenses.

**Profit Sharing**, a method of remunerating labour,



under which the employee receives, in addition to his ordinary wages, a share of the profits.

**Profits Tax**, a tax on companies' profits. As from April 1, 1956, the rate on undistributed profits was increased to 3 per cent. and on distributed profits to 30 per cent.

**Prohibitions and Restrictions**, a term applying to articles which are either prohibited altogether from being exported or imported, or are placed under special conditions.

**Promissory Note**, an unconditional promise in writing made by one person to another, signed by the maker, engaging to pay on demand, or at a fixed or determinable future time, a certain sum in money to or to the order of a specified person or to bearer.

**Promoter**, a person who arranges the formation of a Company.

**Proof of Debt in Bankruptcy**, a creditor's affidavit or declaration, setting forth particulars of debt owing to him by a bankrupt.

**Property** is of two classes, corporeal, as land, buildings, etc., and incorporeal, as the rights in things not represented by material objects.

**Proprietary Company**, a parent company holding lands or mining rights, parts of which it sells or leases to others.

**Prospectus**, a document issued by public companies inviting the public to subscribe for shares of the company. A copy of every prospectus, before publication, must be filed with the Registrar of Joint Stock Companies. The prospectus must state various facts relating to the affairs of the company, and these are enumerated in the Fourth Schedule of the Companies Act, 1948.

**Protest**, a notification by a notary public of an unaccepted or unpaid foreign bill of exchange, which protest must be effected at the place of dishonour, and contain a copy of the bill, a statement of the parties to it, and other particulars.

**Proxy**, one who acts for another, or the written authorisation for such action.

**Public Company**, a limited company whose capital consists of shares publicly subscribed, such shares being saleable by any shareholder without the consent of the other shareholders.

**Purchase Tax**, a tax on purchases of goods in the U.K., charged on the wholesale value at a percentage rate varying with different classes of goods.

**Quarantine** is a term used to denote the period for which a vessel, on which there is infectious disease, is detained in isolation until medically certified free from taint. Originally this period was forty days; hence the term; but now the detention and prohibition of intercourse with the shore only lasts until a clean bill of health can be given.

**Quarter Days**, the last days of each quarter of the year on which payment of rent or interest falls due. (See p. 750.)

**Quit-Rent**. Formerly a rent paid by a freeholder or copyholder to a Lord of the Manor in lieu of services, but abolished in 1936.

**Quorum**. (See p. 144.)

**Quota**, the allocation of a stated amount of raw materials to a particular firm.

**Racking**, a term used in the wine and spirit trade when liquors or wine are transferred from certain casks to other casks, or when drawn off from the lees.

**Rack Rent**, rent of the full yearly value of the property held. A term generally used to denote the rent of a house and land as distinguished from rent of land only.

**Railway Advice**, a document sent by a railway company to a consignee of goods intimating that goods are awaiting his orders at a specified station.

**Rateable Value**. The value of property, other than agricultural land and agricultural buildings, as the same is assessed in the rate books of the local authorities, founded on the net annual value which is derived from the gross value, i.e., the full rental value less certain statutory deductions for repairs and maintenance. Certain dwelling-houses are now assessed on the basis of cost of construction and cost of land (see Local Government Act, 1948). (See also p. 935.)

**Rates**, a payment levied by Local Authorities on the occupiers of land or buildings in the area. The proceeds are used to defray the expenses of Local Government and public services. The amount is assessed annually as a proportion of the rateable value and varies in different cases.

**Real Estate, or Realty**, is immovable property, i.e., land held on freehold. Leaseholds, however long the term, are personal estate.

**Real Securities**, deeds of mortgage of real estate.

**Realisation** is a conversion into actual cash of what was previously contingent or doubtful, a process that may result in gain or loss on original cost according to the state of the market.

**Receipt** is a written acknowledgment of money paid, on which a stamp duty of twopenny must be paid if for a sum of £2 or over. The following are exempt: sums of money placed on deposit with a banker, bankers' acknowledgments of bills of exchange, taxes, wages, salary, or pension.

**Receiver**, one appointed to control an estate or property pending dispute or litigation.

**Receiving Notes**, documents signed by shippers requesting the chief officer of a ship to receive on board specified goods.

**Receiving Order**, the order of a Court of Bankruptcy, on petition presented by a debtor or one of his creditors, placing the debtor's estate in the hands of the Official Receiver, and barring further legal proceedings against the debtor by creditors. The effect of the order is thus to protect the estate of the debtor until it is definitely declared after the public examination whether the debtor be bankrupt or not.

**Recognisance**, an acknowledgment of indebtedness to the Crown, should a certain specified act not be duly performed; for example, a recognisance in respect of a prisoner liberated on bail, whose failure to appear on the day appointed for trial would render the recognisance realisable.

**Re-draft**, a new bill of exchange which the holder of a protested bill draws on the drawer or endorsers for the amount of the original bill with the costs added.

**Registered Bonds** are such as for security against robbery or loss are registered in the holders' names in the books of the company or State issuing the bonds.

**Reinstatement Clause** is a clause in a policy of fire insurance providing that the Company may, if it wishes, re-instate the property destroyed or damaged instead of settling the claim in cash. Used to impose a check on fraud.

**Re-insurance**, when an underwriter considers he has incurred too great a hazard he may effect a sub-insurance with others, so that in the event of loss the liability will be more widely distributed.

**Remedy**, the technical term for the extreme limit of allowance the Mint will allow from the fixed coinage standard.

**Renewal of a Bill** is frequently resorted to when an acceptor finds himself unable to meet it when it falls due. The original bill is cancelled and a new one drawn up, so that the consent of all parties to the original bill is required.

**Rentes** means in France the government debt or the interest paid thereon. Holders of government securities are called "rentiers," and the latter word has been borrowed by the world to designate the class of person who owns investments producing income on which he partly or wholly lives.

**Reputed Ownership** is a term in use regarding goods and property in the possession of a bankrupt, and applies to everything under his control at the time of his bankruptcy. All such property is presumed to belong to the bankrupt and to be available for realisation and distribution, unless the contrary is proved.

**Request Note**, a Customs note filled up and signed by an importer when requiring the removal of dutiable goods from one warehouse to another, or (in the case of perishable goods) from ship-board before clearance.

**Reserve**, a charge made against profits before arriving at the actual net profit, in order to make provision for contingencies. The fund resulting from these reservations is the Reserve Fund. If reservation is made for some specific object—e.g., the replacement of a wasting asset, or repayment of a debt—the fund is known as a Sinking Fund, and must be invested.

**Reserve Liability**, such portion of a limited company's unpaid capital as can only, by special resolution of the company, be called up for winding-up purposes, often called Reserve Capital.

**Reserve Price**. (See Upset Price.)

**Respondentia**, a legal term applying to maritime

contracts, mortgaging the cargo for money advanced for the prosecution of the voyage. It is only repayable on the safe arrival of the ship.

**Restraint of Trade** is a legal term relating to contracts which unreasonably restrict a party in the exercise of his trade or profession. Such contract will be declared void upon application to a court.

**Restrictive Endorsement** is one which destroys the negotiability of a bill of exchange, such as "Pay A only."

**Retiring a Bill** is to withdraw it from circulation either by buying it up and retaining it until maturity or at once cancelling it, or by the acceptor meeting it in the usual way when due. In the latter case it is discharged.

**Revenue**, in its ordinary application, refers to income of any kind; more strictly, however, it denotes (i) the income yielded to a State from taxes and duties, (ii) in accounting, the income earned by a company, as distinct from capital receipts.

**Revenue Account**, another name for a profit and loss account, the term being applied usually to large industrial concerns such as Railway and Shipping Companies, Gas Companies, etc.

**Reversion** is a right to property or benefit, the enjoyment of which does not come into operation until the happening of a certain event or the expiration of a certain period.

**Reversionary Interest**, a term applied to a deferred interest in money or personal property.

**Rider**, any separate addition to a document, or addition to a resolution or verdict, appended to the original.

**Ring**, a combination formed by a group of speculators to obtain the control of the operations in a certain commodity or security, and by creating scarcity to run up prices for their own profitable realisation.

**Royalty** has several meanings: (1) percentages or dues payable to landowners for mining rights; (2) sums paid for the use of a patent; (3) percentages paid to an author by a publisher on the sales of a book.

**Sale Warrant**, a document given with a weight note, in the case of goods sold on payment of deposit, conditionally on an early discharge of the balance.

**Salvage**, the reward payable by the owners of goods carried in a ship, or by the shipowner for exceptional services performed at sea by which goods or the ship are saved from loss. It is also applied to the goods saved from the dangers of the sea or to property saved from fire either on sea or land. The crew are not entitled to any reward for assistance rendered, even for extraordinary services. A passenger may be awarded a reward in exceptional cases.

**Salvage Loss**, a term used in respect of a partial marine insurance loss, being the net value of the goods recovered deducted from the full amount of insurance.

**Sans Recours**, "without recourse," a term which when written on a bill of exchange by an endorser frees him from liability on the document.

**Schedule**, a list, summary, index, or inventory. It may be either supplementary or explanatory.

**Scheduled Territories** for purposes of the export trade are countries listed in the Exchange Control Act, 1947, and which comprise the Sterling Area.

**Scrip**, a certificate of shares in a Government loan, company, or corporation, a contraction of "subscription."

**Searchers** are Customs officers entrusted with the duty of searching and examining vessels on arrival or departure for goods liable to duties.

**Search Warrant**, a document issued by a magistrate authorising a search in any place for stolen or concealed property.

**Seaworthy**, the condition of a ship which is in every respect fitted for undertaking a voyage. There is an implied warranty of seaworthiness in a marine insurance voyage policy but not in a time policy or bill of lading, and should the vessel prove to have been inefficient at starting, the shipowners will be liable for any loss by the cargo owners and any insurance of the ship will be void.

**Second-Class Paper**, bills, notes, and other securities for the satisfaction of which persons or firms of only moderate standing are responsible.

**Secured Creditor**, one who holds some property of a debtor towards the satisfaction of his claim.

If a secured creditor desires to present a petition in bankruptcy against the debtor, he must either surrender his security or establish its value and prove an unsecured balance of at least £50.

**Securities** are documents entitling the holder to specified realisable rights in land, money, stocks, shares, bonds, mortgages, etc., in the event of loans, payments, or advances for which they were given remaining undischarged.

**Seignorage**, profit made by Government on minting coins.

**Seisin**, actual possession of real estate.

**Seizure Notes** are notes made out by a Customs officer on discovering and taking possession of goods fraudulently obtained or bearing fraudulent trade-marks, and left with the goods after they have been placed in a Customs warehouse.

**Seller's Market** is the result of an insufficiency of goods to meet the demand. A market in which the seller is able to sell on his own terms.

**Sellers Over**, a market condition when sellers are in excess of buyers, or when there are no buyers at all.

**Selling Out**, a market or Stock Exchange term. If a buyer fails to take up the securities he has contracted to buy, the seller may sell out against him, the buyer being liable for any expenses to which the seller be put on that account.

**Sequestration** is a legal process putting a sheriff or other officer of Court in possession of property or goods until a dispute or claim in respect thereof has been disposed of. It may also mean the taking possession of the property of a bankrupt for the purpose of distributing it amongst his creditors.

**Set-off**, the placing of a debt due against a debt owing, wholly or partially. The two debts must be due in the same right and between the same parties.

**Settlement** may mean: (1) the discharge of a debt or claim; (2) the settling of a sum of money on a woman on her marriage as a provision for herself and children; and (3) the Stock Exchange fortnightly settling period, viz., the last three days of the account, as to general stocks and shares, and in the mining market four days.

**Settling Day**, the last day of the Stock Exchange account.

**Sharebrokers** are persons engaged in the business of buying and selling shares and stocks for clients.

**Share Certificate**, a document issued by a public company to a shareholder, certifying the number of the shares held and the sum paid up on them.

**Share Warrant**, a document certifying that the bearer owns the shares specified and that they are fully paid up. It is a negotiable instrument, with coupons attached payable at the dates named to whomsoever may present them. When shares take this form the shareholder's name does not appear on the list of shareholders.

**Shipping Articles**, the contract between a shipmaster and his seamen setting forth the terms and conditions of service.

**Shipping Bills**, Customs or trader's documents containing particulars of goods placed on shipboard.

**Shipping Cards**, cards issued by shipbrokers giving dates of sailings, approximate dates of arrivals, and other information of use to shippers.

**Shipping Note**, delivery or receipt note concerning goods sent for loading.

**Shipping Weight**, the declared weight of goods put on shipboard.

**Ship's Certificate of Registry**. This is issued by the registrar after the completion of the building of a ship, and sets forth the name, build, tonnage, and other particulars.

**Ship's Manifest** is a ship's paper that contains full details of the vessel's cargo and the ports for which she is bound.

**Ship's Papers**, such as must go with the ship, comprise the Certificate of Registry, the contract with the seamen, Charter Party or Bills of Lading, Manifest, Official Log, and Bill of Health.

**Ship's Protest**, a declaration, made before a notary, setting forth particulars of loss or damage to ship or cargo, a document necessary for production to underwriters before adjustment of claim.

**Ship's Store Bond**, a document given by a shipowner or captain in respect of dutiable articles to be used as stores during the voyage.



**Ship's Stores**, articles necessary for the provisioning of a ship; as a Customs term, however, it refers to articles which would be chargeable with duty if consumed on land.

**Short Bills, or Short-dated Bills**, are bills of exchange having less than ten days to run. They include bills payable on demand or at sight.

**Short Exchange**, rates quoted for bills payable on sight or within a few days after.

**Short Loans**, advances for short specified periods at a fixed rate of interest.

**Short Shipment**, a term applied to goods that, through accident or want of space, are unable to be taken on board.

**Sight Bills** are such as are payable at sight, without allowance of days of grace.

**Sighting a Bill**. A bill is sighted when presented to the person on whom it is drawn.

**Sinking Fund** is a fund created by setting apart a proportion of the profits of a company or the revenue of a Government with the object of extinguishing the debt or loan.

**Sit-Down**, a form of strike in which the workers down tools but refuse to leave the works premises.

**Slander of Title**, a false, malicious statement injurious to a person's title to property and causing special damage.

**Slander of Goods** is an offence of a similar nature, but where goods are disparaged whereby a man suffers loss of sales or custom.

**Slinging**, the act of putting chains or ropes round goods lying alongside a ship for convenience of hoisting.

**Slip**, a marine insurance term referring to slip-note of particulars required by an underwriter before undertaking to insure, and which he initials if accepted.

**Soft Currency** is the currency of a country in relation to which there is a favourable balance of trade, or a favourable balance of payments, and therefore readily obtainable.

**Sola**, signifying "this only," is a term applied to a document of which only the original exists.

**Solvency**, the ability to discharge all debts and obligations in full.

**Special Damage** is any loss resulting from a wrongful act over and above the damage which the law automatically presumed will result. It can be recovered only if specially claimed.

**Special Indorsement** on a bill of exchange is an indorsement specifying the name of the person to whom the indorser transfers the document.

**Specie**, metallic money or coin, in contradistinction to instruments of credit, such as bills and notes.

**Specie Point**, the point above or below the Mint par of exchange at which it is found more profitable to pay in specie than bills.

**Specific Performance**, the express carrying out of the terms specified in a contract. Where damages supply an adequate remedy, however, the Courts seldom enforce specific performance.

**Specification**, a detailed list of work to be done or goods to be supplied in the carrying out of an order or contract.

**Spits**, instruments of wood, iron, or steel, used by Customs officers in examining goods for dutiable articles.

**Spot Goods** are such as are ready for immediate delivery.

**Squeezing the Bears**, a phrase denoting the condition to which "bears" are reduced when buyers to whom they have contracted for delivery are themselves the holders of the available stock, and by this means compel the "bears" to purchase from them at an advanced price.

**Stag**, a speculator on the Stock Exchange, who applies for new securities not intending to hold shares allotted to him as an investment but to sell as soon as dealings commence, in the hope of being able to do so at above the price of issue.

**Stale Cheque**, a cheque that is not presented for payment within a reasonable period. Bankers make a rule of not cashing cheques a year or more old.

**Standard Gold** is composed of twenty-two parts of pure gold and two parts of copper alloy.

**Standard Money** is coin whose value in exchange depends upon the intrinsic value of the metal it contains.

**Standard Rent**, the maximum basic rent allowed to be charged for a dwelling house coming within the Rent Restriction Acts.

**Standard Silver** consists of one half pure silver and one half alloy by the Coinage Act, 1920. The remedy allowance was made 5 instead of 4 in force previously. (See p. 738.)

**Standardising** is an arithmetical calculation for ascertaining the value of bullion, that is, converting the gross weight of gold or silver that is not of the standard into its equivalent in weight of standard metal.

**State Notes** are the notes of a State or Government undertaking to pay bearer on demand the amount specified in specie.

**Statute Barred**, a commercial term denoting a debt has passed beyond the limit within which it can be legally recovered.

**Statutes of Limitation**, impose periods of limitation for different classes of action, at the expiration of which no action shall be brought. In actions founded on simple contract or on tort; libel and slander and trespass to person, it is laid down that actions shall not be brought after the expiration of six years from the date on which the cause of action arose. Actions based on a contract under seal and those for recovery of land are barred after twelve years.

**Statutory Meeting**, a meeting of the members of a limited company which it is compulsory to hold within not less than a month and not more than three months from the time of starting business.

**Statutory Report**, a report on the state of the company which must be sent to the shareholders at least a fortnight before the statutory meeting.

**Statutory Tenant** is one who after his lease has expired remains in occupation under the protection of the Rent Acts.

**Stay of Execution**, an order of Court suspending execution on a judgment obtained, until an appeal which has been moved for has been heard.

**Stem**, an agreement for a quantity of cargo, the date of loading it, and the time to be occupied in loading.

**Sterling Area**, the group of countries (mainly Commonwealth) which base their international transactions upon the £ and not on gold or dollars. These countries keep their reserves in sterling, money is transferred freely between them and they have a certain common policy regarding imports from and payments to hard currency countries.

**Stock** represents the consolidation of shares and other securities into a money basis of value, and includes the national debt of a country, and fully paid-up shares in a company, and, unlike shares, is divisible into fractional parts.

**Stock Exchange**. An Institution owning a building in which Stocks and Shares are bought and sold, and laying down rules for, and generally controlling, the business of dealing in Stocks and Shares. The London Stock Exchange of which there are some 3,700 Members, is controlled by a Council of thirty-six elected by the Members. There are two classes of Member: (a) Brokers, who act as agents for the public, transacting their business with (b) Jobbers, who specialise in various groups of Stocks, and deal only with the Brokers. Particulars as to Membership, Rules, etc., from the Secretary, The Stock Exchange, London, E.C.2.

**Stock Receipt**, a receipt given to the purchaser of registered stock by the seller on payment of the consideration. On production of this receipt the purchaser's name is registered as owner.

**Stockpiling** is the act of deliberately accumulating raw materials for strategic purposes.

**Stopping a Cheque or Note**, an act resorted to when a cheque or note has been lost or stolen, or for some other reason the drawer of the cheque or owner of the note does not wish the amount paid. In the case of a cheque, the drawer notifies the bank on which it is drawn that it is not to be paid and the bank will withhold payment. Regarding notes, the issuing bank cannot refuse payment, but if it has been "stopped" will trace back as far as possible the source from whence the presenter procured it.

**Stop Order**. If the holder of shares observes that prices are falling he may give his broker a stop order to sell out should the price fall to a certain figure. If that figure is reached, the broker will sell immediately at the best price he can obtain.

**Stoppage in Transit**, a seller has a right to stop goods in transit which are not paid for, and prevent their delivery on discovering after despatch that the purchaser is not solvent.

**Stowage**, the act of placing goods in the holds of a vessel.

**Strike** is a combined withdrawal from work of a body of workers, for the purpose of obtaining or resisting a change in conditions of employment.

**Subpoena**, "under a penalty," a writ of Court commanding the attendance of a witness at a specified time and place. It is called a *subpoena ad testificandum* when requiring verbal testimony only, and a *subpoena tecum* when requiring the production of documents.

**Subrogation**, a legal term meaning that one person can step into the place of another, taking over all his rights and liabilities.

**Subsidiary Company**, a company controlled by a parent or holding company owning all or the majority of the shares.

**Suffrance Wharf**, wharf licensed by H.M. Customs, upon which dutiable goods may be landed and stored.

**Sum Payable**, the amount payable on a cheque, bill, promissory note, or draft, and written out in full in the body of the document. If by error the sum written in figures in another part does not tally with the amount as written out in full, the latter will be deemed correct.

**Surrender Value**, the value of a life insurance policy at any given time when the person insured, because of inability to continue paying premiums or for other cause, desires a lump sum to be paid to him in consideration of what he has already paid and of surrendering the policy.

**Surtax** is payable in addition to income tax on all incomes exceeding £2,000, the rate increasing from 2s. in the £ with the size of the income.

**Suspension of Payment** is when persons, firms, or companies, unable to cope with their liabilities, decide to cease paying further debts, and announce the fact to their creditors. This constitutes an act of Bankruptcy.

**Take-over Bid** describes an offer made to all the shareholders of a company to purchase their shares at a named price and conditional upon acceptance by the holders of a named proportion of the total share issue. If accepted the purchaser thus gains control of the company.

**Taking Up a Bill** is discharging it when it falls due. The acceptor has the first responsibility, and if falling him, it is taken up by an indorser, the latter can sue the other parties previously liable on the bill.

**Tale Quale**, a grain trade term, denoting that goods sold are equal to samples as they lie, but that any loss by damage during transportation must be the concern of the buyer.

**Talon**, last portion of a bearer bond coupon sheet, containing the intimation that on presentation a fresh sheet of coupons will be exchanged for it.

**Tape Prices** are the latest prices as recorded on the "tapes" or the telegraph instruments at various places, as supplied by the authority of the Stock Exchange.

**Tare** is the deduction made in respect of boxes, cases, or other things used in packing goods, leaving only the actual weight of the goods to be paid for.

**Tariff**, a list of duties charged on specified articles. The term is also applied to any list of charges.

**Taxes**, payments which people of a country are compelled to make to their government to meet its expenses. This term excludes local rates which are levied by local authorities. Taxes include income tax, death duties, taxes on tea, beer, tobacco, entertainments tax, purchase tax on many articles. There are direct taxes and indirect taxes (called Customs and Excise duties), so called because they are mostly passed on by those who have to pay them to someone else (for example, the tax on beer is passed on, as it is intended it should be, by the brewer to the consumer). Besides meeting a country's expenses there are other objects of taxation. For example, purchase-tax checks the demand for luxuries and the exemption from tax of utility goods was intended to induce people to buy them. Again a lower tax is put on certain commodities (e.g., tobacco and sugar) from the Empire in order that more may be bought from the Empire than from other markets.

**Telegraphic Transfers** are messages authorising the transfer of amounts specified from one person

to another by process of debt and credit entries by bankers, and much resorted to in transactions between different countries. A trader can in this way pay a sum into a bank in London and have its equivalent paid by the bank's agent in almost any city of the world the same day.

**Tenant's Fixtures** are such as the tenant has himself put up, and are removable by him at the end of his tenancy, unless they are of such a nature that they cannot be detached without injury to the landlord's property. By the Larceny Act, 1916, the larceny of fixtures is punishable.

**Tender** is an offer to supply certain things, perform certain acts, or pay a specified sum, but it is not binding until accepted.

**Territorial Waters** are the area of the sea up to one marine league (3 miles) measured from low-water mark off the coast. They are within the exclusive control of the adjacent country.

**Through Bill of Lading**, a bill of lading for the carriage of goods from one place to another by several railway, road-transport, or shipping companies.

**Ticket**, a document giving particulars of shares sold and given to a purchaser by his broker.

**Tithe Rent Charges**, being amounts payable out of the proceeds of land for the benefit of the Church, were extinguished in 1936. A sixty years' annuity payable out of the land is now substituted. At the end of that period tithe redemption will be complete.

**Tolls (Docks and Canals)**, a charge for conveyance of goods levied against the owner of the goods. (Road and Bridge), a charge made for permission to use a road or bridge which is privately owned. It can be levied on either goods or vehicle.

**Tonnage** as registered is based, not on the carrying capacity of a ship, but upon its cubical capacity, one ton being reckoned for every 100 cubic feet.

**Tonnage Dues**, port charges, estimated on a ship's registered tonnage, payable on entering or leaving port.

**Tort**, a wrongful act causing injury for which damages may be recovered. Apart from special statutes all civil claims for damages arise from tort or breach of contract.

**Trade Bill**, a bill of exchange in respect of which value in goods has been actually received by the drawee or acceptor.

**Trade Fixtures**, like tenant's fixtures, are removable by a tenant at the expiration of his tenancy provided no damage be done to the landlord's property.

**Trade-Mark**, a mark used in relation to goods for the purpose of indicating a connection in the course of trade between the goods and some person having the right, either as a proprietor or registered user, to use the mark. Trade-Marks can be registered, the registration holding good for 7 years and being renewable thereafter indefinitely for periods of 14 years. Infringement of a registered trade-mark renders the infringer liable to damages.

**Trade Union**, a combination of workmen formed to protect the trade interests of its members, by the substitution of collective for individual bargaining between workmen and employers. (See p. 130.)

**Transfer**, any document whereby one person transfers property, securities, or rights to another. On the Stock Exchange a transfer of shares or stock is prepared by the seller's broker, signed by the seller, and handed over to the buyer on payment of the consideration. Share transfers are liable to stamp duty at 2 per cent.

**Treasure Trove**, a legal term applying to money, plate, or bullion found hidden in the earth, or elsewhere, and for which the owner cannot be found. The treasure legally belongs to the Crown. An inquest is held by the Coroner to enquire into the ownership.

**Treasury Bills** are negotiable Government acknowledgments of loans, and may be for three, six, or twelve months.

**Trust**, in law, property vested in a nominal owner to be applied by him for another's benefit; in commerce, an association of several firms in one organisation with a view to defeating competition and furthering joint objects.

**Trust Deed**, a deed assigning or conveying property, debts, or securities to a trustee or trustees for the purposes set forth in such deed.



**Trustee in Bankruptcy** is the person appointed to take over the property of a bankrupt and to distribute it among the creditors. He is appointed by a meeting of creditors and confirmed by the Board of Trade.

**Trustee Savings Banks** were founded in 1810 with the sole object of encouraging thrift and are not conducted for private profit. They are regulated by Acts of Parliament and are subject to Government supervision. All funds in the Ordinary Department must be invested with the National Debt Commissioners (the Government Department which controls the Trustee Savings Banks) and they are guaranteed by the State.

**Turn of the Market**, an expression referring to the difference between selling and buying prices of stocks and shares. For example, if a jobber names two prices, one is the price he will buy at, the other his selling price, the difference between the two is termed the "turn of the market."

**Turnover**, the amount representing the total sales of a trade during a given period.

**Ullage**, waste or leakage in liquid contents of bottles, casks, etc.

**Ultra Vires**. The memorandum of association of a company defines its objects. If a company exceeds these powers it is acting *ultra vires* (beyond its powers).

**Umpire**. In case of disagreement between two arbitrators the dispute is determined by a third person called the umpire. The umpire usually presides during the hearing, but does not express an opinion unless the arbitrators disagree.

**Underwriter**, one who insures ships against loss. Also one who, on a limited company's prospectus being issued, undertakes, if the public do not subscribe to the amount required, himself to take up shares sufficient to cover the deficiency, on a specified commission basis.

**Unilateral Contract** is a contract that is binding only on one party to it, such as a loan of money or a loan for use.

**Unseaworthy**, condition of a ship when from any cause, including inadequacy of crew or captain, it is unsafe to load it or send it on a voyage.

**Upset Price**, the price that must be reached at auction to effect a sale. If there is no bid up to that amount the property is withdrawn.

**Usury**, an excessive rate of interest paid for the loan of money. The Money-Lenders' Acts, 1900-27, compel money-lenders to be licensed; restrict advertising; prohibit compound interest; make money-lenders' contracts unenforceable unless a memorandum in writing be signed personally by the borrower; and unless a copy

thereof be sent to the borrower within seven days. A money-lender must sue for money lent or interest thereon within twelve months. The Court has power to reduce the rate of interest.

**V.C.I.**, document which is to be filled in before permission is granted for jewellery and valuables to be taken abroad by persons leaving the country.

**Vendors' Shares** are shares allotted to the vendor or vendors of a business on the same being converted into a limited company.

**Visa or Vise**, an endorsement on a passport or bill of lading certifying that the person or article of which it relates may be admitted into a country.

**Waiver Clause**, a clause inserted in marine insurance policies, empowering either the insurer or insured to do what he thinks best to minimise loss in the event of an accident, without prejudicing the terms of the policy.

**Wall Street**, the seat of New York Stock Exchange. The phrase is used to describe American banking and finance.

**Warrant**, (1) a magistrate's order for the arrest of a person or seizure of goods; (2) a receipt for goods deposited in a warehouse, and a negotiable document; (3) a document entitling the holder to certain money or property.

**Warrant of Attorney**, a document given by a client to his attorney authorising him to appear for him in specified legal proceedings and act as directed, suffering judgment if necessary.

**Warranty**, a guarantee that goods sold are of the quality stated, and giving the buyer the right of action for damages should the goods turn out inferior.

**Way Bill**, a list of passengers or goods carried by a public conveyance.

**Without Prejudice**. When statements are made or letters written with the words "without prejudice" affixed, they cannot be used as evidence in subsequent litigation without consent of the person responsible.

**Working Parties**. Committees appointed by the President of the Board of Trade for the investigation of the problems of a particular industry. The reports of these committees deal with such matters as labour relations, marketing methods, capital re-equipment, and management. The committees are composed of representatives of employers and employees in equal numbers, together with independent members.

**Writ**, the formal document by which the Queen commands the performance of an act. Most actions in the High Court are commenced by a writ ordering the attendance of the defendant to hear the plaintiff's claim.

## Legal Notes

### LANDLORD AND TENANT

#### THE CONTROL OF RENT AND PREVENTION OF EVICTION OF TENANTS

**1. Origin.** Housebuilding largely ceases in time of war, thus causing a housing shortage resulting in an increase in the rents obtainable in a free market. At the same time the increase of rates and the cost of repairs increases the financial inducement to landlords to terminate tenancies and re-let to the same or new tenants at higher rents. During the First World War the Government intervened in the case of unfurnished tenancies of dwelling-houses to control the ejection of tenants except upon prescribed grounds and to control the increase of rents above the rent at which the dwelling was let on August 3, 1914, which became the "standard rent," except for increases for the purposes of meeting a rise in the rates payable by the landlord or any expenditure incurred by him in respect of improvements or structural alterations, known as the permitted increases. The Increase of Rent and Mortgage Interest (War Restrictions) Act 1915 also prevented mortgagees of dwelling-houses from increasing the rates of interest or calling in the

security. The controls applied to all dwelling-houses where the standard rent or the rateable value did not exceed £35 in London and £26 in the rest of England.

**2. History of Property to which Control Applied.** Between the wars the housing shortage continued, and the control was extended by the Increase of Rent and Mortgage Interest (Restrictions) Act 1920 to dwellings not exceeding three times the limits set in 1915. Tenancies at a rent of less than two-thirds of the rateable value were exempt from control. Approximately 90 per cent. of the dwellings in the country were then subject to control and were known as controlled premises. The 1923 Act took a first step towards decontrol by providing that when the landlord obtained possession, *e.g.*, where the tenant voluntarily vacated or the landlord obtained a court order on one of the prescribed grounds, the premises remained decontrolled upon a subsequent re-letting. The 1933 Act hastened decontrol by limiting control to dwellings where the recoverable rent (*i.e.*,

the standard rent plus the permitted increases) did not exceed £45 in London or £35 elsewhere in England; moreover, possession could be obtained if suitable alternative accommodation (which might consist of only part of the same premises) could be shown to be available to the tenant. The 1938 Act freed all dwellings where the rateable value did not exceed £35 in London (the 1915 figure) or £20 elsewhere in England. The total abolition of control seemed a possibility.

**3. Present Scope of Control.** The outbreak of war in 1939 caused the reimposition by the 1939 Act of control of all dwellings of a rateable value not exceeding £100 in London and £75 elsewhere in England, and these limits are in force today. Tenancies at a rent of less than two-thirds of the rateable value remained exempt from control. Dwellings brought under control by the 1939 Act are called "new control" dwellings as compared with "old control" resulting from the previous Acts, and have a standard rent fixed by the rent being paid on September 1, 1939. In addition, the Furnished Houses (Rent Control) Act 1946 extends qualified control to some furnished lettings, and the Landlord and Tenant (Rent Control) Act 1949 contains provisions as to the fixing of rent by a Tribunal, cases where living accommodation was shared, and the prohibition of premiums.

**4. Main Provisions.** The detailed provisions of the control set up by the Rent Acts are complicated and often difficult even for experts, and the following notes are intended only to point out the main features of the system of control.

**5. Protection of Tenant.** A tenant whose contractual tenancy has been determined by a valid notice to quit becomes what is known as a statutory tenant of the premises on the same terms as his previous contractual tenancy with his landlord, and may only be ejected as a result of a court order obtainable by the landlord on certain grounds. The landlord can always obtain possession if he can satisfy the County Court that suitable alternative accommodation will be available for the tenant and that it is reasonable to make the order. "Suitable" involves a separate dwelling with security of tenure equivalent to protection under the Rent Acts, and suitable to the means and needs of the tenant and his family as regards extent, character, and proximity to place of work. Alternatively, where the Court thinks it reasonable it can make an order for possession if *inter alia* the tenant is in arrears with his rent, is guilty of nuisance or annoyance to his neighbours, has given notice to quit so that the landlord has contracted to sell or relet, or has assigned or sublet the whole of the dwelling in one or several parts. An order may be made if the tenant was formerly and has ceased to be in the employment of the landlord and the dwelling was let because of that employment and the dwelling is reasonably required for a person in the landlord's employ. Lastly, an order for possession may be made if the dwelling is required by the landlord for occupation as a residence for himself and family or any son or daughter over eighteen or his father or mother. In this last case possession will not be given if the tenant satisfies the Court that in all the circumstances greater hardship would be caused to the tenant by making the order than to the landlord by refusing it. The provision is usually called the greater-hardship clause, and in the post-war years by far the greater number of proceedings for possession have been brought on this ground.

**6. Fixing of Rents.** The rent which may be lawfully demanded by the landlord is fixed, in the case of old control dwellings, by the rent being paid on August 3, 1914, or if not then let, the rent at which it was last let before that date or if let for the first time after that date the rent at which it was first let. In the case of new control dwellings September 2, 1939, is substituted for August 3, 1914. The landlord might serve a written notice of increase of rent in respect of one or more of the permitted increases. Such a notice of increase also operates as a notice to determine the contractual tenancy so that the increase may lawfully be made. Further, if increases have in fact been paid, the Court will readily infer that a proper written notice of increase was served, unless the tenant can prove otherwise. In the case of old control dwellings the permitted increases include an amount calculated at a rate per annum not

exceeding 8 per cent. of the amount expended by the landlord on improvement or structural alteration, not including expenditure on decoration or repairs, and after the 1933 Act the supply of improved fixtures and fittings (not being decoration or repairs) may be included. The most common permitted increase is any increase in the amount for the time being payable by the landlord in respect of rates. Further the landlord may add on 15 per cent. of the net rent, and also if he is responsible for repairs, a further 25 per cent. of the net rent (which is the standard rent or where the landlord paid the rates the standard rent less the rates). In the case of new control dwellings the first two of the above four increases apply, and the last two do not. (Increases in respect of repairs may also be made under the Housing Repairs and Rents Act 1954 as to which see paragraph 14 below.) Where rent in excess of the rent fixed by the Acts has in fact been paid by the tenant he may recover by deduction from the current rent or by action (*e.g.*, where the tenancy has ceased), but in neither case may over-payments made more than two years before the deduction or the commencement of the action be recovered by the tenant.

**7. Premiums.** Premiums, sometimes colloquially called key-money, may not be required as the condition of the grant of a tenancy to which the Acts apply, nor for the renewal or continuance of such a tenancy. A person who has paid an unlawful premium may recover it back. The requiring of a premium is an offence punishable on summary conviction by a fine not exceeding £100, and the Court which convicts may also order the repayment of the premium. The purchase of furniture, fittings, or other articles at a price which exceeds the reasonable price of such articles as a condition of the granting of a tenancy is treated as if it were a premium. Prior to the Landlord and Tenant (Rent Control) Act 1949 the prohibition of premiums did not apply to tenancies of fourteen years or upwards.

**8. Furnished Lettings.** Where the terms of the tenancy include the use of furniture or the provision of services (*e.g.*, attendance, or heating or lighting) either party may refer the contract to the Rent Tribunal, who may approve or reduce the rent to such sum as the Tribunal thinks reasonable, or, where services are provided, may also increase the rent. After the rent has been fixed it is illegal to demand or pay a larger rent. A notice to quit served by the landlord after there has been a reference to a Tribunal shall not take effect until the expiry of three months from the decision of the Tribunal, thus providing a limited security of tenure, and the Tribunal may extend from time to time the period of security.

**9. Sharing.** When the tenant shares living accommodation, *e.g.*, the kitchen or a sitting-room with the landlord, even if other rooms are in the sole possession of the tenant, the tenant is not, except to the limited extent mentioned below, a protected tenant, and the landlord who has terminated the tenancy by a notice to quit may obtain possession. But where there is a sharing with the landlord the Landlord and Tenant (Rent Control) Act 1949 provides that the tenancy is subject to the Rent Tribunal's power to fix the reasonable rent. Where the sharing is not with the landlord, but the tenant shares with another person, *e.g.*, another tenant of the landlord, then the tenant is a protected tenant if he shares with that other person as a result of the terms of the tenancy between himself and his own landlord (but may otherwise not be protected). And if the tenant shares with his own sub-tenant of part of the premises, the tenant is as against his own landlord still a protected tenant. But as between the tenant who shares with his sub-tenant the sub-tenant is not protected against the tenant unless, which is unlikely, the sharing is the result of a term of the tenancy between the tenant and the landlord.

**10. Sub-tenancies.** A statutory tenant has the right to sub-let if he had that right under his original contractual tenancy. Control applies as between tenant and sub-tenant. The standard rent of the portion sub-let by a contractual or statutory tenant to a sub-tenant is a proportion of the standard rent of the whole, and the County Court has jurisdiction to fix the standard rent of the part sub-let by apportionment. In making



the apportionment the Court will consider the comparative size, accessibility, aspect, and other physical advantages of the part sub-let. A tenant who desires to evict his sub-tenant must show the existence as against the sub-tenant of one of the grounds set out in paragraph (5) above. As to sharing between tenant and sub-tenant see the preceding paragraph.

11. **Transmission of Statutory Tenancy.** A statutory tenant cannot assign his tenancy, nor can he sub-let the whole. He cannot transmit the statutory tenancy by will. But the widow of a statutory tenant who was residing with her husband at the time of his death, or where the tenant leaves no widow or is a woman such member of the tenant's family who was residing with the tenant at the time of the death (and had so resided for not less than six months immediately before the death) as may be decided in default of agreement by the County Court, is entitled to continue in occupation as a statutory tenant. Such a statutory transmission of the statutory tenancy can occur only once, and on the death, *e.g.*, of a widow who is a statutory tenant by reason of this provision, no other member of the family has any rights of tenancy, and the landlord will be entitled to possession.

#### EXTENSIONS OF THE LAW IN 1954

12. Two major statutes affecting the relationship of landlord and tenant were passed in 1954, namely the Landlord and Tenant Act 1954 and the Housing Repairs and Rent Act 1954. Each is elaborate and highly technical, and any person who has reason to believe that he may be affected should take professional advice. Here it is only possible to state the main objects of these Acts. On and after October 1, 1954, a tenancy originally granted for a term exceeding twenty-one years is, notwithstanding that the rent is less than two-thirds of the rateable value, brought under control. On the expiry of the term the tenancy does not

come to an end, but continues at the same rent and in other respects on the same terms as before. It may be terminated by notice, if given by the landlord of not less than six nor more than twelve months, if given by the tenant of not less than one month. The landlord may obtain possession only if he proposes to demolish or reconstruct the premises or on grounds corresponding (with modifications) to those on which he might obtain possession from a statutory tenant under the Rent Acts. If, instead of claiming possession (or after the failure of an attempt so to do) the landlord proposes to the tenant a statutory tenancy, the terms may be settled by agreement or by the Court. Thus gradually upon the expiry of long terms a large new class of controlled premises can arise.

13. **Business Premises.** Since October 1, 1954, for the first time premises used solely for business purposes became subject to provisions ensuring security of tenure. Business premises include those used for a trade, profession, or employment. A tenancy to which the statute applies does not come to an end unless terminated in accordance with complicated provisions set out in the Act, and if so terminated by the landlord the tenant may apply to the court for a new tenancy.

14. **Repairs.** Under the Housing Repairs and Rents Act 1954, which came into operation on August 30, 1954, the rent paid by a statutory tenant may be increased, provided that the premises are in good repair having regard to their age character and locality, are reasonably suitable for occupation, and the landlord is responsible wholly or in part for repairs under the terms of the tenancy or the tenant is under no obligation to repair. The landlord must produce satisfactory evidence that repair work on the premises has been done during a period of twelve out of the fourteen months prior to the notice of increase served on the tenant and to the extent of a scale of values set out in the Act.

## HUSBAND AND WIFE

### DIVORCE

1. **Persons who May Bring Proceedings.** The High Court may entertain petitions for divorce only when the husband is domiciled in England (including Wales) at the commencement of the proceedings (the wife's domicile during marriage is that of her husband). This is so whatever the nationality of the husband. A home within the jurisdiction is not sufficient. Domicile involves both residence and the intention that that residence shall be the permanent home. Two exceptions exist in favour of wives: firstly, a wife who has been deserted by her husband and immediately prior thereto the husband was domiciled in England (including Wales), secondly, a wife who is and for at least three years prior to bringing the proceedings has been ordinarily resident in England or Wales and whose husband is not domiciled in Great Britain, Northern Ireland, the Channel Isles, or the Isle of Man, may bring proceedings in the High Court.

2. **Grounds of Petition.** A petition may not be presented within three years since the date of the marriage unless the Court allows earlier presentation on the ground of exceptional hardship suffered by the petitioner or exceptional depravity on the part of the respondent. Thereafter either party may present a petition on the ground of adultery since the marriage, desertion without cause for at least three years immediately preceding the petition, cruelty, or that the other party is incurably of unsound mind and has been continuously under care and treatment for at least five years immediately preceding the presentation of the petition. In addition, a wife may present a petition on the ground that the husband has since the marriage been guilty of rape, sodomy, or bestiality.

3. **Decree Nisi.** In the first instance the Court grants a decree nisi, and the decree absolute which severs the marriage tie is not made until application to the Court by the petitioner not less than six weeks after the decree nisi.

4. **Maintenance.** On a decree being made, the Court may order the husband to pay to the wife

such weekly or monthly sum for their joint lives as having regard to the wife's means, the ability of the husband, and the conduct of the parties, the Court may think reasonable. If maintenance is allotted, it is, as a general but not rigid rule, on the basis of one-third of the joint incomes, less the wife's income.

5. **Custody of Children.** The Court may be asked to award the custody of the children under sixteen to one of the parties. The paramount consideration is the welfare of the children, and also to be taken into account are the interests of the innocent party. The age, sex, attachments, and opportunities in life of the children are of importance. The fact that a mother has been found guilty of adultery does not by itself make her claim to custody, as against the innocent father, inferior to the father's.

6. **Absolute Bar to Relief.** (a) Collusion, that is to say the presentation or prosecution of a petition under a bargain or agreement made with the other party, or with the agent of the other party to procure adultery or to supply evidence for the purpose of deceiving the Court as to the true facts, is an absolute bar. Thus it would be collusion for a husband by agreement with his wife to commit adultery for the purpose of providing the wife with evidence on which to found a petition. Similarly, an agreement for one party to provide and the other party to use false evidence of adultery for the purpose of obtaining a divorce, is collusion.

(b) **Condonation** occurs where one party with full knowledge of the relevant circumstances forgives the other party and there is a reconciliation and re-instatement of the forgiven party as the partner in the marriage. Words alone will not constitute condonation, but acts consistent only with re-instatement are evidence of condonation, for instance the resumption of cohabitation. After complete condonation the offence condoned may be revived as a ground for a petition by a subsequent matrimonial offence by the forgiven party. Thus cruelty may revive condoned adul-

tery and vice versa, and adultery may revive condoned desertion. Statutory desertion may revive condoned cruelty or desertion or adultery.

(c) Connivance occurs where the adultery of one party has been caused by or knowingly and wilfully or recklessly permitted by the other party. It therefore precedes the commission of the adultery, and is an absolute bar.

7. Discretionary Bars to Relief. (a) *Adultery*. The Court has a discretion whether or not to grant a decree if the petitioner has been guilty of adultery. The petitioner must expressly ask in the petition for the exercise of the Court's discretion and make a full disclosure in a written statement at the hearing of the facts calling for discretion. The Court will take into account the interests of any children of the marriage, of the petitioner and person with whom the petitioner has committed misconduct, especially having regard to the possibility of their future marriage, and the possibility of a reconciliation of the parties to the marriage.

The Court further regards the interest of the community in, on the one hand, maintaining the strength of the marriage tie and, on the other, the factors which make it contrary to public policy to prevent the regularisation of established *de facto* associations outside marriage.

(b) *Other Discretionary Bars*. Unreasonable delay in presenting the petition, in the sense of culpable delay, something in the nature of acquiescence, is a discretionary bar. An acceptable explanation will be called for. Cruelty by the petitioner to the other party is always a discretionary bar. And where the ground of the petition is adultery or cruelty, then a decree may be refused if the petitioner has without reasonable excuse deserted or separated from the other party before the adultery or cruelty complained of. Wilful neglect or misconduct which has conduced to the adultery, unsoundness of mind, or desertion on which the petition is founded is also a discretionary bar.

## SEPARATION AND MAINTENANCE ORDERS AND ORDERS FOR THE CUSTODY OF CHILDREN MADE BY MAGISTRATES' COURTS

1. In addition to the right to bring proceedings in the High Court on the grounds set out above to terminate a marriage by divorce the law provides an aggrieved partner with remedies during the subsistence of the marriage where the wrong conduct of the other partner is either such that it does not constitute a ground for divorce or alternatively the aggrieved partner does not wish to terminate the marriage. The Magistrates' Courts under a series of Acts (The Summary Jurisdiction (Separation and Maintenance) Acts 1895 to 1949) have power to order that: (a) a husband or wife be no longer bound to cohabit with the other party to the marriage (a "separation" order); (b) the husband pay weekly sums for the maintenance of the wife and of the children of the marriage; (c) the legal custody of the children be committed to the party who applies to the Court. The importance of these powers is increased by the facts that the remedy is near at hand in the Magistrates' Court within whose jurisdiction the aggrieved party ordinarily resides, is cheap and rapid, and that a reconciliation is not hampered, in that the orders of the Court automatically cease to have effect if the parties return to each other. Moreover, a wife may apply for an order notwithstanding that the cruelty or neglect to maintain complained of has not caused her to leave and live separately from her husband.

2. Grounds of Application to the Court. Any married woman may apply to the Court on any of the following grounds, namely that her husband has: (a) deserted her, (b) been guilty of persistent cruelty to her or her children, (c) been guilty of neglect to provide reasonable maintenance for her or her infant children, (d) been guilty of adultery, (e) is an habitual drunkard, (f) been convicted summarily of an aggravated assault upon her or convicted after a trial by jury of an assault upon her, (g) while knowingly suffering from a venereal disease insisted on sexual intercourse with her, and (h) compelled her to submit herself to prostitution. Any husband may apply to the Court on the grounds that his wife has been guilty of adultery or has been guilty of persistent cruelty to his children or that she is an habitual drunkard.

3. Desertion. Desertion has not been, and probably is not capable of being, exhaustively defined owing to the infinite variety of conduct and circumstances in married life. In any one case it is a question of fact in the light of the whole conduct of both parties. There must be conduct by the guilty party which is wilful and which is intended to bring and in fact brings to an end the whole marriage relationship (as distinct from the marriage tie) between the parties without the consent of the other party. Thus physical separation due to the necessities of earning a living does not constitute desertion, whilst desertion may occur when the parties are both living under one roof if the common household has been wilfully brought to an end by one party without the consent of the other. The wilful refusal of

sexual intercourse does not by itself constitute desertion, but may be an important element in assessing the conduct of the refusing party as a whole in order to determine whether there has been such a total disregard of the obligations of marriage as to amount to desertion. Generally the fact that the parties are living apart by agreement or *a fortiori* under the terms of a separation deed precludes desertion. The fact that one party left the matrimonial home does not by itself establish that that party deserted. The conduct of the party who remains in the matrimonial home may have been wilful and adopted for the purpose of making it impossible for the other party reasonably to remain in the matrimonial home, thus in effect driving that other party out, in which event the party who remains is the party guilty of desertion (sometimes called constructive desertion). Constructive desertion is committed by a husband who persists in an adulterous relationship with another woman in the matrimonial home if this conduct drives out his wife. Even if the adulterous relationship is being carried on by the husband elsewhere, his wife is not under a duty to remain in cohabitation and, if she leaves, the husband is guilty of desertion. A husband who is making his wife an allowance may still be guilty of desertion. Once begun, desertion continues until brought to an end by the guilty party, for instance by a reconciliation followed by resumption of cohabitation, but acts of intercourse during unsuccessful efforts to effect a reconciliation will not bring to an end the desertion. It is also brought to an end by a *bona fide* offer by the deserting party to resume cohabitation made in such circumstances that the other party could reasonably be expected to accept it, even though in fact the offer is refused. A refusal to accept a genuine offer to resume cohabitation, in the absence of any circumstances justifying the refusal, turns the party refusing into the position of being the party guilty of desertion. The existence of reasonable cause or excuse for one of the parties to separate from the other prevents the party who separates from being a deserter. Such cause or excuse need not amount to the commission of a matrimonial offence by the other party, but must be a grave and weighty matter, such conduct as makes it practically impossible for husband and wife to live properly together. Thus where a wife has so conducted herself as to give her husband reasonable ground for believing that she has committed adultery, and he does so believe at the time of the separation, does not make him a deserter.

4. Persistent Cruelty. An isolated act of cruelty such as a sudden act of violence is not sufficient. To be persistent cruelty must be part of a course of conduct which extends over a period of time, although a number of different acts need not necessarily be far apart. Conduct of such a character as to have caused danger to life, limb, or health either bodily or mental, or as to give reasonable apprehension of such danger, amounts



to cruelty. The conduct must consist of wilful acts which are unjustifiable, inflicting pain and misery on the other party and causing injury to health. Deliberate and persistent sulking or constant nagging of such a kind that it endangers the health of the other party may constitute cruelty. A course of conduct adopted by one party with the deliberate intention of wounding and humiliating the other party and composed of a long-continued series of minor acts, each of which by itself was not serious, may constitute cruelty. But mere neglect and want of affection does not amount to cruelty.

**5. Neglect to Maintain.** A wife has a right to maintenance as an incident of the status of marriage. The Court must be satisfied that the husband has had the means of maintenance or had the ability to earn money and has wilfully abstained from so doing so that the neglect is wilful and there is an element of matrimonial misconduct. A husband is not guilty of wilful neglect to maintain if the wife has left the matrimonial home without the existence of some grave and weighty matter of complaint which justifies her in leaving. When the parties are living apart under a separation deed the Court may still find neglect to provide reasonable maintenance if the financial position of the wife relevant to the husband has altered, even if the wife has undertaken not to claim maintenance through the courts so long as the payments provided in the deed are made. When the parties are living apart by mutual consent without any agreement as to maintenance the husband is not guilty of this offence until at any rate there has been a previous request for maintenance. A husband is liable to have an order made against him on the ground of wilful neglect to maintain the children of the marriage under the age of sixteen and committed to the custody of the wife, and also in similar circumstances children adopted by both parties.

**6. Adultery.** Adultery is a ground of complaint upon which either husband or wife may apply for a separation order provided the Court is satisfied by the party applying for the order that he or she has not condoned or connived at, or by his or her wilful neglect or misconduct condoned to, the adultery, and that the application is not made in collusion with the other party to the marriage or with the person with whom the adultery is alleged to have been committed. It is a valid defence to a claim by the wife for an order upon any ground that she has been guilty of adultery, provided that the husband has not condoned or connived at or by his wilful neglect or misconduct condoned to such adultery.

**7. Remedies—Separation Order and Custody of Children.** The Court may and will if the ground is satisfactorily established make an order which relieves the other party of the obligation to cohabit, commonly known as a "separation order." The order may be applied for by a wife even though she has not left her husband, but it is not enforceable by her so long as she continues to reside with her husband, and the order ceases to have effect if she continues to do so for three months after the making of the order. Moreover, if at the time of the making of the order the wife is living apart from her husband, or if she does so following the order, then if she resumes cohabitation the order ceases to have effect, although in certain circumstances it may be revived by the Court upon an application made for that purpose. When making the original order the Court may give the legal custody of the children of the marriage while under the age of sixteen to the applicant and also provide, as it thinks fit, for access to the children by the other party to the marriage.

**8. Remedies—Maintenance of Wife and Children.** The Court may order that the husband shall pay to the wife personally or to the Court or a third person on her behalf, a weekly sum not exceeding £5 for her maintenance and a weekly sum not exceeding thirty shillings for the maintenance of each child of the marriage (including children legally adopted by both spouses) whose custody has been committed to her, the payment to continue until the child reaches sixteen. The Court may on application of a wife made when the child reaches that age, and provided the child

is or will be engaged in a course of education or training after that age, order the continuance of the payments for a further period not exceeding two years, and may extend the period from time to time until the child reaches the age of twenty-one. All payments must be made without deduction of income tax. In assessing the amount of the wife's maintenance the means of the wife and in an appropriate case her earning capacity must be taken into account. The Court must be satisfied that the husband has means or is able to work to earn more than sufficient for his own maintenance. The amounts of maintenance may on the application of either husband or wife be increased or diminished from time to time. Payment may be enforced by making an application to the Court and proving the arrears, upon which the Court may issue a warrant of distress. If the Court is of the opinion, after inquiry, that the default in payment was due to the wilful refusal or culpable neglect of the husband, but not otherwise, the Court may issue a warrant of commitment for a period in no case exceeding three months. Arrears under an order may at any time be remitted by the Court in whole or in part.

**9. Jurisdiction and Hearing—Probation Officers.** The Magistrates' Court to which the application should be made is the court within the petty sessional division within which the cause of complaint shall have wholly or partially arisen or in which either party ordinarily resides, or, where the ground of application is one of the convictions referred to above, in which the conviction took place. The hearing is a domestic proceeding, and the court is cleared except for the parties, their legal representatives, and the Press, who may only report the names of the parties and their witnesses with a concise statement of the charges and defences and the decision and observations of the Court, but not the evidence. The Court may request a probation officer to investigate the means of the parties and direct the officer to report to the Court, but the report is not to be made to the Court until all issues arising in the proceedings other than the amount of an order has been determined. The report is made orally or in writing in the presence of both parties, each of whom may object to any of the probation officer's statements, in which event the probation officer is required to give evidence on oath. Further the Court may request a probation officer to attempt to effect a reconciliation between the parties. If he fails in his attempt he may, if he thinks fit, make a report to the Court containing the allegations by each party, but only if the party making the allegation agrees in writing to its inclusion. The probation officer must provide each party with a copy of the report. The Court may use the contents of the report for the purpose of questioning any witness, but may not treat the report itself as evidence. The Court has power to alter, vary, or discharge any order previously made between the parties, provided there is fresh evidence, that is, evidence which a party could not with reasonable diligence have found in time for the earlier hearing or as to facts which have happened since the earlier hearing.

**10. Guardianship of Infants.** Quite distinct from the power of a Magistrates' Court to make an order as to the custody of a child as part of the order made in domestic proceedings, as summarised above, the father or mother of an infant may apply to the High Court or the County Court or the Magistrates' Court of the district in which he or she lives for an order as to the custody of the child and as to the right of access thereto of either parent. This power is exercised under the Guardianship of Infants Acts 1836 and 1925. Application may be made notwithstanding that the parents are residing together. The Court is directed to regard the welfare of the infant as the first and paramount consideration, and is not concerned whether from any point of view the claims of the father are superior to the mother or vice versa. But where the welfare of the infant is not in question the Court may consider the conduct and wishes of each of the parents. If an order is made giving the custody to the mother the Court may, whether or not the parents are residing together, order that the father pay to the mother such weekly or other periodical sum as the Court, having regard to the means of the father,

thinks reasonable, so however that a Magistrates' Court may not award more than thirty shillings a week. The order, whether for custody of maintenance, is not enforceable and no liability accrues whilst the mother is residing with the father, and ceases to have effect at all if she continues so to reside for three months after it is made. An order may be varied or discharged by a subsequent order, even without fresh evidence.

11. Relation between Domestic Proceedings in the Magistrates' Court and Relief in the High Court. The relief obtainable by domestic proceedings in the Magistrates' Court is (apart from a decree of divorce or of nullity or of restitution) similar to but not identical with the relief which may be granted by the High Court. A decree of judicial separation may be granted by the High Court upon a petition on the ground of, *inter alia*, adultery, cruelty or desertion without cause for not less than three years. Upon the grant of such a decree the wife may apply to be maintained

by her husband under an order for permanent alimony. There is no fixed rule as to the amount which will be awarded to an innocent wife, but the order may be to pay the sum required to make up the wife's income to one-third of the joint incomes of husband and wife. On a decree for divorce the Court may order permanent maintenance in favour of the innocent wife. Again there is no fixed rule as to the amount, but the Court may adopt the same or some other proportion of the joint incomes, according to all the circumstances. The custody of, and access to, children of the marriage are matters which may be applied for and dealt with upon the making of a decree of divorce or judicial separation. The Court will treat the benefit and interest of the children as a paramount consideration, and not deprive a guilty party of the custody of the children merely as a means of punishment. Access is usually allowed to the party to whom the custody is not given.

## LAW OF INTESTACY (ENGLAND AND WALES)

The Administration of Estates Act, 1925, which came into effect on 1 January, 1926, completely changed the law of descent upon Intestacy. Prior to that Act the Statute of Distribution which had been in force since 1670 contained the rules prescribing what relatives were entitled to share the leaseholds and personal chattels of the intestate, and a different set of rules based upon the old canons of descent governed the descent of fee simple and entailed estates. Both systems were abolished by the Act of 1925. Section 45 of the Act abolished with regard to both real estate and personal inheritance: (1) all existing rules and canons of descent, including the custom of gavelkind, borough English; (2) tenancy by the curtesy and other estate and interest of a husband in real estate; (3) dower and free bench and other estate and interest of a wife (subject to certain exceptions); (4) escheat to the Crown or the Duchy of Lancaster or the Duke of Cornwall or to a mesne lord for want of heirs.

The new rules were designed to secure the same treatment of both personal (*i.e.*, leaseholds and chattels) and real (*i.e.*, land held in fee simple) property. Further, the general effect of the Act was to equalise the position of the husband and wife, as also of the parents. The parents were given a prior claim over the brothers and sisters of the deceased, and the "whole blood" over the "half blood." All relations more remote than uncles and aunts and issue of deceased ones did not share in the property.

The Intestates' Estates Act, 1952, which came into effect on 1 January, 1953, amends the Act of 1925, substituting new rules for the distribution of the estate of an intestate who dies after the commencement of the new Act. When there is a surviving spouse the "statutory legacy" (see below) is increased from £1000 to £5000 if the intestate has left issue, and from £1000 to £20,000 if the intestate has left no issue. The rules of distribution at present in force resulting from both Acts and applicable to an intestacy occurring on or after 1 January, 1953, are summarised in the tables following.

### I. If Intestate leaves a husband or wife and

- |  |  |
|--|--|
| (1) leaves no issue and no parent or brother or sister of the whole blood or issue of such brother or sister                               | the residuary estate is held in trust for the surviving husband or wife absolutely.  |
| (2) leaves issue (whether or not leaving a parent or parents, brother or sister of the whole blood or issue of such brother or sister)     | <p>(a) surviving husband or wife takes the whole of the personal chattels absolutely, and</p> <p>(b) the rest of the residuary estate is charged with payment to the surviving husband or wife of a net sum of £5000, free of death duties and costs, with interest payable primarily out of income from date of death at 4 per cent. per annum until payment or appropriated;</p> <p>(c) subject to the above charge the rest of the residuary estate is held—</p> <p>(i) as to one half upon trust for surviving husband or wife for life, and subject thereto on the statutory trusts for the issue of the intestate;</p> <p>(ii) as to the other half on the statutory trusts for the issue of the intestate.</p>  |
| (3) leaves no issue, but leaves one or more of the following: parent, brother or sister of whole blood, or issue of such brother or sister | <p>(a) surviving husband or wife takes the whole of the personal chattels absolutely, and</p> <p>(b) the rest of the residuary estate is charged with payment to the surviving husband or wife of a net sum of £20,000, free of death duties and costs with interest payable primarily out of income from the date of death at 4 per cent. per annum until payment or appropriated;</p> <p>(c) subject to the above charge the rest of the residuary estate is held—</p> <p>(i) as to one half upon trust for surviving husband or wife absolutely;</p> <p>(ii) as to the other half—</p> <p>(a) where intestate leaves one parent or both parents (whether or not brothers or sisters or their issue survive) in trust for the one parent absolutely or the two parents in equal shares absolutely;</p> <p>(b) where intestate leaves no parent on the statutory trusts for the brothers and sisters of the whole blood of the intestate.</p> |

Administration of Estates Act, 1925, Section 46 (1), as amended by Intestates' Estates Act, 1952, Section 1 (2).



II. If Intestate does not leave a husband or wife and

- (1) leaves issue the residuary estate of the intestate is held on the statutory trusts for the issue [1925 Act Sec. 46(1)(i)];
- (2) leaves no issue but leaves both parents the residuary estate of the intestate is held in trust for the parents in equal shares absolutely [1925 Act Sec. 46(1)(iii) amended by 1952 Act];
- (3) leaves no issue but leaves one parent the residuary estate of the intestate is held in trust for the surviving father or mother absolutely [1925 Act Sec. 46(1)(iv) amended by 1952 Act];
- (4) leaves no issue and no parent the residuary estate of the intestate is held on the statutory trusts for following persons living at the death of the intestate in order named: (i) brothers and sisters of the whole blood, (ii) brothers and sisters of the half blood, (iii) grandparents in equal shares (not on statutory trust), (iv) uncles and aunts being whole blood of a parent of the intestate, (v) uncles and aunts being half blood of a parent of the intestate [1925 Act Sec. 46(1)(v) amended by 1952 Act];
- (5) if no person takes an absolute interest by reason of the foregoing provisions The Crown or Duchy or Lancaster or Duke of Cornwall as *bona vacantia* in lieu of any right to escheat. Either of the above may provide for dependants (whether kindred or not) of the intestate and other persons for whom the intestate might reasonably have been expected to make provision [1925 Act Sec. 46(1)(vi)].

References to a child or issue living at the death of any person include a child *en ventre sa mere* at the death. [1925 Act Sec. 55(2).]

**STATUTORY TRUSTS.**—Sec. 47 of the 1925 Act prescribes the statutory trusts referred to above. They are as follows, namely in trust in equal shares for the issue of the intestate who are living at the death of the intestate and who attain twenty-one years or marry under that age. Similarly for all the issue of any child of the intestate who predeceases the intestate. Such issue to take through all degrees according to their stocks (in equal shares if more than one) the share which the parent would have taken if living at the death of the intestate. Hence a nephew and niece can only share if his or her parent be deceased, when the child takes the parent's share. [Sec. 47(1)(i).]

Any money paid by way of advancement to start in life or on the marriage of the child of the intestate will (unless there is a contrary intention expressed) be taken as paid out of the share the child would have taken if living at the death of the intestate. [Sec. 47(1)(iii).]

The personal representatives may allow any infant contingently interested to have the use and enjoyment of any personal chattels subject to reasonable conditions, and without being liable to account for consequential loss, *i.e.*, loss arising to a person from the culpable act or omission of another. [Sec. 47(1)(iv).]

If the trusts in favour of the issue of the intestate fail by reason of no child or other issue attaining an absolutely vested interest, then the residuary estate and the income, *etc.*, shall go as if the intestate had died without leaving issue living at the death of the intestate. [Sec. 47(2).]

Statutory trusts in relation to a person or persons other than the issue of the intestate (as, *e.g.*, in Table II (4) above) are to be construed as if such person or persons were substituted for the issue of the intestate.

**MATRIMONIAL HOME.**—Where the residuary estate comprises an interest in a dwelling-house in which the surviving husband or wife was resident at the time of the intestate's death the surviving husband or wife may during his or her life and within twelve months from the taking out of representation to the intestate's estate by a notice in writing to the personal representative require that the interest in the dwelling-house be appropriated towards the satisfaction of the surviving husband or wife's absolute interest in the intestate's estate. This right does not exist when the interest in the dwelling-house consists of either a tenancy which at the date of the death of the intestate would determine within two years, or a tenancy which the landlord by notice given after the death of the intestate could determine within the same time.

**HUSBAND OR WIFE'S LIFE INTEREST.**—On the death of a husband or wife after 1 January, 1953, leaving a wife or husband surviving entitled to a life interest in part of the residuary estate the survivor is entitled to elect to be paid the capital value of the life interest by the personal representative and the life interest thereupon ceases. The Act lays down rules for the determination of the capital value. [1952 Act Sec. 2.]

**DEATH OF HUSBAND AND WIFE** in circumstances rendering it uncertain which of them survived the other. By Law of Property Act, 1925, Section 184, the deaths are presumed to have taken place in order of seniority, so that the younger is deemed to have survived the elder. But for purposes of intestacy only the above presumption is excluded, so that the younger is not presumed to have survived the elder, with the result that if either husband or wife dies intestate his or her estate will be distributed as if there were no surviving spouse. [1952 Act Sec. 1(4).]

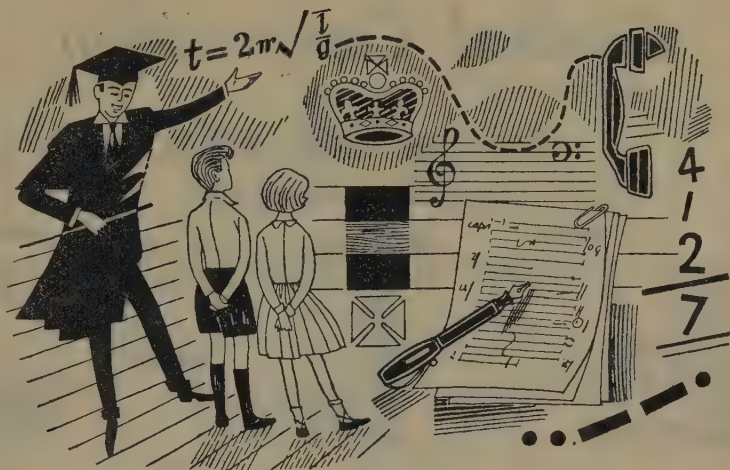
**PARTIAL INTESTACY.**—Where this occurs the surviving husband or wife must bring into account against the "statutory legacy" of £5000 or £20,000 referred to above, any beneficial interest taken under the will. [1925 Act Sec. 49 as amended by the 1952 Act Sec. 3.]

**COMPULSORY PROVISION.**—The Intestates' Estates Act also by Section 7 makes an innovation in the law as to intestacy by extending the provisions of the Inheritance (Family Provision) Act, 1938 (as amended), to cases where persons die intestate. That Act enables: (a) a wife or husband; (b) a daughter who has not been married, or who is by reason of some mental or physical disability, incapable of maintaining herself; (c) an infant son; (d) a son who is, by reason of some mental or physical disability, incapable of maintaining himself, to make an application to the Court on the ground that the disposition of the deceased's estate by his will or the law relating to intestacy or the combination of his will and that law, is not such as to make reasonable provision for the maintenance of the applicant, and the Court may make such reasonable provision as the Court thinks fit. No application may be made where the distribution of the estate is such that the surviving husband or wife is entitled to not less than two-thirds of the income of the net estate and where the only other persons who could apply, if any, is or are a child or children of the surviving husband or wife. [1938 Act Sec. 1(1) as amended by 1952 Act.]

The provision is by periodical payments not exceeding in the case of one applicant an annual rate exceeding the annual income of the net estate, but where the value of a deceased's net estate does not exceed £5000 the Court has power to order the provision of maintenance in whole or in part by way of a lump sum. [1938 Act Sec. 1(4) as amended by the 1952 Act.]

As a general rule, application must be made within six months from the date on which representation in regard to the deceased's estate is first taken out. [1938 Act Sec. 2(1).]

# General Compendium



A collection of useful tables and data on a variety of unrelated subjects, including

Atomic Weights	762	Morse Code	749
Beaufort Scale of Wind Force	752	Papers and Boards—Standard Sizes	742
Books—Standard Sizes	742	Persons of Rank, How to Address	736-37
Calendar Information	749-51	Physical and Chemical Data	760-61
China Marks	746-47	Presidents of the U.S.A.	739
Chivalry, Orders of	737	Proof Correcting	748
Coinage, United Kingdom	738	Roman Numerals	753
Electrical Units	741	Royal Family	735
Elements, Table of	762	Russian Alphabet	753
English Monarchs	734	Silver Marks	743-45
Exchange Rates	753	Sunrise and Sunset Tables	751
Hoods of Academical Robes	754-57	Thermometer Comparisons	753
Legal Tender	738	Type, Sizes and Styles	758
London Postal Districts	739	Union Jack	752
Mathematical Formulae	759	Units and Dimensions	761
Meters, Electricity and Gas	749	Weights and Measures	740-42
Moon's Phases	751		



# General Compendium

## ENGLISH MONARCHS

### I.—BEFORE THE CONQUEST.

SAXONS.		Began to Reign.		Reigned
Egbert (first "King of the English")	A.D.	827	Edmund II. (Ironside) divided the Kingdom with Canute for seven months	1016
Ethelwulf		839		
Etheibald		858		
Ethelbert		858		
Ethelred I.		866		
Alfred (the Great)		871		
Edward (the Elder)		901		
Athelstan		925		
Edmund I. (the Magnificent)		940		
Edred		946		
Edwy		955		
Edgar (the Peaceable)		958		
Edward (the Martyr)		975		

SAXONS.		Reigned.
Ethelred II. (the Unready)	A.D.	979-1013
"clamation"; restored (in Canute's absence) on Sweyn's death		
		1014-1016

DANES.		Reigned
Sweyn		1013-1014
Canute		1017-1035
Harold I.		1035-1040
Hardicanute		1040-1042

SAXONS, RESTORED.		Reigned
Edward the Confessor		1042-1066
Harold II.		1066

### II.—FROM THE CONQUEST TO THE PRESENT DAY.

NORMANS.				STUARTS.			
Access.	Died.	Age.	Reigned (Years).	Access.	Died.	Age.	Reigned (Years).
William I.	1066	1087	60 21	James I. (VI. of Scotland)	1603	1625	59 22
William II.	1087	1100	43 13	Charles I.	1625	Beh. 1649	48 24
Henry I.	1100	1135	67 35	Commonwealth declared May 19, 1649. Oliver Cromwell, Lord Protector 1653-8. Richard Cromwell, Lord Protector 1658-9.			
Stephen	1135	1154	50 19	Charles II.	1660	1685	55 25
				James II.	1685	Abdicated 1688;	Age
				(at death in exile in 1701) 68. Reigned 3 years.			
				William III. and Mary II.	1689	1702	51 13
				Anne	1702	1714	49 12

PLANTAGENETS.				HOUSE OF HANOVER.			
Access.	Died.	Age.	Reigned (Years).	Access.	Died.	Age.	Reigned (Years).
Henry II.	1154	1189	56 35	George I.	1714	1727	67 13
Richard I.	1189	1199	42 10	George II.	1727	1760	77 33
John	1199	1216	50 17	George III.	1760	1820	81 59
Henry III.	1216	1272	65 56	George IV.	1820	1830	68 10
Edward I.	1272	1307	68 35	William IV.	1830	1837	72 7
Edward II.	1307	1327	43 20	Victoria	1837	1901	81 63
Edward III.	1327	1377	65 50				
Richard II.	1377	Dep. 1399	34 22				
Henry IV.	1399	1413	47 13				
Henry V.	1413	1422	34 9				
Henry VI.	1422	Dep. 1461	49 39				
Edward IV.	1461	1483	41 22				
Edward V.	1483	1483	13 0				
Richard III.	1483	1485	35 2				

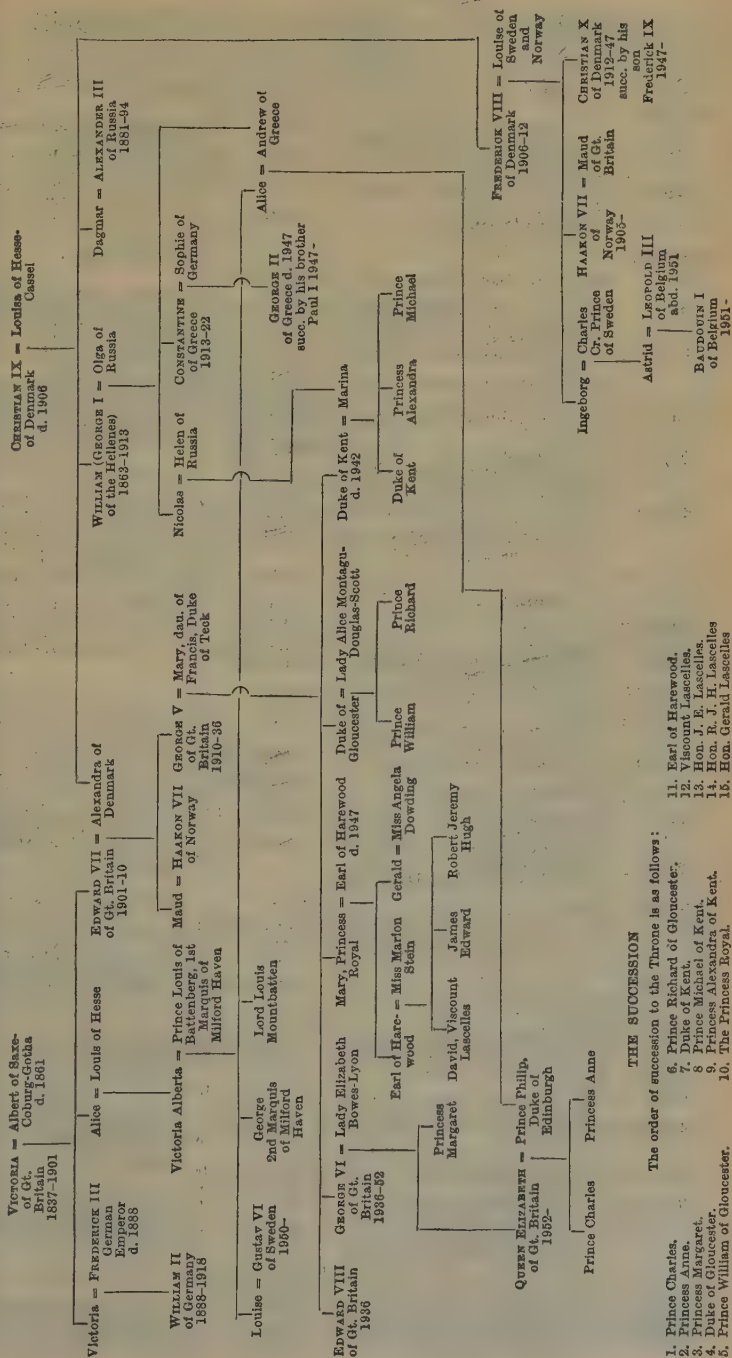
TUDORS.				HOUSE OF SAXE-COBURG-GOTHA.			
Access.	Died.	Age.	Reigned (Years).	Access.	Died.	Age.	Reigned (Years).
Henry VII.	1485	1509	53 24	Edward VII.	1901	1910	69 9
Henry VIII.	1509	1547	56 38				
Edward VI.	1547	1553	16 6				
Mary I.	1553	1558	43 5				
Elizabeth I.	1558	1603	70 44				

HOUSE OF WINDSOR.			
Access.	Died.	Age.	Reigned (Years).
George V.	1910	1936	70 25
Edward VIII.	1936	Abdicated	1936 326 days
George VI.	1936	1952	56 15
Elizabeth II.	1952		

# THE ROYAL FAMILY

Showing the common descent of Queen Elizabeth and The Duke of Edinburgh from Queen Victoria and from Christian IX of Denmark.





# MODES OF ADDRESS TO PERSONS OF RANK

## ROYALTY.

### THE KING.

*Begin :* Sir, or May it please Your Majesty.  
*End :* I have the honour to remain, Sir, Your Majesty's most humble and obedient subject,  
*Address :* To The King's Most Excellent Majesty, or  
 To His Majesty The King.

### THE QUEEN.

*Begin :* Madam, or May it please Your Majesty,  
*End :* I have the honour to remain, Madam, Your Majesty's most humble and obedient servant,  
*Address :* To the Queen's Most Excellent Majesty, or  
 To Her Majesty The Queen.

### PRINCES AND PRINCESSES, DUKES AND DUCHESSSES OF THE BLOOD ROYAL.

*Begin :* Sir (or Madam),  
*End :* I have the honour to be, Sir (or Madam), Your Royal Highness's most humble and obedient servant,  
*Address :* To His (or Her) Royal Highness the Prince (or Princess) ———,  
 To His (or Her) Royal Highness the Duke (or Duchess) of ———.

## NOBILITY.

### DUKES AND DUCHESSSES.

*Begin :* My Lord Duke,  
*End :* I remain, my Lord Duke, Your Grace's most obedient servant,  
*Address :* To His Grace The Duke of ———, K.G., etc.  
*Begin :* Madam,  
*End :* I remain, Madam, Your Grace's most obedient servant,  
*Address :* To Her Grace The Duchess of ———.

### MARQUESSSES AND MARCHIONESSSES.

*Begin :* My Lord Marquess, or My Lord,  
*End :* I have the honour to be, my Lord Marquess (or my Lord), Your obedient servant,  
*Address :* To the Most Hon. The Marquess of ———,  
*Begin :* Madam,  
*End :* I have the honour to remain, Madam, Your Ladyship's obedient servant,  
*Address :* To The Most Hon. The Marchioness of ———.

### EARLS AND COUNTESSSES.

*Begin :* My Lord,  
*End :* I have the honour to remain, My Lord, Your Lordship's obedient servant,  
*Address :* To The Right Hon. the Earl of ———,  
*Begin :* Madam,  
*End :* I have the honour to remain, Madam, Your Ladyship's obedient servant,  
*Address :* To The Right Hon. The Countess of ———.

### VISCOUNTS AND VISCOUNTESSES.

*Begin and end as for Earls and Countesses.*  
*Address :* To The Right Hon. The Viscount ———,  
 To The Right Hon. The Viscountess ———.

### BARONS AND BARONESSSES.

*Begin and end as for Earls and Countesses.*  
*Address :* To The Right Hon. Lord ———,  
 To The Right Hon. Lady ———.

## BARONETS AND KNIGHTS.

*Begin :* Sir,  
*End :* I have the honour to remain, Sir, Your obedient servant,  
*Address :* To Sir Francis T——, Bt.  
*Begin :* Madam,  
*End :* I have the honour to remain, Madam, Your Ladyship's obedient servant,  
*Address :* To Lady T——.

## THE CHURCH.

### ARCHBISHOPS.

*Begin :* My Lord Archbishop, or Your Grace,  
*End :* I have the honour to be, my Lord Archbishop, Your Grace's devoted and obedient servant,  
*Address :* To His Grace the Lord Archbishop of ———,  
 Irish Archbishops are addressed in the same manner as English Archbishops with the exception of the Archbishop of Armagh, who is addressed : To The Most Reverend the Archbishop of Armagh, or To The Most Rev. His Grace The Lord Primate of all Ireland.

### BISHOPS.

All Bishops, whether Diocesan or Suffragan, are addressed by the spiritual title "Lord".  
*Begin :* My Lord, or My Lord Bishop.  
*End :* I have the honour to be, Your Lordship's obedient servant,  
*Address :* To The Right Reverend The Lord Bishop of ———.  
 It is usual to accord to Colonial Bishops the courtesy title of Lord Bishop and they are addressed in the same manner as English Bishops Assistant and retired Bishops are not addressed as Lord Bishop.

### DEANS.

*Begin :* Very Reverend Sir,  
*End :* I have the honour to remain, Very Rev. Sir, Your obedient servant,  
*Address :* To The Very Rev. The Dean of ———.

### ARCHDEACONS.

*Begin :* Venerable Sir,  
*End :* I have the honour to remain, Venerable Sir, Your obedient servant,  
*Address :* To The Venerable The Archdeacon of ———.

## THE LAW.

### LORD CHANCELLOR.

*Begin :* My Lord,  
*End :* I have the honour to be, My Lord, Your Lordship's obedient servant,  
*Address :* To The Right Hon. The Lord Chancellor.

### LORDS OF APPEAL IN ORDINARY.

*Begin and end as for Lord Chancellor.*  
*Address :* To The Right Hon. Lord ———.

### LORD CHIEF JUSTICE.

*Begin and end as for Lord Chancellor.*  
*Address :* To The Right Hon. The Lord Chief Justice of England.

### MASTER OF THE ROLLS.

*Begin :* Sir,  
*End :* I have the honour to be, Sir, Your obedient and humble servant,  
*Address :* To The Right Hon. The Master of the Rolls.

### LORDS JUSTICES OF APPEAL.

*Begin :* Sir,  
*End :* I have the honour to be, Sir, Your obedient and humble servant,  
*Address :* To The Right Hon. The Lord Justice ———.

## JUDGES.

*Begin:* Sir,

*End:* I have the honour to be, Sir, Your obedient and humble servant.

*Address:* To The Hon. Mr. —.

(On the bench the Judge is addressed and referred to as "My Lord," "His Lordship.")

## JUDGES OF COUNTY COURT.

*Begin:* Dear Judge —.

*Address:* To His Honour Judge —.

(On the bench addressed and referred to as "Your Honour," "His Honour.")

## JUSTICES OF THE PEACE.

*Address:* To The Right Worshipful —, J.P.

(On the bench addressed as "Your Worship.")

## LORD MAYORS.

*Begin:* My Lord,

*End:* Your Lordship's obedient servant.

*Address:* To The Right Hon. The Lord Mayor

of — (London, York, Belfast, Dublin, Adelaide, Brisbane, Hobart, Melbourne, Sydney, Perth).

To The Right Hon. The Lord Provost

of — (Edinburgh, Glasgow).

*Otherwise:* To The Right Worshipful The Lord Mayor of —.

Wives share the title, except in the case of the Australian cities.

*Address:* To The Right Hon. The Lady Mayoress of —.

## PRIVY COUNCILLORS.

The courtesy title of The Right Honourable is accorded all Privy Councillors (all members of the Cabinet are privy councillors, and the office is conferred for life). In the case of peers below the rank of Marquess, who already have a right to it in virtue of their peerage, the rank of Privy Councillor is indicated by the letters "P.C." after the name. Wives do not share the title.

*Address:* To The Right Hon. —.

To Admiral The Right Hon. Sir —.

To Colonel The Right Hon. —.

To Air Vice-Marshal The Right Hon.

Sir —.

To The Right Rev. The Right Hon.

The Lord Bishop of —.

To The Most Hon. The Marquess of —, P.C.

## BUSINESS LETTERS.

Business letters to persons of rank can either be written in the third person, in which case they are not signed, or in the first person plural.

## 3rd person.

Messrs. — present their compliments to The Right Hon. The Earl of — and have pleasure in. . . .

## 1st person plural.

*Begin:* Your Lordship,

*End:* We have the honour to be

Your Lordship's obedient servants,

## ORDERS OF CHIVALRY

## Garter

K.G.

The Most Noble Order of the Garter (1348).

*Ribbon:* Garter blue, not worn in undress uniform.

*Motto:* Honi soit qui mal y pense (*Evil to him who evil thinks*).

## Thistle

K.T.

The Most Noble and Most Ancient Order of the Thistle (1687).

*Ribbon:* Green, not worn in undress uniform.

*Motto:* Nemo me impune lacessit (*No one provokes me with impunity*).

## Saint Patrick

K.P.

The Most Illustrious Order of St. Patrick (1783).

*Ribbon:* Sky blue, not worn in undress uniform.

*Motto:* Quis separabit? (*Who shall separate?*).

## Bath

G.C.B. (Knight Grand Cross), (Mil. & Civ.).

K.C.B. (Knight Commander), (Mil. & Civ.).

C.B. (Companion), (Mil.).

The Most Honourable Order of the Bath (1399).

*Ribbon:* Crimson. *Motto:* Tria juncta in uno

(*Three joined in one*). (Remodelled 1725 and

1815, and enlarged 13 times since.)

## Order of Merit.

O.M. (Mil. & Civ.)

The Order of Merit (1902). *Ribbon:* Blue and

crimson. Ranks after G.C.B. before K.C.B.

## Star of India

G.C.S.I. (Knight Grand Commander).

K.C.S.I. (Knight Commander).

C.S.I. (Companion).

The Most Exalted Order of the Star of India

(1861). (Since enlarged 8 times.) *Ribbon:*

Light blue, with white edges. *Motto:* Heaven's

Light our Guide.

## Saint Michael and Saint George

G.C.M.G. (Knight Grand Cross).

K.C.M.G. (Knight Commander).

C.M.G. (Companion).

The Most Distinguished Order of St. Michael and

St. George (1818). *Ribbon:* Saxon blue, with

scarlet centre. *Motto:* Auspiciis melioris

ævi (*Token of a better age*).

## Indian Empire

G.C.I.E. (Knight Grand Commander).

K.C.I.E. (Knight Commander).

C.I.E. (Companion).

The Most Eminent Order of the Indian Empire

(1877). (Since enlarged 8 times.) *Ribbon:* Im-

perial purple. *Motto:* Imperatricis auspiciis

(*Under the auspices of the Empress*).

## Victorian Order

G.C.V.O. (Knight or Dame Grand Cross).

K.C.V.O. (Knight Commander).

D.C.V.O. (Dame Commander).

C.V.O. (Commander).

M.V.O. (Member).

The Royal Victorian Order (1896). *Ribbon:* Blue,

with red and white edges. *Motto:* Victoria.

## British Empire

G.B.E. (Knight or Dame Grand Cross).

K.B.E. (Knight Commander).

D.B.E. (Dame Commander).

C.B.E. (Commander).

O.B.E. (Officer).

M.B.E. (Member).

The Most Excellent Order of the British Empire

(1917). *Ribbon:* Rose pink edged with pearl

grey with vertical pearl stripe in centre (Mil.

Div.); without vertical stripe (Civ. Div.).

*Motto:* For God and the Empire.

## Companions of Honour

C.H.

Order of the Companions of Honour (1917).

*Ribbon:* Carmine, with gold edges. Ranks after

G.B.E. and before K.B.E.

## Victoria and Albert

V.A.

The Royal Order of Victoria and Albert (for

Ladies) (1862). (Since enlarged 3 times.)

## Crown of India

C.I.

The Imperial Order of the Crown of India (for

Ladies) (1878). *Ribbon:* Light blue watered

edged white, worn as bow on left shoulder.



## UNITED KINGDOM COINAGE

The Royal Mint is authorised to issue coins of the following denominations and specifications:—

Denomination.	Standard Weight.
<b>Gold:</b>	<b>Grains.</b>
Five Pound Piece . . . . .	616.37239
Two Pound Piece . . . . .	246.54895
Sovereign . . . . .	123.27447
Half Sovereign . . . . .	61.63723
<b>Cupro-Nickel:</b>	
Crown . . . . .	436.36363
Half-Crown . . . . .	218.18181
Florin . . . . .	174.54545
Shilling . . . . .	87.27272
Sixpence . . . . .	43.63636
<b>Silver:</b>	
Maundy Fourpence . . . . .	29.09090
Maundy Threepence . . . . .	21.81818
Maundy Twopence . . . . .	14.54545
Maundy Penny . . . . .	7.27272
<b>Nickel Brass:</b>	
Threepence . . . . .	105.00000
<b>Bronze:</b>	
Penny . . . . .	145.83333
Halfpenny . . . . .	87.50000
Farthing . . . . .	43.75000

**Gold Coinage** in Britain consists of eleven-twelfths of fine metal and one-twelfth of alloy: fineness, 916.66. Two hundred and forty troy ounces of standard gold are coined into 934 sovereigns and one half-sovereign; one troy ounce is, therefore, worth £3 17s. 10½d., and one ounce of pure gold is nominally worth £4 4s. 11½d. The minimum weight at which a sovereign is allowed to remain current unchallenged is 122½ grains; that of half-a-sovereign 61½ grains. Any person to whom it is tendered may break, cut, or deface any gold coin below the least current weight, but light gold coin which has not been illegally dealt with is received by the Bank of England on behalf of the Mint at its full face value.

**Cupro-Nickel.** The first change in the silver standard since the reign of Queen Elizabeth was made in 1920, when the degree of fineness was reduced to 500 parts in a thousand as against 925. 1946 marked the end of the silver coinage. To provide silver bullion for industry and for a fund towards the redemption of our silver debt to America the silver coins are to be withdrawn from circulation and gradually replaced by ones made of cupro-nickel, composed of 75% copper and 25% nickel. Maundy Money will, however, be raised to the original silver standard of 925 parts per 1000.

**Bronze** as employed in minting United Kingdom coins is an alloy of copper 95½ parts, tin 3 parts, and zinc 1½ parts.

**Nickel Brass.** The twelve-sided threepenny piece is composed of copper 79%, zinc 20%, and nickel 1%.

No person is permitted to coin any token to pass for, or as representing, any British piece of money under a penalty of £20.

**New Coinage.** A proclamation approving new designs for coinage was signed by H.M. the Queen in Council on November 25th, 1952. These coins became legal tender on January 1st,

1953, and include coin in gold as well as in silver, cupro-nickel, mixed metal, and bronze.

The principal design is that of the uncrowned head of Elizabeth II, which is the work of Mrs. Mary Gillick, C.B.E. This is used on the coinage of the United Kingdom, Canada, Australia, New Zealand, South Africa, Ceylon, and Southern Rhodesia, though the inscriptions vary in each country. The Queen is shown wearing a laurel wreath tied at the back with a flowing ribbon above two rows of curls at the nape of the neck. From 1st January, 1954, the inscription on the obverses of the cupro-nickel coins will read "ELIZABETH · II · DEI · GRATIA · REGINA" and on the obverses of the gold, silver, nickel-brass and bronze coins "ELIZABETH · II · DEI · GRATIA · REGINA · F · D ·".

The reverse sides of the coins are as follows:—

**Half-crown,** shield of the Royal Arms surmounted by the Crown; prepared by Mr. E. G. Fuller and modelled by Mr. Cecil Thomas, F.R.B.S.

**Florin,** circular pattern of thistles, shamrock, and leeks about a double rose. This is the first time a Welsh emblem has decorated the United Kingdom coinage as an integral part of the design; prepared by Mr. E. G. Fuller and modelled by Mr. Cecil Thomas, F.R.B.S.

**Shilling,** shield of the English quartering of the Royal Arms surmounted by the Crown; design prepared and modelled by Mr. W. M. Gardner. The Scottish shilling shows a shield of the Scottish quartering of the Royal Arms surmounted by the Crown; also designed and modelled by Mr. W. M. Gardner.

**Sixpence,** garland of interlaced rose, thistle, shamrock, and leek, designed by Mr. E. G. Fuller and modelled by Mr. Cecil Thomas, F.R.B.S.

**Threepenny piece,** chained portcullis surmounted by a coronet, designed and modelled by Mr. W. M. Gardner.

There is no change on the reverse of the bronze coinage (coppers), which will continue to bear, on the penny, the figure of Britannia, familiar since Charles II; on the half-penny, a sailing-ship inspired by the *Golden Hind*, designed by Mr. T. H. Paget, O.B.E., and on the farthing the wren of Mr. Wilson Parker.

The coins of Colonial territories, in accordance with tradition, bear the crowned head of the Sovereign, designed for the present Reign by Mr. Cecil Thomas, F.R.B.S.

The five-shilling pieces issued to commemorate the Coronation bore on the obverses an equestrian effigy of Her Majesty by Mr. Gilbert Ledward, R.A., and on the reverses a design by Mr. E. G. Fuller modelled by Mr. Cecil Thomas, F.R.B.S. of the four quarterings of the Royal Arms each contained in a shield and arranged in saltire with, in the intervening spaces, a rose, a thistle, a sprig of shamrock and a leek. Upon the edges of the coins was the inscription, "FAITH AND TRUTH I WILL BEAR UNTO YOU".

The designs specified for crown pieces issued after the 1st January, 1954 are Mrs. Gillick's uncrowned effigy for the obverses and the same design as shown on the reverses of the Coronation crown pieces for the reverses.

## LEGAL TENDER

**Bank of England Notes** are issued for sums of 10s. £1, and £5. 10s. and £1 bank-notes are legal tender in Great Britain and Northern Ireland, and £5 bank-notes (if dated September 2nd, 1944, or after) in England and Wales only. £5 notes dated prior to September 2nd, 1944, and all notes of higher denominations have ceased to be legal tender; they are, however, still exchangeable at the Bank.

**Gold Coins** if not below the minimum current weight, are legal tender; but, unless otherwise authorised by or on behalf of the Treasury, persons resident in the United Kingdom holding

sovereigns or other gold coin must, under the Exchange Control Act, 1947, offer that coin for sale to an Authorised Dealer.

**Silver and/or Cupro-Nickel Coins** are legal tender for sums not exceeding £2, nickel-brass threepenny pieces for sums not exceeding 2s., and bronze coins, including farthings, for sums not exceeding 1s. No one can demand "change".

**Treasury Notes** of the value of 10s. and £1, which were first issued during the First World War, ceased to be issued in November 1928; though no longer legal tender, they remain exchangeable at the Bank of England.

## PRESIDENTS OF THE UNITED STATES

The terms are for four years, and only President F. D. Roosevelt has served more than two terms.

George Washington	1789	Rutherford Birchard Hayes	1877
George Washington	1793	Gen. J. Abram Garfield (died Sept. 19, 1881)	1881
John Adams	1797	Gen. Chester A. Arthur (elected from Vice-President)	1881
Thomas Jefferson	1801	Grover Cleveland	1885
Thomas Jefferson	1805	General Benjamin Harrison	1889
James Madison	1809	Grover Cleveland	1893
James Madison	1813	W. McKinley	1897
James Monroe	1817	W. McKinley (assassinated same year)	1901
James Monroe	1821	Theodore Roosevelt (elected from Vice-Pres.)	1901
John Quincy Adams	1825	Theodore Roosevelt	1905
Andrew Jackson	1829	William Taft	1909
Andrew Jackson	1833	Dr. Woodrow Wilson	1913
Martin Van Buren	1837	Dr. Woodrow Wilson	1917
General Wm. Henry Harrison (died April 4)	1841	Warren G. Harding (died Aug. 2, 1923)	1921
John Tyler (elected from Vice-President)	1841	Calvin Coolidge (elected from Vice-Pres.)	1923
James Knox Polk	1845	Herbert Hoover	1929
General Zachary Taylor (died July 9, 1850)	1849	Franklin Delano Roosevelt	1933
Millard Fillmore (elected from Vice-Pres.)	1850	Franklin Delano Roosevelt	1937
General Franklin Pierce	1853	Franklin Delano Roosevelt	1941
James Buchanan	1857	Franklin Delano Roosevelt (died April 12, 1945)	1945
Abraham Lincoln	1861	Harry S. Truman (elected from Vice-President)	1945
Abraham Lincoln (assassinated April 14 same year)	1865	Harry S. Truman	1949
Andrew Johnson (elected from Vice-Pres.)	1865	Dwight David Eisenhower	1953
General Grant	1869		
General Grant	1873		

## LONDON POSTAL DISTRICTS

Abbey Wood	S.E.2	Hampstead	N.W.3	Shepherd's Bush	W.12
Acton	W.3	Hanwell	W.7	South Eastern	
Anerley	S.E.20	Hendon	N.W.4	(Head) District	S.E.1
Balham	S.W.12	Herne Hill	S.E.24	Southgate	N.14
Barnes	S.W.13	Highbury	N.5	South Kensington	S.W.7
Battersea	S.W.11	Highgate	N.6	South Lambeth	S.W.8
Bethnal Green	E.2	Holloway	N.7	South Norwood	S.E.25
Blackheath	S.E.3	Homerton	E.9	South Tottenham	N.15
Bow	E.3	Hornsey	N.8	South Western	
Brixton	S.W.2	Kennington	S.E.11	(Head) District	S.W.1
Brockley	S.E.4	Kensington	W.8	Stockwell	S.W.9
Camberwell	S.E.5	Kentish Town	N.W.5	Stoke Newington	N.16
Catford	S.E.6	Kilburn	N.W.6	Stratford	E.15
Charlton	S.E.7	Lee	S.E.12	Streatham	S.W.16
Chelsea	S.W.3	Lewisham	S.E.13	Sydenham	S.E.26
Chingford	E.4	Leyton	E.10	The Hyde	N.W.9
Chiswick	W.4	Leytonstone	E.11	Tooting	S.W.17
Clapham	S.W.4	Lower Edmonton	N.9	Tottenham	N.17
Clapton	E.5	Maida Hill	W.9	Upper Edmonton	N.18
Cricklewood	N.W.2	Manor Park	E.12	Upper Holloway	N.19
Deptford	S.E.8	Mill Hill	N.W.7	Victoria Docks &	
Dulwich	S.E.21	Mortlake	S.W.14	North Woolwich	E.16
Ealing	W.5	Muswell Hill	N.10	Walthamstow	E.17
Earl's Court	S.W.5	New Cross	S.E.14	Walworth	S.E.17
East Dulwich	S.E.22	New Southgate	N. 11	Wandsworth	S.W.18
Eastern Central		Northern (Head)		West Brompton	S.W.10
(Head) District	E.C.1-4	District	N.1	West Ealing	W.13
Eastern (Head)		North Finchley	N.12	Western Central	
District	E.1	North Kensington	W. 10	(Head) District	W.C.1-2
East Finchley	N.2	North Western		Western (Head)	
East Ham	E.6	(Head) District	N.W.1	District	W.1
Eltham	S.E.9	Norwood	S.E.19	West Kensington	W.14
Finchley, Church		Notting Hill	W.11	West Norwood	S.E.27
End	N.3	Paddington		West Wimbledon	S.W.20
Finbury Park	N.4	(Head) District	W.2	Whetstone	N.20
Forest Gate	E.7	Palmer's Green	N.13	Willesden	N.W.10
Forest Hill	S.E.23	Peckham	S.E.15	Wimbledon	S.W.19
Fulham	S.W.6	Plaistow	E.13	Winchmore Hill	N.21
Golders Green	N.W.11	Poplar	E.14	Woodford & South	
Greenwich	S.E.10	Putney	S.W.15	Woodford	E.18
Hackney	E.3	Rotherhithe	S.E.16	Wood Green	N.22
Hammersmith	W.6	St. John's Wood	N.W.8	Woolwich	S.E.18



# WEIGHTS AND MEASURES.

## I. WEIGHTS AND MEASURES LEGALLY PERMITTED UNDER THE WEIGHTS AND MEASURES ACTS.

### I. IMPERIAL WEIGHTS AND MEASURES.

#### AVOIRDUPOIS.

1 dram (dr.) . . . . .	27·34375 grains (gr.)
16 drams . . . . .	1 ounce (oz.) = 437·5 gr.
16 ounces . . . . .	1 pound (lb.) = 7000 gr.
14 pounds . . . . .	1 stone
28 pounds . . . . .	1 quarter
4 quarters . . . . .	1 hundredweight (cwt.) = 112 lb.
20 hundredweight . . . . .	1 ton = (2240 lb.)

#### TROY WEIGHT.

1 pennyweight (dwt.) . . . . .	24 grains
480 grains . . . . .	1 ounce

The only unit of troy weight which is now legal for use in trade in this country is the ounce Troy, and weighings of precious metals are made in multiples and decimals of this unit.

The term *carat* is not a unit of weight for precious metals, but is used to denote the quality of gold plate, etc., and is a figure indicating the number of 24ths of pure gold in the alloy, e.g., a 9 carat gold ring consists of nine parts of pure gold and fifteen parts of base metals.

#### CAPACITY MEASURE.

4 gills . . . . .	1 pint
2 pints . . . . .	1 quart
4 quarts . . . . .	1 gallon
2 gallons . . . . .	1 peck
4 pecks . . . . .	1 bushel
8 bushels . . . . .	1 quarter
36 bushels . . . . .	1 chaldron

There is no legal equivalent of the gallon in terms of cubic inches, but the most up-to-date scientific determination gives the figure 1 gallon = 277·420 cubic inches.

#### APOTHECARIES' WEIGHT.

20 grains . . . . .	1 scruple
3 scruples . . . . .	1 drachm
8 drachms . . . . .	1 ounce

While the apothecaries' ounce is the same as the troy ounce, there is no such thing as an apothecaries' or troy pound of 12 ounces. The troy pound has been obsolete for many years.

The Avoirdupois system is normally used for retailing chemicals in quantities of a  $\frac{1}{2}$  ounce and

over, whilst the metric system is used for the newer drugs. The metric system (with apothecaries' equivalents) is also used for formulae and prescriptions in the *British Pharmacopoeia*.

#### APOTHECARIES' FLUID MEASURE.

60 minims (min.) . . . . .	1 fluid drachm
8 fluid drachms . . . . .	1 fluid ounce
20 fluid ounces . . . . .	1 pint

(See under Customary Measures: "drop," "tablespoonful," "wineglassful," and "teacupful" equivalents.)

There are 437½ grains weight of distilled water at 62° F. in 1 fluid ounce.

#### LINEAR MEASURE.

1 nail . . . . .	$\frac{1}{4}$ yard
1 link . . . . .	7·92 inches
12 inches . . . . .	1 foot
3 feet . . . . .	1 yard
5½ yards . . . . .	1 rod, pole, or perch
4 rods, etc. . . . .	1 chain or 100 links (22 yd.)
220 yards . . . . .	1 furlong
8 furlongs . . . . .	1 mile = 1760 yards

#### SQUARE, SURFACE, OR LAND MEASURE.

144 sq. inches . . . . .	1 sq. foot
9 sq. feet . . . . .	1 sq. yard = 1296 sq. inches
30½ sq. yards . . . . .	1 sq. rod, pole, or perch
40 sq. rods . . . . .	1 rood
4 roods . . . . .	1 acre = 4840 sq. yards
640 acres . . . . .	1 sq. mile

(To convert decimal parts of an acre into roods and perches, multiply by 4 to give roods and decimals of a rood, and multiply this decimal by 40, to give perches and decimals of a perch.)

#### CUBIC OR SOLID MEASURE.

1728 cu. inches . . . . .	1 cu. foot
27 cu. feet . . . . .	1 cu. yard

The relationship between the yard and the bushel is not legally defined. A relationship (based on that of the gallon in "Capacity Measure" above) would be 1 cu. yard = 21·022 bushels.

## 2. METRIC WEIGHTS AND MEASURES.

#### LINEAR MEASURE.

10 millimetres (mm.) . . . . .	1 centimetre (cm.)
10 centimetres . . . . .	1 decimetre (dm.)
10 decimetres . . . . .	1 METRE (m.)
10 metres . . . . .	1 dekametre (dam.)
10 dekametres . . . . .	1 hectometre (hm.)
10 hectometres . . . . .	1 kilometre (km.)

#### SURFACE OR SQUARE MEASURE.

100 centiares . . . . .	1 are = 100 sq. metres
100 ares . . . . .	1 hectare = 10,000 sq. metres

#### CAPACITY.

10 millilitres (ml.) . . . . .	1 centilitre (cl.) = 10 c.c.
10 centilitres . . . . .	1 decilitre (dl.) = 100 c.c.

#### CAPACITY (cont.).

10 decilitres . . . . .	1 LITRE (lit.) = 1000 c.c.
10 litres . . . . .	1 dekalitre (dal.)
10 dekalitres . . . . .	1 hectolitre (hl.)
10 hectolitres . . . . .	1 kilolitre (kl.) = 1 cu. metre

#### WEIGHT.

10 milligrams (mg.) . . . . .	1 centigram (cg.)
10 centigrams . . . . .	1 decigram (dg.)
10 decigrams . . . . .	1 GRAM (gm.)
10 grams . . . . .	1 dekagram (dag.)
10 dekagrams . . . . .	1 hectogram (hg.)
10 hectograms . . . . .	1 kilogram (kg.)
The metric carat . . . . .	0·2 gram

## 3. IMPERIAL AND METRIC EQUIVALENTS.

#### LINEAR MEASURE.

##### IMPERIAL TO METRIC.

1 inch . . . . .	2·54 centimetres
1 foot . . . . .	30·48 centimetres
1 yard . . . . .	0·914399 metre
1 pole (5½ yards) . . . . .	5·0292 metres
1 chain (22 yards) . . . . .	20·1168 metres
1 furlong (220 yards) . . . . .	201·168 metres
1 mile (8 furlongs) . . . . .	1·6093 kilometres

##### METRIC TO IMPERIAL.

1 millimetre . . . . .	0·03937 inch
1 centimetre . . . . .	0·3937 inch
1 decimetre . . . . .	3·937 inches
1 metre . . . . .	39·370113 inches
1 metre . . . . .	3·280843 feet
1 metre . . . . .	1·0936143 yards
1 dekametre . . . . .	10·936 yards
1 hectometre . . . . .	109·36 yards
1 kilometre . . . . .	0·62137 mile

## SQUARE MEASURE.

## IMPERIAL TO METRIC.

1 sq. inch	6.4516 sq. cm.
1 sq. foot	9.2903 sq. decimetres
1 sq. yard	0.836126 sq. metre
1 sq. rod (30½ sq. yd.)	25.293 sq. metres
1 rood (40 sq. rods)	10.117 ares
1 acre (4,840 sq. yd.)	0.40468 hectare
1 sq. mile (640 acres)	259.00 hectares

## METRIC TO IMPERIAL.

1 sq. cm.	0.15500 sq. inch
1 sq. metre	10.7639 sq. feet
1 sq. metre	1.1960 sq. yards
1 are (100 sq. metres)	119.60 sq. yards
1 hectare (100 ares or 10,000 sq. metres)	2.4711 acres

## CUBIC MEASURE.

## IMPERIAL TO METRIC.

1 cu. inch	16.387 cu. cm.
1 cu. foot (1728 cu. in.)	0.028317 cu. metre
1 cu. yard (27 cu. ft.)	0.764553 cu. metre

## METRIC TO IMPERIAL.

1 cu. centimetre	0.0610 cu. inch
1 cu. decimetre (1000 cu. cm.)	61.024 cu. inches
1 cu. metre	35.3148 cu. feet
1 cu. metre	1.307954 cu. yards

## CAPACITY MEASURE.

## IMPERIAL TO METRIC.

1 gill	1.42 decilitres
1 pint	0.568 litre
1 quart	1.136 litres
1 gallon	4.5459631 litres
1 peck (2 gallons)	9.092 litres
1 bushel (8 gallons)	3.637 dekalitres
1 quarter (8 bushels)	2.909 hectolitres

## METRIC TO IMPERIAL.

1 centilitre	0.070 gill
1 decilitre	0.176 pint
1 litre	1.75980 pints
1 dekalitre	2.200 gallons
1 hectolitre	2.75 bushels

Note: One litre = 1000.027 c.c.; one millilitre = 1 c.c.

## APOTHECARIES' MEASURE.

## IMPERIAL TO METRIC.

1 minim	0.059 millilitre
1 fluid scruple	1.184 millilitres
1 fluid drachm (60 minims)	3.552 millilitres
1 fluid ounce (8 drachms)	2.84123 centilitres

## IMPERIAL TO METRIC.

1 pint	0.568 litre
1 gallon (8 pints or 160 fluid ounces)	4.5459631 litres

## AVOIRDUPOIS WEIGHT.

## IMPERIAL TO METRIC.

1 grain	0.0648 gram
1 dram	1.772 grams
1 ounce (16 drams)	28.350 grams
1 pound (16 ounces or 7000 grains)	0.45359243 kilogram
1 stone (14 lb.)	6.350 kilograms
1 quarter (28 lb.)	12.70 kilograms
1 cwt. (112 lb.)	50.80 kilograms = 0.5080 quintal
1 ton (20 cwt.)	1.0160 tonnes or 1016 kilograms

## METRIC TO IMPERIAL.

1 milligram	0.015 grain
1 centigram	0.154 grain
1 decigram	1.543 grains
1 gram	15.432 grains
1 dekagram	5.644 drams
1 hectogram	3.527 ounces
1 kilogram (1000 gm.)	2.2046223 lb. or 15.432.3564 grains
1 myriagram (10 kg.)	22.046 lb.
1 quintal (100 kg.)	1.968 cwt.
1 tonne (1000 kg.)	0.9842 ton

## TROY WEIGHT.

## IMPERIAL TO METRIC.

1 grain	0.0648 gram
1 pennyweight (24 grains)	1.5552 grams
1 troy ounce (20 pennyweights)	31.1035 grams

## METRIC TO IMPERIAL.

1 gram	0.03215 ounce troy
1 gram	15.432 grains

## APOTHECARIES' WEIGHT.

## IMPERIAL TO METRIC.

1 grain	0.0648 gram
1 scruple (20 grains)	1.296 grams
1 drachm (3 scruples)	3.888 grams
1 ounce (8 drachms)	31.1035 grams

## METRIC TO IMPERIAL.

1 gram	0.2572 drachm
1 gram	0.7716 scruple
1 gram	15.432 grains

## II. ELECTRICAL UNITS.

Until 31st December, 1947, the electrical units in general use were the so-called International Units, having been defined by the International Conference on Electrical Units held in London in 1908. These units were based upon specifications for a column of mercury and a silver voltameter which defined the International Ohm and International Ampere respectively, as units which for practical purposes could be accepted as equivalent to the fundamental theoretical units derived by multiplying the corresponding centimetre, gram, second (C.G.S.) electromagnetism unit by an integral power of ten. The International Units were not exactly equal to the fundamental units, and as the accuracy of all measurements increased, the discrepancy became increasingly troublesome.

The International Committee of Weights and Measures, which had succeeded the 1908 Conference, met in Paris in 1946 and decided to abolish

the International Units, and as from 1st January, 1948, to use throughout the world the fundamental units themselves, which are known as Absolute Units. The decision meant that the units in common use at that time changed by various amounts up to 5 parts in 10,000.

The International Units and corresponding Absolute Unit values are as follows:—

**OHM.** The International Ohm is the resistance offered to an unvarying current by a column of mercury of height 106.3 cm., 1 sq. mm. cross-section and weight 14.4521 grams at the temperature of melting ice (0° C.).

1 International Ohm = 1.00049 Absolute Ohm.

1 Absolute Ohm = 10<sup>9</sup> C.G.S. electromagnetic units.

1,000,000 Ohms = 1 Megohm.



**AMPERE.** The International Ampere is that steady current which in flowing through a specified solution of silver nitrate, deposits silver on the cathode at the rate of 0.001118 gram per second.

1 International Ampere = 0.99985 Absolute Ampere.

1 Absolute Ampere = 0.1 C.G.S. electromagnetic unit.

**VOLT.** The International Volt is that steady electromotive force which applied to the ends of a conductor, whose resistance is 1 International Ohm, causes a current of 1 International Ampere to flow.

1 International Volt = 1.00034 Absolute Volt.

1 Absolute Volt =  $10^9$  C.G.S. electromagnetic units.

1000 volts = 1 Kilovolt.

**WATT.** Energy is supplied to a circuit at the rate of 1 International Watt if the current in it is 1 International Ampere and the pressure across it is 1 International Volt.

1 International Watt = 1.00019 Absolute Watt.

1000 watts = 1 Kilowatt.

1 Kilowatt-hour = 1000 watts supplied for a period of 1 hour = Board of Trade Unit.

**COULOMB.** The unit of quantity, and is the quantity passing in 1 second when the mean current is 1 ampere.

1 Coulomb = 0.1 electromagnetic unit.

**HENRY.** The unit of inductance, defined as the inductance of a circuit in which the induced electromotive force is 1 volt when the inducing current changes at the rate of 1 ampere per second.

1 International Henry = 1.00049 Absolute Henry.

1 Absolute Henry =  $10^9$  C.G.S. electromagnetic units.

**FARAD.** The unit of capacity, and is that capacity which is charged to a difference of pressure of 1 volt by 1 coulomb.

1,000,000 microfarads = 1 farad.

1 International Farad = 0.99951 Absolute Farad.

1 Absolute Farad =  $10^9$  C.G.S. electromagnetic unit.

## BRITISH STANDARD SIZES—PAPERS AND BOARDS

(as issued by The British Standards Institution, 1951)

### WRITING AND PRINTING

#### PAPERS

	Inches
Foolscap	$13\frac{1}{2} \times 17$
Foolscap, Double	$17 \times 27$
Foolscap, Oblong Double	$13\frac{1}{2} \times 34$
Foolscap, Quad	$27 \times 34$
Pinched Post	$14\frac{1}{2} \times 18\frac{1}{2}$
Post	$15\frac{1}{2} \times 19$
Post, Double	$19 \times 30\frac{1}{2}$
Large Post	$16\frac{1}{2} \times 21$
Large Post, Double	$21 \times 33$
Demy	$17\frac{1}{2} \times 22\frac{1}{2}$
Demy, Double	$22\frac{1}{2} \times 35$
Demy, Quad	$35 \times 45$
Medium	$18 \times 23$
Medium, Double	$23 \times 36$
Royal	$20 \times 25$
Royal, Double	$25 \times 40$
Crown, Double	$20 \times 30$
Crown, Quad	$30 \times 40$
Imperial	$22 \times 30$
Imperial, Double	$30 \times 44$

### PRINTERS' CARDS AND BLANKS

	Inches
Thirds	$1\frac{1}{2} \times 3$
Extra thirds	$1\frac{1}{2} \times 3$
Town	$2 \times 3$
Duchess	$3 \times 5\frac{1}{2}$
Rex	$3\frac{1}{2} \times 5$
Reduced small	$2\frac{1}{2} \times 3\frac{1}{2}$
Diamond	$3\frac{1}{2} \times 5\frac{1}{2}$
Baronet	$3\frac{1}{2} \times 5\frac{1}{2}$
Small	$2\frac{1}{2} \times 3\frac{1}{2}$
Imperial card	$3\frac{1}{2} \times 5\frac{1}{2}$
Extra small	$2\frac{1}{2} \times 4\frac{1}{2}$
Large	$3 \times 4\frac{1}{2}$
Court	$3\frac{1}{2} \times 4\frac{1}{2}$
Double small	$3\frac{1}{2} \times 4\frac{1}{2}$
Large Court	$4 \times 5$

	Inches
Duke (or official)	$3\frac{1}{2} \times 5\frac{1}{2}$
Extra large	$4\frac{1}{2} \times 5\frac{1}{2}$
Intimation	$3\frac{1}{2} \times 6$
Double large	$4\frac{1}{2} \times 6$
Cabinet	$4\frac{1}{2} \times 6\frac{1}{2}$
Post 8vo	$4\frac{1}{2} \times 7$
Double Official	$5\frac{1}{2} \times 7$
Quad small	$4\frac{1}{2} \times 7\frac{1}{2}$
Large post 8vo	$5 \times 8$
Quad large	$6 \times 9$
Royal 8vo	$6\frac{1}{2} \times 9\frac{1}{2}$
Royal 4to	$9\frac{1}{2} \times 12\frac{1}{2}$

### BOARDS

#### INDEX BOARDS

Index Royal	$20\frac{1}{2} \times 25\frac{1}{2}$
Index Royal and a half	$25\frac{1}{2} \times 30\frac{1}{2}$

#### PULP BOARDS

Pulp Royal	$20\frac{1}{2} \times 25$
Postal	$22\frac{1}{2} \times 28\frac{1}{2}$
Imperial	$22 \times 30$

### PASTE, DUPLEX, TRIPLEX AND IVORY BOARDS

Paste Royal	$20\frac{1}{2} \times 25$
Postal	$22\frac{1}{2} \times 28\frac{1}{2}$
Paste Imperial	$22\frac{1}{2} \times 30$

### COVER PAPERS

Cover Medium	$18\frac{1}{2} \times 23\frac{1}{2}$
Cover Royal	$20\frac{1}{2} \times 25\frac{1}{2}$
Cover Double Crown	$20\frac{1}{2} \times 30\frac{1}{2}$

### ENGLISH AND METRIC CONVERSION FORMULAE

1 ounce	= 28.350 grams
1 inch	= 0.025400 metres
1 lb per sq. inch	= 703.082 gms. per sq. metre.






























































































































The measure for quantity is the ream of 500 sheets.

## STANDARD SIZES OF BRITISH BOOKS

Size	Abbreviation	Inches	Size	Abbreviation	Inches
Foolscap octavo	F8	$6\frac{1}{2} \times 4\frac{1}{2}$	Demy quarto	D4	$11\frac{1}{2} \times 8\frac{1}{2}$
Crown octavo	C8	$7\frac{1}{2} \times 5$	Medium quarto	M4	$12 \times 9\frac{1}{2}$
Large crown octavo	LC8*	$8 \times 5\frac{1}{2}$	Royal quarto	R4	$12\frac{1}{2} \times 10$
Demy octavo	D8	$8\frac{1}{2} \times 5\frac{1}{2}$	Imperial quarto	Imp4	$15 \times 11$
Medium octavo	M8	$9\frac{1}{2} \times 6$	Foolscap folio	F fol	$13\frac{1}{2} \times 8\frac{1}{2}$
Royal octavo	R8	$10 \times 6\frac{1}{2}$	Crown folio	C fol	$15 \times 10$
Imperial octavo	Imp8	$11 \times 7\frac{1}{2}$	Royal folio	R fol	$20 \times 12\frac{1}{2}$
Foolscap quarto	F4	$8\frac{1}{2} \times 6\frac{1}{2}$	Imperial folio	Imp fol	$22 \times 15\frac{1}{2}$
Crown quarto	C4	$10 \times 7\frac{1}{2}$			

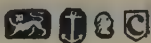
\* l = large, s = small may precede some abbreviations.

## THE LONDON SILVER MARKS

					
 1598	 1618	 1638	 1658	 1678	 1697
 9	 19	 39	 59	 79	 97
 1600	 20	 40	 Chas. II. 60	 80	 98
 1	 21	 41	 61	 81	 99
 2	 22	 42	 62	 82	 1700
 Jas. I. 3	 23	 43	 63	 83	 1
 4	 24	 44	 64	 84	 Anne. 2
 5	 Chas. I. 25	 45	 65	 Jas. II. 85	 3
 6	 26	 46	 66	 86	 4
 7	 27	 47	 67	 87	 5
 8	 28	 48	 68	 88	 6
 9	 29	 Cmwth. 49	 69	 W. & M. 89	 7
 10	 30	 50	 70	 90	 8
 11	 31	 51	 71	 91	 9
 12	 32	 52	 72	 92	 10
 13	 33	 53	 73	 93	 11
 14	 34	 54	 74	 94	 12
 15	 35	 55	 75	 Wm III. 95	 13
 16	 36	 56	 76	 96	 Geo. I. 14
 17	 37	 57	 77		 15

## PROVINCIAL SILVER MARKS

BIRMINGHAM . . 1800



1900



CHESTER . . 1701



1800



EXETER . . 1701



1800



















See also Hall-mark, p. 608.





## SILVER MARKS

																	
																	
A 1836	a 1856	A 1876	a 1896	a 1916	A Ed. VIII. 1936												
B Vic. 37	b 57	B 77	b 97	b 17	B Geo. VI. 37												
C 38	c 58	C 78	c 98	c 18	C 38												
D 39	d 59	D 79	d 99	d 19	D 39												
E 40	e 60	E 80	e 1900	e 20	E 40												
F 41	f 61	F 81	f Ed. VII. 1	f 21	F 41												
G 42	g 62	G 82	g 2	g 22	G 42												
H 43	h 63	H 83	h 3	h 23	H 43												
I 44	i 64	I 84	i 4	i 24	I 44												
K 45	k 65	K 85	k 5	k 25	K 45												
L 46	l 66	L 86	l 6	l 26	L 46												
M 47	m 67	M 87	m 7	m 27	M 47												
N 48	n 68	N 88	n 8	n 28	N 48												
O 49	o 69	O 89	o 9	o 29	O 49												
P 50	p 70	P 90	p Geo. V. 10	p 30	P 50												
Q 51	q 71	Q 91	q 11	q 31	Q 51												
R 52	r 72	R 92	r 12	r 32	R Eliz. II. 52												
S 53	s 73	S 93	s 13	s 33	S 53												
T 54	t 74	T 94	t 14	t 34	T 54												
U 55	u 75	U 95	u 15	u 35	U 55												

## SCOTTISH AND IRISH SILVER MARKS

EDINBURGH . . 1700			1800				
GLASGOW . . 1700			1800				
DUBLIN . . 1700			1800				



# MARKS ON ENGLISH PORCELAIN.

<p><b>Chelsea</b>, about 1745-1784</p> <p>incised 1745-50</p> <p>“crown &amp; trident,” blue 1745-50.</p> <p>applied relief 1749-52</p> <p>red anchor 1752-56</p> <p>blue anchor 1750-56</p> <p>gold anchor 1758-69</p>	<p><b>Derby</b>, about 1745-</p> <p>incised 1750</p> <p>in red or gold</p> <p>in gold 1770-84</p> <p>in blue about 1775</p> <p>in blue or purple about 1780-84</p> <p>on figures 1770-1800</p>	<p>in red S. X. H 1850-70</p> <p>Royal Crown-Derby 1876-present</p> <p>Longton Hall about 1751-60</p> <p>all in blue</p>	<p>impressed 1807-1813 B.F.B.</p> <p>impressed 1813-1840 F.B.B.</p> <p>Chamberlains Worcester red or gold 1810-20</p> <p>WORCESTER ROYAL PORCELAIN WORKS</p>
<p><b>Bow</b>, about 1750-75</p> <p>incised before 1750</p> <p>1750-70 in blue</p> <p>red blue &amp; red</p> <p>blue blue &amp; red</p> <p>blue red</p> <p>all or late wares</p> <p>blue</p>	<p>in blue, crimson or purple 1784-1810</p> <p>about 1795</p> <p>Bloor period all in red 1811-1848</p>	<p><b>Lowestoft</b> 1757-1802 No recognised factory mark</p> <p><b>Worcester</b> 1751-present</p> <p>blue red printed in blue</p> <p>blue 1755-90</p> <p>blue 1760-1775</p> <p>red or blue 1783-1792</p> <p>Flight &amp; Barr in red 1792-1807</p>	<p>impressed printed 1862-</p> <p><b>Caughley</b>, about 1750-1814</p> <p>Salopian blue</p> <p>blue or gold</p> <p><b>Plymouth</b> 1768-70</p> <p>in blue, red or gold</p> <p><b>Bristol</b> 1770-81</p> <p>in blue</p> <p>Patent Office Registration mark printed or impressed 1842-1883</p>


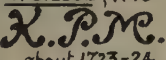













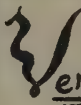









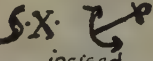






















The earliest fully-developed factory-mark is that of late-16th-century Italian porcelain made at Florence, but it was not until 1724, when the Meissen factory adopted the crossed swords from the arms of Saxony, that the practice was generally taken up by most pottery factories worthy of note.

In 1766 French manufacturers were compelled by law to mark their products with a mark previously registered with the police, but elsewhere marks similar to those of the reputable factories

were adopted. Many factories used marks designed to look like the crossed swords of Meissen, whilst the English factories of Bow, Lowestoft, Derby, and Worcester made no attempt to disguise their occasional use of the device.

Many initials and numerals often found on porcelain are no aid to the identification of its place of manufacture and are merely the mark of a workman for factory or record purposes, pattern or mould numbers. The safest mark to accept as genuine is that which has been incised or

# MARKS ON CONTINENTAL PORCELAIN.

FRANCE	GERMANY	Frankenthal, 1755-	ITALY
<p>Saint-Cloud, about 1678-1766   in blue late 17th C - about 1722                      S.C. in blue about 1722-66                      T</p>	<p>Meissen, 1710-   about 1723-24   </p>	<p>1799  <b>PH PHF</b>                      impressed, 1755-56                         in blue, about 1756</p>	<p>                      Medici porcelain. Florence                        1575-87 -F-</p>
<p>Chantilly, 1725 to about 1800   in red 1725- about 1760   in blue from 1760</p>	<p>1723-30   1724-   1763-74   1774-1814</p>	<p>                      in blue, 1756-59                      Nymphenburg, 1753-   impressed, 1753-   in blue, 1765-</p>	<p>Venice, 1720-27   Ven: a incised red or blue   red, green or blue                      Ven: a 1758-63    incised red</p>
<p>Menecy, 1734-73   in red about 1735                      D.V. incised, about 1740-70</p>	<p>Vienna, 1719-1864                         impressed, 1744-49   in blue, 1749-1827   1850-1864</p>	<p>Ludwigsburg, 1756-1824   in blue, 1759-1793   in blue, late 18th - early 19th century.</p>	<p>                       1764-1812 in red</p>
<p>Sceaux, about 1748-94   incised, about 1762-72.</p>	<p>Höchst, 1746-1796   in red, about 1750-1762   in blue, 1762-96   in blue 1765-74</p>	<p>Ansbach, about 1758-1860   in blue, about 1758-1762   blue, 1762-1785.</p>	<p>La Nove, 1762-1825                         in red, blue or gold 1781-                      Nove  G.B. NOVE                      in gold</p>
<p>Vincennes, 1738-1753                         in blue enamel</p>	<p>Fürstenberg, 1747-   in blue 1755-75   in blue late 18th C.</p>	<p>Berlin   in blue, 1752-1757   in blue, 1761-1763   about 1763-1765</p>	<p>Doccia, 1735-                          red, blue imp or gold red</p>
<p>Sèvres, 1753-   in blue enamel, 1753   in blue 1800-02</p>			<p>Capodimonte, 1743-1759                          impressed gold blue</p>

Drawn by J. P. Cushion, Victoria and Albert Museum.






























stamped in the paste before firing and subsequently glazed.

The most widely used method of marking wares during the 18th century was by painting or printing in underglaze-blue which is generally accepted as authentic, but all painted, printed, or stencilled marks applied over the glaze could be added to a piece with the intention of deceiving. Any refiring of old wares is generally revealed by black specks in the glaze.

German porcelain of the eighteenth century particularly lends itself to forgery due to the hard-paste material then used still being available, and reproductions were made throughout the 19th century, but all tend to have an over-clean finish not in keeping with the original. Chelsea wares were also widely copied but owing to the soft-paste used for their manufacture are far easier to detect when produced in the harder material. See also Porcelain, p. 664.



## HOW TO CORRECT PRINTERS' PROOFS

Marginal mark	Meaning	Corresponding mark in text
	Delete (take out)	Cross through
	Delete and close-up	 Above and below letters to be taken out
<i>stet</i>	Leave as printed (when words have been crossed out by mistake)	 Under letters or words to remain
<i>caps</i>	Change to capital letters	 Under letters or words to be altered
<i>s. c.</i>	Change to small capitals	 Under letters or words to be altered
<i>caps &amp; s. c.</i>	Use capital letters for initial letters and small capitals for rest of words	 Under initial letters and  under the rest of the words
<i>l. c.</i>	Change from capitals to lower case	Encircle letters to be altered
<i>bold</i>	Change to bold type	 Under letters or words to be altered
<i>ital.</i>	Change to italics	 Under letters or words to be altered
<i>rom.</i>	Change to roman type	Encircle words to be altered
<i>w. f.</i>	(Wrong fount.) Replace by letter of correct fount	Encircle letter to be altered
	Invert type	Encircle letter to be altered
<i>x</i>	Replace by similar but undamaged character	Encircle letter to be altered
<i>7</i>	Insert (or substitute) superior figure or sign	 (Or encircle letters or signs to be altered)
<i>7</i>	Insert (or substitute) inferior figure or sign	 (Or encircle letters or signs to be altered)
	Close-up—delete space between letters	 Linking words or letters
<i>#</i>	Insert space	
<i>eq. #</i>	Make spacing equal	 Between words
<i>less #</i>	Reduce space	 Between words
<i>trs.</i>	Transpose	 Between letters or words, numbered when necessary
<i>centre</i>	Place in centre of line	Indicate position with 
	Move to the left	
	Move to the right	
<i>n. p.</i>	Begin a new paragraph	Before first word of new paragraph
<i>run on</i>	No fresh paragraph here	 Between paragraphs
<i>spell out</i>	The abbreviation or figure to be spelt out in full	Encircle words or figures to be altered
	(Caret mark.) Insert matter indicated in margin	
<i>“ ”</i>	Insert single quotation marks	
<i>“ ”</i>	Insert double quotation marks	

## ELECTRICITY METERS

## Two Types.

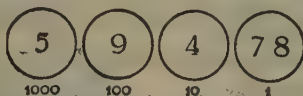
1. Clock dials of the same type as a gas meter. Read from left. If pointer is between two



numbers, read the lower. Take no reading of smaller dials if any. Above example is reading 5947.

2. Cyclometer dials on which figures appear in

openings; each dial (except units dial) moves one figure for a complete revolution of the dial to the right.



Read from the left. If two figures are showing in units opening, read the lower. Take no notice of smaller or red dials if they appear in conjunction with the others; these are for testing purposes only. Above example is reading 5947.

## GAS METER



The top dial is only used as a test dial, and has nothing to do with the record of gas consumed.

Dial.	One Complete Revolution of Hand Records.	Each figure, 1 to 9, on Dial Records.
A.	1,000,000 cubic feet.	100,000 cubic feet.
B.	100,000 ..	10,000 ..
C.	10,000 ..	1,000 ..
D.	1,000 ..	100 ..

Commencing with dial A, write down the

smaller of the two figures between which each of the hands is standing, unless the hand is between 9 and 0, when put down 9.

Add 00 after the figures so set down, and you have the present state of the index.

Deduct the state of the index previously recorded, and you have the figures representing the consumption of gas since the last reading. The accompanying index reads 701,500. If the reading a month before had been 640,600, the consumption during the month would have been 60,900 cubic feet.

## THE MEANING OF "A THERM."

A Therm is 100,000 British Thermal Units (B.Th.U.).

A British Thermal Unit is the quantity of heat required to raise the temperature of 1 lb. of water 1 degree Fah.

The number of Therms in 1,000 cubic feet of gas of 500 B.Th.U. per cubic foot =

$$\frac{1000 \text{ cubic feet} \times 500 \text{ B.Th.U.}}{100,000} = 5 \text{ Therms.}$$

The number of cubic feet of gas that will produce one Therm =

$$\frac{100,000}{500} = 200 \text{ cubic feet.}$$

## "MORSE" TELEGRAPH CODE

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P
Q	R	S	T
U	V	W	X
Y	Z		

1	6
2	7
3	8
4	9
5	0

## EASTER DAY

Falls on the first Sunday after the full moon following the vernal equinox. The rule fixing the date of Easter refers not to the true full moon but to an ecclesiastical imaginary moon, which is generally a day or two ahead of the true full moon. (See Easter, Gen. Inf.)

## Dates of Easter Days

1950	April	9
1	March	25
2	April	13
3	"	5
4	"	18
5	"	10
6	"	1

1957	April	21
8	"	6
9	March	29
1960	April	17
1	"	2
2	"	22
3	"	14
4	March	29
5	April	18
6	"	10
7	March	26
8	April	14
9	"	6
1970	March	29



## BANK AND PUBLIC HOLIDAYS

In *England, Wales, N. Ireland and The Channel Islands* it is ordained that the Bank Holidays shall be: Easter Monday, Whit Monday, first Monday in August, Boxing Day (first weekday after Christmas).

*N. Ireland and the Irish Republic* have in addition a special Bank Holiday on St. Patrick's Day, March 17th.

The Stock Exchange is closed on Bank Holidays.

	1956.	1957.
Easter Monday . . . . .	Apr. 2	Apr. 22
Whit Monday . . . . .	May 21	June 10

Good Friday, January 1st and on Saturdays throughout the year.

The Queen's birthday (when decreed) is observed in the Customs and certain other Government establishments as a holiday.

In *Scotland* it is enacted that the Bank Holidays observed shall be: New Year's Day, first Monday in May, first Monday in August. There are also special Spring and Autumn holidays in Edinburgh and Glasgow.

	1956.	1957.
1st Monday in Aug. . . . .	Aug. 6	Aug. 5
Boxing Day . . . . .	Wed. Dec. 26	Thurs. Dec. 26

## THE SEASONS

1956.  
Vernal Equinox—Spring begins Mar. 20, 3 p.m.  
Summer Solstice—Summer begins June 21, 10 a.m.  
Autumnal Equinox—Autumn begins Sept. 23, 2 a.m.  
Winter Solstice—Winter begins Dec. 21, 9 p.m.

1957.  
Vernal Equinox—Spring begins Mar. 20, 9 p.m.  
Summer Solstice—Summer begins June 21, 4 p.m.  
Autumnal Equinox—Autumn begins Sept. 23, 7 a.m.  
Winter Solstice—Winter begins Dec. 22, 3 a.m.

(All the above times are in G.M.T.)

## QUARTER DAYS

ENGLAND, WALES, AND N. IRELAND.			
Lady Day . . . . .	March 25	Michaelmas . . . . .	September 29
Midsummer . . . . .	June 24	Christmas . . . . .	December 25

SCOTLAND.			
Candlemas . . . . .	February 2	Lammas . . . . .	August 1
Whitsun . . . . .	May 15	Martinmas . . . . .	November 11

## HALF QUARTER DAYS

ENGLAND.			
February 8.	May 9.	August 11.	November 11.

## BRITISH GAME, FISH AND SPORTING SEASONS

Black Game, from August 20 to December 10; but in Somerset, Devon, and New Forest, from September 1 to December 10.  
Buck-hunting—August 20 to September 17.  
Bustard—September 1 to March 1.  
Red Deer hunted—August 20 to September 30.  
Male Deer (Ireland)—October 20 to June 10.  
Fallow Deer (Ireland)—June 20 to Michaelmas.  
Eels—Seasons vary according to whether fishing by rods, baskets, traps, etc.  
Fox-hunting—November to Lady Day.  
Fox Cubs—August 1 to first Monday in November.  
Grouse-shooting—August 12 to December 10.  
Hare-hunting—October 1 to February 27.  
Hare-coursing—Between September and March.  
Hind—Hunted in October and again between April 10 and May 20.  
Moor Game (Ireland)—August 20 to December 10.

Oyster (deep sea)—August 5 to June 14; (other than deep sea)—August 5 to May 13.  
Partridge-shooting—September 1 to February 1.  
Pheasant-shooting—October 1 to February 1.  
Ptarmigan—August 12 to December 10.  
Quail—Season varies in different parts; some areas give protection throughout year.  
Rabbits—Between October and March.  
Salmon—Seasons controlled by River Boards and vary from place to place; (rod-fishing)—about February to October.  
Trout—Seasons controlled by River Boards and vary from place to place; about April 1 to September 30.  
Woodcock—Season varies in different parts; in certain places complete protection throughout year.

Game in England—Hare, pheasant, partridge, grouse, and moor fowl.

Game in Ireland—Same as England, with the addition of deer, black game, landrail, quail, and bustard.

Game in Scotland—Same as England, with the addition of ptarmigan.

## ENGLISH LAW SITTINGS

	1956.	1957.		1956.	1957.
Hilary . . . . .	Jan. 11–Mar. 28	Jan. 11–Apr. 17	Trinity . . . . .	May 29–July 31	June 18–July 31
Easter . . . . .	Apr. 10–May 18	Apr. 30–June 7	Michaelmas . . . . .	*Oct. 1–Dec. 21	*Oct. 1–Dec. 21

\* Subject to alteration by Order in Council.

## LAW TERMS IN SCOTLAND

Law sittings in Scotland are from January 8 to March 30, May 7 to July 20, and October 8 to December 21. Should the first day of Term fall on a Sunday, legal business commences on the day following.

## UNIVERSITY TERMS

OXFORD.				CAMBRIDGE.			
1956.				1956.			
Hilary . . . . .	10.1–24.3	Full Term	15.1–10.3	Lent . . . . .	5.1–24.3	Full Term	17.1–16.3
Trinity . . . . .	4.4–7.7	" "	22.4–16.6	Easter . . . . .	12.4–20.6	" "	13.4–4.6
Michaelmas . . . . .	1.10–17.12	" "	14.10–8.12	Michaelmas . . . . .	1.10–19.12	" "	9.10–7.12
Eucaenia' Wed., 26 June.							
1957.				1957.			
Hilary . . . . .	10.1–13.4	Full Term	20.1–16.3	Lent . . . . .	5.1–25.3	Full Term	15.1–15.3
Trinity . . . . .	24.4–8.7	" "	28.4–22.6	Easter . . . . .	14.4–22.6	" "	23.4–14.6
Michaelmas . . . . .	1.10–17.12	" "	13.10–7.12	Michaelmas . . . . .	1.10–19.12	" "	8.10–6.12

## SUNRISE AND SUNSET TABLE, 1956-57

(These times are given in G.M.T. throughout)

1956.			1957.			Date		
Date	Sunrise	Sunset	Date	Sunrise	Sunset	Date	Sunrise	Sunset
	a.m.	p.m.		a.m.	p.m.		a.m.	p.m.
July 1	3.47	8.20	January 6	8.05	4.07	June 30	3.46	8.20
8	3.53	8.17	13	8.01	4.16	July 7	3.52	8.17
15	4.00	8.11	20	7.55	4.28	14	3.59	8.12
22	4.08	8.04	27	7.46	4.40	21	4.07	8.05
29	4.19	7.53	February 3	7.36	4.53	28	4.17	7.55
August 5	4.29	7.42	10	7.24	5.05	August 4	4.27	7.44
12	4.40	7.29	17	7.11	5.18	11	4.39	7.31
19	4.51	7.15	24	6.57	5.31	18	4.49	7.18
26	5.02	7.00	March 3	6.42	5.43	25	5.01	7.03
September 2	5.13	6.45	10	6.27	5.55	September 1	5.12	6.47
9	5.25	6.29	17	6.11	6.07	8	5.23	6.31
16	5.36	6.13	24	5.55	6.19	15	5.34	6.16
23	5.47	5.57	31	5.39	6.31	22	5.45	6.00
30	5.58	5.41	April 7	5.23	6.42	29	5.57	5.43
October 7	6.10	5.25	14	5.08	6.54	October 6	6.08	5.28
14	6.21	5.10	21	4.53	7.06	13	6.19	5.13
21	6.34	4.55	28	4.39	7.17	20	6.32	4.57
28	6.46	4.41	May 5	4.26	7.29	27	6.44	4.43
November 4	6.59	4.29	12	4.14	7.40	November 3	6.56	4.30
11	7.10	4.17	19	4.03	7.51	10	7.08	4.19
18	7.23	4.07	26	3.55	8.00	17	7.21	4.09
25	7.34	3.59	June 2	3.43	8.08	24	7.32	4.01
December 2	7.45	3.54	9	3.44	8.14	December 1	7.43	3.55
9	7.53	3.51	16	3.42	8.19	8	7.52	3.52
16	8.00	3.52	23	3.43	8.21	15	7.58	3.51
23	8.04	3.54				22	8.03	3.54
30	8.05	4.00				29	8.05	3.58

## MOON'S PHASES, 1956-57

(These times are given in G.M.T. throughout)

1956.			1957.		
Date	Phase	Time	Date	Phase	Time
June 1	New Moon	7.13 p.m.	March 1	New Moon	4.12 p.m.
8	First Quarter	9.29 p.m.	9	First Quarter	11.50 a.m.
15	Full Moon	11.56 a.m.	16	Full Moon	2.22 a.m.
23	Last Quarter	6.13 a.m.	23	Last Quarter	5.04 a.m.
July 1	New Moon	8.40 a.m.	31	New Moon	9.19 a.m.
8	First Quarter	4.37 a.m.	7	First Quarter	8.32 p.m.
14	Full Moon	8.46 p.m.	14	Full Moon	12.09 p.m.
22	Last Quarter	9.29 p.m.	21	Last Quarter	11.00 p.m.
August 30	New Moon	7.31 p.m.	29	New Moon	11.54 p.m.
6	First Quarter	11.25 a.m.	7	First Quarter	2.29 a.m.
13	Full Moon	8.45 a.m.	13	Full Moon	10.34 p.m.
21	Last Quarter	12.38 p.m.	21	Last Quarter	5.03 p.m.
September 29	New Moon	4.13 a.m.	29	New Moon	11.39 a.m.
4	First Quarter	6.57 p.m.	5	First Quarter	7.10 a.m.
12	Full Moon	12.13 a.m.	12	Full Moon	10.02 a.m.
20	Last Quarter	3.19 a.m.	20	Last Quarter	10.22 a.m.
October 27	New Moon	11.25 a.m.	27	New Moon	8.53 p.m.
4	First Quarter	4.24 a.m.	4	First Quarter	12.09 p.m.
11	Full Moon	6.44 p.m.	11	Full Moon	10.50 p.m.
19	Last Quarter	5.24 p.m.	20	Last Quarter	2.17 a.m.
November 26	New Moon	6.02 p.m.	27	New Moon	4.23 a.m.
2	First Quarter	4.43 p.m.	2	First Quarter	6.55 p.m.
10	Full Moon	3.09 p.m.	10	Full Moon	1.08 p.m.
18	Last Quarter	6.44 a.m.	18	Last Quarter	4.16 p.m.
December 25	New Moon	1.12 a.m.	25	New Moon	11.32 a.m.
2	First Quarter	8.12 a.m.	1	First Quarter	4.34 a.m.
10	Full Moon	11.51 a.m.	9	Full Moon	4.55 a.m.
17	Last Quarter	7.06 p.m.	17	Last Quarter	4.02 a.m.
January 24	New Moon	10.10 a.m.	23	New Moon	7.18 p.m.
February 30	First Quarter	9.24 p.m.	30	First Quarter	5.49 p.m.
7	Full Moon	11.23 p.m.	8	Full Moon	9.42 p.m.
14	Last Quarter	4.38 p.m.	16	Last Quarter	1.44 p.m.
21	New Moon	12.18 p.m.	23	New Moon	4.43 a.m.
March 1	First Quarter	2.13 a.m.	30	First Quarter	10.43 a.m.
9	Full Moon	7.06 a.m.	7	Full Moon	2.32 p.m.
16	Last Quarter	6.21 a.m.	14	Last Quarter	9.59 p.m.
22	New Moon	9.43 p.m.	21	New Moon	4.19 p.m.
30	First Quarter	9.24 p.m.	29	First Quarter	6.57 a.m.
February 7	Full Moon	11.23 p.m.	29	Full Moon	6.16 a.m.
14	Last Quarter	4.38 p.m.	14	Last Quarter	5.45 a.m.
21	New Moon	12.18 p.m.	21	New Moon	6.12 a.m.
March 30	First Quarter	2.13 a.m.	29	First Quarter	4.52 a.m.

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ONE HOUR must be ADDED to the above times when SUMMER TIME is in operation.  
 LIGHTING-UP TIME is from 1 hour after local sunset to 1 hour before local sunrise during SUMMER TIME and from  $\frac{1}{2}$  hour after local sunset to  $\frac{1}{2}$  hour before local sunrise during the remainder of the year.





THE UNION JACK

The present Union Jack is composed of three heraldic crosses, viz., the cross of St. Andrew, forming the blue and white basis; upon which lies the red and white cross of St. Patrick; and upon the whole rests the red and white cross of St. George, dividing the flag vertically and horizontally. The original Union Jack combined only the St. George and St. Andrew crosses and was adopted in 1606 by order of James I. who as James VI. of Scotland succeeded to the throne of England in 1603. No further alteration was made in the flag until January 1st, 1801, when the Irish Parliament was dissolved and the Act of Union came into force.

It is flown on the following days on Government and Public buildings (from 8 a.m. to sunset):—

Feb. 6 (1952)	H.M. the Queen's Accession.	Aug. 4 (1900)	Birthday of H.M. Queen Elizabeth the Queen Mother.
Mar. 31 (1900)	Duke of Gloucester's Birthday.	" 15 (1950)	Princess Anne's Birthday.
Apr. 21 (1926)	Birthday of H.M. the Queen.	" 21 (1930)	Princess Margaret's Birthday.
" 25 (1897)	Princess Royal's Birthday.	Nov. 14 (1948)	Prince Charles' Birthday.
May 24	Empire Day.	" 20 (1947)	The Royal Wedding Day.
June 2 (1953)	Coronation Day.		
" 10 (1921)	Duke of Edinburgh's Birthday.		

and on the occasion of the "official" Queen's birthday, Remembrance Day and the opening and closing of Parliament by the Queen.

The *Royal Standard* is hoisted on buildings in which Her Majesty the Queen is actually present.

THE BEAUFORT SCALE OF WIND FORCE

Beaufort number	Wind	Effect on land	Speed	
			M.p.h.	Knots
0	Calm	Smoke rises vertically	Less than 1	Less than 1
1	Light air	Direction shown by smoke but not by wind vanes	1-3	1-3
2	Light breeze	Wind felt on face; leaves rustle; wind vanes move	4-7	4-6
3	Gentle breeze	Leaves and twigs in motion; wind extends light flag	8-12	7-10
4	Moderate breeze	Raises dust, loose paper and moves small branches	13-18	11-16
5	Fresh breeze	Small trees in leaf begin to sway	19-24	17-21
6	Strong breeze	Large branches in motion; whistling in telegraph wires; difficulty with umbrellas	25-31	22-27
7	Moderate gale	Whole trees in motion; difficult to walk against wind	32-38	28-33
8	Fresh gale	Twigs break off trees; progress impeded	39-46	34-40
9	Strong gale	Slight structural damage occurs; chimney pots and slates blown off	47-54	41-47
10	Whole gale	Trees uprooted and considerable structural damage	55-63	48-56
11	Storm	Widespread damage, seldom experienced in England	64-75	57-65
12	Hurricane	Winds of this force only encountered in tropical revolving storms	Above 75	Above 65

## THERMOMETER COMPARISONS

Centigrade, 100°	Fahrenheit, 212°	Centigrade, 100°	Fahrenheit, 212°
95	203	20	68
90	194	15.5	60
85	185	12.8	55
78.9	174	10	50
75	167	7.2	45
70	158	5	41
65	149	1.7	35
60	140	0	32
55	131	- 1.1	30
52.8	127	- 5	23
50	122	- 6.7	20
45	113	- 10	14
42.2	108	- 12.2	10
40	104	- 15	5
36.7	98	- 17.8	0
35	95	- 20	- 4
32.2	90	- 25	- 13
30	86	- 30	- 22
26.7	80	- 35	- 31
25	77	- 40	- 40

To reduce Fahrenheit to Centigrade, subtract 32 degrees and multiply by 5/9; to reduce Centigrade to Fahrenheit, multiply by 9/5 and add 32 degrees.

## ROMAN NUMERALS

I	1	LXX	70
II	2	LXXX	80
III	3	LXXXVII	88
IV	4	XG	90
V	5	IC	99
VI	6	C	100
VII	7	CX	110
VIII	8	CXI	111
IX	9	CXC	190
X	10	CC	200
XI	11	CCXX	220
XII	12	CCXXIV	224
XIII	13	CCC	300
XIV	14	CCCXX	320
XV	15	CD	400
XVI	16	D	500
XVII	17	DC	600
XVIII	18	DCCC	800
XIX	19	DCCCLXXVI	876
XX	20	CM	900
XXX	30	CMXCIX	999
XL	40	M	1000
L	50	MD	1500
LX	55	MDCCC	1800
LX.	60	MM	2000

## RUSSIAN ALPHABET

А а	а	Р р	р
Б б	б	С с	с
В в	в	Т т	т
Г г	г	У у	у
Д д	д	Ф ф	ф ph
Е е	е ye	Х х	kh <sup>1</sup>
Ж ж	zh	Ц ц	ts
З з	z	Ч ч	ch <sup>2</sup>
И и Й	и	Ш ш	sh
К к	к	Щ щ	shch <sup>3</sup>
Л л	л	Ы ы	oui <sup>4</sup>
М м	м	Э э	e <sup>5</sup>
Н н	н	Ю ю	iou <sup>6</sup>
О о	о	Я я	ya
П п	п	Ө ө	f

## RATES OF EXCHANGE IN RELATION TO STERLING

Country.	Currency.	Par value of Sterling at 1.3.56 <sup>1</sup>	Approximate rate at 6.3.56 or latest date available.
Argentina	Peso		110-60 <sup>2</sup>
Australia	Pound	1-25	1-25
Austria	Schilling	72-80	72-80
Belgium/Luxembourg	Franc	140-00	139-375
Belgian Congo		140-00	139-375
Bolivia	Boliviano	532-00	528-93
Brazil	Cruzeiro	51-80	193-00 <sup>2</sup>
Br. Honduras	Dollar	4-00	4-00
British West Indies	"	4-80	4-80
Burma	Kyat	13-333	13-333
Canada	Dollar		2-797
Ceylon	Rupee	13-333	13-31
Chile	Peso	308-00	1,617-50 <sup>2</sup>
China	P.B. Dollar		6-893
Colombia	Colon	5-46	12-33 <sup>2</sup>
Costa Rica	Peso	15-72	15-76
Cuba	Peso	2-80	2-802
Czechoslovakia	Koruna		20-16
Denmark	Krone	19-34	19-349
Dominican Republic	Peso	2-80	2-802
Ecuador	Sucre	42-00	48-70 <sup>2</sup>
Egypt	Pound	0-975	0-975
El Salvador	Colon	7-00	7-04
Ethiopia	Dollar	6-957	7-00
Finland	Markka	644-00	643-00
France	Franc		982-875
French Equat. Africa	C.F.A. Franc		491-50
French West Africa	"		491-50
Germany (Fed. Rep. of)	Deutsche Mark	11-76	11-714
Greece	Drachma		84-00
Guatemala	Quetzal	2-80	2-818
Haiti	Gourde	14-00	14-00
Honduras	Lempira	5-60	5-60
Hongkong	Dollar	16-00	16-134
Iceland	Krona	45-60	45-625
India	Rupee	13-333	13-333
Indonesia	Rupiah		31-92
Iran	Rial	90-30	212-10 <sup>2</sup>
Iraq	Dinar	1-00	1-00
Israel	Pound		5-04
Italy	Lire		1,754-50
Japan	Yen	1,008-00	1,008-25
Jordan	Dinar	1-00	1-00
Lebanon	Pound	6-136	8-96 <sup>2</sup>
Malaya	Dollar	8-57	8-543
Mexico	Peso	35-00	35-10
Netherlands	Guilder	10-64	10-634
Netherlands West Indies	"	5-28	5-275
New Zealand	Pound		1-07
Nicaragua	Cordoba	19-60	19-75 <sup>2</sup>
Norway	Kroner	20-00	20-01
Pakistan	Rupee	13-333	13-333
Panama	Balboa	2-80	2-802
Paraguay	Guarani	168-00	238-00 <sup>2</sup>
Peru	Sol		53-875
Philippines	Peso	5-60	5-615
Poland	Zloty		11-20
Portugal	Escudos		80-125
Spain	Pesetas		109-56 <sup>2</sup>
Sweden	Kronor	14-485	14-528
Switzerland	Franc		12-235
Syria	Pound	6-136	9-92 <sup>2</sup>
Thailand	Baht		56-675
Turkey	Lira	7-84	7-875
Union of South Africa	Pound	1-00	1-00
U.S.A.	Dollar	2-80	2-802
Uruguay	Peso		10-875 <sup>2</sup>
Venezuela	Bolivar	9-38	9-385 <sup>2</sup>
Yugoslavia	Dinar	840-00	840-00

<sup>1</sup> as in "loch".  
<sup>2</sup> as in "church".  
<sup>3</sup> as in "Ashechurch".

<sup>4</sup> as in "bit".  
<sup>5</sup> as in "epic".  
<sup>6</sup> as in "you".

<sup>1</sup> Established under agreement with the International Monetary Fund.

<sup>2</sup> Rate which in general is applicable to financial transactions.

<sup>3</sup> Official rate.



## UNIVERSITY DEGREES—COLOURS OF HOODS

## Aberdeen

M.A.	Black corded silk lined with white silk and edged round cape and cowl.
D.Litt.	Scarlet superfine cloth lined with white silk.
B.D.	Black corded silk lined with purple silk.
D.D.	Scarlet superfine cloth lined with purple silk.
B.L.	Black corded silk edged with light blue silk.
LL.B.	Black corded silk lined with light blue silk.
LL.D.	Scarlet superfine cloth lined with light blue silk.
M.B., Ch.B.	Black corded silk lined with crimson silk.
Ch.M.	White corded silk lined with crimson silk.
M.D.	Scarlet superfine cloth lined with crimson silk.
B.Sc.	Black corded silk lined with green silk.
D.Sc.	Scarlet superfine cloth lined with green silk.
B.Sc.(Agric.)	Black corded silk edged with green silk.
B.Sc.(Eng.)	Black corded silk with green and white silk.
B.Sc.(For.)	Black corded silk with waved green silk edging.
B.Com.	Black corded silk edged with lilac silk.
Ph.D.	Scarlet superfine cloth lined with black ribbed silk.

*Note:*—All the hoods of this university are of the full type, with rounded capes, but have no lipripe to the cowl or hood portion proper.

## Belfast, The Queen's University

B.A.	Black ribbed silk edged with white fur and the neck edged with watered blue silk.
M.A.	Black ribbed silk lined and edged with watered blue silk.
D.Litt.	Scarlet superfine cloth lined with white silk and edged with watered blue silk.
B.D.	Black ribbed silk lined with white silk and edged with watered blue silk.
D.D.	Scarlet superfine cloth lined with black silk and edged with watered blue silk.
LL.B.	Black ribbed silk lined with pink silk and edged with watered blue silk.
LL.D.	Scarlet superfine cloth lined with pink silk and edged with watered blue silk.
M.B., B.Ch., B.A.O., M.Ch.	Black ribbed silk lined with scarlet silk and edged with watered blue silk.
M.D.	Ribbed red silk lined with white silk and edged with watered blue silk.
M.A.O.	Scarlet superfine cloth lined with scarlet silk and edged with watered blue silk.
B.Mus.	Black ribbed silk lined with purple silk and edged with watered blue silk.
D.Mus.	Blue silk lined with white silk and edged with watered blue silk.
Ph.D.	Scarlet superfine cloth lined with blue silk and edged with watered blue silk.
B.Sc.	Scarlet superfine cloth lined with violet silk and edged with watered blue silk.
M.Sc.	Black ribbed silk lined with green silk and edged with watered blue silk.
D.Sc.	Ribbed red silk lined with green silk and edged with watered blue silk.
B.Sc.(Econ.)	Scarlet superfine cloth lined with green silk and edged with watered blue silk.
M.Sc.(Econ.)	Black ribbed silk lined with rose pink silk and edged with watered blue silk.
B.D.S.	Rose pink silk lined with white silk and edged with watered blue silk.
B.Agric.	Black ribbed silk lined with grey silk and edged with watered blue silk.
M.Agric.	Black ribbed silk lined with yellow silk and edged with watered blue silk.
	Red ribbed silk lined with yellow silk and edged with watered blue silk.

*Note:*—Bachelors' and Masters' hoods are of the simple shape and Doctors' of the full shape. All the hoods have the neck portion at least edged with the pale blue watered silk peculiar to this University.

## Birmingham

B.A.	Black ribbed silk lined for 3" with watered electric blue.
M.A.	Black ribbed silk fully lined with watered electric blue.
B.D.	Black ribbed silk lined with watered cobalt blue.
D.D.	Scarlet superfine cloth lined with watered cobalt blue.
LL.B.	Black ribbed silk lined for 3" with watered bronze green silk.
LL.M.	Black ribbed silk fully lined with watered bronze green silk.
LL.D.	Scarlet superfine cloth lined with watered bronze green silk.

M.B., Ch.B.	Black ribbed silk lined for 3" with watered cardinal silk.
Ch.M.	Black ribbed silk fully lined with watered cardinal silk.
M.D.	Scarlet superfine cloth lined with watered cardinal silk.
B.Mus.	Black ribbed silk lined for 3" with watered orange silk.
D.Mus.	Scarlet superfine cloth lined with watered orange silk.
Ph.D.	Crimson cloth, lined with the watered silk of the Faculty.
B.Sc.	Black ribbed silk lined for 3" with watered grey silk.
M.Sc.	Black ribbed silk fully lined with watered grey silk.
D.Sc.	Scarlet superfine cloth lined with watered grey silk.
D.Litt.	Scarlet superfine cloth lined with watered electric blue silk.
B.D.S.	Black ribbed silk lined for 3" with watered dark red silk.
M.D.S.	Black ribbed silk fully lined with watered dark red silk.
B.Com.	Black ribbed silk lined for 3" with watered terra-cotta silk.
M.Com.	Black ribbed silk fully lined with watered terra-cotta silk.
B.Soc.Sc.	Follow the scheme for Bachelors and Masters above with 3" of the watered silk of the Faculty.
M.Soc.Sc.	

*Note:*—All hoods are of the full shape, similar to London, all the capes having well-rounded corners.

## Bristol

B.A.	All hoods are of the full shape, similar to Cambridge. No scarlet superfine cloth is used. All hoods are made of the University's special red stuff or silk. All Bachelor's hoods are partly lined with a silk of a somewhat lighter shade than the outside. All Masters' hoods are fully lined with white silk, and all Doctors' are fully lined with salmon coloured silk. The M.B., Ch.B. hood is an exception and is fully lined with light red silk and is edged inside the hood proper with $\frac{1}{2}$ " of white silk. The Ph.D. hood is of red silk fully lined with dark violet silk.
M.A.	[This is an unconventional system.]
LL.B.	
LL.M.	
LL.D.	
M.B., Ch.B.	
Ch.M.	
M.D.	
B.Mus.	
D.Mus.	
Ph.D.	
B.Sc.	
M.Sc.	
D.Sc.	
D.Litt.	
B.D.S.	
M.D.S.	
B.Sc.(Dom.Sc.)	
B.V.Sc.	
B.A.(Econ.)	

## Cambridge

B.A.	Black corded ottoman silk lined with white fur.
M.A.	Black corded ottoman silk lined with fine ribbed white silk.
B.D.	Black corded ottoman silk lined with fine ribbed black silk.
D.D.	Scarlet superfine cloth lined with shot silk lilac shade.
LL.B.	Light cerise silk lined with white fur.
LL.M.	Black corded ottoman silk lined with light cerise silk.
LL.D.	Scarlet superfine cloth lined with light cerise silk.
M.B., B.Ch.	Mid-cerise silk lined with white fur.
M.Ch.	Black corded ottoman silk lined with mid-cerise silk.
M.D.	Scarlet superfine cloth lined with mid-cerise silk.
Mus.B.	Deep cherry coloured satin lined with white fur.
Mus.M.	Black corded ottoman silk lined with deep cherry coloured satin.
Mus.D.	Cream figured damask silk lined with deep cherry coloured satin.
M.Sc.	Black cloth lined with shot silk (pink with blue).
Sc.D.	Scarlet superfine cloth lined with shot silk (pink with blue).
M.Litt.	Black cloth lined with deep cerise silk (scarlet).
Litt.D.	Scarlet superfine cloth lined with deep cerise silk (scarlet).
Ph.D.	Black corded ottoman silk lined with scarlet superfine cloth.

*Note:*—All hoods are of the full shape. Edging is forbidden.

## The University of Dublin (Trinity College)

B.A.	Black, White Fur, White.
M.A.	Black, Dark Blue.
B.D.	Black and Black Silk.
D.D.	Scarlet and Black Silk.
LL.B.	Black and White.
LL.D.	Scarlet, Pink.
M.B., B.Ch.	} Black, Crimson.
B.A.O.	
M.Ch.	Crimson, White, Blue.
M.A.O.	Black, Purple.
M.D.	Scarlet, Crimson.
Mus.B.	Pale Blue, White Fur.
Mus.D.	White, Rose.
Ph.D.	Scarlet, Yellow.
B.Litt.	Black, Mid-Blue and White.
Litt.D.	Scarlet and Mid-Blue.
B.Sc.	Dark Green, Black.
M.Sc.	White, Myrtle Green.
Sc.D.	Scarlet, Myrtle Green.
B.D.Sc.	Myrtle Green, Black, Crimson.
M.D.Sc.	Myrtle Green, Pale Blue, Crimson.
B.Sc.Vet.	Black, Maroon, Olive Green.
B.A.I.	Black, Green.
M.A.I.	White, Green.
E.Com.	Black, Gold.
M.Com.	White, Gold.
B.A.I.Mech.	Black, Green, Orange.
B.A.I.Elect.	Black, Green, Orange.
B.Sc.Tech.	Dark green silk lined with black silk and edged with orange silk.
B.Agric.	Black, Brown.
B.Agric.(For.)	Black, Brown, Green.

*Note*.—All hoods are made in the full shape, similar to London; the capes should be rounded. Bachelors' and Masters' hoods are generally of black corded silk lined with fur or silk mentioned above, whereas Doctors' hoods are of scarlet superfine cloth lined with the silk specified above. Exceptions are, for example:—

B.Dent.Sc.	Myrtle green silk lined with black watered silk and edged with crimson silk.
M.Dent.Sc.	Myrtle green silk lined with pale blue silk and edged with crimson silk.
Mus.B.	Pale blue silk partly lined and edged with white fur.
Mus.D.	Cream figured damask silk lined with rose-coloured satin.

## Durham

B.A.	Black and White Fur lining.
M.A.	Black and Palatinate.
B.D.	Black and Black.
D.D.	Scarlet and Palatinate.
B.C.L.	Purple and White Fur.
D.C.L.	Scarlet and White.
LL.M.	Maroon and Purple.
M.B., B.S.	Scarlet, Palatinate and White Fur edging.
M.S.	Rose and Purple.
D.Ch.	Scarlet, Rose and Purple.
M.D.	Scarlet, Scarlet and Palatinate.
B.Mus.	Palatinate and Brocade Satin.
D.Mus.	Brocade Satin and Palatinate.
Ph.D.	Scarlet, Scarlet and Palatinate Purple Silk edging 1".
B.Sc.	Palatinate, Fur and Scarlet Silk edging 1".
M.Sc.	Black, Purple and Scarlet Silk edging 1".
D.Sc.	Palatinate and Scarlet.
B.Litt.	Gold and White Fur.
D.Litt.	Scarlet and Gold.
B.Hy.	Black, Purple, Scarlet and White Fur.
D.Hy.	Scarlet, Purple and White.
B.D.S.	Rose, Ivory and White Fur edging.
M.D.S.	Rose and Ivory.
B.Com.	Black and Cerise and White Fur edging.
M.Com.	Black and Cerise Silk lining.
B.Arch.	Black, Blue and White Fur edging.

and 2 Diplomas (not Degrees):—

L.Th.
L.D.S.

*Note*.—Bachelors' and Masters' Hoods are generally intended to be of the Oxford M.A. type, but Doctors' hoods are of the Oxford Doctors' type with well-rounded capes.

Palatinate purple silk, cloth, or cassimere is peculiar to this University: it is in fact a soft lilac shade.

## Edinburgh

M.A.	Black and White.
B.D.	Black, Purple and Fur.
D.D.	Black and Purple.
B.L.	Black, Blue and Fur.
LL.B.	Black, Blue and Fur.
LL.D.	Black and Blue.
M.B., Ch.B.	Black, Crimson and Fur.
Ch.M.	Black and Gold.
M.D.	Black and Crimson.
Mus.B.	Scarlet, White and Fur.
Mus.D.	Scarlet and White.
Ph.D.	Black, Brown and Blue Shot.
B.Sc.	Black, Green and White Fur.
D.Sc.	Black and Green.

D.Litt.	Black, Blue and Yellow.
B.D.S.	Black, Crimson bordered with Ivory Fur.
M.D.S.	Black, Crimson bordered with Ivory Fur.
B.Com.	Black, Primrose Yellow, Fur.
B.Ed.	Black, Blue and Fur.

*Note*.—All hoods are of the simple shape and are worn back to front; all are lined with silk of the Faculty colour, Bachelors' being edged with white fur as well. Some of the Doctors' hoods (e.g. M.D.) have a sewn on cape of crimson silk as well.

## Exeter

B.A.	Dove grey cloth edged with Faculty colour art. silk.
M.A.	Dove grey cloth lined with Faculty colour art. silk.
D.Litt.	Scarlet superfine cloth lined with dove grey cloth.
LL.B.	Dove grey cloth edged with Faculty colour art. silk.
LL.M.	Dove grey cloth lined with Faculty colour art. silk.
LL.D.	Scarlet superfine cloth lined with dove grey cloth.
B.Sc.	Dove grey cloth edged with Faculty colour art. silk.
M.Sc.	Dove grey cloth lined with Faculty colour art. silk.
D.Sc.	Scarlet superfine cloth lined with dove grey cloth.
B.A. (Social Studies).	Dove grey cloth edged with Faculty colour art. silk.
M.A. (Social Studies).	Dove grey cloth lined with Faculty colour art. silk.
Ph.D. (all Faculties).	Dove grey cloth lined with scarlet cloth.

The Faculty colours are:—

Arts	Kingfisher blue.
Law	Purple.
Science	Turquoise blue.
Social Studies	Dark blue.

*Note*.—All bachelors have theological college style hoods, unlined, all the seams show, and the hood proper is merely edged with the Faculty colour 2" both inside and outside the cowl portion. All Doctors' hoods (incl. Ph.D.) are very heavy, being made of cloth and fully lined with cloth—no silk. All hoods are of the full shape similar to Cambridge. The Ph.D. hood is the Higher Doctors' hood inside out.

## Glasgow

M.A.	Black and Purple.
B.D.	Black, Cherry, and Scarlet cloth border.
D.D.	Scarlet and White.
B.L.	Black and Red (Venetian red silk).
LL.B.	Black, Red, and Scarlet cloth border.
LL.D.	Scarlet and Red (Venetian red silk).
M.B., Ch.B.	Black and Scarlet silk lined with Scarlet cloth.
Ch.M.	Black silk lined with Scarlet silk.
M.D.	Scarlet cloth lined and faced with Scarlet silk.
B.Mus.	Black, Blue and Scarlet cloth border.
D.Mus.	Scarlet and Blue.
Ph.D.	Black and Crimson.
B.Sc.	Black, Gold and Scarlet cloth border.
D.Sc.	Scarlet and Gold.
B.Litt.	Black, White and Scarlet cloth border.
D.Litt.	Scarlet and Purple.
B.D.S.	Black, Green and Scarlet cloth border.
B.V.M.S.	Black and Green.
M.V.S.	Black, Terra-cotta and Scarlet cloth border.
D.V.M.	Black and Terra-cotta.
B.Ed.	Black, Blue and Scarlet cloth border.

*Note*.—All hoods are of the full shape with well-rounded capes.

## Hull

B.A.	All hoods are lined throughout with the University silk, a turquoise blue taffeta.
M.A.	All Bachelors' hoods (other than B.D. and B.Mus.) are of black ribbed rayon, of the improved Oxford Burgon shape. The B.D. is of black superfine cloth of the same shape as the Doctors'. The B.Mus. is of the same shape as the B.A., LL.B. and B.Sc., but is of cream figured damask silk.
D.D.	The Ph.D. is of claret coloured cloth.
LL.B.	The D.Mus. is of the same shape as the Doctors' (i.e. of the improved Oxford Doctors' shape) but is of cream figured damask silk.
LL.M.	All the Higher Doctors' hoods are of scarlet superfine cloth with semi-circular cape of the improved Oxford Doctors'. The necks of all hoods are cut in one piece with a single central seam and no neck bands are let in. Edging of all hoods is forbidden except that Masters' hoods are ordered to be edged 1" with the lining silk (turquoise blue) round the cape portion only: all Masters' hoods are of the London shape, with well-rounded cape.
B.Mus.	
D.Mus.	
B.Sc.	
M.Sc.	
D.Sc.	
Ph.D.	
(in all Faculties)	



## National University of Ireland (Dublin, Cork and Galway)

B.A.	Green and White.
M.A.	Green, White and Blue.
LL.B.	Green and Prune.
LL.D.	Green and Prune.
M.B., B.Ch.,	} Green and Scarlet.
B.A.O.	
M.Ch.	Green, White and Scarlet.
M.A.O.	Green, White, Scarlet and Gold.
M.D.	Green and Scarlet.
B.Mus.	Green and Coral Pink.
D.Mus.	Green and Coral Pink.
Ph.D.	Green, Maroon and Faculty colour.
B.Sc.	Green and St. Patrick's Blue.
D.Sc.	Green and St. Patrick's Blue.
D.Litt.	Green and White.
D.Litt.Celt.	Green and Saffron.
B.D.S.	Green, Silver Grey and Scarlet.
M.D.S.	Green, White, Silver Grey and Scarlet.
B.Comm.	Green and Strawberry.
M.Comm.	Green, White and Strawberry.
M.Econ.Sc.	Green, White and Strawberry.
D.Econ.Sc.	Green, White and Strawberry.
B.Sc.Agric.	Green and Light Green.
M.Sc.Agric.	Green, White and Light Green.
B.Sc.(Dairying)	Green and Orange.
B.Sc.Sc.	Green, White and Maroon.
B.Eng.	Green, lined terra-cotta poplin.
M.Eng.	Green, White and a border of 3" terra-cotta.
M.Vet.B.	Green and Celtic Blue.
M.Vet.M.	Green, White and Celtic Blue.
B.Arch.	Green and Gold.
M.Arch.	Green, White and Gold.
B.Agric.Sc.	Green and Light Green.
M.Agric.Sc.	Green, White and Light Green.

*Note:*—Bachelors' hoods are of the simple shape, Masters' and Doctors' are of the full shape. Scarlet superfine cloth is not used for Doctor's hoods. All hoods are made of dark green Irish poplin, lined with poplin of the second colour named and bordered or edged with the third colour named (where this is so).

## Leeds

B.A.	Dark Green.
M.A.	Dark Green and White.
B.D.	Dark Green, Scarlet and White.
D.D.	Scarlet, Dark Green and White.
LL.B.	Light Green.
LL.M.	Light Green and White.
LL.D.	Scarlet and Light Green.
M.B., Ch.B.	Dark Green and Light Green.
M.D.	Dark Green, White and Light Green.
B.Mus.	Scarlet, Dark Green and Light Green.
Ph.D.	Dark Green and White.
B.Ch.D.	Green and Scarlet.
M.Ch.D.	Dark Green and Middle Green.
B.Sc.	Dark Green, White and Middle Green.
M.Sc.	Middle Green.
D.Sc.	Middle Green and White.
D.Litt.	Scarlet and Middle Green.
M.Ed.	Scarlet and Dark Green.
B.Com.	Dark Green, White and Middle Green 1" laid on the lining.
M.Com.	Light Green and Dark Green.
	Light Green, White and Dark Green.

*Note:*—Bachelors' and Masters' hoods are of the simple shape and Doctors' hoods are of the full shape.

## Liverpool

B.A.	Black, Apple Blossom and Fur.
M.A.	Black and Apple Blossom.
LL.B.	Black, Bronze and Fur.
LL.M.	Black and Bronze.
LL.D.	Scarlet and Bronze.
M.B., Ch.B.	Black, Lavender and Fur.
Ch.M.	} Black and Lavender.
M.Ch.(Orth.)	
M.D.	Scarlet and Lavender.
Ph.D.	Scarlet, Black and Velvet.
B.Sc.	Black, Slate Blue and Fur.
M.Sc.	Black and Slate Blue.
D.Sc.	Scarlet and Slate Blue.
D.Litt.	Scarlet and Apple Blossom.
B.D.S.	Black, Dark Red and Fur.
M.D.S.	Black and Dark Red.
B.Eng.	Black, Orange and Fur.
M.Eng.	Black and Orange.
D.Eng.	Scarlet and Orange.
B.V.Sc.	Black, Grey and Fur.
M.V.Sc.	Black and Grey.
D.V.Sc.	Scarlet and Grey.
B.Arch.	Black, White with two narrow lines of Black Velvet, Fur.
M.Arch.	Black, White with two narrow lines of Black Velvet.

B.Com.	Black, Citron and Fur.
M.Com.	Black and Citron.
M.Rad.	Black and Lavender.
Ph.D.	Scarlet, Black and Velvet.

*Note:*—Bachelors' and Masters' hoods are simple shape, Doctors' are full shape.

## London

B.A.	} Russet Brown.
M.A.	
D.Lit.	
B.D.	} Sarum Red.
M.Th.	
D.D.	
LL.B.	} Mid-blue.
LL.M.	
LL.D.	
M.B., B.S.	} Violet.
M.S.	
M.D.	
B.Mus.	} White Watered.
M.Mus.	
D.Mus.	
B.Sc.	} Yellow-Gold.
M.Sc.	
D.Sc.	
Ph.D.	Claret.
B.Pharm.	Old Gold.
B.D.S.	} Olive Green (corded).
M.D.S.	
M.S.(Dent. Surg.)	Violet.
B.Vet.Med.	} Lilac.
M.Vet.Med.	
B.Sc.(Eng.)	} Yellow-Gold.
M.Sc.(Eng.)	
D.Sc.(Eng.)	} Same as B.Sc.
B.Sc.(Est. Man.)	
B.Sc.(Vet. Sci.)	
B.Com.	} Orange.
M.Com.	

*Note:*—All London hoods are of identical shape (full shape with rounded cape). Bachelors' hoods are lined with Faculty colour 3" only, Masters' are fully lined, Doctors' are all of scarlet superfine cloth fully lined with Faculty colour silk. Bachelors who are registered Members of Convocation are entitled to wear hoods of black corded ottoman silk, the remainder of the hood being fully lined with fine ribbed white silk. The B.Mus. hood is an exception and is of mid-blue corded silk with 3" lining of white watered silk, but fully lined with white watered silk if a Member of Convocation. The Ph.D. hood is of claret coloured cloth fully lined with claret coloured silk, and may be edged with silk of the Faculty in which the degree was taken. Bachelors' hoods (except B.Mus.) and Masters' hoods are black, only Members of Convocation being allowed silk hoods.

## Manchester (Victoria University)

B.A.	Black, Blue and Fur.
M.A.	Black and Blue.
B.D.	Black, Heliotrope and Fur.
D.D.	Gold and Gold.
LL.B.	Black and Violet.
LL.M.	Black and Violet.
LL.D.	Gold and Gold.
M.B., Ch.B.	Black and Red.
Ch.M.	Black and Red.
M.D.	Gold and Gold.
Mus.B.	Dark and Light Blue.
Mus.D.	Gold and Gold.
Ph.D.	Gold and Gold.
B.Sc.	Black, Salmon and Fur.
M.Sc.	Black and Salmon.
D.Sc.	Gold and Gold.
D.Litt.	Gold and Gold.
B.D.S.	Black, Fawn and Fur.
M.D.S.	Black and Fawn.
D.D.S.	Gold and Gold.
B.A.(Theol.)	} Black, Blue and Fur.
B.A.(Mus.)	
B.A.(Econ.)	} Black, Orange and Fur.
B.A.(Admin.)	
B.A.(Com.)	} Black and Orange.
M.A.(Econ.)	
M.A.(Admin.)	} Black, Terra-cotta and Fur.
M.A.(Com.)	
B.Sc.(Tech.)	Black and Terra-cotta.
M.Sc.(Tech.)	Black and Bluish-Green.
M.Ed.	

*Note:*—All hoods are of the simple shape and are worn back to front with the tippet or hipline outwards instead of inwards towards the back.

## Nottingham

B.A.	} Light Blue and Cherry and Black.
M.A.	
B.D.	Light Blue and Purple and Black.
D.D.	Light Blue and Purple and Scarlet.

LL.B.	}	Light Blue and Maroon and Black.
LL.M.		
LL.D.	}	Light Blue and Maroon and Scarlet.
B.Mus.		
D.Litt.	}	Light Blue and Pink and Black.
B.Sc.		
M.Sc.	}	Light Blue and Cherry and Scarlet.
D.Sc.		
Ph.D.	}	Light Blue and Royal Blue and Black.
B.Sc.(Agric.)		
M.Sc.(Agric.)	}	Light Blue and Royal Blue and Scarlet.
D.Sc.(Agric.)		
B.Sc.(Eng.)	}	Light Blue and Faculty Colour and Claret.
M.Sc.(Eng.)		
D.Sc.(Eng.)	}	Light Blue and Green and Black.
B.Pharm.		
M.Ed.	}	Light Blue and Green and Scarlet.
	}	Light Blue and Light Navy and Black.
	}	Light Blue and Light Navy and Scarlet.
	}	Light Blue and Grey and Black.
	}	Black, Light Blue and Grey.
	}	Light Blue and Lilac and Black.

*Note*.—All hoods in this University are of the full, Cambridge, shape. All Bachelors' hoods are of black stuff, lined for 3" only with light blue silk. The hoods of all Masters and of Bachelors in Divinity are of black silk, and lined throughout with light blue silk.

The hoods of Doctors in Philosophy are of claret coloured silk or cloth lined throughout with light blue silk. The hoods of the Higher Doctors are of scarlet superfine cloth lined throughout with light blue silk.

All hoods in this University are bound (cowl portion only) with a ribbon of the appropriate faculty colour

The Faculty colours are:—

Arts	Cherry red.
Theology	Purple.
Law	Maroon.
Music	Pink.
Education	Lilac.
Science	Royal blue.
Pharmacy	Dove grey.
Agriculture and Horticulture	
Engineering and Mining	Light Navy blue.

## Oxford

B.A.	Black, lined with white fur.
M.A.	Black silk, lined crimson silk shot orange.
B.D.	Black, lined fine ribbed black silk.
D.D.	Scarlet superfine cloth, lined fine ribbed black silk.
B.C.L.	Dark blue silk, lined with white fur.
D.C.L.	Scarlet superfine cloth, lined crimson silk.
B.M., B.Ch.	Dark blue, lined white fur.
M.Ch.	Black silk, lined blue silk.
D.M.	Scarlet superfine cloth, lined crimson silk.
B.Mus.	Dark purple, lined white fur.
D.Mus.	Cream damask lined rich pink satin.
D.Litt.	} Scarlet superfine cloth, lined with grey silk.
D.Sc.	
B.Litt.	} Light blue, lined white fur.
B.Sc.	
D.Phil.	} Grey, lined white fur.
	} Scarlet superfine cloth, lined dark blue silk.
B.Phil.	Same as B.Litt.

*Note*.—The Oxford Bachelors' hoods (except B.D.) and the M.A. and M.Ch. hoods are of the simple or Burgon shape. The B.D. and all Doctors' hoods are of the correct full shape with well-rounded cape. The B.A. hoods are of corded black ottoman silk, as are M.A., M.Ch. and B.D. The other Bachelors' hoods are of corded or ribbed silk of the colour shown, lined with white fur. All Doctors' hoods are of scarlet superfine cloth with a lining of the silk shown (except D.Mus. cream fig. damask).

At present the robemakers make all five degree hoods, B.Litt., B.Sc., B.Phil., as well as the B.C.L., B.M. hoods of a light blue ribbed silk not quite so light as the light blue authorised by the University in 1895 for the B.Litt. degree.

## Reading

B.A.	All Reading hoods are lined with cream coloured silk. Bachelors' hoods are of dark blue lined with cream silk to a depth of 3". All hoods are full shape. All Doctors' hoods are of scarlet superfine cloth fully lined with cream silk, of the full shape, except Ph.D., which is of crimson cloth lined with cream silk (maroon Russell-Cord is generally used).
M.A.	
D.Litt.	
B.Sc.	
M.Sc.	
D.Sc.	
Ph.D.	

## St. Andrews

M.A.	Black, cherry lining.
B.D.	Wood Violet, white fur edging.
D.D.	Wood Violet, white lining (satin).
B.L.	Pimento, white edging.
LL.B.	Pimento, white fur edging.
LL.D.	Pimento, white lining (satin).
M.B., Ch.B.	Medici Crimson, white fur edging.
Ch.M.	Medici Crimson.

M.D.	Medici Crimson, white lining (satin).
Mus.B.	Cerulean blue silk edged with white fur.
Mus.D.	Cerulean blue silk or cloth with a white lining (satin).
Ph.D.	Nanking Blue, white lining (satin).
B.Sc.	Purple Lilac, white fur edging.
D.Sc.	Purple Lilac, white lining (satin).
B.Litt.	Saffron Yellow, white fur edging.
D.Litt.	Saffron Yellow, white lining (silk).
B.D.S.	Claret, white fur edging.
M.D.S.	Claret.
D.D.Sc.	Claret, white lining (satin).
B.Com.	Black, green lining, white fur edging.
B.Phil.	Gold, white fur edging.
B.Ed.	Black, primrose lining, white fur edging.

*Note*.—All hoods of this University are of the full shape with well-rounded capes.

## Sheffield

B.A.	Green, Fur and Strawberry.
M.A.	Green and Strawberry.
LL.B.	Green, Fur and Pale Green.
LL.M.	Green and Pale Green.
LL.D.	Red and Pale Green.
M.B., Ch.B.	Green, Fur and Red.
Ch.M.	Green, Red and White.
M.D.	Red and Red.
B.Mus.	Green, Strawberry, White Fur and Silk.
D.Mus.	Red, White and Strawberry.
B.Sc.	Green, Fur and Apricot.
M.Sc.	Green and Apricot.
D.Sc.	Red and Apricot.
D.Litt.	Red and Strawberry.
B.D.S.	Green, Fur and Rose Pink.
M.D.S.	Green and Rose Pink.
B.Eng.	Green, Fur and Purple.
M.Eng.	Green and Purple.
D.Eng.	Red and Purple.
B.Met.	Green, Fur and Steel Grey.
M.Met.	Green and Steel Grey.
D.Met.	Red and Steel Grey.

*Note*.—All hoods of this University are of the full shape.

## Southampton

Faculty colours:—

Arts	Mid-cerise
Law	Blue (Univ. silk)
Science	Rich gold
Engineering	Orange
Economics	Light green
Education	White
B.A.	All hoods are lined throughout with the University silk, a peacock blue. All Bachelors' hoods are of black ribbed rayon of the improved Oxford Burgon shape. The cowl portion only is edged inside and outside with ½" of the Faculty colour, except in Law, in which case the lining is turned over ½" on to the outside to form the edging, and B.A.(Law) which has an added edging of mid-cerise of ½" on the outside of the cowl portion. All Masters' hoods are of the London shape, but with well rounded cape, the cowl portion is edged ½" inside and outside with the Faculty colour except LL.M., in which case the lining silk is turned over ½" on the outside to make the edging. The cape of Masters' hoods is edged ½" with the peacock-blue lining silk. All Ph.D. hoods are of claret-coloured cloth fully lined with peacock-blue silk. All the Higher Doctors' hoods are of scarlet superfine cloth fully lined with peacock-blue silk. All Doctors' hoods (incl. Ph.D.) are of the improved Oxford D.D. shape. Neck bands are prohibited for all hoods, the neck of which must be cut on the curve in one piece with a single central seam.
B.A.(Law)	
LL.B.	
LL.D.	
B.Sc.	
M.Sc.	
D.Sc.	
B.Sc.(Eng.)	
M.Sc.(Eng.)	
D.Sc.(Eng.)	
B.Sc.(Econ.)	
M.Sc.(Econ.)	
D.Sc.(Econ.)	
M.A.(Educ.)	
Ph.D. (in all Faculties)	

## Wales

B.A.	Black and Green shot Blue (3").
M.A.	Black and Green shot Blue.
LL.B.	Black and Purple shot Red (3").
LL.M.	Black silk lined with Red silk shot with Purple.
LL.D.	Scarlet and Purple shot Red.
M.B., Ch.B.	Black and Black shot Green and White.
M.D.	Scarlet and Black shot Green and White.
B.Mus.	Blue and Pearl silk lining to a depth of 3".
M.Mus.	Black silk fully lined with Pearl-coloured silk.
D.Mus.	Scarlet and Pearl.
B.Sc.	Black and Black shot Yellow.
M.Sc.	Black and Black shot Yellow (3").
D.Sc.	Scarlet and Black shot Yellow.
Ph.D.	Crimson and Faculty colour.
D.Litt.	Scarlet and Green shot Blue.

*Note*.—Bachelors' hoods are of the simple shape, Masters' and Doctors' hoods are of the full shape.



## SIZES OF TYPE

*The following are the names and sizes in ordinary use for printed matter in books, pamphlets, and newspapers :—*

## 5 POINT

A hundred and sixty years ago, PEARS SOAP was invented, and its popularity has increased from decade to decade, it being known and used in every part of the world.

## 6 POINT

A hundred and sixty years ago, PEARS SOAP

## 7 POINT

A hundred and sixty years ago, PEARS

## 8 POINT

A hundred and sixty years ago, PEAR

## 9 POINT

A hundred and sixty years ago, PEA

## 10 POINT

A hundred and sixty years ago, P

## 11 POINT

A hundred and sixty years ago,

## 12 POINT

A hundred and sixty years

## 14 POINT

A hundred and sixty y

*Each of the above sizes are generally comprised of five complete alphabets shown in 8 point sizes, as follows :—*

ABCDEFGHIJKLMNOPQRSTUVWXYZ

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

PEARS SOAP IS USED

PEARS SOAP IS USED IN EV

Pears Soap is used in every

PEARS SOAP IS USE

Pears Soap is used in every

## STYLES OF TYPE

*The following are the styles in ordinary use for all kinds of printed matter.*

## ANTIQUE OLD STYLE

"Pears Cyclopaedia" ha

## BODONI

"Pears Cyclopaedia" has

## BODONI ITALIC

"Pears Cyclopaedia" has t

## BASKERVILLE

"Pears Cyclopaedia" has t

## BASKERVILLE ITALIC

"Pears Cyclopaedia" has the

## CASLON OLD FACE

"Pears Cyclopaedia" has th

## CASLON OLD FACE ITALIC

"Pears Cyclopaedia" has the

## CORVINUS MEDIUM

"Pears Cyclopaedia" has th

## CORVINUS MEDIUM ITALIC

"Pears Cyclopaedia" has th

## GARAMOND

"Pears Cyclopaedia" has th

## GARAMOND ITALIC

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## GILL SANS

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## GILL SANS ITALIC

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## MODERN

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## MODERN ITALIC

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## OLD STYLE

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## OLD STYLE ITALIC

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USEFUL FACTORS

$$\begin{aligned}(a+b)^2 &= a^2 + 2ab + b^2 \\ (a-b)^2 &= a^2 - 2ab + b^2 \\ a^2 - b^2 &= (a+b)(a-b) \\ a^3 + b^3 &= (a+b)(a^2 - ab + b^2) \\ a^3 - b^3 &= (a-b)(a^2 + ab + b^2) \\ x^4 + x^2y^2 + y^4 &= (x^2 + xy + y^2)(x^2 - xy + y^2) \\ a^3 + b^3 + c^3 - 3abc &= (a+b+c)(a^2 + b^2 + c^2 - ab - bc - ca) \\ a^2(b-c) + b^2(c-a) + c^2(a-b) &= -(a-b)(b-c)(c-a) \\ bc(b-c) + ca(c-a) + ab(a-b) &= -(a-b)(b-c)(c-a) \\ a(b^2 - c^2) + b(c^2 - a^2) + c(a^2 - b^2) &= (a-b)(b-c)(c-a)\end{aligned}$$

ARITHMETICAL PROGRESSION

$$\text{Last term} = a + (n-1)d$$

$$\text{Sum to } n \text{ terms} = \frac{n}{2}[2a + (n-1)d]$$

GEOMETRICAL PROGRESSION

$$p\text{th term} = ar^{p-1}$$

$$\text{Sum to } n \text{ terms} = a \frac{r^n - 1}{r - 1} \text{ or } a \frac{1 - r^n}{1 - r}$$

$$\text{Sum to infinity} \left\{ \begin{array}{l} \text{when } r < 1 \end{array} \right\} = \frac{a}{1 - r}$$

PERMUTATIONS AND COMBINATIONS

$${}^nP_r = n(n-1)(n-2) \dots (n-r+1) = \frac{n!}{(n-r)!}$$

$${}^nC_r = \frac{n(n-1)(n-2) \dots (n-r+1)}{r!} = \frac{n!}{r!(n-r)!}$$

BINOMIAL THEOREM

$$(a+x)^n = a^n + na^{n-1}x + \frac{n(n-1)}{1 \cdot 2}a^{n-2}x^2 + \dots + {}^nC_r a^{n-r}x^r + \dots + x^n$$

MENSURATION FORMULAE

**LINE**  $\left\{ \begin{array}{l} \text{Pythagorean Theorem } a^2 = b^2 + c^2 \\ \text{Circumference of circle} = 2\pi r \end{array} \right.$

**PLANE AREAS**  $\left\{ \begin{array}{l} \text{Parallelogram} = bh \\ \text{Triangle} = \frac{1}{2}bh \\ \text{Trapezium} = \frac{1}{2}(a+b)h \\ \text{Circle} = \pi r^2 \\ \text{Ellipse} = \pi ab \end{array} \right.$

**CURVED SURFACES**  $\left\{ \begin{array}{l} \text{Cylinder} = \text{circum. base} \times \text{height.} \\ \text{Cone} = \frac{1}{2} \text{ circum. base} \times \text{slant.} \\ \text{Conical Frustum} = \pi(R+r)s \\ \text{Sphere} = 4\pi r^2 \end{array} \right.$

**VOLUMES**  $\left\{ \begin{array}{l} \text{Prism (or Cylinder)} = \text{area base} \times \text{height} \\ \text{Pyramid (or Cone)} = \frac{1}{3} \text{ area base} \times \text{height} \\ \text{Prismoid} = \frac{h}{6}(A+B+4C) \\ \text{Sphere} = \frac{4}{3}\pi r^3 \end{array} \right.$

TRIGONOMETRY

(a)  $\pi = 3.14159 \dots$  [approximations are  $\frac{22}{7}$  and  $\frac{355}{113}$ ]

(b)  $\sin^2 \theta + \cos^2 \theta = 1$

(c)

Degrees	0°	30°	45°	60°	90°
Radians	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
Sine	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
Cosine	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
Tangent	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	$\infty$

(d)  $\sin(-\theta) = -\sin \theta$ ;  $\cos(-\theta) = \cos \theta$   
 $\sin(90^\circ - \theta) = \cos \theta$ ;  $\cos(90^\circ - \theta) = \sin \theta$   
 $\sin(90^\circ + \theta) = \cos \theta$ ;  $\cos(90^\circ + \theta) = -\sin \theta$   
 $\sin(180^\circ - \theta) = \sin \theta$ ;  $\cos(180^\circ - \theta) = -\cos \theta$   
 $\sin(180^\circ + \theta) = -\sin \theta$ ;  $\cos(180^\circ + \theta) = -\cos \theta$

(e) If  $\sin \theta = \sin a$ , then  $\theta = n\pi + (-1)^na$   
 If  $\cos \theta = \cos a$ , then  $\theta = 2n\pi \pm a$   
 If  $\tan \theta = \tan a$ , then  $\theta = n\pi + a$

(f)  $\sin(A+B) = \sin A \cos B + \cos A \sin B$   
 $\cos(A+B) = \cos A \cos B - \sin A \sin B$   
 $\sin(A-B) = \sin A \cos B - \cos A \sin B$   
 $\cos(A-B) = \cos A \cos B + \sin A \sin B$   
 $\sin C + \sin D = 2 \sin \frac{C+D}{2} \cos \frac{C-D}{2}$

$$\sin C - \sin D = 2 \cos \frac{C+D}{2} \sin \frac{C-D}{2}$$

$$\cos C + \cos D = 2 \cos \frac{C+D}{2} \cos \frac{C-D}{2}$$

$$\cos C - \cos D = 2 \sin \frac{C+D}{2} \sin \frac{C-D}{2}$$

$$2 \sin A \cos B = \sin(A+B) + \sin(A-B)$$

$$2 \cos A \sin B = \sin(A+B) - \sin(A-B)$$

$$2 \cos A \cos B = \cos(A+B) + \cos(A-B)$$

$$2 \sin A \sin B = \cos(A-B) - \cos(A+B)$$

$$\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

$$\tan(A-B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$$

$$\sin 2A = 2 \sin A \cos A$$

$$\cos 2A = \cos^2 A - \sin^2 A = 1 - 2 \sin^2 A = 2 \cos^2 A - 1$$

$$\sin 2A = \frac{2 \tan A}{1 + \tan^2 A}; \cos 2A = \frac{1 - \tan^2 A}{1 + \tan^2 A}$$

$$\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

$$\sin 3A = 3 \sin A - 4 \sin^3 A$$

$$\cos 3A = 4 \cos^3 A - 3 \cos A$$

$$\tan 3A = \frac{3 \tan A - \tan^3 A}{1 - 3 \tan^2 A}$$

$$\sin \frac{A}{2} = \pm \sqrt{\frac{1 - \cos A}{2}}; \cos \frac{A}{2} = \pm \sqrt{\frac{1 + \cos A}{2}}$$

$$2 \sin \frac{A}{2} = \pm \sqrt{1 + \sin A} \pm \sqrt{1 - \sin A}$$

$$2 \cos \frac{A}{2} = \pm \sqrt{1 + \sin A} \pm \sqrt{1 - \sin A}$$

(g)  $\log_a mn = \log_a m + \log_a n$

$$\log \frac{m}{n} = \log_a m - \log_a n$$

$$\log_a m^n = n \log_a m$$

$$\log_a m = \log_a m \times \log_a b$$

(h)  $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$   $\cos A = \frac{b^2 + c^2 - a^2}{2bc} \dots$

$$\sin \frac{A}{2} = \sqrt{\frac{(s-b)(s-c)}{bc}} \dots \cos \frac{A}{2} = \sqrt{\frac{s(s-a)}{bc}} \dots$$

$$\tan \frac{A}{2} = \sqrt{\frac{(s-b)(s-c)}{s(s-a)}} \dots$$

$$\sin A = \frac{2}{bc} \sqrt{s(s-a)(s-b)(s-c)} \dots$$

$$a = b \cos C + c \cos B, \dots$$

$$\tan \frac{B-C}{2} = \frac{b-c}{b+c} \cot \frac{A}{2} \dots$$

$$\Delta = \sqrt{s(s-a)(s-b)(s-c)} = \frac{1}{2} bc \sin A = \frac{1}{2} ca \sin B = \frac{1}{2} ab \sin C$$

(i)  $R = \frac{a}{2 \sin A} = \frac{b}{2 \sin B} = \frac{c}{2 \sin C} = \frac{abc}{4 \Delta}$

$$r = \frac{\Delta}{s} = (s-a) \tan \frac{A}{2} = \dots$$

$$r_1 = \frac{\Delta}{s-a} = s \tan \frac{A}{2}$$

$$\text{Area of a quadrilateral inscribable in a circle.}$$

$$= \sqrt{(s-a)(s-b)(s-c)(s-d)}$$

$$\frac{\sin \theta}{\theta} = 1, \text{ when } \theta \text{ is very small.}$$

$$\sin a + \sin(a+\beta) + \sin(a+2\beta) + \dots \text{ to } n \text{ terms}$$

$$= \frac{\sin \left\{ a + \frac{n-1}{2} \beta \right\} \sin \frac{n\beta}{2}}{\sin \frac{\beta}{2}}$$

$$\cos a + \cos(a+\beta) + \cos(a+2\beta) + \dots \text{ to } n \text{ terms}$$

$$= \frac{\cos \left\{ a + \frac{n-1}{2} \beta \right\} \sin \frac{n\beta}{2}}{\sin \frac{\beta}{2}}$$

CONSTANTS

1 metre = 100 cm. = 1000 mm. = 0.001 Km.

1 yard = 3 ft. = 36 in. = 0.9144 metre.

1 mile = 8 fur. = 320 po. = 1760 yards.



1 Hectare = 100 ares = 10,000 sq. metres.  
 1 acre = 4 rods = 4840 sq. yds. = 0.4047 Hectare.  
 1 litre = 1 c. dm. = 100 cl. = 0.01 Hl. = 0.001 c. metre.  
 1 gallon = 4 qt. = 8 pt. = 0.1606 c. ft. = 4.546 litres.  
 1 quarter = 8 bush. = 32 pk. = 64 gal.  
 1 Kilogram = 1000 g. = 0.001 tonne.  
 1 lb. = 16 oz. = 7000 grains = 453.6 grams.  
 1 ton = 20 cwt. = 80 qr. = 2240 lbs.  
 1 litre of water weighs 1 kg.; 1 c. ft. of water weighs 62.3 lbs.  
 1 gallon of water weighs 10 lbs.  
 A circle of a radius  $r$  has a circumference of length  $2\pi r$  and has an area of  $\pi r^2$ , where  $\pi = 3.1416$ .  
 $\frac{1}{\pi} = 0.3183$ ,  $\pi^2 = 9.8696$ .

Base of natural logarithms is  $e = 2.7183$ .  
 The acceleration of a falling body is 32.2 feet per sec. per sec., or 981 cm. per sec. per sec.  
 1 horse-power = 550 foot pounds per second = 746 watts.  
 1 atmosphere = 760 mm. of mercury (30 in.) = 1.03 Kg. per sq. cm. = 14.7 lbs. per sq. inch = 1010 millibars.  
 1 statute mile = 5280 feet = approx. 1.6 kilometres.  
 1 sea mile = 6080 feet = approx. 2000 yds.  
 1 cable =  $\frac{1}{10}$  sea mile.  
 1 shackle =  $\frac{1}{2}$  cable.  
 1 knot = 1 sea mile per hr. = approx. 100 ft. per min.

MECHANICS

$$v = u + ft$$

$$s = ut + \frac{1}{2}ft^2$$

$$v^2 = u^2 + 2fs$$

$$P = mf$$

$$\text{or } P = \frac{mv}{t}$$

Time of swing of Pendulum—

$$t = 2\pi \sqrt{\frac{l}{g}}$$

AREAS AND VOLUMES

$\pi = 3.14159$   
 Circumference of circle =  $2\pi r$   
 Area of circle =  $\pi r^2$   
 Vol. of sphere =  $\frac{4}{3}\pi r^3$   
 Surface of sphere =  $4\pi r^2$   
 Vol. of cylinder =  $\pi r^2 h$   
 Vol. of cone =  $\frac{1}{3}\pi r^2 h$

PHYSICAL AND CHEMICAL CONSTANTS\*

\* Average values are given where materials may vary in quality.

Young's Modulus.	Ultimate Strength.	Modulus of Rigidity.
Brass . . . . . 5,700	11	2000
Steel . . . . . 13,500	28—32	5200
Iron (wrought). . 13,000	20—28	5000
" (cast) . . . . . 6,000	8—11	3000

All the above are in tons per square inch.  
 Gravity—"g" at lat. 45° 980.6 Poles 983.2  
 (cm./sec./sec.) Equator 978.0 Greenwich 981.17

Specific Gravity—

Copper = 8.95	Silver = 10.5—10.3
Iron = 7.84	Calcite = 2.71
Glass = 2.4—2.6	Marble = 2.714
Brass = 8.1—8.6	Turps (Oil) = 0.870
Methd. = 0.825	Weight of 1) = { 1.293
Alcohol = 0.825	litre of air) = { grms.
Paraffin = 0.916	Mercury = 13.596
Wax = 0.916	
Ice = 0.9167	

Earth—Mean Diameter = 7918 miles.  
 Mean distance from Sun = 93,004,000 miles.  
 Mean Density = 5.53 gm./cm.<sup>3</sup>  
 Mass =  $5.9 \times 10^{21}$  tons.

Sun—Diameter = 865,400 miles.  
 Volume = 1,300,000 times that of Earth.  
 Mass = 332,000 times that of Earth.

Moon—Mean distance from Earth = 238,857 miles.  
 Diameter = 2,160 miles.

HEAT

Coefficient of expansion per degree C. (cubic)—

Gases = 0.00366	Brass = 0.000053—0.000057
Glass = 0.000022	Iron = 0.000033—0.000044
Hg. = 0.0001815	Copper = 0.000051
Platinum = 0.000027	

Specific Heat—

Iron = 0.105—0.114	Sulphur = 0.16—0.24
Brass = 0.093	Marble = 0.210
Copper = 0.091—0.095	Carbon = 0.147
Glass = 0.19	Meth. Spt. = 0.615
Calcite = 0.205	Turps = 0.426
Quartz = 0.190	Mercury = 0.033

Air = 0.238

Latent Heats of fusion, Ice = 79.6  
 (calories per of vaporization, Water = 539  
 gm.) of fusion, Lead = 6

TABLE OF MELTING-POINTS

Platinum 1757—1855° C.	Glass (about) 1100° C.
Wrought Iron 1500—1600° C.	Borax (about) 1100° C.
Gold . . . . . 1035—1093° C.	Cane Sugar . . . 160° C.
Cast Iron 1100—1306° C.	Sulphur . . . . . 114.5° C.
Copper . . . . . 1054—1097° C.	White Wax . . . 68° C.
Silver . . . . . 954—986° C.	Paraffin . . . . . 54° C.
Zinc . . . . . 415.3—433.3° C.	Spermacetl . . . 44° C.
Lead . . . . . 322—334° C.	Phosphorus 44—55° C.
Cadmium 315—321.7° C.	Butter . . . . . 33° C.
Bismuth . . . 260—270.5° C.	Lard . . . . . 33° C.
Tin . . . . . 228.5—235° C.	Ice . . . . . 0° C.
Sodium . . . . 90—98.5° C.	Bromine . . . . . -7.3° C.
Potassium 58—62.5° C.	Mercury . . . . . -40.5° to -38.5° C.

TABLE OF BOILING-POINTS at 760 mm. PRESSURE

Nitrous Oxide	-87.9° C.
Carbonic Anhydride	-78.2° C.
Ammonia . . . .	-33.5° C.
Chlorine . . . .	-33.6° C.
Sulphurous Anhydride	-10.0° C.
Ether . . . . .	35.0° C.
Sulphide of Carbon	46.2° C.
Chloroform . . .	60.2° C.
Alcohol . . . . .	78.3° C.
Benzene . . . . .	80.4° C.
Distilled Water	100.0° C.
Spirits of Turpentine	130.0° C.
Oil of Turpentine	159.1° C.
Phosphorus . . .	237.3° C. at 762 mm.
Linseed Oil . . .	316.0° C.
Sulphuric Acid .	325.0° C.
Mercury . . . . .	357.25° C.
Sulphur . . . . .	444.7° C.

CRITICAL TEMPERATURE

Carbon Dioxide 30.92° C.	Nitrogen -146° C.
Hydrogen . . . .	Sulphur . . . . .
243 to 241° C.	Dioxide 155° C.
Oxygen . . . . .	Chlorine 141° C.
-118° C.	

WATER VAPOUR PRESSURE

t.	f.	m.	t.	f.	m.
mm. of Hg.	gm. per cub. m.	mm. of Hg.	gm. per cub. m.		
-10° C.	2.0	2.1	10° C.	9.1	9.4
-8	2.2	2.4	11	9.8	10.0
-6	2.4	2.7	12	10.4	10.6
-4	2.6	3.0	13	11.1	11.3
-2	2.8	3.2	14	11.9	12.0
0	3.1	3.5	15	12.7	12.8
1	3.3	3.8	16	13.5	13.6
2	3.6	4.1	17	14.4	14.5
3	3.9	4.4	18	15.4	15.1
4	4.2	4.6	19	16.3	16.2
5	4.6	4.9	20	17.4	17.2
6	4.6	4.9	20°	17.4	17.2
7	4.9	5.2	21	18.5	18.2
8	5.3	5.6	22	19.7	19.3
9	5.7	6.0	23	20.9	20.4
10	6.1	6.4	24	22.2	21.5
	6.5	6.8	25	23.6	22.9
	7.0	7.3	26	25.0	24.2
	7.5	7.7	27	26.5	25.6
	8.0	8.1	28	28.1	27.0
	8.5	8.8	29	29.8	28.6
	9.1	9.4	30	31.6	30.1

## CONDUCTIVITIES

SUB- STANCE.	ABSOLUTE CONDUCT- TIVITY. K	SUBSTANCE.	ABSOLUTE CONDUCT- TIVITY. K
	<i>O.G.S. units.</i>		<i>O.G.S. units.</i>
Silver	0.974	Lead	0.083
Copper	0.918	Platinum	0.186
Gold	0.700	German Silver	0.070
Brass	0.280	Palladium	0.188
Zinc	0.258	Bismuth	0.0194
Tin	0.155	Ice	0.0052
Iron	0.184	Roll Sulphur	0.0006
Steel	0.158	Coal	0.0003

*Mechanical Equivalent of Heat.*  
 = 778 ft. lb. in lb. ° F units.  
 =  $4.18 \times 10^7$  ergs in grm. ° C. units.

## SOUND

*Pitch* (Philharmonic), 1896—

A = 439 at 68° F.

*Diatonic Scale*— C D E F G A B C

*Intervals*— 1 9 5 4 3 5 15 2

*Velocity per sec.*—

Air at 0° C.	1,090 ft.	331 metres.
Water	4,753 "	1,445 "
Carbon Dioxide	850 "	
Coal gas	1,880 "	
Hydrogen	4,180 "	
Oak	13,500 "	to 14,500
Mahogany	13,500 "	to 15,500
Deal	16,000 "	to 16,500
Brass	12,000 "	
Glass	16,000 "	to 17,000
Pitch Pine	1,250 "	

*Limits of Audition*—30 vibrations to about 40,000.

## OPTICS

## REFRACTIVE INDICES

Diamond	2.42	Hydrochloric	
Flint Glass	1.57	Acid	1.41
Quartz	1.54	Alcohol	1.36
Rock Salt	1.54	Ether	1.36
Canada Balsam	1.54	Water	1.33
Crown Glass	1.51	Hydrogen	1.00014
Plate Glass	1.52	Oxygen	1.00027
Iceland Spar	1.66	Air	1.00029
Alum	1.45	Nitrogen	1.00030
Ice	1.31	Nitric Oxide	1.00029
Carbon disul- phide	1.63	Carbonic Oxide	1.00034
Olive Oil	1.47	Ammonia	1.00038
Oil of Turpen- tine	1.48	Carbonic Acid	
Sulphuric Acid	1.43	Gas	1.00045
		Nitrous Oxide	1.00050
		Chlorine	1.00077

*Velocity of Light in air* = 186,325 miles per sec.  
*Notes.*—The refractive indices of solids and liquids are given against air and those of gases against a vacuum.

## ELECTRICITY

Resistivity (ohms/cm. <sup>2</sup> /cm.)	Temp. Coefficient (per ° C.)
Silver	$1.6 \times 10^{-8}$ 0.0035
Copper	$1.8 \times 10^{-8}$ 0.004
Zinc	$6.2 \times 10^{-8}$ 0.0035
Nickel	$7.7 \times 10^{-8}$ 0.0055
Tin	$1.15 \times 10^{-8}$ 0.004
Lead	$2.1 \times 10^{-8}$ 0.004
German Silver	$2.5 \times 10^{-8}$ 0.0005
Mercury.	$9.41 \times 10^{-8}$ 0.0009

## WAVE LENGTHS

(IN TEN-MILLIONTHS OF A MILLIMETRE)

Name of Line.	Colour.	Salts used.	Wave lengths = $\lambda$ .
Lithium	Red	Lithium chloride or nitrate	6708
Lithium	Orange	Lithium chloride or nitrate	6104
D	Yellow	Sodium chloride or bicarbonate	5893
"Little b"	Green	Magnesium ribbon	5173
Strontium	Blue	Strontium chloride or metal	4607
Calcium	Blue	Calcium nitrate or chloride	4227
Potassium	Violet	Potassium chloride	4046

## CHEMICAL NAMES OF COMMON SUBSTANCES

Alcohol	= Ethyl Alcohol ( $C_2H_5OH$ ).
Alum	= Potassium Aluminium Sulphate ( $K_2SO_4, Al_2(SO_4)_3, 24H_2O$ ).
Aqua fortis	= Nitric Acid ( $HNO_3$ ).
Bi-Carbonate of Soda	= Sodium Hydrogen Carbonate ( $NaHCO_3$ ).
Blue Vitriol (Blue Stone)	= Copper Sulphate ( $CuSO_4, 5H_2O$ ).
Boracic Acid	= Boric Acid ( $H_3BO_3$ ).
Borax	= Sodium Borate ( $Na_2B_4O_7, 10H_2O$ ).
Calomel	= Mercurous Chloride ( $Hg_2Cl_2$ ) (inactive, non-poisonous).
Chalk	= Calcium Carbonate ( $CaCO_3$ ).
Common Salt	= Sodium Chloride ( $NaCl$ ).
Corrosive Sub- limate	= Mercuric Chloride ( $HgCl_2$ ) (violently poisonous).
Epsom Salts	= Magnesium Sulphate ( $MgSO_4, 7H_2O$ ).
Fire Damp	= Methane ( $CH_4$ ) + air.
Glauber Salts	= Sodium Sulphate ( $Na_2SO_4, 10H_2O$ ).
Green Vitriol	= Ferrous Sulphate ( $FeSO_4, 7H_2O$ ).
Hypo	= Sodium Thiosulphate ( $Na_2S_2O_3, 5H_2O$ ).
Lime	= Calcium Oxide ( $CaO$ ).
Oil of Vitriol	= Sulphuric Acid ( $H_2SO_4$ ).
Plaster of Paris	= Calcium Sulphate ( $CaSO_4, H_2O$ ).
Red Lead	= Triplumbic Tetroxide ( $Pb_3O_4$ ).
Sal Ammoniac	= Ammonium Chloride ( $NH_4Cl$ ).
Sal Volatile	= Impure Ammonium Carbonate ( $(NH_4)_2CO_3$ ).
Saltpetre	= Potassium Nitrate ( $KNO_3$ ).
Salts of Lemon	= Potassium Hydrogen Oxalate ( $KHC_2O_4$ ).
Spirit of Salt	= Hydrochloric Acid ( $HCl$ ).
Sugar of Lead	= Lead Acetate ( $Pb(C_2H_3O_2)_2, 3H_2O$ ).
Verdigris	= Basic Copper Acetate ( $-Cu[C_2H_3O_2]_2, Cu(OH)_2$ ).
Vinegar	= Dilute Acetic Acid ( $C_2H_4O_2$ ).
Washing Soda	= Crystalline Sodium Carbonate ( $Na_2CO_3, 10H_2O$ ).
White Lead	= Basic Lead Carbonate ( $2PbCO_3, Pb(OH)_2$ ).

## UNITS AND DIMENSIONS.

	Symbol.	Dimension.	Absolute Unit.	Practical Unit.	Ratio.
Length . . . . .	<i>l</i>	<i>L</i>	centimetre	micro-millimetre	$10^{-7}$
			foot	light-year	$946 \times 10^{15}$
Mass . . . . .	<i>m</i>	<i>M</i>	gram	mile	5280
			pound		
Time . . . . .	<i>t</i>	<i>T</i>	second		
Velocity . . . . .	<i>v</i>	<i>LT^{-1}</i>	cm. per sec.		
			ft. per sec.	miles per hr.	1.47
Acceleration . . . . .	<i>f</i>	<i>LT^{-2}</i>	cm. per sec. per sec.	knots	
			ft. per sec. per sec.		
Momentum . . . . .	<i>mv</i>	<i>MLT^{-1}</i>			
Force . . . . .	<i>F</i>	<i>MLT^{-2}</i>	Dyne		
			poundal	poundweight	32.2
Work, Energy . . . . .	<i>U</i>	<i>ML^2T^{-2}</i>	erg	joule	$10^7$
			foot-poundal	foot-pound	32.2
Power . . . . .	<i>P</i>	<i>ML^2T^{-3}</i>	ergs per sec.	watt	$10^7$
			foot-pounds per sec.	foot-pounds per sec.	32.2
				horse-power	$1.77 \times 10^6$



## ELEMENTS

Element.	Symbol.	Atomic Number.	Atomic Weight.	Element.	Symbol.	Atomic Number.	Atomic Weight.
actinium	Ac	89	227	mercury	Hg	80	200.61
aluminium	Al	13	26.97	molybdenum	Mo	42	96
americium*	Am	95	243				
antimony	Sb	51	121.76	neodymium	Nd	60	144.27
argon	A	18	39.944	neon	Ne	10	20.183
arsenic	As	33	74.91	neptunium*	Np	93	237
astatine*	At	85	210	nickel	Ni	28	58.69
				niobium	Nb	41	92.91
barium	Ba	56	137.36	nitrogen	N	7	14.008
berkelium*	Bk	97	249				
beryllium	Be	4	9.02	osmium	Os	76	190.2
bismuth	Bi	83	209.00	oxygen	O	8	16.000
boron	B	5	10.82				
bromine	Br	35	79.916	palladium	Pd	46	106.7
				phosphorus	P	15	30.98
cadmium	Cd	48	112.41	platinum	Pt	78	195.23
calcium	Ca	20	40.08	plutonium*	Pu	94	244
californium*	Cf	98	249	polonium	Po	84	210
carbon	C	6	12.010	potassium	K	19	39.096
cerium	Ce	58	140.13	praseodymium	Pr	59	140.92
caesium	Cs	55	132.91	promethium*	Pm	61	147
chlorine	Cl	17	35.457	protactinium	Pa	91	231
chromium	Cr	24	52.01				
cobalt	Co	27	58.94	radium	Ra	88	226.05
copper	Cu	29	63.57	radon	Rn	86	222
curium*	Cm	96	245	rhentum	Re	75	186.31
				rhodium	Rh	45	102.91
dysprosium	Dy	66	162.46	rubidium	Rb	37	85.48
				ruthenium	Ru	44	101.7
einsteinium	E	99	255	samarium	Sm	62	150.43
erbium	Er	68	167.2	scandium	Sc	21	45.10
europium	Eu	63	152.0	selenium	Se	34	78.96
				silicon	Si	14	28.06
fermium*	Fm	100	255	silver	Ag	47	107.88
fluorine	F	9	19.00	sodium	Na	11	22.997
francium*	Fr	87	223	strontium	Sr	38	87.63
				sulphur	S	16	32.066
gadolinium	Gd	64	156.9	tantalum	Ta	73	180.88
gallium	Ga	31	69.72	technetium*	Tc	43	99
germanium	Ge	32	72.6	tellurium	Te	52	127.61
gold	Au	79	197.2	terbium	Tb	65	159.2
				thallium	Tl	81	204.39
hahnium	Hf	72	178.6	thorium	Th	90	232.12
helium	He	2	4.003	thulium	Tm	69	169.4
holmium	Ho	67	164.94	tin	Sn	50	118.7
hydrogen	H	1	1.0080	titanium	Ti	22	47.90
				tungsten	W	74	183.92
indium	In	49	114.8	uranium	U	92	238.07
iodine	I	53	126.92	vanadium	V	23	50.95
iridium	Ir	77	193.1	xenon	Xe	54	131.3
iron	Fe	26	55.84	ytterbium	Yb	70	173.04
				yttrium	Y	39	88.92
krypton	Kr	36	83.7	zinc	Zn	30	65.38
lanthanum	La	57	138.92	zirconium	Zr	40	91.22
lead	Pb	82	207.21				
lithium	Li	3	6.940				
lutetium	Lu	71	175				
magnesium	Mg	12	24.32				
manganese	Mn	25	54.93				
mendelevium*	Mv	101	256				

\* In the cases of these elements, which are very rare or not found in nature, but have been artificially prepared, atomic weight in the chemical sense is meaningless; the integral mass of the most stable isotope known is given.

## GAS LAWS

Boyle's Law (1662)  $pV = \text{constant}$ .

Charles' Law (1787)  $\frac{pV}{T} = \text{constant}$ .

Van der Waal's equation  $\left(p + \frac{a}{V^2}\right)(V - b) = RT$  where  $a$  and  $b$  are constants.

Adiabatic expansion of a gas  $pV^\gamma = \text{constant}$  where  $\gamma = \frac{C_p}{C_v}$ .

# Medical



## LIST OF CONTENTS

Medical Dictionary	763-803	Baby Care	810-16
First Aid Hints	804-05	Maternal and Child Care in the so-called Backward Areas of the World.	816
National Health Service	806-09		



# Medical Dictionary

It is impossible for any one individual to keep abreast of all the advances in modern medicine. The subject is far too complex, and there are far too many special branches of which the general practitioner can only know the mere outlines. But it is possible, at least, to show along what lines medicine has recently developed, and what are the main directions in which it is progressing. These are somewhat as follows :

Firstly, medicine is becoming much more scientific. Doctors are no longer content merely to relieve symptoms; they want to know what the symptoms mean. In the past they have often tended to suppress pains and the other annoying or distressing signs of illness. Now they want to know their meaning so that they can attack the fundamental cause. In this they have been aided by the discovery of powerful new drugs of the type which the German scientist Ehrlich once called "magic bullets". These are drugs which, when introduced into the body, specifically attack the bacteria causing the trouble. Up to the end of the nineteenth century, physicians rarely cured diseases; they simply tried to put the patient in the best condition so that he might be cured by nature. Now, drugs such as the sulphonamides and penicillin directly attack the cause of infectious diseases and destroy them. In other words, medicine has passed from what was very largely a position of active defence to an active attack on the causes of disease. But all illnesses are not caused by bacteria, and a further great discovery has been the fact that emotions, when long continued, can cause disease. Resentment, lack of affection, fear, worry, and hatred, can make people ill with such diseases as gastric ulcer, high blood-pressure, various skin diseases, and nervous illnesses. They may even indirectly lead to infectious diseases by lowering the resistance of the body to bacteria. What this means, is that the physician now studies the whole man. To find the cause of any one illness, the doctor needs to consider the patient's physical health, the shape of his body, his previous illnesses, his occupation, whether he is happy in his work and at home—in fact, he must consider the patient as an individual, not as a machine. In any one disease one of these factors may be more important than the others; an ill man is not necessarily unhappy, but he very often is. To take an example: a patient with asthma is found to have attacks which are caused by inhaling the dust of a substance with which he works. But the explanation does not end there. His tendency to asthma is perhaps inherited, but it would not have happened had he not become sensitised to this particular dust at his work. Nor would it have affected his chest had he not suffered from bronchitis in childhood. His relatives notice that he has more frequent attacks when he is angry or irritable—emotions have a strong influence on asthmatic seizures. In order to treat this one case, then, the doctor has to consider heredity, childhood illnesses, occupation, and home environment. That is, he should ideally be a scientist, a specialist in chest diseases, an industrial medical officer, and a psychologist.

The modern physician is much more inclined to trust nature. He uses far fewer strong and dangerous drugs—especially antiseptics. There is a great deal of truth in Bernard Shaw's statement that the use of soap and improved hygiene have done more than vaccination and inoculations to put an end to the epidemics of smallpox and other infectious diseases. But vaccination and inoculations have also played an important part. Improved Public Health measures are one of the most potent weapons of modern medicine: for the best doctors in the world could not have saved as many lives as the simple procedure of ensuring a pure water supply, or improving methods for the disposal of sewage. In 1840 the average age of death was twenty-nine, today it is fifty-eight. In 1840 one-third of all the babies born died before the age of five. In the really bad areas of the industrial slums the average age of death was thirteen, and fifty to sixty per cent of the total deaths were infants under five. The common causes of death were typhoid fever, smallpox, cholera, and starvation. Typhoid and cholera are both spread by infected water supply, and could not be dealt with until the first Board of Health in the early nineteenth century insisted on a pure water supply and proper disposal of waste.

Public Health includes preventive medicine. We have discovered that it is easier, cheaper, and more humane to keep people from becoming ill than to cure them once they are ill. Preventive medicine covers a vast field: inoculation protects against such diseases as smallpox, typhus, typhoid, tetanus, diphtheria, and so on; giving a good food supply prevents the vitamin deficiency diseases of scurvy, rickets, and night-blindness; ante-natal clinics reduce maternal mortality by noting dangerous symptoms in time. Examination of school-children by doctors, dentists, and eye-specialists, extra milk for schools, and Child Guidance Clinics, all play a part in the prevention of disease. No less important is the function of Industrial Medicine in keeping workers healthy mentally and physically, and Education, whether adult or juvenile, in making them well-informed. Ignorance is an ally of disease. It is important to realise that one of the signs of health is to be unconcerned with health. Provided one eats enough of the proper kind of food, keeps clean within reason, does not worry unduly, and, above all, keeps happy and occupied, there is no reason whatever to keep thinking about one's health. In fact, it would not be difficult to show that the most miserable people are those who make a hobby of their health, and are always trying to keep fit. It may be that those who lead sedentary lives require a certain amount of exercise in order to keep fit, but, on the whole, exercise should be motivated by pleasure rather than by a sense of duty. The best reason for playing games is that one likes doing so, and joy and enthusiasm in living make up for a great deal of lack of exercise. Nothing is more pathetic than to see an over-developed body associated with an under-developed mind. Excessive attention to health is confusing the means with the end; one wants a healthy body and mind in order to live a happy and useful life, but being healthy in itself is not the sole purpose of life.

**Abdomen.** The part of the body lying below the chest and above the thighs. Pain in the abdomen may be due to many causes; flatulence, indigestion, appendicitis, gall-bladder inflammation, dysmenorrhœa, and so on. Usually it is necessary to call a doctor to distinguish between these various pains, but the following generalisations may be made: pain due to indigestion is usually relieved by one of the many alkaline mixtures; other pains will be at least temporarily relieved by the application of a rubber hot-water bottle; purgatives must never be used while abdominal pain is present—even death may result from this; finally, in severe or prolonged pain, or pain accompanied by vomiting, a doctor should be called at once. (*See Duodenal ulcer, Appendicitis, Dyspepsia, Gall-stones, Dysmenorrhœa.*)

**Abortion.** The termination of pregnancy, from whatever cause, before the child is capable of independent existence. Deliberate abortion is illegal in Britain unless two doctors are able to certify that having a child will endanger the mother's life. It is, of course, very common, but extremely dangerous. No drug will produce abortion without severely affecting the mother (unless there is a strong tendency to abortion in any case). Inserting instruments in the womb is even more dangerous as it is likely to lead to infection. The Catholic Church forbids deliberate abortion in any circumstances. Signs of a threatened abortion are, abdominal pain in the lower part of the abdomen, and vaginal bleeding. Such symptoms in a pregnant woman should be treated by immediate rest in bed: the doctor should be called.

**Abortus Fever.** An infectious disease, also known as undulant fever, which produces abortion in cows and pigs. Human beings may develop the disease by drinking cow's milk containing the germs, or by handling infected material from a cow or pig. Abortus fever is very similar to Malta fever, which is spread by goat's milk. As its other name implies, the fever "undulates" for several weeks; but modern drugs are, on the whole, successful in treating this condition. At least 25 per cent. of the unpasteurised milk in Britain is contaminated by the bacillus abortus, the causative organism of the fever.

**Abrasion.** Any injury which rubs off the surface skin. An abrasion should be washed thoroughly in soap and water and a clean dressing applied. A little vaseline will keep the dressing from sticking. Strong antiseptics (*see Antiseptics*) are neither necessary nor desirable, as they are liable to destroy the body cells and prevent healing. If used at all, antiseptics should not be repeated on re-dressing.

**Abscess.** A collection of pus enclosed anywhere in the body—in other words, a sort of internal boil. It is caused by infection with germs and may end in one of three ways: by bursting inwardly, by bursting on the surface of the body, or by becoming absorbed. Most abscesses are short-lived, but some, as in tuberculosis ("cold abscess"), are chronic and last for a long time. Since the usual treatment is surgical, combined with the use of penicillin or sulphonamide drugs, it is necessary in most cases to call a doctor.

**Achondroplasia.** A form of dwarfism in which the trunk is of normal size, but the limbs are too short.

**Acidosis.** Meaning an acid condition of the blood, is a misnomer, since the blood is always alkaline. The name therefore means decreased alkalinity, and applies to a tendency rather than to a disease. Acidosis is not nearly so common as is usually thought, but where it exists without any serious disease being present, it may be relieved by taking more oranges and other citrus fruits in the diet.

**Acidity.** Excess of the hydrochloric acid normally found in the stomach. It is found in some, but by no means all, cases of dyspepsia; for indigestion may be caused by lack of acid as well as by excess. Acidity is relieved by the use of alkaline powders, such as magnesium trisilicate, but prolonged indigestion should be treated by a doctor.

**Acne.** "Blackheads" are usually found on the face and chest. As they are caused by minor imbalance of the gland secretions, they occur most often at puberty and in adolescence. The skin is generally oily. In mild cases, anything which dries up the skin will relieve the condition. Thus

frequent washing with antiseptic detergents such as "Cetavlon" is useful. In more severe cases, sulphur lotion should be dabbed on at night. Ointments or other greasy substances should never be used. In the worst cases, medical attention is required, and X-rays or injections of glandular extract may be used.

**Acridavine.** A yellowish antiseptic used for wounds. It is useful, but modern developments have made it somewhat out of date.

**Acromegaly (gigantism).** A state of excessive growth of the body caused by overaction of the pituitary gland in the base of the brain. The giants of circus sideshows are suffering from this disease. It can only be stopped by operation at an early stage.

**A.C.T.H.** An abbreviation for adreno-cortico-thyrotropic-hormone, a new drug which has an action similar to that of Cortisone (which *see*).

**Adenoids.** In the back of the throat, and elsewhere in the body, are areas of spongy tissue which have the function of trapping germs. When, at the back of the nose and throat, these tissues become inflamed and infected, they are no longer able to work properly, and cause obstruction to breathing. This condition is usually found in children, and the symptoms are—cough, sometimes fever, frequent colds, mouth breathing, and tendency to disease of the ears. Difficulty of breathing results in a typical facial expression: the mouth is open, the eyes dull, and the child appears stupid. Treatment is by surgical operation—a relatively simple one.

**Adhesions.** After an operation, areas which have been cut or bruised may adhere to each other by fibrous tissue and cause pain through stretching. This, however, is less common than is generally thought.

**Acrophagy.** (*See Flatulence.*)

**Agar.** A form of seaweed used in treating constipation.

**Ague.** An old-fashioned name for malaria or other fevers.

**Air.** Important factors about the air we breathe are—temperature, moisture, and dust content. Ideally, a climate should be temperate, neither too dry nor too moist, and there should not be excessive dust in the atmosphere. However, the body is very adaptable and a great deal of nonsense is talked about the subject of fresh air. There are not many houses with insufficient air, even when doors and windows are closed. The idea that open windows make an immense difference to health is ridiculous, but, on the other hand, cool air is more stimulating than air which is over-heated.

**Albuminuria.** (*See Nephritis.*)

**Alcohol.** In moderation, alcohol is a lubricant of civilisation. It encourages sociability, and, generally speaking, makes people more friendly. In moderate doses, alcohol is harmless, and, from the lessening of mental tension it induces, perhaps even helpful. It is absurd to believe that it has any serious pretence to be considered as a food. When alcohol becomes a necessity, and life becomes intolerable without it, the condition becomes one of alcoholism, which is a disease. Many treatments have been employed for alcoholism, but it can be stated categorically that any treatment based on drugs alone is bound to fail. Drunkenness can only be cured by understanding and treating the causes which compel the patient to drink; the body known as "Alcoholics Anonymous" often helps.

**Allergy.** Means abnormal sensitivity to any substance which does not affect normal people—hay-fever, asthma, eczema, migraine, are all allergic diseases. The substances causing them may be pollen, grasses, feathers, dust from plants or animals, and so on. When the particular substance to which the patient is over-sensitive is discovered, it may be possible to desensitise and so cure him by injecting increasing doses of the stuff under the skin. Allergic diseases are related to emotional upsets. *See Antihistamine Drugs.*

**Aloes.** A strong vegetable purgative.

**Alopecia.** (*See Hair.*)

**Amenorrhœa.** Stopping of the normal monthly periods. It may be due to pregnancy, anaemia, or internal causes in the pelvis. Treatment depends on the cause. In healthy women, amenorrhœa may be caused by fear or hope of pregnancy.



**Amnesia.** Loss of memory, may be due to physical causes, *e.g.*, following a blow on the head, there may be forgetfulness of the short period prior to the accident. Most types are psychological in origin and are caused by the repression of thoughts which conflict with the everyday beliefs of the individual, *e.g.*, a soldier may desert in a state of amnesia. Nevertheless, loss of memory is not nearly so common as many people choose (often conveniently) to think.

**Anæmia** ("Bloodlessness") happens when the red cells which carry oxygen from the lungs, by way of the blood vessels, to the rest of the body are reduced in number. This may happen in various ways. An accident may cause anæmia if there is severe bleeding; the bone-marrow which manufactures new blood cells may become exhausted; or poisons may kill many of the cells. In other words, anæmia is caused by loss of blood, by destruction of blood in the body, or by lack of materials to build new blood. By far the commonest type of anæmia is that due to excessive menstrual loss and inadequate food in young women. Symptoms are paleness, exhaustion, and breathlessness. Treatment is to take iron in the form of Blaud's capsules, or ferrous sulphate. Yeast—either Marmite or tablets—is useful in addition to the iron. Men less often have simple anæmia, but gastric cases who take too little proper food may suffer from it; treatment is the same. Other types of anæmia need specialised treatment and cannot be dealt with without medical help. In particular, pernicious anæmia requires different treatment, since it is due to lack of a substance which enables blood to be manufactured in the body. The substance is found in stomach or liver extracts, which are therefore used in treatment.

**Anæsthesia.** Any drug used by surgeons to remove pain during an operation. Opium and similar substances have been used for centuries to relieve pain, but the characteristic of an anæsthetic is that it completely prevents the pain, either by making the patient unconscious, or by the use of local anæsthesia, which removes pain sensations from a particular part of the body. The first general anæsthetic to be used in this country was chloroform, the use of which was discovered by Professor J. Y. Simpson of Edinburgh. It was used mainly to relieve pain in child-birth, and became popular after Queen Victoria had permitted its use during the birth of one of her children.

An American dentist, Horace Wells (1815-48), used nitrous oxide ("laughing gas") some years before the use of chloroform became known, and ether has also been extensively used. All the above drugs are administered by breathing through a mask.

Nowadays it is much more common to give general anæsthetics in the form of an injection, and such drugs as sodium amylal, Pentothal, and others are used. These act more quickly than the older type, and the after-results are less unpleasant. Local anæsthetics are also used in modern surgery. In small operations they may simply be injected into the spot to be operated on, but, when larger areas are being dealt with—*e.g.*, the arm—loss of feeling may be produced over the whole limb by injecting the main nerves in the shoulder. A still larger area may be rendered insensitive by injecting the drug into the spinal canal. This is known as spinal anæsthesia, and removes all feeling below the waist.

It is not always realised that the inside of the body is capable of very little sensation. The intestines, or even the brain, may be operated on without producing any pain whatever, and all that is necessary is to deaden the nerves in the skin and muscle where the incision has to be made. Brain and abdominal operations are therefore frequently done with only a local anæsthetic. The first such anæsthetic to be used was cocaine, but it was found too dangerous, and now synthetic drugs are always used.

For many minor operations, such as the opening of an abscess, all that is necessary is to freeze the surface of the skin by the use of a substance known as ethyl chloride, which evaporates so quickly that it produces a thin layer of frost on the skin, temporarily paralysing the nerve endings.

**Analgesia.** A drug prescribed for the relief of

pain. The best known analgesic is aspirin, which deadens centres in the brain where pain is felt. Although many other analgesic drugs are known, it can be stated generally that any pain which does not respond to 10 grs. of aspirin (two tablets) will not respond to anything less potent than morphia.

**Anatomy.** The science which deals with the structure of the body. It describes the way the body is built, while the related science of physiology describes how it works.

**Aneurysm.** A swelling in a blood-vessel arising from the stretching of a weak place in the wall. Aneurysms may occur in almost any blood-vessel in the body, but are usually found on the larger or medium-sized arteries. The most usual cause is an infection destroying part of the elastic tissue of the artery—for example, chronic syphilis was at one time a common cause of aneurysm in the aorta (the main blood-vessel arising from the heart). A nearby abscess may also cause weakening leading to aneurysm. Gunshot wounds may have a similar effect. The circle of arteries surrounding the spinal cord at the point where it joins the brain, may be the site of congenital aneurysms, that is to say, aneurysms present from birth. In most cases, no treatment is possible, unless the swelling is in some easily accessible spot. It may then be possible to remove the aneurysm, or introduce some material which causes the blood to clot inside. In the brain, such treatment is obviously impossible. The chief danger is that the aneurysm may rupture and cause a serious hemorrhage, so it is always necessary for the patient to be under constant medical supervision, and to take life easily.

**Angina Pectoris.** An illness marked by severe attacks of pain over the heart, coming on following exertion. It is most important to remember, however, that 99 per cent. of people with pain in the chest do not suffer from angina. Pain, in fact, is a very uncommon symptom in heart disease. The most common causes of chest pain are—fibrositis, injury, and pleurisy, in that order of frequency. The pain of angina is very severe, and is, perhaps, the most terrible pain known in any disease when the condition is fully developed. It comes on following exertion, and usually radiates from the heart region along the inner side of the left arm. Whenever the exertion stops, the pain tends to subside. Coronary thrombosis (which see) causes a similar pain—not, however, relieved by cessation of exertion. Angina is caused by narrowing of the blood-vessels to the heart, which prevents an adequate supply of blood reaching it. Treatment should only be carried out under the care of a doctor, but the outlook, with reasonable precautions, is quite good. Recently it has been discovered that angina tends to occur in people of a particular psychological type, and the victims are usually over-consciousness brain-workers. Many people have their first attack following severe reverses in business. The most important don'ts for people suffering from this illness are: Don't eat too much, or too quickly, avoid sudden or prolonged physical exercise, avoid emotional stress or worry, and get plenty of sleep. Try to reduce if overweight.

**Ankylosis.** Partial or complete rigidity of a joint produced either by disease, such as arthritis, or deliberately, by surgical operation.

**Anorexia.** Loss of Appetite (which see).

**Antabuse.** The name of a proprietary drug used in the treatment of alcoholism. Antabuse works by producing unpleasant symptoms of giddiness, faintness, and collapse in those who subsequently take alcohol.

**Anthrax.** Anthrax is an uncommon disease in this country. The germ, first discovered by Koch, is usually found in the hair, hide, or excretions of animals. It is, therefore, most often found in farm-workers, workers with hides, and butchers. There are two forms of the disease; when the infection is on the surface of the body, large boils result, but the germs may be breathed in, causing a sort of pneumonia known as "wool-sorter's disease." A common cause of the skin variety is by using an infected shaving brush.

Since Anthrax is uncommon, we need not discuss here any further details. In treatment, serums have been used, and the sulphonamide drugs have also been found useful. Without immediate treatment, the outlook is very bad.

**Antibiotics.** The group of drugs to which penicillin (which see) belongs. Most antibiotics are prepared from moulds or mould-like organisms, and, together with the sulpha drugs (sulphathiazol, "M. & B. 693," etc.), have revolutionised the practice of medicine. While penicillin acts upon staphylococci, streptococci, pneumococci, meningococci, and the germs of gonorrhoea, syphilis, and certain other diseases, the other antibiotics—streptomycin, aureomycin, chloromycetin, terramycin—have differing ranges of curative effect. Thus, streptomycin is most frequently used in the treatment of certain types of tuberculosis, and, although it has not proved so easy to cure these conditions as it was for penicillin to cure the others, in at least two diseases which were formerly incurable there is now some hope for the patient. These diseases are tuberculous meningitis and acute miliary tuberculosis, which, instead of being invariably fatal, are now cured in about 25-40 per cent. of cases. Streptomycin is, however, a more dangerous drug to use than penicillin, which is almost non-poisonous.

Aureomycin, unlike the other drugs, is given only by mouth. It is effective in even more diseases than either of the above. Good results have been noted in gonorrhoea, all types of pneumonia, typhus and typhoid fevers, undulant fever, psittacosis, as well as in staphylococcal and streptococcal infections. Unlike either penicillin or streptomycin, germs do not become resistant to aureomycin after repeated use.

Chloromycetin is similar in effect to aureomycin, is given by mouth, and is most potent in the treatment of the typhoid group of diseases. It seems likely that drugs of this type will be multiplied almost indefinitely and will become ever more potent over a greater range of diseases. As has been indicated, the main danger is that after repeated use germs may become resistant to them, but a solution will no doubt be found to this problem.

**Antidote.** A remedy given to counteract a poison. (See under Poison.)

**Antihistamine Drugs.** A series of new drugs used in the treatment of allergy (which see). Although allergic diseases, such as asthma, hay fever, dermatitis, some types of migraine, and perhaps even acute nephritis are due to an abnormal sensitivity to various substances, the final result in the body is always the same: a substance known as histamine is liberated from the body cells. Histamine is, therefore, the immediate cause of the symptoms of allergic illnesses. Antihistamine drugs aim to neutralise the effects of histamine on the body, but, although they were at first highly thought of, it is now generally believed that their use is strictly limited. Their main use is in hay fever and in certain specific types of dermatitis such as urticaria (*i.e.*, "nettle rash"). These drugs do not effect a permanent cure, and, even in those cases where they are of help, require to be continued. Unpleasant symptoms, such as giddiness, sleepiness, and so on, may result from the use of antihistamines, which should, therefore, always be used under the direction of a doctor. Recently, it has been shown that the morning sickness of pregnancy responds very well to such treatment. A good deal of publicity was given to the use of antihistamine drugs in the prevention and cure of colds; they were widely used in the United States for this purpose. More careful experiments have shown that they are quite useless in this field. Proprietary names of the drugs are Anthisan, Antistin, Benadryl, Ancolan, Phenergan, and Thephorin.

**Anticoagulants.** A new group of drugs, such as Dicoumarin, which reduce the clotting tendencies of the blood. They are used to prevent thrombosis (which see).

**Antiseptic.** A drug which destroys germs. Antiseptics were, naturally, unknown, until the discovery by Pasteur that some diseases are caused by germs. It then became a logical necessity to discover something that would destroy germs without unduly harming the human body. The second factor is the critical one, because, although thousands of substances are known which will kill bacteria, the vast majority are equally deadly to the cells of the body. Lister, who discovered the use of antiseptics, first used carbolic acid, and this is still used, either diluted, or in the form of soap. But modern research has discovered countless other safer substitutes.

From the practical point of view, what should be remembered is that the incorrect use of antiseptics may produce a result almost as bad as the disease they were designed to prevent. Doctors commonly see patients with an injury or abrasion, received many weeks before, which has remained still unhealed because antiseptics have been applied daily, thus interrupting the healing process and destroying the growing cells. Most wounds, unless obviously contaminated with dirt, are fairly clean to begin with, and all that is necessary is to wash the area with soap and water, and apply a sterile dressing. If antiseptics must be used, they should be used only on the first occasion of treating the wound. It is quite useless to go on applying antiseptic to an area where no germs exist. In any case, after the first few hours, any germs in the wound will have gone far below the surface, where they can no longer be reached.

There are so many excellent proprietary antiseptics that nobody need ever use the old crude ones such as acriflavine, carbolic acid, and iodine. The best to use are those containing hypochlorites, such as Milton, or the more complex ones, such as Dettol, and numerous others.

When used for other purposes than the cleaning of wounds, different antiseptics must be used. Probably the best gargle is glyco-thymoline, or Listerine. It should be remembered, however, that gargling, from the medical point of view, serves very little useful purpose. It is not possible, in tonsillitis, for example, to do anything more than kill a thin layer of germs on the surface, and the germs must be attacked by modern germ-killing substances, such as penicillin or sulphonamide, which circulate in the blood. Of course, gargles refresh the patient and create a pleasant taste in the mouth.

Vaginal douches for women, unless local disease or discharge is present, should not contain antiseptic at all, and ordinary warm water is quite adequate. It is always unwise to use any antiseptic frequently, and even the regular use of antiseptic mouth-wash is better avoided, as the body in health supplies its own antiseptics.

**Anti-Toxin.** A substance manufactured by the blood, which neutralises the poison (toxin) given off by a particular germ. Each anti-toxin is specific for one particular germ and no other. They are created by the body in response to invasion by germs, and it is for this reason that injections of dead germs (*e.g.*, T.A.B. given in the Army) are given to stimulate the creation of anti-toxin.

**Antrum.** A space within a bone, usually that in the maxilla or upper jaw.

**Anuria.** Inability to pass urine, which may be due to (1) a failure of the kidneys to secrete urine, or (2) some factor preventing the escape of urine from the bladder.

**Anus.** The outlet of the bowel.

**Aorta.** The main artery leaving the heart.

**Aphasia.** A condition produced by brain disease, in which the patient, although his power of producing sounds is unimpaired, is unable to form words.

**Aphrodisiac.** A drug which produces sexual excitement. Although drugs are often sold for this purpose, no true aphrodisiac exists. That is to say, no drug can stimulate desire unless it already exists. Alcohol, by reducing the critical faculties, may make people aware of previously suppressed desire, but it does not create it. Most of the drugs sold as aphrodisiac are merely poisons which have a local irritant effect on the sexual organs. When normal desire is absent, a doctor should be consulted, and it may be possible to relieve the condition by the use of sex-hormones. However, nearly all lack of normal sexual feeling is caused by psychological factors.

**Apoplexy.** Commonly known as a "stroke." This usually affects people with high blood-pressure and hardening of the arteries, and is one of the commonest causes of death. It may be caused by three different mishaps: (1) rupture of a blood-vessel in the brain, producing hemorrhage which destroys part of the brain tissue; (2) embolism, which is produced by a clot of blood from somewhere else in the body lodging in an artery in the brain, and thus stopping the blood supply to the part affected. This type frequently occurs after an operation elsewhere in the body; (3) thrombosis, where a clot develops spon-



taneously in one of the blood-vessels of the brain producing the same effect as in (2).

Hæmorrhage most usually occurs during excitement or exertion. Embolism, which may occur in younger people, sometimes happens when, a week or so after an operation, the patient is getting up for the first time. Thrombosis may occur during sleep. In all cases, however, the result is the same—paralysis, due to destruction of part of the brain, develops almost at once. Most usually, the paralysis is of one half of the body, but sometimes only an arm or leg may be affected. To begin with, the patient is generally unconscious, and, indeed, he usually falls down immediately the stroke occurs. He should not be moved until the doctor arrives, nor should any attempt be made to force alcohol or other stimulant down his throat. He should be kept warm.

The after-care is a matter for medical attention, but, if the patient survives the first day, the immediate outlook is fairly good. Prolonged rest in bed will probably be necessary, and the main point at this stage is to avoid bedsores (which see).

**Appendicitis.** This condition was hardly known until the end of last century, and the symptoms were probably attributed to other causes. The appendix is a small body, about the size of the little finger, which projects from the large intestine in the right lower part of the abdomen. In many other animals the appendix does not exist, but apes, dogs, cats, and sheep have an appendix just like human beings.

It used to be thought that appendicitis was always caused by blocking of the appendix with seeds or indigestible foods, but this is no longer believed. The illness is due, like any other kind of inflammation, to an infection with germs, which may result in blocking of the canal and formation of an abscess. Another fallacy is the belief that appendicitis is a disease of civilisation. In fact, it is equally common among primitive peoples. Appendicitis comes seventh or eighth on the list of the commonest causes of death, and a very common reason for death is that the patient has taken castor oil, or some other purgative to cure a pain in the abdomen, which really is appendicitis. Purgatives should, therefore, never be taken when any pain is present.

Appendicitis usually begins with a general feeling of unwellness, and soreness in the upper part of the abdomen—that is, in the region of the stomach. Later the pain becomes more severe and localized in the right-hand lower part of the abdomen. There may be vomiting, and the temperature and pulse-rate rise. It is important to realise, however, that the symptoms may be by no means as obvious as this, and even surgeons have difficulty in discovering the cause at times.

Once discovered, the treatment by operation is simple, and usually the patient will be out of hospital in about ten days.

**Appetite.** The feeling of hunger is caused by contractions of the stomach. Anything, therefore, which tends to upset this will cause loss of appetite. Excessive smoking, for example, is one of the commonest causes, since tobacco causes the stomach muscle to relax. It is usually considered that general debility spoils the appetite, but people who are very run-down may nevertheless be extremely hungry.

The fact is, that the main stimulus to appetite is psychological, and hunger cannot exist in the presence of fear, anxiety, or worry. The mind must be at rest, and, for this reason, it often helps to drink wine or small amounts of spirits, before, or during, meals. Reading or thinking of business during meal-times, is, of course, bad.

**Arteriosclerosis.** As people grow older, their arteries tend to become thick and less elastic. The cause of this is not known, but it seems to occur earlier in some families than others. It has been said that excessive smoking or drinking may lead to arteriosclerosis, but this is nonsense, for cases of chronic alcoholism show no more tendency in this direction than others. People with hardening of the arteries tend to have an abnormally high blood-pressure, which is an attempt on the part of the body to compensate for the narrowing of the blood vessels. In such cases it is sometimes dangerous to try to bring the pressure down.

The commonest symptoms of arteriosclerosis are headaches, insomnia, buzzing in the ears and giddiness, but it should be remembered that

millions of people have these symptoms from psychological or other causes.

There is no treatment for arteriosclerosis, because it is a physical impossibility to alter the composition of the blood-vessel walls. It is therefore sheer waste of time and money to take patent medicines. The doctor may, however, order sedatives, or various other drugs to help headaches or sleeplessness. Recent research suggests that, although the fully-developed condition cannot be cured, it may be dieting be possible to prevent the disease.

Many people who have lived to be a hundred have had hardening of the arteries for forty or more years, so the condition is not necessarily serious; but if the hardening is in the blood-vessels of the brain or heart, the outlook is not so good.

**Arthritis.** Inflammation of one or more joints. The commonest cause of arthritis occurring simultaneously in a large number of joints is rheumatic fever (which see), but other types, such as rheumatoid arthritis and osteo-arthritis, may be found. The acute type—that is, the type that comes on suddenly and lasts for a relatively short time—may be due to rheumatic fever, or infection with the germs that cause scarlet fever, typhoid fever, or gonorrhœa. These latter types, then, are caused by definite infection with a germ. Rheumatoid-arthritis, on the other hand, is due to some unknown cause, but fatigue, injury, emotional strain, or exposure to damp or cold, are contributing causes.

The usual symptoms are pain and swelling in the joints anywhere in the body, but there is a degenerative type of arthritis known as osteo-arthritis which comes on with old age, although it may be present in younger people after an injury. This kind is not caused by any infection, but simply by hardening of the bones in the area of the joint.

Treatment, of course, depends on the cause. In some cases, vaccines, heat treatment, or injection of gold salts, may help. Those due to particular germs will be cured when the germs are destroyed. There is no evidence that diet has any effect, provided the patient gets enough good food, but arthritis, being a painful and troublesome disease, has more than the usual share of quacks and humbugs claiming to cure it. The best drug to relieve pain is aspirin.

Cortisone (which see) may produce good results in some types of arthritis.

**Artificial Respiration.** The simplest method of artificial respiration to be used when, for any reason, the patient has stopped breathing, is as follows: Lay the patient face downwards on the ground with the head on one side, and pull the tongue forward (preferably the head and shoulders should be at a lower level than the rest of the body). Sit astride the small of his back, and place the hands one on either side of his chest. Lean forward, pushing the air out from his chest in the process. Count three slowly, and then lean backwards, relaxing the pressure on the chest, and allowing air to enter through the mouth. This should be kept up for several hours if necessary, until the patient begins to breathe. Meantime a doctor should be sent for.

The most usual mistakes in using this method are, (1) to apply pressure merely with the hands instead of pressing downwards with the whole weight of the body; (2) to press in and out too quickly.

Other methods are in use, but this is the simplest.

When a stretcher is available, a good method is to lay the patient face downwards on the stretcher, and lift the stretcher on to a trestle which supports it in the centre only. The stretcher is then slowly moved up and down like a see-saw. Another mechanical method, used in infantile paralysis, when the nerves to the breathing-muscles have been destroyed, is Drinker's apparatus. The patient is kept with the body enclosed in a metal cylinder in which the pressure is alternately raised and relaxed by electricity. Some people may have to spend their whole lives in such an apparatus if the damage to the nerve is irreparable.

**Asbestosis.** A disease of the lungs occurring in those who work with asbestos. See Silicosis.

**Ascites (Dropsy).** An accumulation of fluid in

the abdomen caused by heart, liver, or kidney disease. Treatment depends on the cause.

**Asepsis.** A technique which differs from antiseptics in that all instruments and dressings coming in contact with the area to be operated on are sterilised beforehand. It is universally used now in surgery. In earlier days, an operation was carried out by soaking the area, instruments, dressings, and the surgeon's hands, in antiseptic. What happens now is that the area to be operated on is cleaned by antiseptics, and everything else coming in contact with it has been previously sterilised. Instruments are boiled, dressings are sterilised with steam, and the surgeon and nurse wear similarly sterilised clothing. In other words, in antiseptics, the germs are killed, in asepsis, they are prevented from reaching the wound. Antiseptic means "Against sepsis," Asepsis means "Without sepsis."

**Asphyxia.** Stoppage of breathing due to obstruction of the air passages, as in diphtheria, pressure on the windpipe, as in strangling or tumours, or other causes such as drowning. Treatment is to remove obstruction and give artificial respiration.

**Asthma.** A chest disease usually caused by hypersensitivity to some substance. (See Allergy.) The causes have been divided into those due to allergy, those due to chronic bronchitis, and those due to psychological causes, but all these causes are present in nearly every case. The condition is often found in people who come in contact with various dusts, such as flour, fur, cotton, feathers, etc. Asthma often goes in families, and sufferers are nearly always emotionally sensitive—in fact, attacks are very often brought on by anger or other emotions.

During an attack, the patient finds it more and more difficult to breathe and has a feeling of suffocation. His skin may become pale or blue. Such attacks often come on at night, and may occur almost daily, or only once every few months.

The treatment may be divided into immediate and long-term. During an attack, the doctor may give a drug, adrenalin or ephedrine, which usually gives relief. But the real problem is to find the substance to which the patient is hyper-sensitive, and to give him increasing doses of this until he becomes de-sensitised. Psychological causes, where they exist, must also be investigated.

Chronic asthma causes breathlessness and tends to make the chest barrel-shaped; it produces a condition of the lungs known as emphysema.

**Astigmatism.** A defect of eyesight caused by uneven curvature of the outside membrane of the eye. The various parts of an image are therefore focused unevenly, and glasses are required.

**Atebrin.** A synthetic form of quinine developed since 1936 as a specific treatment against malaria.

**Ataxia.** Loss of co-ordinated movement caused by disease of the nervous system.

**Atheroma.** Hardening of the arteries. (See Arteriosclerosis.)

**Athlete's Foot.** A form of ringworm of the feet. It occurs in the form of a white, sodden, appearance of the skin, and cracks between the third and fourth, or fourth and fifth toes. The most important factor in treatment is to keep the area clean, and absolutely dry. In mild forms, medicated powder may be sufficient, but in the more advanced form Whitfield's ointment, containing salicylic acid, should be used. Glaxo, Boots, and a number of other large firms produce excellent fungicidal creams, but the important thing is to avoid re-infection from shoes or socks worn before treatment, which should therefore be dusted with fungicidal powder.

**Atomic Bomb Injuries.** In general, the injuries to be expected from atomic warfare do not differ greatly in kind from those due to ordinary high explosives. The main complicating factors are those introduced by intense heat and radioactivity. When an atomic bomb explodes, immense energy is released which takes three main forms capable of causing damage to materials and persons. These are heat, radioactivity, and blast. Heat and blast, although much more intense and of far greater range, are similar to what is found in connection with high-explosive bombs. Treatment of burns is as described elsewhere in this dictionary for ordinary burns, but the effects produced by radioactivity are profound, and peculiar to this form of war-

fare. Briefly, radiation is capable of inducing changes in various tissues of the body, particularly in the bone marrow (which plays a large part in manufacturing blood cells) and in the sex glands. These changes lead, as John Hersey has graphically described in his book *Hiroshima*, to sterility and fatal forms of anaemia. A detailed account of first-aid treatment will be found in the official booklets on the subject, but, as has already been indicated, the immediate treatment of casualties follows the lines recommended in earlier types of warfare.

**Atomic Medicine.** Recent discoveries in atomic physics have had a profound influence both upon practical medicine and medical research. As is well known, it has now become possible to make many substances radioactive—i.e., to activate them so that they give off rays in much the same way as does radium. This is done by an elaborate apparatus called a cyclotron.

In medical and biological research such radioactive atoms are capable of being traced throughout the body by means of special instruments, so that, for example, it is now possible to discover what happens to iron from the stage when it is swallowed in the food to the stage when it is built up into the red blood cells which carry oxygen around the body. In a similar manner the growth of plants and animals may be studied in detail. Such activated atoms are described as "tracers," and it seems likely that, in this way, atomic research will have much to contribute to the study, not only of the normal bodily processes, but also of the processes which take place in disease.

Substances which have been made radioactive in a cyclotron are also used in treatment. Thus, cancer of the thyroid gland has for many years been treated with radium and X-rays, but this method proved only moderately successful, since the rays did not penetrate deeply enough unless they were so powerful as to damage other tissues than those of the cancer. Now, all iodine taken into the body ultimately reaches the thyroid gland, and when the iodine is made radioactive the rays which destroy cancer cells are given off within the gland itself, and so are able to exert a much more potent effect, which, however, does not harm the surrounding healthy tissues. There can be little doubt that further advances in atomic medicine will revolutionise treatment of many serious diseases. See Radioisotopes ("The World of Science").

**Auscultation.** The method used by a doctor when he listens for signs of disease inside the body by means of a stethoscope.

**Autonomic Nervous System.** The most primitive part of the central nervous system, which supplies the internal organs. It is divided into two parts, the sympathetic nervous system, and the para-sympathetic nervous system, one of which, broadly speaking, induces relaxation of the internal organs, while the other produces stimulation. The sympathetic system has the function of preparing the body for fight or flight, and therefore increases the heart rate, makes the skin pale, increases the blood-sugar, and so on. The importance of the autonomic nerves has been increasingly realised, since it has a great deal to do with all those diseases in which emotional over-stimulation plays a part—such diseases as asthma, dyspepsia, high blood-pressure, and so on.

**Backache.** The backbone is composed of a number of cylindrical bones known as vertebrae, each of which is separated from the adjoining one by a small disc made of elastic material. All the vertebrae are joined together by ligaments. Backache is a symptom which may be caused by many different diseases—sometimes disease of the vertebrae themselves, sometimes strain of the ligaments, and sometimes inflammation or spasm of the surrounding muscles. "Lumbago" is usually due to inflammation of the muscles in the small of the back. Displacement of the disc between the vertebrae may cause backache.

On the other hand, many cases of backache are due to disease elsewhere. Stomach ulcer, gall-bladder disease, and diseases of the womb may cause such pain. So also may defects of the legs and feet, or a faulty posture or manner of walking.

Obviously the most important thing in this illness is to find out the cause, and therefore a doctor should nearly always be consulted. Back-



ache from purely local causes—that is to say, those causes given in the first paragraph—may be treated temporarily by applying heat in the form of a kaolin poultice or a rubber hot-water bottle and taking two aspirin tablets three times a day. (See also Fibrositis.)

**Bacteria.** Pasteur, the famous French scientist, discovered about a century ago that many diseases are caused by germs so small as to be invisible to the naked eye. Since then, many different types of bacteria have been discovered and scientists have shown how they may be passed from one individual to another. Infection may be spread by germs coughed out by other people, by eating or drinking infected food or water, by dirt getting into wounds, or by sexual contact with someone who is harbouring the germ. However, getting an infectious disease is not simply a matter of the germs entering the body. A lot depends on the ability of the body to fight back and destroy them. This ability to resist depends on being in good physical health and also on the mental attitude. Happy people who have plenty of interest in life are much less likely to become ill than miserable people. Another important factor is cleanliness, but this should be attained by ordinary common-sense means—namely, the use of soap and water. Normal people rarely need to use antiseptics unless, as in the case of doctors or nurses, their work brings them into constant contact with disease. (See Antiseptics.)

**Baking Soda.** Sodium bicarbonate is often used for treating indigestion. It should not be used as it produces gas and makes the blood too alkaline. The best alkali to use is magnesium trisilicate, which does not have this defect.

**Barber's Itch.** An infection of the beard area properly known as sycosis. It is caused by the use of infected towels, shaving brushes, or razors, and appears in the form of small, moist, septic spots on the face. Sycosis is very infectious and therefore great care should be taken in using clean towels in case the skin becomes re-infected. Treatment by a doctor is always necessary, but, although this disease was at one time very difficult to cure, it can now be cleared up in a few days in many cases by the use of sulphonamide powder or penicillin. Ointment should never be used.

**Basal Metabolism.** All the processes of the body are carried out at a particular speed, and if the speed is too fast or too slow it is usually due to disease. For example, in exophthalmic goitre, excess secretion of the thyroid gland speeds up all bodily processes. Doctors may take measurements of the basal metabolic rate in order to find out whether such disease is present.

**Bedsore.** Patients with a chronic illness who have lowered resistance, or old people confined to bed, may develop large sores where their bodies are compressed by the mattress. These sores should be prevented by frequent washing every four hours with soap and water, followed by dabbing on spirit (methylated spirits or eau de cologne), and, finally, dusting with talcum powder. The most important thing is to keep the skin dry. In severe cases, it may be necessary to use a mattress filled with air or water. Care should be taken to see that the bed-clothes under the patient are not creased. The treatment of a bed sore once it has developed is a matter for the doctor, but only mild ointments should be used and moist dressings forbidden. Bedsore is a dangerous symptom and may lead to death.

**Bed-Wetting.** This is much more common in boys than girls. It may be due to minor physical defects of the bladder, faulty training, or psychological causes. The latter is much the most common cause and the child should be taken to a Child Guidance Clinic for advice. Adults may require psychiatric treatment.

**Bee-stings.** In most people, the result of a single bee or wasp sting is not serious and clears up in about twenty-four hours. In a small number of cases, however, there is a more dangerous reaction. Usually all that is necessary is to apply a soothing lotion or ointment, such as calamine. Theophorin cream, one of the new antihistamine substances, is particularly effective.

**Bee poison** has been used in the treatment of arthritis and other diseases, but there is no reason to believe that it has any effect whatever.

**Bell's Palsy.** Paralysis of the facial nerve is shown in weakness of one side of the face. The

eye on the affected side will not close properly and it becomes impossible to blow out the cheeks or whistle. Usually the condition follows exposure of one side of the face to excessive cold, for example, when driving a car with the window open, but Bell's palsy is unusual unless the individual is generally run-down. Heat and electric treatment are often applied, but there is no evidence that they hasten cure. Mild cases recover in two to three weeks, but sometimes the defect is permanent. Paralysis may also be due to disease inside the skull, or to an injury which cuts the nerve as it passes out just below, and in front of, the ear.

**Benzadrene.** The proprietary name of a drug known as amphetamine, which is used as a nervous stimulant. It has been used in the treatment of depression, certain nervous diseases, and for the relief of pain due to spasm of muscle, as in period pains in women. Less wisely, it has been used in the cure of "hangovers" and by students to keep them awake when studying for examinations. One type of amphetamine known by the proprietary name of Dexedrene is used to treat obesity, in which case it acts by reducing the desire for food. Amphetamine, except in too large doses, is not a dangerous drug, but it should never be taken without medical advice, since a dose which hardly affects one person may produce extreme nervousness, agitation, and insomnia in another.

**Beri-beri.** A disease, uncommon in this country, caused by eating food deficient in vitamin B. It is a form of neuritis and shows itself with numbness of the arms and legs and swelling of the feet and hands. The most common state of affairs is when people eat polished rice from which the husk containing the vitamin has been removed, but those who drink too much alcohol may develop mild beri-beri, since inflammation of the stomach prevents vitamin B from being absorbed into the system. Treatment is to give the vitamin, either pure, or in the form of yeast.

**Biliousness.** Medically speaking, there is really no such condition as biliousness, but the condition popularly called this is usually due to mild upset of the liver caused by dietary indiscretion. Treatment is to avoid rich food and alcohol, take light diet for a few days with plenty of sugar, and a dose of fruit salts.

**Birth Control (Contraception).** To be effective requires expert advice, which should be sought either from a doctor or a Birth Control Clinic. Various methods employed are: (1) mechanical, in which a pessary or sheath is used to prevent the union of male and female sex cells; (2) chemical, in which jellies or tablets are used to destroy the male sex cells; (3) "natural" methods depending on the un-proven theory that the female cell is only released at a particular time, once a month.

Contraception is not necessarily used to avoid having children at all, but is properly employed to ensure suitable spacing of births. Methods (1) and (2) are forbidden by the Catholic Church, but (3) is allowed.

**Birth-mark.** This usually takes the form of a reddish patch on the skin made up of distended blood vessels. If unsightly, it may be possible to have it removed by electrical or surgical treatment.

**Bladder.** The liquid waste matter filtered out of the blood by the kidneys passes down two tubes called ureters and is collected in the bladder. The bladder is subject to many diseases, such as inflammation due to infection (cystitis), tumour, and irritation from hard collections of waste material known as stones or calculi. The usual symptoms of inflammation are the frequent passing of urine accompanied by pain. In such cases, the best first-aid treatment is to drink plenty of fluids, whether in the form of water, lime juice, or other non-irritating liquid. If there is much pain, a rubber hot-water bottle on the site of the pain may help. When stones are present, blood may be passed in the urine. All these diseases require skilled medical attention, and patent medicines should never be used.

**Bleeder.** A person suffering from hæmophilia, an inborn incurable disease in which severe bleeding follows even a slight cut. The disease is only fatal if such an injury causes the patient to bleed to death. It was this disease in the Crown Prince of Russia which led to the influence of Rasputin over the Czarina in 1916. Members of the Spanish royal house also suffered from it.

**Blepharitis.** Inflammation of the eye-lids shown by redness, crusting, swelling, and falling out of the eye-lashes. It is usually a chronic disease, and requires expert attention.

**Blood.** Blood is the fluid responsible for carrying oxygen from the lungs to the cells of the body, and for carrying away carbon dioxide, which is later expelled by the lungs. It is also responsible for carrying the nourishment resulting from digestion of food in the stomach to the body cells, and carrying away waste material to be expelled by the kidneys. Blood consists of a fluid part called the plasma, and, floating in this, the red and white cells. A cubic millimetre of blood contains about 5 million red cells and 5000 white cells, the former being concerned with carrying food and oxygen, the latter with resistance to infection. In anaemia, the number of the red cells is reduced, while in infection by germs, the number of the white cells is increased. Chemical investigation of the blood gives the doctor a great deal of information about the state of the body.

**Blood-pressure.** This term refers to two different pressures in the blood system—the systolic pressure, which is that existing when the heart is contracting, and the diastolic pressure, when the heart is in full relaxation. The condition popularly known as "blood pressure," therefore, refers only to cases in which pressure is abnormally high. It is found as a symptom in several different illnesses, for example, in kidney disease, and internal poisoning during pregnancy. In the former type, it appears that a substance is given off by the kidneys which causes the high tension in the blood-vessels, and it is now possible to give substances which help to counteract the condition.

On the other hand, the disease known as essential hypertension occurs without any other illness being present. It is now considered that psychological factors, particularly prolonged emotional stress, are of the greatest importance. In normal fear, a substance called adrenalin is released into the blood in order to prepare the body for emergency. Adrenalin raises the blood-pressure in order to ensure a better blood supply to the brain and muscles. Chronic anxiety is a state of perpetual fear, and the continual secretion of adrenalin keeps the blood-pressure high.

In treatment, several points must be taken into consideration, first, that high blood-pressure is often a compensation for narrow blood-vessels which require a high pressure in order that the blood may be forced throughout the body. It is therefore not always a good thing to reduce it without considering whether a high pressure is, in the circumstances, a necessity. Secondly, it is not now considered that diet has any great influence on this condition. Thirdly, it is most important to reduce over-weight, if it exists, and above all, to relax mentally, and avoid physical over-exertion.

High blood-pressure may sometimes be treated by the operation of sympathectomy (*i.e.*, by cutting the nerves of the sympathetic nervous system—*see under Autonomic Nervous System*). Also effective are certain new drugs. Of course, all such treatment should be carried out under medical supervision. (*See Emotions*.)

**Blood-pressure (Low): Hypotension.** Many people worry needlessly over this alleged disease which has recently become fashionable. When the blood-pressure is too low there may be a tendency to fainting attacks, especially when getting up from a lying-down or seated posture. There is, however, no danger in this, and, since there is less wear and tear on the arteries, such people will probably live longer than most. In short, low blood-pressure is not a cause for anxiety.

**Boil.** A boil is an infection of the skin, and is caused by three separate factors: (1) the presence of germs on the surface of the skin; (2) lowered bodily resistance to these particular germs, and (3) the existence of pressure or friction causing the germs to be rubbed into small cracks in the skin. Boils are therefore commonest where such pressure exists, for example, on the neck where the collar rubs, on the wrists beneath the cuffs, in the armpit, and on the buttocks. The treatment is directed to the causes: (1) keep the skin clean with frequent washing with soap and water; (2)

increase bodily resistance by taking yeast tablets, or by the use of manganese, or tin preparations; (3) avoid pressure and friction, and ensure that collars and other clothing compressing the skin are frequently changed.

When a boil has developed, the best treatment is to wash and clean up the area surrounding it, and then to apply an Elastoplast dressing of suitable size. The dressing should not be changed until necessary, because it appears that shutting the germs in, "to stew in their own juice," has a helpful effect. In more serious cases, a doctor may recommend penicillin injections. It should not be forgotten that, when many boils occur, this may be a sign of diabetes or other chronic disease.

**Bones.** Bones are made of elastic tissue, hardened with calcium salts. Therefore, for healthy development of bones and teeth, a continual supply of calcium is necessary. Few people suffer from calcium deficiency, since most foods contain an ample supply, but calcium can only be used by the body if vitamin D is present. This vitamin, which is necessary for the development of bones, is found in butter and milk, and is created by the influence of sunlight on the skin. When necessary, it may be taken in more concentrated form, as cod-liver, or halibut-liver, oil, or still more concentrated, as Adexolin capsules.

**Botulism.** The most dangerous form of food-poisoning, caused by a germ known as the bacillus botulinus which is found chiefly in badly-canned sausages, or meat paste, and sometimes in preserved vegetables. Fortunately, botulism is uncommon in Europe. The main symptoms are weakness and paralysis.

**Bradycardia.** A slow heart-rate. Sometimes found in people convalescing from influenza or other fevers, but may be found in perfectly normal people.

**Brain.** Man's brain is the chief distinguishing feature between human beings and other animals. It is the telephone exchange which sends out and receives messages to and from the rest of the body. It is impossible to give more than a most superficial account of the nervous system, but the main facts are as follows: Essentially, the nervous system consists of two different levels, the lower centres, where primitive emotions are felt, the viscera controlled, and simple actions initiated, and the higher centres, the true brain, which holds the lower centres under control. For example, if one is pricked with a pin, a message passes up the nerves, and through the spinal cord to the lower centres, which return the impulse causing the hand to jerk away. All this takes place without any deliberate, or conscious interference. In fact, such actions can take place even after the true brain has been removed. It is possible, of course, to be pricked by a pin, and, by deliberate effort, refuse to draw the hand away. This occurs because the higher centres suppress the lower. All mental life is a constant conflict or inter-action between the higher and lower centres. When we become angry, the anger originates in the lower centres, and may be suppressed by the higher centres. To some extent, the latter correspond to what is called the conscious mind in psychology, the former to the unconscious mind.

The relationship of mind to brain, has been a subject for discussion by philosophers for centuries. Briefly, there have been three main types of theory about this relationship: (1) idealism, which states that matter is not real and only mind exists—that the universe is a thought in the mind of God; (2) materialism, that only matter exists, and mind is not real; (3) interactionism, which states that both mind and matter exist and interact in some unknown way. The modern theory is that, although mind exists, it is not a thing, but a process occurring in the brain just as digestion is a process occurring in the stomach.

Other facts are: The nervous system is made up of nerve cells and supporting tissue. The actual cell is smaller than the head of a pin in size, but has a long narrow fibre attached. It is these fibres which form the nerves of the body. The brain of a man is, on the average, slightly heavier than that of a woman, but size has no direct relation to intelligence. The various faculties are located in various areas of the brain, *e.g.*, sight at the very back, and hearing at the side. The brain cannot be exhausted by overwork in the ordinary sense of the word, and the feeling of mental ex-



haustion is usually due to mental conflict—for instance, being compelled to do work, when one has lost interest. From this it follows that there is no such thing as a "nerve tonic" to "build up" the brain.

The commonest diseases of the brain are—meningitis caused by infection of the lining of the brain, and abscesses or tumours. The two latter are serious diseases, and the symptoms are, generally speaking, severe headache, vomiting, and slow pulse rate. At a later stage, there may be epileptic fits. In brain abscess there is usually fever. It should be remarked, however, that over 90 per cent. of headaches are caused by worry or digestive upset. The illness known as "nerves" has no relationship to brain disease whatever, nor has insanity in most cases. (See under *Neurosis*, and *Psychosis*.)

**Bright's Disease (Kidney Disease).** (See under *Nephritis*.)

**Bromidrosis (Offensive body odour).** Most people are able to keep sufficiently clean by the use of soap and water, but some, in spite of ordinary cleanliness, still find that their perspiration has an offensive odour.

This may need medical attention, but can usually be cleared up by dabbing on a 1 per cent. solution of formalin. In cases where excess sweating is caused by nervousness, sedatives may be necessary. Although much publicity has been given to the use of chlorophyll in this condition, it is quite useless taken internally. It is, however, just possible that chlorophyll may have some effect when applied locally, *e.g.*, as tooth paste.

**Bronchiectasis.** A state in which the lung tissue around the ends of the breathing tubes becomes infected with the formation of sac-like cavities which fill with purulent material. The main symptoms are—continual cough, and the spitting up of a great deal of bad-smelling sputum. The amount of sputum coughed up depends on how large the cavities are, and how much infection is present. Other symptoms are, difficulty in breathing, blueness of the skin, excessive sweating, especially at night, and loss of weight. In the morning there is usually a specially large amount of sputum.

The treatment depends (under medical advice) on the severity of the disease. Plenty of nourishing food, fresh air, and rest are necessary. It also helps if, in the morning, the patient lies face down over the edge of the bed, in order to let the fluid escape, and coughs into a basin on the floor. Sometimes surgical treatment is helpful—the lung may be made to collapse in order to rest it, and sometimes parts of the lung, or even the whole lung, may require to be removed. Some cases are helped by drugs directed against whatever germs may be present.

**Bronchitis.** Bronchitis means inflammation of the tubes leading from the windpipe to the lungs. It is part of a continuous process which may attack any part of the breathing apparatus. Thus, one may get laryngitis, tracheitis, bronchitis, and pneumonia, according to whether the inflammation is in the voice-box, the windpipe, the bronchi, or the lungs. It is not caused by any one germ, and any of the germs found in the throat and mouth may cause bronchitis.

The usual sequence of events is as follows: an ordinary cold fails to clear up; it is followed by aching in the chest, tightness, and cough. There may be a temperature. At first the cough is hard and dry, but later it becomes softer, and an increasing amount of sputum is coughed up.

The treatment for this form of the illness should be rest in bed, easily digested and nourishing food, with plenty of milk and other fluids. Inhalations may be used to relieve the symptoms. These are made up of about a pint of boiling water into which is put either a pinch of menthol crystals, or a teaspoonful of Friar's balsam. The latter should be floated on the surface, not mixed up with it. A towel is then put over the head, and the steam inhaled. Care must be taken to ensure that the boiling water is not spilt over the patient, an accident which is very liable to happen if he is in bed.

Cough mixtures are a treatment for bronchitis that everybody knows about, but it is important to remember that there are two types of cough mixture which are entirely opposed in their action—sedative cough mixture, and stimulant

cough mixture. A sedative cough mixture contains drugs which act on the coughing centre in the brain, and suppress the cough. It should only be used when an irritating cough is present which is dry and results in the production of no sputum. A stimulant cough mixture, on the other hand, is designed to make the patient cough to better effect. It makes the waste material in the lungs more fluid, so that it can escape more easily. Patent medicines are liable to contain a mixture of both these opposed types of drugs, and the end result may be that they have no effect whatever.

It should not be thought that coughing is always a symptom of bronchitis. A cough merely means that the body is trying to rid itself of some irritant in the breathing passages. Obviously this may be a crumb in the back of the throat, irritation caused by excessive smoking or breathing irritating dust, or, as in bronchitis, fluid in the bronchial tubes. A smokers' cough may safely be suppressed because it is, in a sense, a false alarm—there is no foreign body in the throat, but merely an irritation of the lining.

Chronic bronchitis is less common than is usually believed. It is essentially a disease of old people or the very young and is rather uncommon in the middle-aged.

**Bruises.** Any injury to the surface of the body in which the skin is not broken. If the skin is broken, the condition is called an abrasion (which see).

When a blow leads to the formation of a bruise, what has happened is that some of the smaller blood vessels have ruptured making the area "black and blue." As is well known, some people bruise more easily than others. Generally speaking, unless any other injury is present, the only problem is to remove the unsightly blue colouration of the skin as quickly as possible. This is best done by the application of heat.

In a few cases, especially when a blow has been severe, one must look for the presence of more severe injuries beneath the bruise. Thus, a bruise on the abdomen may conceal the rupture of some underlying internal organ, and a bruise on the scalp may conceal a fracture of the skull. All severe blows, especially of the head, or abdomen, should be attended to by a doctor.

**Bubonic Plague.** (See *Plague*.)

**Bürger's Disease.** A disease of the blood vessels, usually in the arms and legs, in which spasm of the arteries leads to numbness, coldness, and pain in the muscles. The symptoms are like periodic attacks of cramp.

This disease is not very common, but is interesting in that it is one of the diseases in which excessive tobacco-smoking is an important factor. However, only a small number of people who smoke excessively have the particular form of over-sensitivity that leads to Bürger's disease. Only a doctor can treat this condition and usually a surgical operation is necessary.

**Bunions.** Like most deformities of the feet bunions are largely due to ill-fitting footwear. At an early stage, they may be remedied by wearing correctly fitting shoes; in a later stage, the discomfort can be relieved by a chiropodist. But when they are large, inflamed, or have existed for a long time, the only satisfactory treatment is surgical.

**Burns.** The seriousness of a burn depends (1) on how deep it is; (2) on how extensive it is. The latter is, generally speaking, a more important factor. In any extensive burn, the first thing to do is to treat the patient for shock, since this leads to 80 per cent. of the total deaths. The patient should be placed in a position of rest, with the head slightly lower than the body. He should be kept warm, and, if pain-relieving drugs are available, they should be given immediately. Hot sweet tea is said to help, and at any rate can do no harm. The doctor should be sent for.

The application of dressings to severe burns is really a matter for the expert. Mild burns may be treated with boracic ointment, but, unless no medical help is likely to be available, it is exceedingly important that nothing should be put on a severe burn, as it may interfere with the later use of more efficient remedies.

The treatment used by surgeons for burns has changed a great deal since the second world war. Tannic acid jelly is now little used, and the applications vary from so called triple dye, to a particular

type of paraffin, and mixtures of blood plasma with sulphonamides.

If medical help is not likely to be available, after treating for shock, the patient's clothes should be removed with as little disturbance of the burns as possible. In bad cases, the clothes should be cut off, and the burned area gently cleaned with soap and water. Great care must be taken to avoid sepsis, and the hands of the person carrying out the treatment should be thoroughly cleaned before touching the burn. The dressing applied thereafter will naturally depend on what is available, but the best dressing is vaseline with sulphonamide. In other cases, gauze soaked in normal salt solution can be used (this is made by adding an ounce of salt to a pint of boiling water, and applying cool). Further dressings should be carried out with scrupulous attention to the cleanliness of the hands of the person doing the dressing.

**Bursitis.** Any part of the body which is continually rubbed or pressed may develop a bursa. This is a little swelling produced by a sac of fluid under the skin. The bursa is a response on the part of Nature to protect the underlying bones or tissues—it is a sort of shock absorber. Later, a bursa may become infected, and require to be removed, opened, or simply drained through a hollow needle. This may also have to be done if it becomes inconveniently large. The commonest forms of bursitis are—housemaid's knee, miner's elbow, or the types that develop on the buttocks or the shoulder.

**Cachexia.** The extreme wasting and weakness found in the later stages of a severe illness.

**Cesarean Operation.** When the abdomen has to be opened to remove the child in a pregnant woman. The process is named after Julius Caesar who is said to have been born in this way.

With modern methods, this operation is no longer as serious as it used to be, and the results are usually favourable.

**Caisson Disease.** Occurs in workers, such as divers, who have to work under high atmospheric pressure. It comes on when the pressure is reduced too rapidly, and the nitrogen in the blood tries to escape in the form of bubbles. The symptoms are—pain in the legs and abdomen, dizziness, and difficulty in breathing. The treatment is to reverse the process by putting the patient back under high-pressure conditions, and reducing the pressure gradually.

**Calamine.** A pink substance composed of zinc oxide and a little iron oxide which is used in the form of a lotion or ointment to soothe the skin.

**Calcium.** (See under Bone.)

**Calculus.** A stone-like mass which may form in the body under abnormal conditions. The usual types are gall-stones, and stone in the kidney or bladder. Calculi may exist without giving rise to any symptoms, but, when symptoms are present, an operation is usually necessary. Contrary to the claims of patent medicines, no drug is known which will dissolve calculi.

**Callouses.** Any thickening of the skin formed on the site of continual irritation, usually on the feet or hands. Since they are designed to protect the body against irritation, treatment is not necessary unless they become too thick or unsightly. They may then be shaved down, if on the feet, by a chiropodist.

**Callus.** The new tissue formed at the site of fracture when a bone heals.

**Calorie.** A measurement of energy intake and output in the body. The large calorie or Calorie used in food chemistry is equal to 1,000 small calories. (See Gen. Inf. for definitions.)

**Camphor.** A drug obtained from the camphor tree and used to stimulate the skin, as in camphorated oil.

**Cancer.** There are numerous immediate causes of cancer—whatever may be its basic cause—some of them are as follows: (1) continual irritation; cancer of the tongue or lip is often found in elderly people who have been in the habit of smoking a broken-off clay pipe. The rough edge of the broken pipe stem continually irritates a part of the tongue, and hot tobacco-smoke, pouring on the sore, creates a condition of continual irritation which may lead to cancer; (2) sometimes, in the process of development before birth a small piece of a particular tissue becomes enclosed by tissue

of another kind. This may lead later on in life to development of a cancer. It is even possible for a cell that would have developed into a twin child, to get shut up in the body of the other, and to start growing later in life. This kind of cancer is called a teratoma, and may contain hair, bone, or teeth; (3) in the laboratory, cancer may be caused in animals by rubbing coal-tar into a part of the body. Human beings may also get this kind of cancer by frequent contact with certain dyes, soot, etc.; (4) in certain animals, an infectious type of cancer caused by a virus, may be produced. So far as is known, this type does not occur in human beings.

There is no reason whatever to believe that cancer is hereditary and it should be realised that far more people are afraid of cancer than ever develop it. Nevertheless, any untoward symptoms should be seen by a doctor, especially if they persist for more than a short time. The following are especially important: (1) hoarseness of the voice, lasting for more than two weeks, and not responding to ordinary treatment; (2) any sore on the body, especially in the mouth, which does not heal in a few days; (3) if a patient who suffers from chronic indigestion begins to find that the pain becomes more constant and does not respond to the usual remedies, if blood appears in the bowel movements, or loss of weight occurs, he should report to his doctor at once; (4) in women, any discomfort, pain, or swelling in the breast, any irregular bleeding from the vagina, especially in women over thirty-five, should be immediately dealt with.

It must be remembered, that not only is cancer not incurable, but it is cured, in fact, very often indeed. There should, therefore, be no hesitation in going for treatment, and no foolish prejudices should be allowed to interfere. Finally, it cannot be said too often, that there is no treatment, except that given by doctors or surgeons, which can lead to anything else but disaster. No disease is 100 per cent. incurable, because all disease is a fight between an abnormal process, on the one hand, and the body on the other. Sometimes, even in apparently incurable cases, the powers of the body and mind step in and determine to defeat the enemy. "Miracles" of this sort do occur, both at Lourdes and in the consulting room of the good physician, who can instil hope and faith in his patient. But none of these facts can take away from the absolute necessity of using all the knowledge and power of modern science.

**Carbohydrates.** The scientific name for sugars, starches, and cellulose.

**Carbuncle.** A very large boil, which should be treated in the same way as ordinary boils (which see). The only point to remember is that carbuncles are more likely to be associated with underlying disease of the body, such as diabetes, and, therefore, the patient should have a thorough investigation.

**Carcinoma.** A particular type of cancer (which see).

**Cardiac.** Concerning the heart (which see).

**Caries.** A condition of decay, usually applied to decay of the teeth. (See p. 818.)

**Carminative.** A drug to aid digestion and relieve flatulence, such as ginger, peppermint, or dill-water. Their virtue is largely imaginary.

**Carrier.** A person who harbours disease germs without suffering from the disease himself. Such individuals are dangerous because they may infect others. Carriers are commonly found who spread typhoid fever in this way.

**Catalepsy.** A general name to describe various states marked by loss of power to move the muscles. The patient often appears to be unconscious, although he, in fact, is not. These states are mainly of psychological origin, and occur in such mental illnesses as schizophrenia and hysteria. Catalepsy may last, if untreated, for several hours, or for months, and, occasionally, years. In the types due to mental illness, the cause is the desire to retreat from the responsibilities of life.

**Catamenia.** An out-of-date name for menstruation.

**Cascara.** A laxative used in the treatment of constipation. It is made from the bark of a tree, and given in the form of liquid extract or sugar-coated pills. (For general discussion see under Constipation).



**Castor Oil.** An old-fashioned purgative which is still used and found useful in two circumstances: (1) when, before an operation, the surgeon wishes to clear out the bowels completely by single administration of purgative; (2) in mild cases of diarrhoea when similar effects are desired with the intention of clearing-out poisons in the system. Castor oil has the effect of producing constipation later on. It should therefore not be used regularly.

**Cataract.** A clouding of the lens of the eye which prevents clear vision. The usual symptoms are, sore eyes with swollen eye-lids, poor vision, and headaches. Cataract usually occurs in older people above fifty, but may occur from before birth in children.

Treatment is by operation—a procedure which has been carried out for centuries, and is still carried out under primitive conditions in India. After the modern operation, 97 per cent. of patients have good vision, but it becomes necessary to wear glasses which replace, and do the work of, the lens which has been removed.

It is quite wrong to believe that drugs or treatment other than operation can influence cataract in any way.

**Catarrh.** This is an out-of-date word applied to any illness which causes inflammation of the membranes, with a discharge of mucus. Thus one may talk of nasal catarrh when the nose is running, bronchial catarrh when mucus is being coughed up from the breathing-tubes, and gastric catarrh when mucus is supposed to be secreted to excess by the stomach. In reality, the word is an unscientific one to use, and is, practically speaking, meaningless.

**Cathartic.** A purgative. (See under Constipation.)

**Cauterisation.** The application of heat or burning chemicals to the surface of the body. Cauterisation is used in three different ways: (1) to burn off warts or small tumours; a wart may be burned off by a red-hot electric needle, or by chemicals such as silver nitrate; (2) some operations, especially on organs such as the lungs, or liver, from which much bleeding is expected, can be carried out by cutting with a red-hot needle, heated by electricity, instead of by a knife. This clots the blood as it cuts, and prevents bleeding; (3) in olden days, pain, for instance, in the back, or in sciatica, was treated by applying to the skin a heated piece of metal the size of a halfpenny, which burned the skin slightly. This, of course, did not remove the original pain, but merely distracted attention from it and therefore is not now used.

**Cellulitis.** A deep inflammation of the tissues just under the skin caused by infection with germs.

**Cerebellum.** A small part of the nervous system, situated at the back of the brain, which is concerned with co-ordination of movements. When the cerebellum is diseased, the patient may stagger about like a drunken man, because he can no longer co-ordinate the separate movements involved in walking.

**Cerebro-spinal Fluid.** The watery fluid which surrounds the brain and spinal cord as they lie inside the skull and in the canal of the spinal column. This fluid acts mainly as a shock absorber. The two important facts about it are: (1) when, due to a tumour or infection, the fluid is prevented from circulating, a state called hydrocephalus (water on the brain) results; (2) since the cerebro-spinal fluid becomes infected by any germs present in the nervous system, the doctor can discover what germs are present by drawing off some of the fluid and examining it. This is done by a process called lumbar puncture, in which a hollow needle is pushed between the bones composing the spinal column, usually in the small of the back, and the fluid withdrawn.

**Cerebrum.** The brain, especially the large front portion, as distinct from the cerebellum and the spinal cord.

**Chafing.** Irritation caused by the rubbing together of two skin surfaces. Usually occurs between the thighs, the buttocks, or under the breasts, and is aggravated if sweating occurs. In treatment, ointments or oily dressings should be avoided, and probably the best thing to do is to apply eau de cologne, or surgical spirits and dust with talcum powder.

**Chancere.** The name given to the sore that appears on the body when infection with certain types of venereal disease has occurred. It usually takes the form of a flat, hard ulcer, and is found on the part of the body through which the germ has entered. Thus, the most usual sites are on the sex organs or on the lips. The most usual form of chancre is caused by syphilis, but another less serious disease called chancroid or soft sore is sometimes found. Of course, many types of sore occur on the sex organs which are not caused by venereal disease and the patient need not be unduly anxious unless there is reason to fear infection from sexual intercourse in the preceding six weeks. Nevertheless, it is always wise to consult a doctor in cases of doubt.

**Change of life.** There are many mistaken ideas about this perfectly natural state of affairs. The menopause, to give it its proper name, usually occurs between the ages of forty and fifty-five in women, and about ten years later in men. It is marked, in women, by the stopping of the monthly periods, and sometimes by other symptoms, both physical and mental. The characteristic symptoms are headaches, "hot flushings," dizziness, and irregular periods. Sometimes the flow may be excessive and more frequent than usual, or, on the other hand, it may be reduced in amount and less frequent. Mentally, a woman is liable to feel depressed, anxious and nervous.

It should be understood that these symptoms are neither inevitable nor natural, and, indeed, rarely occur in women living under more natural surroundings. The only practical effect of the change of life is that sex cells are no longer produced by the ovaries, and therefore pregnancy, once the changes are completed, can no longer occur. But the cells of the ovary which produce sexual desire and make a woman feminine and attractive continue to function for many years after. The vast majority of women in this country grossly exaggerate the importance of the menopause, and there is a tendency to attribute every symptom or unpleasant feeling at this time to the "change of life." There is, in fact, no reason why there should be any unpleasant sensations whatever. Many of these symptoms and the feeling of misery that goes with them are caused by the fact that the woman's attitude is wrong. If she believes that she has reached the end of the "womanly" stage of her existence, there is no wonder that she becomes unhappy and exaggerates every out-of-the-way sensation by paying undue attention to it. As we have seen, the menopause should be only a minor incident in the healthy life, and the symptoms have a great deal to do with a wrong way of looking at something which is quite normal.

If, however, the symptoms are troublesome, the doctor should be consulted, and with modern treatment it is usually possible to remedy them quite quickly. Severe depression is abnormal and should be treated by a psychiatrist.

**Chapped Skin.** This is usually due to cold weather which causes the glands of the skin to be less active than usual. The skin becomes dry, and therefore cracks more easily than in warm weather.

Since the condition is due to lack of the natural oil of the skin, the treatment should be (1) to avoid excessive use of soap and water; (2) dry the hands immediately they become wet; (3) apply grease in the form of cold cream, or some other mild ointment.

**Chicken-pox.** Chicken-pox is a very infectious children's disease, which usually develops about two weeks after contact with someone suffering from the disease. It is caused by a virus—that is to say, a germ which is so small as to be invisible under even the most powerful microscope. There is no specific treatment, but, since nearly every other person has suffered from chicken-pox in childhood, there is no reason to worry. The only way to avoid the illness is to keep away from people who are suffering from it.

All the treatment required is to make sure that the blisters which appear on the chest and face are not scratched, because this will result in their being infected by other germs and may produce disfiguring scars in later life. Ordinarily, when left alone, they disappear in a few days.

The diet should be light, and the doctor will probably prescribe soothing applications to stop irritation. Warm baths are often helpful.

**Chilblains.** Painful swelling of the fingers, toes, and ears caused by exposure to cold. Chilblains occur most often in the young, and in those who are run-down or have insufficient nourishing food.

In appearance, the chilblain is first of all a pale area on the skin, but later it becomes red, shiny, and painful. The part swells, and blisters may develop.

The most important thing is to make sure that the patient has plenty of nourishing food. In addition, it will help if vitamin tablets are taken, particularly those containing vitamins A and D. These may be obtained from the chemist, either in the form of halibut-liver oil, or vitamin capsules. One capsule should be taken three times a day. Woollen socks should be worn, and the hands covered with gloves in cold weather. More recently vitamin K and tablets of nicotinic acid have been used successfully.

**Child Care.** The following are the signs of a healthy baby: A clear skin, good sleep, a good appetite, steady increase in weight, and regular bowel movements. The baby should sleep with the mouth and eyes closed, and should not vomit or spit up its food. At birth, the baby should weigh about 7 lb., but anything between 5½ and 9 lb. is fairly normal. All babies should be breast fed, if possible, not only because breast milk is the best food for an infant, but also because the act of sucking acts as an important stimulus to the baby's mind. Feeding should be at regular intervals, and, in a child of normal weight, every four hours. Under-weight babies may, on the doctor's advice, be fed more often. Weaning is nowadays recommended to begin about the fifth month, but opinions differ; it is usually carried out by gradually substituting such foods as Farex, Robinson's barley, bone broth, and artificial milk foods, for the breast milk. While feeding the baby, the mother should have an ordinary nourishing diet to which should be added three or four glasses of milk a day. Ordinarily speaking, there is no food that the mother may not take, and she can, in general, carry on as usual. Very few drugs appear in the milk, and the mother need not be afraid of taking any medicine necessary. Alcohol and tobacco in moderation are harmless. Artificial feeding is a matter for discussion with the doctor or maternity nurse.

**Bowel control:** opinions differ about this, but the modern tendency is to leave it till the second year. Napkins should be changed as soon as possible, whenever they become wet. It should be remembered, however, that babies have different ideas on cleanliness from those of their parents, and behaviour that appears very dirty to a grown-up is quite natural to a baby. The baby should be bathed daily, paying special attention to folds of skin where irritation may develop; these should be powdered afterwards.

The doctor or nurse should be called in when (1) a baby is not gaining in weight, or is crying unduly, or vomiting up food; (2) when there is anything abnormal about the appearance of the bowel motions; (3) when any eruption appears on the skin; (4) if the baby is sickly in appearance, sleeps poorly, and does not look contented.

The first thing to remember about bringing up children is that they are being prepared to live in a particular type of environment. It is silly to teach a child "baby words" for its natural functions, or for any part of the body that the parents are prudish enough to think unmentionable. On the other hand, it is equally stupid to go to the other extreme, and tell a child a lot of unnecessary facts about sex which it is unable to understand. The keynote in bringing up a child should be complete honesty. The child should be told the proper name for everything, and its questions should always be answered truthfully. Thus, if at a later stage, a child asks where it came from, the answer should be that it grew inside its mother, but there is no need to give a detailed account of the process. Each question should be answered as it is asked, but usually no unasked-for information need be given. In the second place, a child's upbringing should always be consistent—if a child does something which it is told is wrong on one day, it should still be wrong on another day. The child should not be punished according to the good or bad moods of its parents. But it cannot

be repeated too often, that children are not born with any moral ideas. They are perfectly natural. It is therefore always necessary to explain first why something is wrong, be lenient on the next occasion, and explain again, and only consider punishment when it is quite certain that the child knows that he is doing wrong. Even then an intelligent parent will want to know why his child persists in doing wrong. It may be with the intention of getting the parents to fuss over him, when he feels that he has had too little attention. A famous teacher has said, "There are no problem children—only problem parents." Finally, because grown-ups have been spoiled by a stupid society into believing that various natural processes, especially sexual ones, are dirty, they should be on their guard against imposing their own unreasonableness on their children.

**Chill.** This is not a proper medical word, but refers to the symptoms that occur when one first becomes infected with any germs which cause fever. When such germs enter the body, all the defending processes are mobilised and speeded up. The white cells in the blood increase in number, and the amount of energy used is greater than normal, causing the temperature to rise. This rise in temperature increases the ability of the body to fight back, and, in order to retain heat within the body, the blood-vessels in the skin contract so that less heat is lost by radiation. This makes the skin cold and pale.

What is ordinarily called a chill is merely an infection by the germs causing cold or influenza. But a chill may be the preliminary to almost any infectious disease, such as measles, mumps, scarlet fever, pneumonia, and so on.

The best treatment when the temperature is raised is to go to bed with as much warmth as possible. Hot drinks and hot-water bottles are helpful. The ordinary type of chill, which is not a prelude to anything else, shows in the form of a feeling of coldness, shivering, headaches, and general shakiness.

It is the custom to take aspirin or similar drugs in these circumstances, but it should not be thought that they have any effect in curing a chill. All that aspirin can do is to depress the "shivering centre" in the brain, and relieve headache. It therefore only removes the symptoms, without altering the disease. However, it may give some relief, and will do no harm.

**Chiropractic.** A system of treatment, founded in America, based on the belief that all disease is caused by pressure on the nerves as they leave the spinal column. This belief is not accepted by orthodox medical practitioners.

**Chloasma.** A brownish discoloration of the skin found in patches on any part of the body. It is usually found in pregnancy, but may occur in some people after sun-bathing.

**Chlorosis.** A form of anaemia, very common in young girls during the nineteenth century. It is now almost unknown. The treatment is as for ordinary anaemia.

**Cholecystitis.** (See under Gall-bladder.)

**Cholera.** A tropical intestinal disease, somewhat similar to typhoid fever, although much more severe in its symptoms. It is mainly found in India and the Far East, is less common in Europe, and is not now found in England. The germs are taken in by swallowing infected food or water and the disease can be avoided by using only cooked food and boiled water. Vaccines have been prepared which, when given by injection, protect against cholera.

The symptoms are—very severe diarrhoea, followed by the passing by the bowel of almost pure mucus and water, and severe vomiting. The loss of fluid and salts leads to severe muscular cramps. Cholera is a serious disease and many patients die of it.

**Chorea.** Also known as St. Vitus' dance or Sydenham's chorea. A disease of the nervous system, usually considered to be related to rheumatism. The real cause, however, is unknown, but it appears that it occurs in those who have been infected with rheumatism and who have particularly sensitive nervous systems. It is much more common in children, occurs more often in girls than boys, and in some families more than others.

The symptoms are—rapid twitching movements of the hands, and sometimes of the whole body.



Children are often punished by parents who suppose that the movements are being made deliberately. Patients with chorea require careful nursing and plenty of good food. The treatment is a matter for the doctor, but, with adequate care, the child will recover in a few weeks, although a long convalescence is necessary.

It should be remembered that there are several diseases which closely resemble chorea, one of which is a serious chronic illness, and the other is an hysterical illness due to psychological causes. It is therefore essential that a doctor should distinguish between these different illnesses.

**Chronic.** A chronic disease is one which is prolonged and relatively mild, as opposed to an acute one, which is short and severe.

**Chyme.** The food after it has been digested in the stomach.

**Cicatrice.** A scar.

**Circumcision.** The operation of cutting off the fore-skin which is carried out by Jews and Moslems for religious reasons, but is sometimes carried out for reasons of cleanliness or when disease is present.

Undoubtedly, there are certain cases in which circumcision is necessary and advisable, but it should certainly never be done for reasons associated with "cleanliness" or crank moral ideas.

Unless absolutely essential, circumcision is best avoided; for there can be little doubt that its psychological effect is often harmful.

**Cirrhosis.** Hardening of any tissue, but particularly of the liver. Usually said to be due to alcoholism, but probably more often caused by germs or parasites. Doctors are not nowadays so certain that alcohol causes cirrhosis of the liver, but certain drugs, such as chloroform, arsenic, and phosphorus, do. In mild cases no symptoms may be present, but in more severe cases, there is loss of appetite, fluid in the abdomen, and sometimes vomiting of blood. At this stage, the disease is serious, and requires medical attention. Treatment involves leading a quiet, regular life.

**Claustrophobia.** A psychological symptom, which causes the individual to be afraid of enclosed spaces. People with claustrophobia are afraid of being shut in railway carriages, or in small rooms, or of going through railway tunnels. The condition is very common and not serious in itself. It is one of the symptoms of a neurosis (which see). The usual meaning of such a fear is that the individual is afraid of being "shut-in" in the social sense—that is to say, he has an abnormal fear of his personal freedom being interfered with by others.

**Cleft Palate.** The depression in the middle of the lip just beneath the nose is the site where, during development before birth, two parts of the skull join together. Defects in this union may lead to all different degrees of deformity. Thus the two sides of the lip may fail to join together, causing a hare-lip, or the two sides of the palate may fail to unite. Minor degrees are unimportant, but the only possible treatment for cleft palate is surgical.

**Climateric.** (See *Change of Life*.)

**Climate.** (See under *Air*.)

**Club-Foot.** A deformity of the feet, present from birth, of unknown cause. It can only be treated surgically, and the sooner treatment is undertaken, the better. The longer a parent waits before beginning treatment, the longer time is necessary for treatment and the less is the hope of success. If begun in the first year of life, there is every chance that the child will grow up practically normal.

**Cocaine.** The first drug to be employed as a local anæsthetic. It is now no longer used, except in eye surgery, but is common as a drug of addiction. In curing the cocaine habit the same principles apply as in alcoholism (which see).

**Coccyx.** The small bones at the end of the spine which correspond to the tail in other animals. They may be injured by a kick, or sitting down hard, and such an injury may cause a great deal of pain. Treatment is a matter for the doctor.

**Cod-Liver Oil.** The chief source of vitamins A and D which ensure the health of the skin and bones. Nowadays, these vitamins are better taken in the form of halibut-liver oil or vitamin capsules such as Adexolin, which are more concentrated.

**Coffee.** Coffee makes some people tense and nervous, or unable to sleep, because it contains the stimulant drug caffeine. Such people should either stop taking coffee or take it only in the morning and early afternoon, or else use one of the brands of coffee now made in which the caffeine has been much reduced.

**Coitus.** Sexual intercourse.

**Colds.** Colds are highly infectious, and come on two to three days after contact with someone else who has a cold. The most infectious period is the first day. Colds are caused by a virus—a germ which is so small, that it cannot be seen under an ordinary microscope—but later in the course of a cold other germs are concerned which produce a yellow discharge from the nose.

Being exposed to cold and damp has no direct relation to having a cold except that such conditions are apt to reduce the vitality. Psychological factors are extremely important—people who are happy and keen on their work are less likely to get colds than those who are not. One is less likely to get cold when attending a football match which is interesting than doing some outdoor work, which is not.

Although many doctors recommend bed and aspirin for colds it should be noted that aspirin has no curative effect (see under *Chills*), and unless the patient feels really run-down, or has a temperature, it is probably better to carry on. A Benzadrine inhaler is the best means of relieving the choked-up sensation in the nose. In the later stages, the secondary infection by other germs can be relieved by penicillin, or sniffing up mild antiseptics.

No inoculations or vaccines taken by injection or by mouth have the slightest effect in preventing colds, and their use is a piece of medical humbug. The most such vaccines can do is to reduce secondary infection.

**Cold Sores.** (Herpes Simplex.) Small groups of blisters, usually round the lips, frequently associated with colds, pneumonia, or other diseases. They may also be found on the sex organs. Nothing can be done to prevent these, but the best treatment is to clean them and apply collodion.

**Colic.** A severe pain in the abdomen, caused by spasm of one of the internal organs, usually the intestines. True colic only occurs in those parts of the body which are hollow tubes, such as the stomach, intestines, bile duct, or the tube leading from the kidneys to the bladder. The pain is characteristic, since it is periodic, that is to say, it comes on, increases to a certain pitch of intensity, and then becomes less painful, only to be followed once more by an increase in pain. In the stomach the most frequent cause of colic is flatulence (which see). In the intestine, any harmful substance which has been swallowed may lead to colic, which is usually followed by diarrhoea. Gall-bladder colic may occur either following inflammation of the gall-bladder or its ducts, or as the result of gall-stones. This type of colic produces severe pain just under the margin of the ribs of the right side. There may also be pain in the region of the shoulder-blade on the right side.

So-called renal colic is caused by the passage of a stone from the kidney towards the bladder. Pain is felt in the kidney region, which radiates down the front of the abdomen into the groin and the thigh.

Any form of colic, if the pain is severe enough, may be associated with vomiting, sweating, and temperature. Since nearly all types require medical attention, the only thing to do in the meantime is to put the patient to bed and apply heat to the site of the pain, preferably in the form of a well-covered rubber hot-water bottle.

**Colitis.** Inflammation of the large intestine. Food, after being digested in the stomach, passes along the small intestine, which is about 22 feet long, and during its passage all the available nourishment is absorbed into the system. The food then enters the large intestine, or colon, by which time it consists largely of waste matter, and is subsequently eliminated. Colitis is caused by irritation of the latter part of the digestive system.

Many cases of colitis are neurotic in origin, and nearly all of them are caused by the patient himself, through excessive use of purgatives.

The usual type of the disease, known as mucous colitis, is caused in this way and shows itself by pain in the abdomen associated with the passing of excessive mucus and possibly small amounts of blood. It is found in patients who are constantly concerned about their bowels, and are always taking medicines or "crank" foods. The disease is, as we have seen, directly caused by this wrong attitude, but when it has got so far, treatment may be necessary in the form of special diet. Certainly no further laxatives should be taken, and apart from essential treatment by the doctor, the less attention paid to the bowel functions the better. (See the article on Constipation.) Colonic lavage, since it helps to fasten the attention on the colon, is extremely inadvisable as a general rule.

There is another condition of the bowel which is more serious, the cause of which is not yet completely known. This disease is known as ulcerative colitis. As in the first illness, blood and mucus may be passed by the bowel, but there is also loss of weight, anæmia, weakness, and diarrhoea. Ulcerative colitis must always be treated by a specialist. The outlook is sometimes serious, but is much improved with modern treatment.

Since colitis is an inflammation of the large intestine, such infectious diseases as dysentery and cholera also come under this heading, but, generally speaking, the use of the word is limited to the two conditions described above.

**Colon.** The large intestine (see above).

**Colloidion.** A drug which, when painted on the skin, forms a thin transparent protective film. It is also known by the proprietary name of New Skin.

**Colour Blindness.** An inborn condition in which, while ordinary vision remains normal, the individual is unable to distinguish between particular colours. The most common type is difficulty in distinguishing between red and green; less common is difficulty in distinguishing blue from yellow. The importance of this abnormality lies in the fact that people who are unable to tell, say, red from green, are liable to be a danger on the roads when automatic traffic signals are encountered.

**Coma.** Complete loss of consciousness, which may be due to many different diseases. Alcohol, diabetes, cerebral hæmorrhage, brain tumour, and epilepsy, are a few of many possible causes. Only a doctor can treat coma.

**Comedones.** Blackheads. (See Acne.)

**Concussion.** Stunning. A condition of dizziness, mental confusion, and sometimes unconsciousness, due to a blow on the head. The patient is usually pale and suffers from shock, with a weak pulse and slow breathing. He should be put to bed and kept there until the doctor arrives.

An important fact about concussion is that serious after-results are not nearly so common as many people imagine. Very severe blows can lead to epileptic fits and certain other symptoms, but most people who complain of symptoms following a head injury are suffering from a wrong attitude to the accident, or what is technically called a neurosis. Such factors as resentment, desire for compensation, or general discontent, may lead to the appearance of symptoms, such as headache, dizziness, and "nerves," which are attributed to the original blow. It is in the patient's own interest that he should take note of these facts.

Every doctor knows that if one compares the results in people who have been injured on the head at sports with the results in those who have had similar injuries while at work, the latter will be found to have a far higher number of cases with residual symptoms. This is because the mental attitude in each case is different. A man injured playing football is not resentful and wants to get back as soon as possible. But, when the injury occurs during work, the attitude is usually the very opposite. It is these emotional causes which lead to unpleasant after-effects following concussion far more often than physical causes.

**Congenital.** Existing at, or before, birth.

**Congestion.** Excess accumulation of blood or mucus in any part of the body.

**Conjunctivitis.** Inflammation of the trans-

parent membrane which covers the eyeball. The symptoms are—irritation on the front of the eye, which often feels as if dust had got into it, redness, and excessive flow of tears, or discharge. Often the eye-lids are stuck together in the morning.

Conjunctivitis is caused by infection with germs of different types, and the treatment depends on what germs are present. The safest treatment is to bathe the whole eye with hot water, and then apply a solution of boric acid with an eye-bath. This will cure mild cases, but it may be necessary to see a doctor if the inflammation does not clear up. Since conjunctivitis is infectious, the eye should not be touched either with the hands or with a dirty handkerchief.

A very severe form of the disease, leading to blindness, may result from a newly-born baby's eyes being infected from a mother with gonorrhoea. For this reason it is compulsory to drop antiseptic into the eyes of new-born children.

**Constipation.** There has been more nonsense written and published on this subject than on almost any other disease in medicine. Bowel motions occur normally at intervals of anything from twenty-four hours to four or five or more days. The idea that constipation leads to serious internal poisoning is believed by nobody nowadays, although it is carefully fostered by those who sell patent medicines. It is possible to go for weeks without any bowel movement and with no very serious results. (It must be remembered, however, that constipation may be a sign of more serious disease, and it is this, rather than constipation itself, which may cause unpleasant effects.) In general, constipation should be looked on as a sign that a wrong diet is being taken, or that faulty habits have been formed in childhood, but, if the condition does not improve after a diet containing fresh fruit, stewed prunes, and wholemeal bread, a doctor should be consulted.

Purgatives should never be used regularly, because most of them are merely poisons which irritate the bowel. The least harmful are such substances as agar. The proper function of a purgative is to clear the bowel on one occasion only, and frequent repetition may lead to a disease, such as mucous colitis, which is much more serious than constipation.

In fact, a normal person should have no occasion to be interested in the functions of his bowel, or in the nature of his bowel motions, but every doctor sees only too frequently patients who think they are constipated because their bowels do not work daily! In most cases, there is little need to be worried if they work only three times weekly, and even this may be quite normal.

**Consumption.** (See Tuberculosis.)

**Contagion.** (See Infection.)

**Contraception.** (See Birth Control.)

**Contusion.** A bruise (which see).

**Convulsions.** Any kind of fits, but this term usually refers to convulsions in children, which occur much more frequently than in adults. Indeed, any form of infectious disease or other irritation in a child, may lead to convulsions. In these, the child becomes unconscious and rigid, and there may later be spasmodic jerking of the face, arms, and legs. A doctor should always be called to distinguish between this condition and epilepsy. Epilepsy is only the cause in one-fifth of cases. The best treatment is to keep the child warm, either with a hot bath or hot-water bottles. Great care must be taken not to cause burning. Since convulsions in children are sometimes caused by lack of calcium in the blood, doses of halibut-liver oil may be given.

**Cornea.** A transparent membrane covering the eye, and lying beneath the conjunctiva.

**Corns.** Corns are produced by continual rubbing or irritation of the feet by ill-fitting shoes, but they may occasionally also appear on the hands. In ordinary cases, the best treatment is to cut them away with a razor-blade, but, unless the footwear is altered, they will, of course, grow again. Various corn-cures containing salicylic acid may also be used. If the corns are at all bad, it is best to consult a chiropodist.

**Coronary Thrombosis.** Clotting of blood in the blood-vessels which supply the heart. The illness is similar to angina pectoris (which see).

**Cortisone.** A hormone, or potent chemical substance, produced by the suprarenal glands.



which are situated above the kidneys. These glands produce several hormones, of which cortisone is only one. Medically, cortisone is obtained by the extraction and purification of the substances derived from the suprarenal glands of animals, and since these glands are very small, it was at first impossible to obtain more than very small amounts of cortisone, which was, therefore, also extremely expensive. Now, however, it is more generally available.

The original work on cortisone was carried out in the United States, where it was found to have an effect on certain diseases which could only be described as magical. For example, sufferers from the serious and crippling disease of rheumatoid arthritis were described as being relieved of their symptoms within minutes of an injection and being able to get up and walk quite normally for the first time in years. It was admitted, however, that, unless the injections were continued, the condition was liable to relapse. Unfortunately, these first enthusiastic reports have not been substantiated, and recent writers in this country have not found cortisone to be superior to aspirin in rheumatoid arthritis. Although cortisone was hailed as a cure-all for many different disorders, including certain mental diseases, the most that can be said now is that it is very useful in a small number of conditions, and makes others dramatically worse.

Nevertheless, cortisone has served the useful function of drawing attention to the nature of disease processes in general; for, although the point cannot be elaborated here, we are on the verge of a hypothesis which may indicate that all diseases, of whatever nature, produce their effect at the cellular level in basically the same manner. This hypothesis, which is at present being developed by Professor Hans Selye of Montreal, is known as the theory of the General Adaptation Syndrome.

**Cough.** An attempt on the part of the body to expel something causing irritation in the chest or throat. Cough mixtures should not be given indiscriminately, as there are two separate types: one for stopping a useless and troublesome cough, the other for liquifying material choking the bronchial tubes so that it can be expelled more easily. (For a fuller discussion, see under *Bronchitis*.) Very occasionally, cough may be caused by irritation outside the throat or chest, such as the cough produced by irritation from wax in the ears.

**Cramps.** (See under *Colic* and *Dysmenorrhœa*.)

**Cretinism.** A condition of idiocy, caused by lack of secretion of the thyroid gland just after birth; it may be removed by giving the baby thyroid extract by mouth. In some districts, such as Derbyshire and parts of Switzerland, cretinism is more common than elsewhere, because of lack of iodine in the drinking water. The deficiency may then be made up by the use of iodised table salt, or iodised chocolate. Any baby which appears to be dull in infancy should at once be referred to a doctor, to see whether cretinism is present or not. Later treatment has much less effect than when it is begun early.

**Crisis.** The turning-point of a disease, such as lobar pneumonia, in which, usually on the seventh or eighth day, the temperature suddenly starts to come down.

**Croup.** An old-fashioned name applied to the diseases now known as laryngitis, diphtheria, or sore throat.

**Cyanosis.** A term used to describe blueness of the skin, generally caused by lack of oxygen. Most usually found in heart diseases, less often in lung and blood diseases.

**Cysts.** Any sac in the body filled with liquid, or semi-liquid substance. They are most frequently due to blocking of the mouth of a gland.

**Cystitis.** Inflammation of the bladder. (See under *Bladder*.)

**Cystoscopy.** The process of examining the inside of the bladder with an instrument.

**Dandruff.** Dandruff is only part of a more widespread condition of the skin, known as seborrhœa, and those who suffer from dandruff of the head usually also show it on the back, shoulders, and chest, in the form of a greasy, patchy irritation, which may itch badly. The back and chest may be infected from the scalp, and the main measure to prevent dandruff is

frequent washing of the scalp, and, of course, of the other areas if they are infected. It is not difficult to stop dandruff temporarily, but, since the infection can only take place where the skin is excessively oily, the underlying state of oiliness will make the disease tend to recur. For the head, the use of "Cetavlon" 20% or shampoos containing "Cetavlon" will help. On the body, in addition to thorough frequent washing, sulphur lotion may be used. No greasy substance or ointment should be used in treatment.

**Deafness.** The inside of the ear is a wide tube divided into three parts; the outer ear, which communicates with the air; the middle ear, which contains three tiny bones, which transmit vibrations from the ear-drum (at the inner end of the outer ear), to the third part, or internal, ear. The latter is a very complicated apparatus which is connected, not only with hearing, but also with the sense of balance. The vibrations from the ear-drum pass along the three small bones of the middle ear, and, in the internal ear, are transformed into nerve impulses, which pass along the auditory nerve to the brain.

Deafness may result from disease in any part of this system. Thus, a boil or wax in the external ear may block the passage of sound waves, or infections from the throat may pass along the tube which connects the throat with the middle ear. Infectious diseases, such as measles and scarlet fever, may have a similar effect. Any such infection may lead to middle ear inflammation which causes deafness by preventing the small bones from transmitting sound. In the inner ear, disease of the nerve may cause deafness.

In older people, a common cause of deafness is otosclerosis, a hardening of all the tissues in the ear, which occurs in some people at an earlier age than in others. Like hardening of the arteries, it is merely a sign of old age. Certain trades, in which workers are exposed to continual loud noises, especially those of a high-pitched nature, are associated with deafness.

Most types of deafness cannot easily be cured once they are established, and if the defect is severe, it may be necessary to use some sort of hearing aid. Lip-reading is also helpful.

**Death-Rate.** The number of people who die each year, compared with the total number of population. It is expressed as the number of people who die in a particular group of every thousand persons, e.g., a death rate of 12 per thousand means that, on the average, of every thousand people 12 die each year.

**Debility.** Weakness. There is no disease called "debility," but general weakness may be the result of many different types of disease. It can only be treated by dealing with the cause.

**Deficiency Disease.** Any disease caused by the lack of some essential part of the diet. Usually applied to vitamins, the term may also be used to include deficiency in fat, carbohydrate, or protein, or of minerals in the diet. (See *Beriberi*, *Pellagra*, *Rickets*, and *Scurvy*.)

**Deglutition.** The act of swallowing.

**Delirium.** A mental disturbance, usually occurring in the course of some infectious disease, or under the influence of poisonous drugs. The word can only be used for an acute and, generally speaking, short-lived disturbance. The patient becomes restless and incoherent, may have hallucinations, or believe that he is being persecuted. He may also be disorientated and unaware of where he is, or of the identity of those surrounding him. The most common type of delirium occurs in the course of pneumonia and other fevers. Delirium tremens, due to chronic alcoholism, is now less common. Treatment is a matter for the doctor, but the main point is to give the patient as much rest as possible, and ensure that he gets enough fluids and does not over-exert himself.

**Delusion.** (See *Hallucination*.)

**Dentifrice.** Any substance used for cleaning teeth. The most important point about a toothpaste is that it should clean the teeth adequately, without injuring the gums or the enamel covering the teeth. Coarse materials should therefore not be used. It is a mistake to believe that antiseptic taken into the mouth can have any effect in destroying germs. Scientifically speaking, the use of an antiseptic mouth-wash is no more effective in killing germs than washing the mouth out with water, because any antiseptics contained

in it are in contact with the germs for much too short a time to have any effect. (See p. 827.)

**Depilatory.** A substance used to remove hairs. In the past, caustic substances were used in the form of cream for removing superfluous hairs, but the most satisfactory methods now in use are mechanical methods, such as wax which pulls off the hair when it hardens, or, when the hairs are not too coarse, an abrasive pad of a substance resembling sand-paper. The only permanent way of removing hair is to use an electric needle which kills the roots, but probably the best method for ordinary use is a safety-razor. It is probably untrue that shaving makes the hair grow more quickly, or become coarser. X-Rays may also be used, but they are liable to cause scarring of the skin.

It should be remembered that all growth of superfluous hair is caused by glandular abnormality which may sometimes be cured, thus removing the condition permanently.

**Dermatitis.** Inflammation of the skin, also known as eczema. Although any inflammation of the skin is scientifically called dermatitis, the term is ordinarily used to apply to inflammation caused by undue sensitiveness to various substances. Dermatitis is therefore related to other allergic diseases (which see).

In industry, there are many substances which can cause irritation in those with sensitive skins, and if the inflammation is allowed to spread by continual contact with the irritant, the result may be serious. Dermatitis is therefore legally notifiable in industrial workers. Treatment is a specialist's task, and depends on the type of eruption present, but the first essential is to remove the patient from contact with whatever is the cause of his illness. As in other allergic diseases, emotional factors have a great deal to do with dermatitis.

**Diabetes.** A disease of the pancreas, which shows itself in an inability of the body to make use of sugar in the food, which, therefore, accumulates in the blood, and is finally excreted in the urine.

The pancreas produces a substance known as insulin without which sugar, which is one of the most important energy-producing substances in the body, cannot be utilised. When it happens that not enough insulin is produced, the sugar continues to accumulate in the body and cannot be made use of. The blood becomes loaded with sugar and ultimately it is passed out in the urine.

There are no specific symptoms in the early stages of diabetes; there may be general debility, loss of weight, and excessive hunger or thirst. People who have large numbers of boils should have their urine tested, as this is sometimes a symptom of diabetes. If the condition is allowed to go on too far, the patient may develop diabetic coma, and become unconscious.

Fortunately, diabetes can be easily diagnosed by the discovery of sugar in the urine. Treatment in mild cases may be confined to diet, but, in more severe cases, regular injections of insulin are necessary. There is no reason why a diabetic should not live as long as a normal person, and no reason why he should not marry and have children, although diabetes is, to some degree, hereditary.

**Diaphragm.** The large muscle which separates the inside of the chest from the inside of the abdomen.

**Diarrhoea.** Looseness of the bowels, which may arise from many causes, but is mainly due to eating irritating or poisonous food. It is simply an attempt on the part of the body to get rid of harmful substances and therefore should be helped, rather than hindered. That is to say, it is unwise to take drugs, such as chalk and opium, which will stop the diarrhoea before all the poison has been expelled, unless the patient is becoming weak. For ordinary diarrhoea, the best treatment is to take a dose of castor oil. Colic will be relieved by a rubber hot-water bottle.

The above only applies to simple diarrhoea, which may be associated with vomiting, but diarrhoea may also be found as a symptom in many more serious diseases, such as dysentery, typhoid, cholera, and colitis. Prolonged diarrhoea should be referred to a doctor.

**Diathermy.** The process of producing heat within the tissues by means of an electrical

apparatus. It is used in the treatment of fibrositis, rheumatism, etc. The same apparatus is also used in surgery (see *Cauterisation*) with an electric needle attachment, for cutting tissues that are likely to bleed.

**Diathesis.** The type of constitution which makes one liable to a particular disease, e.g., rheumatic diathesis—a tendency to rheumatism.

**Dick Test.** A test devised by George and Gladys Dick of Chicago, to discover whether a patient is liable to, or immune from, scarlet fever.

**Diet.** A suitable diet contains the following: (1) carbohydrates, which form the fuel of the body, and are found in starchy foods, sugar, and sweets; (2) proteins, the building substances of the body, found in meat, cheese, nuts, peas, beans, lentils, herrings, and milk; (3) fats, the warmth-producing and protective food, found in butter, animal fats, etc. In addition, there must be minerals, mainly calcium and phosphorus, found especially in milk, eggs, herrings, and meat. Vitamins, which are essential factors in any diet, are found in butter, margarine, milk, fresh fruit, and vegetables; particularly concentrated sources are halibut or cod-liver oil, yeast, oranges. (See *Vitamins*.)

Every diet must contain adequate amounts of these foods. The energy value of a diet is calculated in calories (which see).

**Digitalis.** A drug used in the treatment of heart diseases. It is obtained from the fox-glove, and has the effect of slowing the heart and strengthening the force of the heart-beat.

**Diphtheria.** A disease, caused by a particular germ, taking the form of a sore throat in which a membrane may grow, which in serious cases interferes with breathing and may cause death. Usually, the child develops a slight temperature, looks pale and ill, and complains of pains in the throat.

Before the use of anti-toxin, the infection in the throat often resulted in the formation of the greyish membrane already described which might cause death from suffocation. Now, with early treatment, the outlook is much better. Thus, before the use of anti-toxin, 35 per cent. of children died of ordinary diphtheria, now only 5 per cent. die.

In those who have not yet suffered from diphtheria, it is possible, by means of the Schick test, to discover whether they are susceptible or not. They can, if susceptible, be inoculated against it by the use of diphtheria toxoid. This is a perfectly safe procedure and gives a high degree of protection.

**Dipsomania.** This is a term which is often misused. It means a periodic and almost irresistible craving for alcohol in someone who ordinarily drinks little or not at all. It is a mental disease and requires psychological treatment.

**Disinfection.** Killing germs by antiseptics or other methods. In the room occupied by a sick patient, it is necessary to destroy germs in any of the bodily secretions—particularly, of course, in those which are most liable to carry infection in the particular disease concerned. Thus in typhoid fever or dysentery, the bowel motions should be disinfected, in tuberculosis, the sputum. The process of disinfecting rooms is, however, quite another matter, and, although still carried out by many Public Health Authorities, "fumigation" and the use of sulphur or formaldehyde is about as useful as the medieval custom of prayers and bells. Antiseptic sprays create a pleasant and refreshing atmosphere in a sick-room, but their effect in killing germs is negligible.

**Dislocation.** Displacement of the bones in a joint.

**Disseminated Sclerosis.** A disease of the nervous system in which small patches of hard tissue (sclerosis) develop throughout the spinal cord and brain. The cause is unknown. Beginning in patients about the age of twenty to thirty, there may be many different symptoms, such as defects of eyesight or of the eye muscles, weakness or paralysis of the legs, difficulty in speaking, etc. The disease may last for many years, but the outlook is not very good as no treatment has yet been discovered which will stop the process.

**Diuretic.** A medicine which increases the flow of urine by making the kidneys more active. It usually acts by increasing the amount of salts in



the blood so that an increased flow of water is required to wash them out.

**Diverticulitis.** In some people, the large intestine develops numerous small pouches along the wall. Usually these may be present without producing any symptoms, but if waste material from the bowel gets into them, inflammation may be set up, and this condition is called diverticulitis. It can be discovered by an X-ray picture, and the treatment, in mild cases, is to take a suitable diet. In more serious cases, it may be necessary to remove the affected piece of bowel by a surgical operation.

**Drop Foot.** When the foot, by reason of paralysis of the muscles of the front of the leg, cannot be raised upwards. It may be due to neuritis, or to an injury of the nerve supplying the muscles.

**Dizziness.** This is one of the commonest symptoms in medicine, and may be found in many different diseases. It is often associated with a feeling of nausea. Mild degrees of food-poisoning, certain drugs, some physical disorders of the nervous system, diseases of the ears, too high, or too low, blood-pressure, may all be causes of dizziness. In the larger number of cases, however, there is usually little evidence of any physical upset, and, in such cases, the symptom is due to nervous or emotional instability. The so-called "black-outs" which were a familiar complaint in war neuroses had such an emotional origin. Treatment depends, of course, on the cause, but persistent dizziness should be referred to a doctor.

**Dropsy.** An abnormal accumulation of fluid anywhere in the body. It may be generalised over the whole body, or tend to be in the more dependent parts, such as the legs and feet. Sometimes fluid collects, not throughout the tissues, but in the body spaces of the abdomen or chest. Severe dropsy is usually due to kidney or heart disease, but lesser degrees may be found in diseases of the liver or blood. Treatment is always a matter for a doctor, and depends on the underlying condition.

**Duodenal Ulcer.** These are found four times as often in men as in women, and are ten times more common than ulcer in the stomach. The cause of duodenal and gastric ulcers has been sought for many years by doctors, but it is doubtful whether they can be said to have any single cause. Faulty eating habits, bad food taken at irregular intervals, and "natural" tendency to the disease have been blamed in the past, but it now seems that by far the most important factor is high-tension living, and excessive worry. With modern instruments which make it possible to see the inside of the stomach in the living individual, it can be shown that emotions such as anxiety and fear cause contraction of the stomach muscles and pallor of the lining of stomach and duodenum. Persistence of such emotions causes a state of affairs in which the acid normally found in the stomach may start to eat away the weakened lining. Although excessive acid has been blamed in the past for causing ulcers, it is well known that many perfectly normal people have a high acid content, and some people with ulcers have very little acid. Alkaline powders, which are used in treatment, produce their result mainly by relaxation of the stomach muscle. Certain drugs which have no effect in neutralising acids produce relief of pain just as efficiently by causing relaxation. The patent medicine advertisements with dramatic accounts of how acids are neutralised to produce relief of pain, are largely nonsense, since, as we have seen, neutralisation has little to do with their effect.

Treatment can only be carried out efficiently under medical supervision, but, in order of importance, the main points are as follows: (1) the relief of anxiety, preferably by removing the cause, or by sedatives if necessary; (2) diet; (3) alkalies or other medicines which act directly on the stomach. (See Emotions.)

**Dysentery.** The name given to a group of disorders in which there is diarrhoea, produced by irritation of the bowels. It is uncommon in this country, but found frequently in tropical or sub-tropical countries. The two main types are amoebic dysentery caused by a small parasite, and bacillary dysentery caused by various groups

of germs. Infection occurs by eating food infected by these organisms, or drinking infected water. Usually, the organisms get into food and water through contamination with the excreta of someone who already has the disease.

Minor degrees of dysentery cause colic and diarrhoea, but, in more severe degrees, blood and mucus may be passed as well. The chief points are: (1) prevention: in countries where dysentery occurs, food and water should be disinfected or boiled before use; (2) immediate medical treatment, since the disease may become chronic if treatment is inadequate. (This is especially true of amoebic dysentery.) Modern treatment is highly successful, but depends on the type. Amoebic dysentery requires to be treated by drugs which are derivatives of arsenic and antimony; bacillary dysentery is treated by sulphaguanidine, which is related to sulphonamide and "M. and B."

**Dysmenorrhœa.** Painful menstruation is one of the commonest causes of loss of time in industry, and, of course, causes a great deal of discomfort and suffering which are, in most cases, avoidable. It is impossible here to give an account of the various causes of painful menstruation, which may be due to glandular causes, or local disease in the pelvis. Most often, however, it is found in women who have subconscious fear, anxiety, or disgust about their sexual functions. Self treatment is unwise, firstly, because drugs, such as aspirin, do not get to the fundamental cause, and secondly, because a medical examination is necessary to discover the particular cause in each case.

**Dyspepsia.** (See Duodenal Ulcer.) Dyspepsia is a term used for indigestion in general. Minor degrees may exist in the absence of any structural change and the condition is then called functional dyspepsia. More severe degrees result in gastric or duodenal ulcer. The treatment is the same in all types.

**Earache.** Is caused by inflammation within the ear. (See description under Deafness.) Inflammation may be caused in the outer ear by a boil or sometimes by infection introduced, for example, while swimming. In the case of the middle ear, where infection is more often found, the spread usually occurs from the throat up the Eustachian tube connecting the throat with the middle ear. This type of inflammation is, therefore, most often found where there is tonsillitis, adenoids, or a history of frequent colds. Boils or other irritation in the outer ear may be very painful, but are not often serious. In the middle ear, however, the pus is unable to escape owing to the presence of the ear-drum and there is a serious risk of the disease spreading to the surrounding bone (mastoid), or rupturing the ear-drum.

The only first-aid measures which should be used in earache are the application of heat to the outside of the ear and, perhaps, the taking of two aspirin tablets. It is extremely unwise for the layman to put anything inside the ear. Peroxide and olive oil should, in particular, be avoided; the first because impurities in it often lead to severe irritation, the second because it merely leads to the accumulation of dirt and serves no useful purpose. When earache is severe or prolonged, a doctor should always be called.

**Eclampsia.** A form of internal poisoning which may occur in the course of pregnancy. The early symptoms are headache and failing vision. Later, the blood-pressure is raised, and fits and unconsciousness occur. With modern treatment, the outlook is very much better than it once was, but the fact is that eclampsia ought never to occur because if the woman is seen regularly at an ante-natal clinic (as she should be) the disease can always be arrested in time.

**E.C.T.** The abbreviated form of the name for a modern type of treatment for certain psychiatric disorders—electro-convulsive therapy. This treatment was first used by Dr. von Meduna of Budapest in 1934, but has been greatly elaborated on since that time.

Dr. von Meduna believed that an antagonism existed between the mental disorder of schizophrenia and the condition known as epilepsy. On the basis of this assumption (which, in the light of more recent knowledge, is more than doubtful), he began to induce in his schizophrenic

patients a state of artificial epilepsy by giving them the drug named cardiazol, which causes convulsions very similar to those of epilepsy. Good results followed this empirical treatment, and other convulsion-producing methods were used, the most recent of which is the use of electric shock.

In E.C.T. the patient lies on a bed or couch and two metal plates attached to an apparatus which passes a current lasting about one-tenth of a second are placed on either side of the head. The switch is thrown over, and the patient immediately loses consciousness and remains in this state for a few minutes. He may be slightly confused when he comes to, but there is no pain associated with this treatment, and complete loss of memory exists for what has happened in the previous ten or fifteen minutes. Still more recently, the drug named curare, which was used by certain primitive tribes for poisoning their arrow-tips, is given before the convulsion to induce relaxation and prevent undue strain to the muscles or bones during the convulsive attack.

Although, as has been indicated, this treatment was first used in the treatment of schizophrenia, it has been found that insulin is better for schizophrenia and E.C.T. for depressive states. In suitable cases E.C.T. is almost 100 per cent. effective in removing the depression.

**Eczema.** (See Dermatitis.)

**Electric Shock.** A person who has been subjected to a severe electric shock should, first of all, be removed from contact with the source of electricity (if he is still in contact with it). Those helping must, of course, take care to insulate themselves from the body of the patient so long as he remains in contact with the source of power. Treatment for shock should then be applied, and if the patient has stopped breathing, artificial respiration (which see) will be necessary. Burns and other injuries should be treated last.

**Elephantiasis.** A tropical disease in which blocking of the lymph vessels by a parasite leads to great swelling of the tissues, especially in the lower part of the body.

**Embolism.** An embolus is a small clot which has become detached from the inside of a blood-vessel and is floating free in the blood stream. Occasionally, it may be a particle of fat released by a fracture, or an air bubble. The main danger of an embolism is that it may lodge in an area where there is only one blood-vessel supplying the tissues and block the blood from reaching them. If the embolus is infected, it may set up an abscess in the spot where it lodges. The most dangerous areas for embolism to occur are the brain, heart, lungs, or kidneys, and in these areas the result may be death. Treatment, when possible, is immediate operation; but this is obviously not practicable when the embolus is in the heart or brain. People who have an excessive tendency to clotting of the blood may be given a substance known as heparin which lessens the likelihood of casualties.

**Emotions.** It is not generally realised just how important emotional factors are in the maintenance of health or the causation of illness. People tend to think of "psychological" influences as being in some way mysterious and intangible, yet the fact is that emotions are accompanied by bodily changes both in muscle tension and in the chemical constitution of the blood. For example, anger or worry are accompanied by rise in blood-pressure, increase of the normal sugar in the blood, increase of tension in all the muscles, and tightening and pallor of the lining of the stomach. When these emotions are persistent, the physical changes not only persist but may give rise to structural changes, such as gastric and duodenal ulcers, high blood-pressure, etc. So-called "fibrositis" and "rheumatic" pains, asthma, various skin diseases, and many other conditions have a similar origin. In general, the emotions which give rise to illness are those which are repressed—that is, those which do not find expression in action. Continual unexpressed resentment in marriage or business, a sense of frustration in life, and other unsatisfied longings are the cause of much disability which has been graced by the name of "psychosomatic" illness. In fact, however, nearly all illness is related to the patient's way of life, and a great deal of the doctor's difficulty in treating it is due to this

cause. Too often the patient only wants a bottle of medicine, not realising that every illness implies some failure of adaptation either of body or mind, indigestion, for instance, is not something to be merely charmed away by drugs—it implies a host of other factors: does the patient eat properly cooked and selected food? Does he eat it in a satisfactory way, at reasonable intervals? Is he worried, unhappy at business or at home? What is his attitude to life, and so on (with more emphasis on the latter than the former factors, because if anything is obvious it is that some people can eat any way they like without any ill results—they are the ones who do not worry). We are beginning to realise that happiness and the desire to live are the best medicines and, conversely, that unhappiness has much to do with weakening resistance to illness or even directly causing it.

**Empysema.** A condition of the lungs in which the lung tissue becomes thinned out owing to the breaking-down of the walls between the tiny compartments of which the lung is composed. It is not in itself a disease, but rather the result of such diseases as chronic bronchitis and asthma where there is continual coughing. The symptoms are cough and breathlessness on exertion. On thumping the chest, as the doctor does on examination, it gives out a hollow resonant note. Treatment depends on the cause.

**Empyema.** A collection of pus in the lung, more commonly found in children. It may be caused by the germs which cause infection in ordinary abscesses or boils, or it may be caused by certain funguses or by tuberculosis. The symptoms are—pain in the chest, sweating, and fever, often following on another illness, such as pleurisy or pneumonia. When pus has formed, it is usually necessary to draw it off through a needle with a hollow bore. Nowadays, with penicillin and the sulpha drugs, the outlook is much better than formerly.

**Encephalitis** is inflammation of the brain, and the term is often used to mean encephalitis lethargica or sleepy sickness (this is, of course, not the same as sleeping sickness, which is a tropical disease found in Africa). Common in 1918, it is now rather uncommon in this country. The symptoms are drowsiness in the daytime and an inability to sleep at night, weakness, and paralysis, etc. Most unpleasant are the after-effects which often followed—mental dullness, tremors, and weakness, and sometimes, in children, moral delinquency. Encephalitis may also be caused by lead poisoning and, very occasionally, by vaccination for smallpox.

**Endemic.** Referring to a disease, means prevalent in a particular area.

**Endocarditis.** Inflammation of the lining of the heart, especially of the valves. Generally follows rheumatic fever, diphtheria, or scarlet fever. (For further details see under Heart.)

**Endocrine Glands.** (See under Glands.)

**Endometritis.** Inflammation of the lining of the womb.

**Enema.** An injection of liquid into the rectum, usually intended for the treatment of constipation. Unless given, as in hospital, in preparation for an operation or examination, enemata are usually a sheer waste of time. Many cranks and humbugs specialise in giving enemata or "colonic lavage" for the most varied diseases, real or imaginary, to those other cranks who have nothing better to think about than the action of their bowels.

**Enteric.** (See Typhoid Fever.)

**Enteritis.** Or gastro-enteritis. Inflammation of the intestinal tract by infection or irritating food. There is diarrhoea, colic, a feeling of nausea, or actual vomiting. The best treatment, if the diagnosis is certain, is a dose of castor oil to clear out the poison, and mild diet for a few days.

**Enuresis.** Bed-wetting (which see).

**Ephedrine.** A drug used to shrink the lining of the nose in colds, and also in the treatment of asthma.

**Epidemic.** A disease that affects many people at one time in the same area, being infectious.

**Epiglottis.** A lid which covers the opening to the wind-pipe and prevents food from getting into the voice-box or lungs.

**Epididymitis.** Inflammation of the epididymis, a structure which covers the upper end of the testicle. It may be caused by various germs,



among them the germ of gonorrhoea. Treatment depends on the cause.

**Epilepsy.** It is, in general, incorrect to think of epilepsy as a disease having a single cause and requiring a single type of treatment. Fits are a symptom of numerous different diseases and should only be named "epilepsy" when no other underlying condition can be found. In children, almost any minor trouble may lead to fits without there being any tendency to epilepsy. Later in life, however, fits are always a sign which needs to be thoroughly investigated. Among the possible underlying conditions are brain tumour (in cases where the fits are of recent origin and are accompanied by headache and other symptoms), head injury (although not quite so frequently as is often thought), and hysteria, which is a purely psychological illness.

If no other disease has caused the fits, the patient is said to have true, or idiopathic, epilepsy, and it is nowadays possible to diagnose this by means of an instrument known as the electroencephalograph, which records minute electrical waves in the brain. True epilepsy is treated by such drugs as phenobarbitone, which decrease the activity of the brain centres in which disturbances arise. A more modern drug is epanutin, which has less tendency to make the patient sleepy. None of these drugs should be used except under a doctor's advice. Some patients require to take medicine all their lives, but others are able to discontinue it if the seizures stop.

**Epistaxis.** Nose-bleeding.

**Epithelioma.** Cancer of the skin. (See Cancer.)

**Ergot.** A drug used in midwifery to cause contraction of the uterus and control bleeding after child-birth.

**Ergosterol.** A substance found in the skin and elsewhere, which, when exposed to sunlight, becomes converted to vitamin D.

**Erysipelas.** An infection of the skin with streptococci. It begins as a red, raised area anywhere on the body where the germs have been able to enter through a small crack or cut in the skin. The red area advances and spreads over the body until the disease is got under control. Erysipelas is very infectious, and those who look after the patient should always wash their hands thoroughly after contact. At one time, the disease used to spread as an epidemic throughout hospital wards, but this is very rare nowadays.

Treatment is, of course, a matter for the doctor, although erysipelas is no longer as serious as it once was. The sulphonamide drugs are used.

**Erythema.** Redness of the skin due to any cause, but usually inflammation.

**Erythrocytes.** The red cells of the blood.

**Exanthem.** Any fever accompanied by a rash.

**Exercise.** One of the more ridiculous ideas of modern times is the idea that violent exercise is an essential for health and that large muscles are a sign of fitness. Every normal child gets enough exercise without having to be told, and, in later life, too much exercise does more harm than good. There seems little doubt that athletes who engage in the more violent sports are less long-lived than normal people. This is not to say, that normal people should "take care" in indulging in any exercise which happens to amuse them, but it does mean that there is only one good reason for engaging in sport, and that is because one wants to. There are few more pathetic specimens than the physical fitness "expert" who can think of nothing better than absurd training to no particular end, and whose muscles are as over-developed as his mind is under-developed. Exercise and sports are for pleasure and should not be considered as a means to anything else; anybody who has a guilty fear that he does not exercise enough should take to heart the advice of an American writer: "When I feel the urge to exercise, I lie down on a couch with a good book, and pretty soon the urge leaves me."

**Exhaustion.** There are two kinds of exhaustion, physical and mental, and both are much less common than is generally believed. Physical exhaustion is caused by the accumulation of the waste-products of muscular exercise in the blood, and ceases as soon as these are excreted—a matter of a few hours. Mental exhaustion in the same sense does not exist, and, in fact, it must be admitted that so-called mental exhaustion is almost

entirely plain boredom. Thus, when any act is carried out for too long, boredom and resentment increase and one has to fight against an increasing unwillingness to do any more. Similarly, in so-called "neurasthenia," anxiety and concern over personal matters is so great that the patient is unable to concentrate on more practical tasks and is therefore more easily exhausted. It is really surprising how the most exhausted individual (in the psychological sense) can nevertheless talk for hours about himself, while his more normal listener is long ago tired out. There is also no doubt that the girl who is too tired to help wash the dishes is readily cured when her lover calls. There is nothing deceitful about this; it is merely that the mind is easily bored and yet is less tired by doing the things it wants to do.

**Exophthalmos.** Bulging of the eyes, usually caused by over-activity of the thyroid gland.

**Expectorant.** A drug supposed to have the effect of liquefying the sputum in bronchitis.

**Fæces.** The waste matter excreted by the bowel.

**Fainting.** A temporary loss of consciousness due to insufficient blood reaching the brain. The immediate cause may be exhaustion or emotion. Treatment is to keep the patient lying down, so that an adequate flow of blood may once more reach the brain; any tight clothing should be loosened. It is usually unnecessary to give any stimulants.

**Fallopian Tubes.** The tubes which connect the ovaries with the womb within the pelvis, and along which the ovum passes. They may cause pain through being twisted or blocked, or through becoming infected with germs (the latter may be caused by gonorrhoea or other infection). Sometimes the ovum becomes fertilised before it reaches the womb, and, as it grows, stretches, and finally bursts the tube, causing dangerous hæmorrhage. This condition, known as tubal pregnancy, requires an operation.

**Favus.** An infection of the skin and hair caused by a fungus. It is related to ringworm. The eruption consists of round crusts, usually on the scalp, which cause baldness. Treatment is difficult, but can usually be effected by exposure of the scalp to X-rays.

**Feeble-Mindedness.** A state of low development of the intelligence. It is inborn, and has no relationship to insanity or the so-called mental diseases. There are three degrees of feeble-mindedness, the lowest being idiocy, the next imbecility, and the least pronounced being termed mental dullness, dullness and backwardness, or, in America, such a person is called a moron.

An idiot is defined in law as a person so defective in intelligence as to be unable to guard himself against common physical dangers. An imbecile is defined as a person who, while not so defective as an idiot, is incapable of managing his own affairs, or, if a child, of being taught to do so. A person who is dull and backward is one who is slightly below normal intelligence. In England 10 per cent. of children are of too low intelligence to benefit by an ordinary education, and require to be sent to special schools.

Except in the case of Cretinism (which see) there is no treatment for feeble-mindedness, and all that one can do is to train such people to the highest capacity of which they are capable. Some require to be kept constantly under supervision in an institution. Mental defect is inherited, but idiot and imbecile children may be born to seemingly normal parents. Those who are dull and backward, however, are usually the children of dull and backward parents. Nobody knows the cause of these conditions; they are simply hereditary abnormalities. In a few cases mental defect is due to disease of the brain in early life, or birth injury, but this is not very common.

**Fenestration.** A relatively new type of surgical operation designed for the treatment of certain types of deafness. In such types it may be most successful; but it is not, as some sufferers suppose, a cure-all for deafness in general.

**Fever.** Any disease in which a high temperature is the main symptom. The normal temperature is 98.4 degrees Fahrenheit. In most cases fever is caused by the invasion of the body by germs, and the high temperature is part of the body defences set up to defeat the disease. It is therefore a great mistake to take drugs which lower the temperature without considering whether it is advisable to do so. Aspirin,

phenacetin, and similar drugs, should not be used nearly so frequently as they are, since their only effect is to dull the pain and fever-producing centres of the brain. They have no curative effect whatever—but perhaps it is asking too much to expect the reader to act on this advice!

**Fibrillation.** A state of tremor in the muscles found in certain nervous and muscular diseases. It may also occur in the muscle of the heart and is then known as auricular fibrillation. This is a serious state of affairs, as it means that the heart-beats become irregular and heart-failure may develop. Auricular fibrillation can, however, be treated.

**Fibroid.** A kind of muscle tumour found in the womb. It is not malignant—that is to say, it does not spread like cancer, but it may cause abdominal pain and irregular bleeding. Usually fibroids occur in childless women of over thirty, but any woman may be affected. Treatment is removal by an operation if the symptoms are troublesome.

**Fibroma.** A tumour composed of fibrous tissue. It is benign—that is to say, it does not spread, and is not dangerous to life.

**Fibrositis.** This is a very common disease, but the causes are not completely known. Among the alleged factors are exposure to cold and damp, over-exertion, and poisoning from concealed septic areas in the body, such as septic teeth, gall-bladder, appendix, etc. More recently, attention has been drawn to the emotional causes of muscle pains, such as continued anxiety or resentment. (See article on Emotions.)

Those who believe in the first group of causes consider that fibrositis is a state of inflammation of the fibrous tissues between the muscle fibres. "Emotional" fibrositis is caused by spasm of the muscles—a literal "pain in the neck"! Most often the muscles affected are those of the back, whichever type of fibrositis is present. Treatment depends on finding the cause, and maybe massage and other forms of physical therapy, or, on the other hand, psychological treatment may be advised.

**Filariasis.** A tropical disease due to infection of the body with tiny worms which block the lymph vessels, causing swelling of the limbs or elephantiasis (which see). They are spread by blood-sucking flies or mosquitoes.

**Fistula.** An abnormal passage leading from the surface of the body to an internal cavity, such as the rectum or stomach.

**Fit.** (See Convulsions and Epilepsy.)

**Flat Foot.** The sole of the foot is normally raised from the ground in certain areas, formed by a longitudinal arch between the base of the toes and the heel, and a transverse arch across the base of the toes. When the muscles supporting these arches become weakened, they flatten out, leading to flat foot. Treatment may be in the form of exercises, or the use of supports; occasionally operation may be necessary. It is only fair to say that many people have flat feet which lead to no discomfort whatever. Medical Officers in the Army noted that many men who fell out on route-marches had flat feet—this was thought to be of great significance until someone thought of examining the feet of those who had not fallen out, when it was discovered that almost as great a proportion of these had flat feet as in the first group.

**Flatulence.** Gas in the stomach or intestines. This is a purely psychological symptom since no gas of any sort is formed in the bowels in sufficient quantity to cause discomfort. What happens is that a feeling of discomfort in the intestines or stomach is interpreted as being due to gas, and an attempt is made to "bring it up." This results in air being swallowed and the process continues until the stomach is, in fact, full of "wind" which has been swallowed. It must be repeated that the only gas in the stomach is that which the patient puts there himself.

Treatment is that for indigestion in general, and the patient must resist all attempts to "bring up" wind. Unless this is done, all treatment is a waste of time. The use of baking soda for indigestion also leads to flatulence.

Intestinal flatus may be treated by a dose of purgative. This type of flatulence may come on after an abdominal operation, and is in this case due to temporary paralysis of the intestinal muscles.

**Fomentation.** The treatment of inflammation by applying heat and moisture to the affected part. The usual thing is to apply hot, wet, boracic lint. Such treatment is rarely used nowadays and is deservedly falling out of repute, the reason being that heat is not retained long enough in a hot fomentation to be of any service, and, further, that the moisture has a bad effect on the skin, making it sodden and more liable to further infection.

Heat is one of the most useful agents in medicine, but it should be dry heat, best applied in the form of infra-red rays or radiant heat. If these are not available a hot-water bottle may be applied or a kaolin poultice, which does not make the skin moist. There is no objection to soaking the affected part in hot water, as hot as can be borne, for the objection to wet fomentations is that the moisture is shut-in by oiled silk which prevents it from escaping.

In short, the best all-round poultice is kaolin or its patent form antiphlogistine. Needless to say, the home-made poultices of sugar, bread, and so on, should never be used in any circumstances, as such substances are not free from germs.

**Food.** An adequate diet must fulfil several conditions. To begin with, it must contain a correctly balanced proportion of the basic food constituents, which are carbohydrate (sugars and starches), protein (found in cheese, lean meat, and nuts), and fat (found in animal and vegetable oils—e.g., butter, fat meat, margarine, etc.). Next, it must contain an adequate amount of certain minerals, such as iron, manganese, copper, calcium, potassium, and sodium, and there must be a proper amount of vitamins A, B, C, and D (see under Vitamins). Lastly, it must supply calories (which see) sufficient to compensate for the amount of work done by the individual. This varies from 1500 calories daily for the sedentary worker to three or more times this amount in the case of the heavy manual worker.

Provided that these requirements are fulfilled, there is no evidence that it matters *how* this is done. That is to say, there may be good economic or moral reasons for being a vegetarian, but there are no known health reasons for being one. In fact, it is known that, since vegetables and fruit are relatively poor in protein substances, it is necessary to eat larger amounts of such foods in order to obtain sufficient protein in the diet.

There are many people, in particular those who have been influenced by theories of "nature cure" (see Naturopath), who have exaggerated and completely unscientific views as to what dieting is capable of accomplishing. The orthodox physician makes considerable use of dieting in his treatment of sickness, but he realises that there are limits to what may be accomplished by such means. Patients with gastric or duodenal ulcers should obviously take easily digested foods with plenty of milk and no fried or greasy dishes. Those with gall-bladder disease are advised not to eat too much fatty food. Diabetics have to limit their carbohydrate intake, and patients with chronic constipation require food with a good deal of bulk and residue. There are also special diets for such conditions as vitamin deficiencies, sprue, and colitis. With the exception of the illnesses mentioned here, dieting plays little part in the cure of disease, although it may be a useful adjunct to other treatment. It must be repeated that if a diet contains adequate proportions of carbohydrate, protein, and fat; enough vitamins; enough minerals, and provides an adequate amount of calories to cover the energy output, it matters not if it be obtained from sawdust, grass, or beefsteak—or, for the matter of that, from a test-tube. There are, as a psychologist would point out, unconscious reasons why some individuals attach such excessive importance to diet. Food is to babies, and those who have failed to grow up emotionally, a symbol of love and affection (that is why many who have been starved of affection eat to excess and become pathologically fat). Such people cannot realise that food is not all-important, and therefore tend to produce without any scientific foundations entirely fantastic theories which seem to imply that all diseases are caused by faulty feeding habits and can be prevented or cured by dieting. The more orthodox medicine discovers about the causes



of illness, the less opportunity will there be for faddists to make exaggerated claims concerning this subject. We do not hear about dietary cures for pneumonia, venereal disease, or small-pox, simply because we know about these conditions. But we hear a great deal about dietary treatment of "rheumatism" and even cancer, because ordinary medicine cannot in all cases effect a cure of these complaints. Nothing said here is meant to imply that food is unimportant or that dieting does not help some diseases. But it is not a cure-all.

**Food Poisoning.** (See Dysentery and Enteritis.) The latter is the usual form found in this country.

**Fracture.** When a bone is broken, treatment is, of course, a matter for a surgeon. In the meantime, as a first-aid measure, all that is necessary is to apply splints (walking sticks or other rigid pieces of wood of a suitable size, or even rolled-up newspapers), which are bound firmly along the limb. The patient should be moved as little as possible, and kept warm and comfortable.

**Freckles.** Freckles are simply small patches of sun-tan, and are more commonly found in blonde or red-headed people. In spite of many silly beliefs, it is not possible to remove them. If they are thought to be unsightly, the "patient" may (1) keep out of the sunshine; (2) use a cream which shuts off ultra-violet rays causing sun-tan, (3) use a tinted cosmetic cream which conceals the freckles. (See also p. 914.)

**Frost-Bite.** Frost-bite rarely occurs unless the temperature of the air falls below 8° F. A strong wind is especially likely to cause it. The first sign is paleness of the skin, which becomes a normal colour once more on warming. Later, when frost-bite becomes more severe, the pallor is not removed by warming, the skin gradually becomes purplish or black, and large blisters begin to form. The most important consideration is prevention, and outdoor work should not be carried on if the temperature is below 8° F. Clothing should fit closely, but not too tightly. In treatment, there is no point in rubbing the affected part with snow once frost-bite has developed; it is best to massage very gently with oil for a few minutes, and then wrap in cotton wool. It is dangerous to try to warm the limb too quickly.

**Furunculosis.** Boils (which see).

**Gall-Bladder.** The pear-shaped bag which acts as a reservoir for the bile secreted by the liver.

**Gall-Stones.** If anything occurs to block the tube which carries the bile, if infection of the gall-bladder occurs, or if gall-stones form, attacks of pain may occur. Such attacks are usually said to occur in otherwise healthy women who are "fat, fair, and forty." Severe abdominal pain occurs in the upper part of the abdomen on the right side, may last for a few hours, and then not appear again for months or years. On the other hand, attacks may be much more frequent, and in between attacks there may be aching under the ribs, especially on eating fatty foods, pain under the right shoulder-blade, and a constant feeling of fullness of the stomach.

Gall-stones may be present without causing any symptoms whatever, or they may cause attacks such as have already been described. Such a condition is called cholelithiasis. If, however, a stone completely blocks the duct, infection and inflammation of the gall-bladder may occur, and this is much more serious. The medical name for inflammation of the gall-bladder is cholecystitis. In mild cases diet and medical treatment may be adequate, but in more serious cases operation is necessary.

**Ganglion.** A cyst-like swelling found in the region of a joint or the sheath of a tendon. The most usual site is the back of the wrist, where it takes the form of a round elastic swelling under the skin. It causes no pain and is quite harmless, but, if it becomes troublesome, the ganglion may be removed by a minor operation.

**Gangrene.** The death and deterioration of a part of the body, caused by interference with the blood supply. Gangrene may be caused by wounds, or inflammation affecting the blood vessels (for instance, of the leg), which results in blood failing to reach the lower part of the leg and foot. Too long application of a tourniquet will have the same effect, or the very serious wound

infection known as gas-gangrene. Old people and diabetics are specially liable to get gangrene.

When any of these accidents occur, the limb below the affected part becomes pale and numb and later turns bluish black. Since the tissues at this stage are damaged beyond repair, the only possible treatment is removal by operation. The most serious thing that can happen is when the gangrenous area becomes infected (as in gas-gangrene) and the infection continues to spread up the body. This is now much less likely to happen with modern advances in germ-killing drugs, such as penicillin and sulphonamide.

**Gastric.** Pertaining to the stomach.

**Gastric Ulcer.** (See Duodenal Ulcer.)

**Gastritis.** Inflammation of the stomach may be acute or chronic, depending on whether it has come on recently and suddenly, or has lasted for a long time. Gastritis is not the same thing as stomach ulcer and is, in fact, simply a state of irritation in which the lining of the stomach becomes red and swollen as any other part of the body may do when irritant substances come in contact with it. The usual irritants are alcohol, and, in cases of poisoning, such substances as carbolic acid or strong alkalis. In people with unusually sensitive stomachs, coarse or over-spiced foods may have a similar effect. In acute gastritis there is pain over the stomach persisting for a period of several days and not only appearing after meals as in the case of ulcer. Chronic gastritis leads to dull ache over the stomach, a continual feeling of nausea, and loss of appetite. Treatment depends on removing the cause and giving a light diet until the inflammation has disappeared. A more specialised treatment is a matter for the doctor.

**Gastro-Enteritis.** (See Enteritis.)

**Gastropnoia.** A form of visceroptosis in which the stomach muscle is over-relaxed and sinks below its normal position in the abdomen. In most cases, the importance of this condition is grossly exaggerated, since there is no evidence that gastropnoia in itself causes any symptoms whatever. It is often associated with neurotic and hypochondriacal behaviour.

**Geriatrics.** The medical study of old age.

**German Measles.** (See Rubella.)

**Gigantism.** (See Acromegaly.)

**Gingivitis.** Inflammation of the gums which shows itself in the form of swelling of the gums around the base of the tooth and bleeding after brushing the teeth. There are numerous causes for this condition, which may occur in chronic poisoning with lead, bismuth, and other drugs, in scurvy due to deficiency of vitamin C, and in certain infections, such as pyorrhoea and Vincent's angina. Treatment depends on the cause and is best carried out by a dentist. Penicillin lozenges are successful in many types of gingivitis. (See also p. 820.)

**Glands.** There are three main types of glands: (1) lymph glands, which are found mainly at various junctions in the body, such as the armpit (where the arm joins the chest), in the groin (where the leg joins the pelvis), and also within the body and around the base of the neck. Their function is to trap germs and prevent them reaching vital areas. That is why in an infection of hand or foot a swelling often develops in the groin or armpit—the glands having trapped the germs are themselves suffering from inflammation; (2) larger glands, such as the pancreas and liver which produce mainly digestive agents such as bile, trypsin, and so on. These glands empty their products into the intestines through a duct or tube; (3) the endocrine glands, which are also called ductless glands because they empty their products direct into the blood-stream, and unlike the former have no ducts. These glands are of immense importance because they have a great deal to do with making an individual into the type of personality that he is. The best-known endocrine gland is the thyroid in the base of the neck, which acts as accelerator to the body. That is, it controls the speed at which body processes are carried out. When it is over-active (see Goitre) the patient becomes tense, nervous, flushed, his heart beats faster, and he loses weight. If the gland is too sluggish in action, the effect is the opposite (see Myxœdema). The small parathyroid glands, attached to the thyroid, control the amount of calcium in the blood, and therefore are

also related to nervous tension, and, in addition, to the constitution of the bones. The sex glands, ovary in women and testis in men, produce the typical sexual characters of the adult, while the suprarenal glands prepare the body for emergencies, for example, by producing the emotion of fear. All these glands are co-ordinated by the pituitary gland at the base of the brain, which, besides controlling the other glands, determines the height of the individual, his self-assertiveness or otherwise, and many other personality traits. In addition to the above, the pancreas which, as we have seen, supplies through a duct digestive ferments into the intestines, also produces insulin (see Diabetes) which passes directly into the blood. Most of the substances produced by endocrine glands can now be made synthetically and are used in the treatment of diseases due to glandular deficiency.

**Glaucoma.** A disease of the eyes in which the tension of the fluid within begins to increase. The symptoms are pain and redness of the eye, dim vision, and very severe headache. There may be vomiting in addition to the above. Glaucoma is a serious emergency, and urgent hospital treatment is required.

**Gleet.** The discharge from the urethra which used to be found in chronic gonorrhoea. Since the discovery of modern drug treatment it is rarely seen.

**Glossitis.** Inflammation of the tongue.

**Glottis.** The space between the vocal cords.

**Goitre.** An enlargement of the thyroid gland which lies at the base of the neck. There are two main types: (1) the simple goitre, which is usually found in childhood, and is caused by deficiency of iodine in the diet, iodine being a mineral necessary for the production of the secretion of the thyroid gland. This type of goitre is especially common in areas where the water is deficient in iodine, such as Derbyshire and certain parts of Switzerland. It can be prevented by the use of iodised salt and chocolate. Simple goitre, although it may be unsightly, or uncomfortable, does not produce any other symptom; (2) exophthalmic goitre. This is produced by excessive secretion of the thyroid gland and is usually, but not always, found in older people between thirty and fifty. The symptoms are those of general over-activity of the whole body; the heart beats faster, the patient is nervous, thin, flushes and sweats easily, and the typical appearance of exophthalmos—prominent eyes—may appear. The cause of this condition is not known, but there is no doubt that severe chronic anxiety has a great deal to do with it. Treatment is usually by operation, X-ray therapy, or recently the use of a drug which damps down the action of the thyroid gland, and is known as thiouracil. This gives excellent results in suitable cases. Atomic research has led to the discovery of radio-active forms of iodine, which will probably be used in the treatment of this condition in the near future.

**Gonorrhoea.** A venereal disease spread in nearly all cases by sexual intercourse with an infected person. It is very unusual for an adult to be infected in any other way. Gonorrhoea is much less serious than syphilis. The symptoms are that usually about two to five days after sexual intercourse with a person who already has the disease, a discharge starts to come from the urethra (the pipe through which the urine passes). There is a burning pain on passing water, and the discharge becomes thicker. If the infection is carried by the hands to the eyes, a serious type of inflammation may begin there. It is, of course, essential to go as soon as possible to a doctor or to a V.D. Centre where the disease can be treated and cured by modern drug treatment in a comparatively short time. It is equally essential to avoid infecting anyone else, and sexual intercourse should be avoided until the illness is cleared up. The patient need not be afraid to report to his doctor or the nearest V.D. Centre, because the treatment will be done in secret, and there is little left nowadays of the moral humbug which at one time surrounded the whole subject.

**Gout.** A disease in which there is an upset in the excretion of certain kinds of food in the body, and uric acid, which is a product of the digestion of certain proteins, collects in the blood and is later deposited in some of the joints. A very painful type of arthritis develops in the smaller

joints of the body, especially the big toe. Two factors are apparently present in this disease: (1) a natural tendency to gout, the cause of which is not known, and (2) the eating and drinking by the patient of an excessive amount of certain rich foods—spirits, wines, sweetbreads, liver, etc. The treatment is both dietetic and by means of drugs, but can only be carried out by a doctor.

**Grave's Disease.** (See Goitre.) Grave's disease is exophthalmic goitre.

**Gumboil.** A swelling in the mouth due to an abscess at the root of a tooth. Hot mouthwashes and hot applications to the outside of the cheek with aspirin taken four-hourly will relieve the pain for a time, but a dentist will have to be consulted sooner or later to remove the tooth, if necessary.

**Gynaecology.** The study of the diseases of women.

**Hæmatemesis.** Vomiting of blood, a symptom which may occur in the course of several diseases, for example, stomach or duodenal ulcer, cancer of the stomach, certain diseases of the blood, and cirrhosis of the liver, in roughly that order of frequency.

**Hæmatoma.** A swelling containing clotted blood, usually caused by direct violence, e.g., a black eye.

**Hæmaturia.** The passing of blood in the urine. Hæmaturia is a symptom of various diseases in general, those which cause irritation of the urinary tract, such as nephritis, stone in the ureter or bladder, or inflammation of the prostate gland. It is also found in certain blood diseases, tropical diseases due to parasites, heart disease, and so on. Treatment depends on treating the cause.

**Hæmoglobin.** The red pigment in the blood (which see).

**Hæmophilia.** (See Bleeder.)

**Hæmoptysis.** The spitting-up of blood. Although this is a well-known symptom of tuberculosis of the lungs, it is also found in heart disease, pneumonia, and also in some quite trivial conditions. Many people who spit up blood are simply suffering from some inflammation of the mouth or throat, or the blood may come from a bleeding area at the back of the nose (which communicates with the back of the throat). Nevertheless, hæmoptysis should always be taken seriously until it has been shown that no serious disease is present, and every patient who has this symptom should consult a doctor at once.

**Hæmorrhage.** Bleeding. This is usually due to an injury, but, especially when the bleeding is internal, it may be caused by an ulcer or some process eating into the tissues; or the blood-vessels may be particularly liable to bleed because of a vitamin deficiency (vitamin K), or a blood disease, such as hæmophilia. In any serious bleeding of whatever type the first necessity is to keep the patient absolutely quiet and at rest. Next, the doctor should be sent for. If the bleeding is internal, nothing further can be done by the layman. If the blood comes from an internal injury, however, a clean pad should be firmly pressed over it; if in a limb, a tourniquet may be used. This is made by tying a handkerchief loosely round the limb at some distance above the injury, and then inserting a pencil beneath the handkerchief and twisting it until the bleeding stops. It is of the utmost importance to realise that no tourniquet must be kept on longer than ten minutes. After that time, it should be slowly released, and, if the bleeding has stopped, it may be removed. If bleeding continues, the tourniquet should be tightened once more after a short interval. A tourniquet kept on too long may cause the loss of the whole limb.

**Hæmorrhoids.** (See Piles.)

**Hair.** In this limited space we can only deal with a few of the more important facts about hair. The most important point is that hardly anything has any influence on the rate of growth or quality of the hair. It is untrue, for example, that shaving makes the hair grow faster or coarser. Shaving, indeed, has no effect of any sort. Substances, such as oils or pomades are equally without effect, and the same applies to ultra-violet rays. The only substances or physical force known which have any effect on the hair are X-rays and certain chemicals which cause the hair to fall out. Hair in poor condition is usually



an indication of either bodily ill-health or neglect. Regular brushing and massage help to keep the scalp healthy, by freeing the pores from clogging particles of dust, waste oils and acids, etc., and stimulating the flow of blood to the hair roots. (See also p. 817.)

**Baldness**, in most cases, is an hereditary trait, inherited through the male side of the family; being hereditary, it cannot be altered. There is, however, a type of baldness known as alopecia areata in which temporary baldness is caused by such factors as nervous debility and certain fevers. This type usually recovers itself.

The hair should be washed at least every two weeks, but this will depend to some extent on whether the scalp is oily or not. Certain types of shampoo or applications for the hair are better than others, in that they give the hair a cleaner or more attractive appearance. (For superfluous hair, see under **Depilatory** and also p. 826.)

**Halitosis**. Bad-smelling breath arises from the mouth, teeth, or throat, and is caused either by decay of the teeth, or infected gums or tonsils. Occasionally it comes from diseases of the nose, lungs, or stomach. (For the treatment of gum infection, see under **Gingivitis**.)

Mouth-washes are of only temporary value in halitosis because the antiseptic is never in contact with the infected area for long enough to produce any effect. In general, they merely act by concealing the unpleasant smell by a stronger and more pleasant one. Tooth decay and gingivitis should be dealt with by a dentist. They are caused either by infection with a germ, or by particles of decaying food between the teeth. Chronic tonsillitis is another common cause—it should be dealt with by an ear, nose, and throat specialist.

Only very severe disease of the lungs or stomach leads to bad breath and, again, these can only be treated under medical supervision.

**Hallucination**. A hallucination is a mistaken sense impression. That is to say, it is the hearing, seeing, smelling or feeling, of something which does not exist in reality. The most common type is the hallucination of hearing, in which the patient hears voices or sounds which are imaginary. The next most common type is the hallucination of sight, in which the patient has visions which are not based on reality. Hallucinations of touch and smell are much less common.

Hallucinations of sound are usually a sign of mental disorder. They are commonest in schizophrenia (which see), but are also found in hysteria (which see), and, occasionally, it appears in the absence of any abnormality whatever. The same applies to visual hallucinations which, in addition to the above causes, may be produced by drugs such as opium and hashish.

Hallucinations of touch are found in cocaine poisoning, but those of smell are uncommon except in some types of brain tumour and occasionally in mental disease.

**Delusions** are false beliefs, and are, generally speaking, a symptom of mental disease. The subject is, however, much more complicated than this because many people have delusions without being in any way insane. Thus, an African native may believe that he is bewitched without being abnormal mentally—such a belief is normal to the culture in which he lives. Similarly, a few Englishmen believe that the earth is flat, but are not abnormal, first, because a few other people have the same belief, and secondly, because they consider whatever to discuss the matter and

Delusions arise other theories may not be true. as projection, in which the mental process known with the personality as a whole, which conflicts to agents in the outside world. The attributed a woman who has been brought up to be a sexual desire wicked, may, if she becomes an example: abnormal, attribute these desires to consider sources, thereby keeping her self-respect at the expense of her normality. They may then be the form of believing that she is in danger of being seduced, that she is pursued by one or more men, or there may be actual hallucinations of voices, appearing to make indecent or suggestive remarks. The voices are simply a projection of her own thoughts, as are all hallucinations.

**Hammer-Toe**. A claw-like deformity of the toe as a result of which the first joint presses

upwards against the top of the shoe, while the tip of the toe points downwards to the sole. Hammer-toe is caused by abnormal tension of the tendons, and can only be dealt with, in severe cases, by operation. In less severe cases no operation should be necessary.

**Hare-Lip**. A defect in the development of the upper lip which is related to cleft palate (which see). In mild degrees, the cleft may be only on the lip, in more severe degrees it may extend to the palate. The condition should be treated by operation in the first few months of life. The results are very satisfactory.

**Hay Fever**. An allergic disease (see **Allergy**) caused by abnormal sensitivity to certain grass pollens, and therefore mainly found in early summer. The symptoms are—running nose, irritation, redness, and running of the eyes. Sometimes there may be red patches or blisters on the skin. There are two aspects of treatment: (1) the symptoms may be relieved by bathing the eyes, and using ephedrine drops or a Benzedrene inhaler for the nose; (2) an attempt may be made to cure hay fever by giving increasingly large doses, by injection, of the pollen to which the patient is sensitive. In some cases the anti-histamine drugs (which see) have a useful effect upon the symptoms of hay fever, but, of course, the relief is purely temporary; for they do not, in any sense of the word, cure the underlying condition. Nevertheless, in severe cases anti-histamine drugs taken throughout the summer may afford almost complete relief.

**Headache**. Headache is one of the commonest of all symptoms, and it may be caused by many different diseases, or, as most people realise, by no disease at all. It is hardly an exaggeration to say that 90 per cent. of headaches are caused by functional upsets of a purely temporary nature such as anxiety, frustration, depression, or minor gastric troubles. The next most common cause is defective eyesight, which should always be referred to an eye specialist. Other causes of headache are—high blood-pressure or very low blood-pressure, meningitis, migraine, and brain tumour, but it must be repeated that the tendency to think out some dramatic cause for headache when the cause is probably a perfectly simple one should be guarded against. In other words, far more people have headaches caused by worry and frustration than headaches caused by tumour in the brain. Persistent headaches should always be referred to a doctor, and nobody should get into the habit of taking aspirin and other drugs. All drugs are poisonous and should only be regularly used on the advice of a doctor.

**Health**. Most people have a very exaggerated belief in the power of healthy living to prevent disease. For, while it is true that certain fairly obvious measures such as adequate food, fresh air, moderate exercise, and a calm mind play a large part in preventing nutritional and infectious diseases, there are two important facts to be remembered by would-be "healthy lifers." First, the healthy life is based solely on the simple measures mentioned above, and there is not the slightest evidence that any additional measures of the type dear to cranks provide any additional protection to health. Special diets, vegetarianism, over-enthusiasm in exercising the body, yogi and physical culture, deep-breathing, and so on have not the smallest effect over and above the ordinary precautions taken by the sensible man. Secondly, the length of life depends largely upon heredity and has much less to do with how one lives than most people usually believe, and a very large number of diseases are not prevented by any health measures. Cancer, for example, one of the most dreaded of sicknesses, comes to the healthy and unhealthy alike, and so do the organic nervous diseases, diabetes, heart disease, and the degenerative diseases of old age. No evidence has ever been found to suggest that eating meat and drinking in moderation have any adverse influence upon health. (In fact, there is some evidence that moderate drinkers live longer than teetotallers.) The best attitude to adopt is, as the Bible says, to "be not overmuch concerned"; for there is much truth in the saying that the man who cuts out all the minor joys of life for the sake of his health may not live twice as long as the man who does not, but his life will only seem twice as long.

**Heart.** The heart lies in the centre of the chest and slightly to the left side between the lungs. It consists of four chambers, the right and left auricles, and the right and left ventricles. Each auricle communicates with the corresponding ventricle, through a valve placed in such a way that blood can flow only from auricle to ventricle and not in the opposite direction. Disease of these valves therefore renders the heart less efficient, since it permits blood to flow backwards into the auricle. Circulation of the blood may be said to begin at the left ventricle, which pumps blood through the aorta, the main artery of the body, and thence throughout all the rest of the arteries. After passing through the tissues, blood is collected by the veins and ultimately reaches the largest vein in the body, the vena cava, which opens into the right auricle. The blood then flows into the right ventricle and from there is pumped through the lungs where it becomes oxygenated and gives off the carbon dioxide it has collected in the tissues. Thus purified, the blood enters the heart again at the left auricle and passes from there into the left ventricle, to begin its circulation once more. Although this process has been described as it would appear to a single blood cell passing round the body, the beating of the heart is of course much simpler than it might seem from this description. The contraction of the heart begins at the auricles simultaneously, and passes on to the ventricles; the heart then relaxes and a further wave of contraction begins at the auricles, and passes once more to the ventricles.

Heart disease may be of various types. Thus in a few cases, babies are born with defective valves, but in most cases valvular disease is the result of inflammation following rheumatic fever, scarlet fever, or diphtheria. Defective valves cannot be cured—that is to say, the defect cannot be removed—but the heart has considerable ability to compensate and there need not necessarily be any need for concern. A heart "murmur" (the sound the doctor hears through his stethoscope in cases of valvular disease) may be of no importance whatever. Less commonly, heart disease may be caused by degeneration of the heart muscle in older people, or disease of the blood-vessels supplying the heart muscle. The disease known as pericarditis is an inflammation of the thin membrane which covers the heart.

Heart disease is far too large a subject to describe here in detail, but the following story gives an indication of the modern medical attitude to it: A wealthy patient had with great difficulty arranged an appointment with a well-known London heart specialist, as he considered that there might be something wrong with his heart. On reaching the hospital, he found that the doctor's office was on the third floor, and the lift was not working. He was therefore compelled to walk up three flights of stairs, and finally knocked at the door of the specialist's office. When the door was opened, the doctor looked at him and asked: "You walked up the stairs because the lift was broken?" "Yes," replied the patient. "Then your heart is perfectly normal. Good afternoon!" said the doctor.

What this story illustrates is that, generally speaking, the only sensible criterion of the heart's efficiency is whether it works satisfactorily. It is rarely possible to have heart disease in the presence of a perfect ability to do whatever one wants to do. In conclusion, it should be noted that symptoms related to the heart in an obvious manner, such as pain over the heart, discomfort, or palpitation, are not often signs of heart disease (an exception is Angina Pectoris—which see). Palpitation is nearly always a sign of excess nervous tension and so is minor discomfort in the heart region. There is no evidence that tobacco affects the heart in any way.

The end result of true heart disease is heart failure, in which the heart becomes too weak to pump the blood throughout the body. The main symptoms are—extreme breathlessness on exertion and swelling of the legs. But these symptoms may be present in other diseases, and nobody who has them should jump to conclusions until he has seen a doctor.

**Heart-Block.** A disease of the heart in which the impulse of contraction is unable to pass from the auricles to the ventricles, with the result that both beat independently of each other.

**Heartburn.** A burning sensation, either in the back of the throat or in the oesophagus, leading from the throat to the stomach. It is a form of indigestion, caused by excessive acid in the stomach.

**Heliotherapy.** The treatment of diseases by the rays of the sun, usually by the use of an ultra-violet lamp. This was a popular medical fad about twenty years ago, but it is now realised that the value of sun-ray treatment in medicine is strictly limited. Heliotherapy is very useful in certain skin diseases in which stimulation of the skin is necessary. Apart from this, it is practically valueless. Large-scale experiments carried out during the war have shown that it is untrue that sun-rays have any pronounced tonic effect. What makes a person feel better when sun-bathing is relaxation and the mental satisfaction of exposing the body to the air. Perhaps, also, the feeling that "Handsome men (or women) are slightly sunburnt" has a good deal to do with it!

**Hemiplegia.** Paralysis of one side of the body caused by hæmorrhage into the brain. (See Apoplexy.)

**Hepatic.** Concerning the liver.

**Hepatitis.** Inflammation of the liver.

**Heredity.** Every physician knows that many of his patients add to their burden of misery by worrying, often needlessly, about their condition. Of these worries, one of the most frequent is the belief that their illness is hereditary, that it "runs in the family."

Scientific knowledge about heredity, which is now very considerable, dates from the work of the Abbé Mendel, an Austrian Roman Catholic priest, in the early years of last century. By observing the interbreeding of peas, Mendel was able to discover the laws of heredity that now bear his name. These laws, while relatively simple, are nevertheless too complex to describe here. (See p. 173.) Suffice it to say that the inheritance of physical characteristics is now clearly understood—by physical characteristics we mean such factors as eye colour, hair colour, stature, and body-build generally. There is also a fairly accurate understanding of what diseases are inherited, and it is known that these are relatively small in number. Thus certain organic nervous disorders, such as Huntington's chorea (a rather rare disease) and some others that are even more uncommon, are inherited, but even in these cases there is nothing inevitable to make it certain that any one member of a family will suffer from the disorder. Hæmophilia, the "bleeding disease" (which see), is handed on through the female side of the family, although it occurs only in males. The significant point is that none of the common illnesses are inherited. Tuberculosis, for example, "runs in families" in some instances, not because it is hereditary, but because the children are infected in early childhood. Cancer is not inherited, nor does it "run in families," and although venereal disease may be discovered in a child at birth, this, of course, is due to infection in the womb, and could have been prevented if the mother had been treated.

With regard to mental characteristics, there is no evidence that these are inherited in any specific way. What is inherited, or is believed to be so, is temperament. Thus a person may be slow or quick in his reactions, dull or clever intellectually, emotional or unemotional, as a result of his heredity, but he does not become a good piano player, a good athlete, brave or cowardly, criminal or good citizen because of his heredity. These are qualities which are acquired during upbringing within the family circle or from early influences in general.

So far as mental illness is concerned, there is no evidence that neurosis is in any sense inherited. But there is fairly conclusive evidence that schizophrenia and manic-depressive insanity are, at least in part, hereditary. However, these diseases may arise in families with no such history, and other families with a bad history in this respect may produce many generations free from any sign of the disease. It would appear that "insanity" as such is not inherited, but rather the tendency to break down, given other stresses in life. Further, it must be remembered that abnormal parents are unlikely to give any child a favourable home atmosphere or a healthy upbringing, and this may often give the impression



of heredity at work when it is merely an example of unhealthy parents rearing children in an unhealthy way. So, too, when we are told that crime runs in families, this shows, not the potency of heredity, but the power of parents to influence their children, favourably or unfavourably.

In short, unless the patient has one of those comparatively uncommon organic nervous diseases, or hæmophilia, it is rarely necessary to trouble about the possibility of handing on disease. Most handing on is done (in the case of infectious conditions) by contagion from parents to children, or (in the case of mental disorders) by bad example in the home from abnormal relatives.

**Hernia.** Rupture; the bulging-out of a part of any of the internal organs through a weak area in the muscular wall. The most common herniæ are found in the groin (so-called inguinal hernia), in the middle of the abdomen (umbilical hernia), or on the site of an operation scar (incisional or post operational hernia). The main danger of a hernia is that a piece of intestine may get caught in the cavity and twisted, thus causing a blockage in the passage of intestinal contents (strangulated hernia). The patient with a rupture may either wear a belt or truss to keep it in position, or he may have it completely cured by an operation in which the gap in the muscles is closed up. Babies are sometimes born with a hernia which is best treated by operation as soon as possible.

**Herpes.** There are two types of herpes, both quite unrelated to each other: (1) herpes simplex, which is the name given to a collection of small blisters which sometimes appears in the region of the mouth, especially following, or during, a fever such as pneumonia. It is a minor illness best treated by keeping clean and applying collodion; (2) herpes zoster or shingles, which is an extremely painful skin disease due to inflammation of a nerve root at the point where it leaves the spinal cord. It takes the form of a painful area, usually on the back or side of the chest, but sometimes on the face on which, a few days later, a crop of blisters appears. Shingles should only be treated by a doctor, although there is, so far, no specific treatment. The illness, however, clears up of itself, although in old or rundown patients, there may be a residual pain long after the blisters have disappeared. Both types of herpes are caused by virus, and that of herpes zoster appears to be related to the virus causing chicken-pox.

**Hiccoughs.** Hiccough is caused by contractions of the diaphragm, the large muscle which separates the abdomen from the chest. The spasm is usually due to irritation from the stomach. Ordinarily, hiccoughs are not serious, and can be dealt with by the usual methods of drinking cold water, or pressing on the upper lip. Probably the best first-aid treatment is to hold a paper bag over the nose and mouth, and breathe deeply in and out. Occasionally, hiccough may be serious and may go on for days; in such cases the treatment rests with a doctor.

**Hives.** (See *Urticaria*.)

**Hoarseness.** (See *Laryngitis*.)

**Hodgkin's Disease.** A disease in which the lymph glands and spleen become swollen. Usually the first symptom is a painless enlargement of the glands in the side of the neck. Hodgkin's disease is a very serious illness for which no specific treatment has yet been discovered, although X-rays and radium often help. However, there are so many diseases in which the lymph glands are swollen that the condition can only be diagnosed by an expert.

**Homœopathy.** A system of healing, discovered by a German physician called Hahnemann. It is based on two assumptions: (1) that diseases may be cured by giving drugs which would produce the symptoms of the disease in normal people; (2) that drugs have a more potent effect when given in very minute doses. As with most sects, there is a certain amount of truth in these assumptions, but it is quite certain that there is no one system of healing, and any sect adhering exclusively to a particular philosophy is bound to be mistaken.

**Homosexuality.** A psychological disorder which causes a patient to be attracted to people of the same sex. Homosexuality is really a failure to grow up, because everybody passes through a stage of mental homosexuality in the course of their development (between the ages of twelve and fourteen). Physical love by homosexuals is

illegal in Britain in the case of males, but not of females. There is no evidence that physical causes, such as glandular defects, have anything to do with this condition; but, in the case of males, it is possible to reduce the sexual drive by giving stilboestrol (female sex hormone), which thus may keep the homosexual out of conflict with the law.

**Hormone.** (See *Gland*.)

**Hydrocephalus.** "Water on the brain." An illness in which the cerebro-spinal fluid which circulates round the brain and spinal cord is either blocked in its flow or increased in amount. The increasing pressure causes shrinking of the brain leading to fits and headaches. Hydrocephalus usually occurs in infants, in which case the head becomes abnormally large. When the bones have become firmly fixed together, however, swelling of the head does not occur.

**Hydrophobia.** Rabies. A disease caught by infection from animals usually by the bite of a mad dog (that is, one which suffers from rabies). It is uncommon in this country. Symptoms do not appear for one to six months after the bite, and during this period the disease can be prevented by injections discovered by Pasteur. When they begin, there is spasm of the throat muscles, choking feeling, and delirium, ending in death. Drinking makes the throat spasm worse, hence the name, which means fear of water.

**Hyperhidrosis.** Excessive sweating. (See *Bromidrosis*.)

**Hypertension.** High blood-pressure. (See *Blood-pressure*.)

**Hypothyroidism.** (See *Goitre*.)

**Hypochondriasis.** A person who is always imagining that he is ill is called a hypochondriac. Such a person is dealing with his worries by failing to face up to the real source of the trouble and concentrating instead on sensations coming from his body. Anybody can produce symptoms in this way if he thinks hard about his heart-beats, or the movements of his stomach, or any other bodily actions which are normally unconscious. For example, a man who has been spoilt in childhood and later marries a wife who refuses to go on fussing over him, may develop palpitations or queer sensations in the stomach or bowels. The real source of his worry (that he wants more attention) is not respectable, whereas heart disease is. Hypochondriasis is really a form of selfishness or self-love, but it can only be treated by getting the patient to face up to reality.

**Hypotension.** Low blood-pressure. (See *Blood-pressure-low*.)

**Hysteria.** The term hysteria is popularly taken to mean the sort of "attack" when a girl loses control and behaves in such a way that someone has to throw a bucket of water over her. Properly speaking, however, hysteria is a form of neurosis in which (as in hypochondriasis) a failure to face up to reality leads to the appearance of symptoms which appear to be due to bodily disease although the patient is, in fact, quite normal physically. There may be paralysis of the arms or legs, deafness, or even blindness, but the doctor can usually discover quite easily whether any organic disease is present. A person with hysterical illness always gets some benefit from his symptom—part of his mind does not really want to see or hear or move. Thus someone who has seen a horrible sight may not want to see any more, a soldier who is afraid of going into battle may not want to be able to move—he wants to be able to escape from a hard reality. Hysterical illness is very common, and even more common is the element of hysterical behaviour which is found in all, or nearly all, physical disease. People who have a desire to remain ill in order to evade responsibilities take much longer to get well than others. For example, a certain minor operation on the knee is done in hundreds of hospitals every day, and the patients return to work in about two weeks. In the Army, the same operation was done by the same surgeons in the same way, under just as favourable conditions—and the patients were often six months in returning to duty. This is not simply a matter of malingering, because the desire to evade duty is unconscious. Perhaps the best definition of hysteria is unconscious malingering.

**Ichthyl.** A coal-tar product used in the treatment of skin diseases. It is less used now since more effective remedies have been found.

**Ichthyosis.** A condition in which babies are born with a skin which is dry and scaly like that of a fish. The cause is not known.

**Icterus.** Jaundice (which see).

**Immunity.** The ability to resist infectious disease. This may be inborn—for example, certain peoples have in the course of history become increasingly resistant to particular diseases, while others are extremely susceptible to them. Syphilis is much less deadly than it once was to Europeans, and, on the other hand, some islands in the Pacific have had their populations decimated by measles, which is a relatively trivial illness in Europe.

When germs invade the body, certain substances known as antitoxins (which see) are created by the body in order to neutralise the poisons (toxins) of the bacteria. When the disease has been defeated, the patient becomes immune to a second attack for as long as the antitoxins remain active in the blood. This period may be a lifetime or only a few days, depending mainly on the type of germ. One of the reasons why anti-cold inoculations are useless is that the period of immunity following a cold is only a few days. Unless, therefore, the sufferer is prepared to take a course of inoculations for the rest of his life, he can never avoid colds in this way.

Inoculations against disease may be active or passive. In the first case, either a very weak strain of the germ or a solution of dead germs is injected and the body produces its own immunity against them. In passive immunity, the antitoxins from a patient or animal who has had the disease are injected—this is only done when the patient is already ill and there is no time for active immunity to be built up. But, with the discovery of penicillin and the sulpha-drugs, the use of sera (the solutions of antitoxin) are less and less used. In conclusion, it is important to realise that immunity does not depend solely on chemical substances in the blood. A happy, well-adjusted life makes one much less liable to disease. Thus in a factory workshop in which colds were very prevalent, one group of workers remained free from infection all winter. They were producing a play in their spare time, were passionately interested in it, and simply did not want to be ill. People who have no time to be ill are not often ill.

**Impetigo.** An infectious disease, caused by infection of the skin by streptococci and staphylococci, the germs that are responsible for most septic conditions. It takes the form of blisters filled with pus, usually on the face. Under the blisters, the skin is red and inflamed. Elsewhere, there are yellow crusts. Impetigo is easily spread by touching with the fingers, or by dirty towels, and the first necessity is to use clean towels in drying the face and ensure that they are not used by anyone else. Treatment is with sulphonamide powder or penicillin, but must be carried out by a doctor. No other drugs should be used—ointments or patent medicines must especially be avoided.

**Indigestion.** (See Dyspepsia, Duodenal Ulcer.)

**Infantile Paralysis.** (See Poliomyelitis.)

**Inflammation.** The changes that occur in living tissues when they are invaded by germs. The classical signs of inflammation were described many years ago as redness, swelling, pain, and heat (in Latin, *rubor, tumor, dolor, and calor*). When, for instance, a cut is infected, the part becomes red because an increased amount of blood is sent to help fight the germs (see Immunity); this increase of blood supply leads to swelling and heat in the part, and the tension in the tissues to pain. A barrier of body cells develops which shuts off the infected area from the rest, and white cells (phagocytes or leucocytes) leave the distended blood vessels to eat up the bacteria. In the body as a whole, the poison of the germs causes an increase in the number of leucocytes in the blood—a sign which gives the doctor an idea as to how well the body is responding—and there is a rise in temperature. All these signs must be understood as a natural response to infection and the most that medical treatment should do is to aid Nature. Heat is applied both to increase the flow of blood to the part and to ease pain (see Fomentation), but it is unwise for the layman to attempt anything else. Above all, it is extremely dangerous to make an incision in an infected area until the infection is localised

by the body defences and the dead tissues have become liquid pus. Nor is there any point in taking drugs to reduce the temperature unless the fever is causing discomfort. Modern treatment, such as the use of sulphonamide or penicillin, can only be used under a doctor's advice.

**Infantilism.** A failure of development, mental and physical, due to glandular lack, especially of the pituitary gland. (See Glands.)

**Influenza.** While serious epidemics of influenza take the form of a very dramatic and often fatal disease, the milder type more usually seen is not easy to distinguish from a common cold. However, a sudden onset, pains in the back and legs, redness of the eyes, and a good deal of weakness are typical of influenza rather than a cold. Most typical of all is the long period of weakness and depression which may follow. Influenza is caused by a virus (which see) and is not yet curable by any of the new drugs, but a vaccine has been developed which may be useful. For the present, the best treatment is rest in bed, and plenty of drinks (of the orange squash or lemon barley water variety—there is no evidence that whisky helps, although it may make the illness more tolerable). In serious cases, death may be due to the onset of pneumonia, but this happens only in old or weak patients or in serious epidemics.

**Inoculation.** (See Immunity.)

**Insomnia.** Inability to sleep may be due to two groups of causes: (1) physical, (2) mental. The first group includes illnesses which produce pain or discomfort and thus keep the patient from sleeping. The treatment here is obviously to remove the cause of pain. Certain drugs, of which coffee is the commonest, stimulate the brain and make sleeping difficult. This can be dealt with either by using coffee from which the stimulant, caffeine, has been removed, or by avoiding coffee in the late evening. In old people, heart failure, high blood-pressure, or hardening of the arteries, may lead to insomnia, which can only be dealt with by a doctor.

By far the larger number of cases of insomnia are due to mental causes. These may be simple, as when intellectual work is carried on right up to bed-time, and the mind is then too stimulated to be able to sleep. Or the cause may be worry, either conscious or unconscious. In the treatment of insomnia due to mental causes, it is first necessary to remove the cause of worry. In addition to the original worry which led up to insomnia, many people get very worried in case sleeplessness leads to mental exhaustion or insanity. This fear is quite groundless, and, although it is exhausting to get insufficient sleep, nobody has ever become ill as a result of it. The very worst way to get peaceful sleep is to try so hard that sleep becomes impossible. It is a good idea to have a hot drink before going to bed, and to ensure that the bed is comfortable. If it is difficult to sleep, a book should be ready to hand, because anything which distracts attention from trying to sleep, helps. No drugs should ever be taken for sleeplessness without the advice of a doctor. Indeed, it is impossible to get these without a prescription.

**Insulin.** The internal secretion of the pancreas used in the treatment of diabetes. (See Diabetes and Glands.)

**Insulin Therapy.** Insulin is a substance produced by the pancreas which, under normal conditions, enables the body to utilise the sugar absorbed from the digestion of food in the stomach. In the disease of diabetes the pancreas fails to produce sufficient insulin, with the result that sugar accumulates in the blood and the excess is secreted in the urine. Insulin is, therefore, used in the treatment of diabetes, and is given by injection to replace what the pancreas no longer produces.

Since insulin reduces the amount of sugar in the blood-stream, it tends to produce hunger, and is given to patients with a poor appetite—especially when this is due to psychological causes—in order to get them to eat. However, apart from its use in diabetes, the main use of insulin is the effect which it has upon certain mental disorders, in particular, upon schizophrenia. The prospect of recovery from this serious disease was formerly very slight (although, of course, it is not dangerous to life), and no more than about 30 per cent. of cases showed any tendency to spontaneous recovery. With the use of insulin, this recovery-rate has



more than doubled, and in most hospitals stands at about 60-70 per cent.

The technique of insulin therapy is somewhat as follows: the patient is kept in bed in a warm room and given a relatively small dose of insulin while the results are observed. Each day the dose is increased until relatively large amounts are being given. Initially, the only effects are slight sweating and nervousness, but with larger doses the results are more pronounced, until finally the patient becomes unconscious and goes into a coma. When the coma appears to be getting too deep, or when it is desired to stop the daily treatment, injections of sugar (glucose) are given which rapidly put an end to the coma. Insulin is used in certain other mental conditions, but other treatments usually give better results in these.

**Intelligence.** Intelligence has been defined as the ability to see the relationship between things. Being inborn, it is not increased by education (although through inadequate education of emotional problems, the individual may be unable to make full use of what intelligence he has been born with). Although intelligence is inherited from the parents, low intelligence is sometimes caused by injury or disease of the brain at birth. (See Feeble-mindedness.) The various grades of intelligence are described as follows—progressing from the lowest to highest: idiot, imbecile, dull and backward, average, above average, genius. These grades are discovered by means of intelligence tests.

**Intermittent Claudication.** (See B rger's Disease.)

**Intestine.** The tube beginning at the mouth and ending at the rectum. It includes the  sophagus, leading from the mouth to the stomach (about 2 feet long), the stomach (1 foot long), the duodenum (1 foot long), the small intestine (23 feet long), the large intestine (5 feet long) and rectum (6 inches long). In this tube digestion takes place. The main diseases of the intestine are: ulceration, as in stomach ulcers, or ulcerative colitis, infection, as in dysentery and typhoid, obstruction due to twisting, or tumours. All these are treatable only by a doctor.

**Iodine.** This is found in sea-water, and especially in sea-weed. It is used internally in small amounts as a sedative for the stomach and in the treatment of goitre. Externally, it is used as an ointment in treating muscular pains; the tincture of iodine was formerly used as an antiseptic, but is much less efficient than more modern antiseptics. (See Antiseptics.)

**Iritis.** Inflammation of the iris, the area surrounding the pupil. It may be caused by many different germs. The symptoms are—pain, redness, and abnormal sensitivity to light. Iritis cannot be treated without medical help.

**Iron.** A metal found in the red cells of the blood. Lack of iron leads to  m mia. It is taken in the form of Bland's pills, ferrous sulphate, or iron and ammonium sulphate.

**Itching.** This may be a symptom of many diseases, such as infection of the skin by germs or fungi, or by parasites, such as lice or "the itch" (scabies). It also occurs in dermatitis due to oversensitiveness of the skin to certain substances which are harmless to others. (See Dermatitis.) Glandular defects, especially in women at the change of life, may lead to itching. The treatment depends on the cause, but many types of itching of the skin have no discoverable physical cause, and are psychological in origin. These are known as pruritis.

**Jaundice.** Yellowness of the skin, eyes, and urine, due to the presence of the colouring matter of bile in the blood. Jaundice may occur when there is excessive breaking-down of the red cells in the blood. This type is found in pernicious  m mia, and the yellow tinge is usually slight. Or it may occur in diseases of the liver produced either by poisons or germs. Finally, any blocking of the bile ducts, as in gall bladder disease, may lead to jaundice. The commonest type is the sort of jaundice occurring after mild gastritis and known as infective jaundice or infective hepatitis. This usually passes off in two to three weeks. All cases of jaundice should be referred to a doctor immediately.

**Joint Diseases.** (See Arthritis, Backache, and Gout.)

**Kala-azar.** Also known as Mediterranean

fever, Dumdum, or Black fever, occurs in tropical countries and shows itself in fever,  m mia, dropsy, and swelling of the liver and spleen. The germ is carried to human beings by the bite of the sand-fly.

**Keloid.** An over-growth of tissue on the site of a scar. It is more commonly found in Negroes. The usual treatment is radium or X-rays.

**Keratitis.** Inflammation of the cornea, the membrane in front of the eye.

**Kidneys.** The kidneys are about 4 inches long and 2 inches wide. There are two, one on each side of the spinal column, in the small of the back. All the blood in the body is filtered through the kidney, and the waste matter passes through two tubes known as ureters which enter the bladder. It then leaves the body through the urethra in the form of urine. The commonest diseases of the kidneys are stone (see Calculus), inflammation (see Nephritis), and tumour.

**Kyphosis.** Hunch-back, usually caused by tuberculosis of the bone, rickets, and spinal injuries.

**Labour.** Child-birth.

**Lactation.** Secretion of milk by the breasts.

**Lanugo.** The fine hair which covers a baby before birth.

**Laryngitis.** Inflammation of the vocal cords. This may be due to excessive use of the voice, inflammation by germs as in colds, or more serious conditions, such as tuberculosis, cancer, or syphilis. In some people excessive smoking causes laryngitis. Treatment is to rest the voice and treat the cause. Any patient who has hoarseness of the voice for more than two weeks should see a doctor, and if the symptom does not disappear after a week's treatment, he should demand to see a throat specialist.

**Leprosy.** A chronic disease caused by a germ similar to that of tuberculosis. It affects the skin and the nerves. The usual symptoms are pain and tingling in the affected areas, which later gives place to complete loss of feeling. Deformities arise, partly from ulceration of diseased areas, partly because the lack of feeling makes the patient unaware when his hands or body are being injured. Leprosy is very uncommon outside tropical countries and is not nearly so infectious as people in the past have been led to believe. It is, moreover, curable.

**Lesion.** Any wound or injury anywhere in the body.

**Leucocytosis.** An increase in the number of white cells in the blood. (See Inflammation.)

**Leucoplakia.** White, thickened patches which appear on the tongue following chronic irritation. It is caused by spirits, smoking, syphilis, or sepsis, and if untreated, may lead to cancer. It should be referred to a doctor.

**Leucorrh a.** A whitish discharge from the womb. A certain amount of discharge is normal, but, if it is foul-smelling or excessive in amount, a doctor should be consulted. In mild cases, douching with warm water is all that is necessary.

**Leucotomy.** A brain operation used in the treatment of certain mental disorders, and particularly the more serious and otherwise incurable ones such as schizophrenia, severe and prolonged states of depression, and occasionally severe obsessional neurosis. The operation consists in the severing of the nerve tracts between the higher controlling centres and the lower impulsive centres. This, in effect, means that the association between thought and emotion is to some extent removed. For example, a patient's delusions are only important in so far as they have strong emotional drives behind them; when the drive is removed they become of less significance. Depression and obsessional neuroses are essentially due to an excessive control of emotional expression by the "conscience"; this again is reduced by the operation.

Leucotomy is a serious procedure which should be considered only when all other methods have proved useless. To put the matter in another way, leucotomy does minor (but irreparable) damage to the brain in order to remove a greater disability. Many otherwise incurable cases have been able to return home after treatment, and sometimes to work at their original job. But there can be no doubt that their intellectual and emotional control are reduced.

It is most important to realise this. Leuco-

tomy is quite unjustifiable unless no other method will cure the patient, or if the patient is either only mildly disturbed or is likely to improve with time. The operation was devised by the Portuguese surgeon Moniz about fifteen years ago.

**Leukemia.** A disease in which there is a great increase in the number of white cells in the blood and swelling of the spleen and lymph glands. The red blood-cells break down, causing anaemia and hæmorrhages in various parts of the body. This is a very serious disease which has previously been treated without much success by X-rays. Recently, however, radio-active phosphorus has been used, but this treatment is still in the experimental stage.

**Libido.** In the psychology of Freud and Jung, the term *Libido* is used to mean the instinctual energy of life, usually sexual energy. Jung, however, uses it in the much wider sense of mental energy in general.

**Lice.** There are three kinds of lice: the head-lice found only in the hair, the body-lice found elsewhere on the body, and the crab-lice found only in the hair round the sexual organs. Lice do not develop of themselves, and can only be spread by contact with someone who already has them. For the head-lice a preparation known as lethane is now in use, which should be applied after washing the hair. Body-lice are dealt with by the use of D.D.T. powder, but it is also necessary to have the clothes disinfested as body-lice breed in the seams. If no other method is available this may be done by ironing the clothes with a hot iron. Crab-lice being found only in the genital area can more easily be dealt with, and all that need be done is to shave the hair off and wash. In towns, the best thing to do is to go to the local Cleansing Centre. When this is not possible, head-lice can be dealt with by rubbing a mixture of equal parts of paraffin and olive oil well into the hair, covering for at least two hours, and then washing. Body-lice are best dealt with by bathing and shaving off the body hair, especially under the arm-pits where body lice are most often found. The main danger of lice is that they spread typhus fever.

**Ligaments.** The fibrous bands that hold bones together in the region of a joint.

**Linctus.** A thick syrupy medicine, usually a cough mixture.

**Liniment.** Any oily substance rubbed into the skin to relieve pain.

**Lipoma.** A swelling made up of fat cells. It is harmless, but if it causes inconvenience, may be removed.

**Liver.** The liver lies in the upper right-hand side of the abdomen just under the margin of the rib. It has many different functions. For example, all the food which is not immediately required for use is stored in the liver. This particularly applies to sugar which is the main source of energy. It is kept in the liver in the form of glycogen and released to act as fuel whenever necessary. The liver also has the function of breaking-down poisons which are produced either inside or outside the body, and in the presence of liver disease the patient is much more susceptible to poisons. Finally, the liver produces bile which is stored in the gall-bladder. Bile is both a means of getting rid of the break-down materials of used-up blood cells and an important digestive agent.

The liver may suffer from inflammation caused by germs (infective hepatitis); from hardening or cirrhosis, which is caused by various poisons of which alcohol is the commonest, and also by lack of vitamin B<sub>1</sub>. Tumours are occasionally found in the liver, but they have usually spread from somewhere else in the body. Liver extract used in the treatment of pernicious anemia is a substance which stimulates the formation of red blood cells.

**Lock-jaw.** Properly called Tetanus, is a disease caused by the tetanus bacillus which is found in rich soil. Infection is produced by the germs entering the skin through a wound or cut. The disease affects the nervous system and produces contraction of all the muscles in the body—in particular of the jaw, so that the mouth is unable to open. Without treatment, death almost always occurs. Fortunately, people can be immunised against tetanus by inoculation, or, after infection, if there is time, the patient can be passively immunised (see *Immunity*). The

effectiveness of active immunisation can be seen in the fact that, while in earlier wars thousands of soldiers in France died of tetanus, the disease was almost unknown in the last war when everyone received injections of T.T. (tetanus toxoid).

**Locomotor Ataxia.** (See *Tabes*.)

**Lordosis.** An abnormal curvature of the spine with the convexity towards the front.

**Lungs.** The organs of breathing, two large spongy organs that fill most of the chest. They are made up of many small air cells which connect with the bronchioles or air tubes and finally with the wind-pipe. Air passing into the air sacs through these tubes carries oxygen to the blood-vessels which spread throughout the lungs. (For diseases of the lungs see *Bronchitis*, *Bronchiectasis*, *Emphysema*, *Empyema*, *Pleurisy*, *Pneumonia*, and *Tuberculosis*.)

**Lupus.** Tuberculosis of the skin, which takes the form of yellow or brown nodules that coalesce forming a continuous patch in which the tissues are gradually eaten away. Lupus can, however, be cured by ultra-violet irradiation.

**Lymph.** The liquid part of the blood which flows through special vessels on its own and passes through the filter of the lymph glands before entering once more into the blood stream.

**Lymphadenoma.** (See *Hodgkin's Disease*.)

**Lysol.** A proprietary name for Cresol which is mainly used in disinfecting drains, instruments, and so on. It is not so useful as a body antiseptic since it burns the skin and is extremely poisonous.

**Malaria.** Malaria is the most dangerous disease in the world, and millions of people die of it yearly. This is all the more tragic in that it is relatively easily treated by means of quinine or the new synthetic drugs Atebrin and Mepacrine. The problem of malaria in India and other countries is mainly an economic one, since the supply of quinine in the world is inadequate to the number of patients. At one time, it was thought that malaria was caused by breathing damp, foul air—hence the name which means "bad air." But it was discovered by the Scottish physician Ross to be caused by a parasite spread by the bite of mosquitoes. The practical problem in controlling malaria is therefore one of preventing mosquitoes from breeding and from biting human beings. Since the eggs of mosquitoes are hatched in water, the first thing to do is to dry up all areas of stagnant water or render them poisonous to the mosquito by the use of oil which forms a film over the surface. Mosquito nets and protective clothing are used to prevent people being bitten. There are several different types of malaria, benign, malignant, tertian, and so on, but the treatment of the actual disease can only be carried out by a doctor. Those who live in malarial climates can protect themselves by taking Atebrin tablets.

Finally, we must mention that those who have suffered from malaria are particularly prone to believe that every fever which develops when they return to England is malaria. This, in fact, is rarely the case, yet the doctor constantly sees people who, having been in India twenty years previously, still consider that every cold is a return of their malaria. This is usually mere boasting.

**Mania.** A type of insanity in which there is wild excitement, sometimes violence, and constant over-activity. It is one phase of the disease properly known as manic-depressive insanity, in which the patient has a tendency to alternate between the extreme emotions of elation and depression. Mania is now successfully treated by psychiatrists. It is not caused by any disease of the brain and is a purely psychological illness.

**Mammary Glands.** The breasts.

**Marsasmus.** Progressive wasting in infants without any obvious cause.

**Massage.** The treatment of diseases by manipulation of the tissues. It acts by increasing the blood flow and relaxing the muscles. While very useful in certain illnesses, such as fibrositis, there is a tendency on the part of its practitioners to over-estimate its importance in general medicine.

**Mastitis.** Inflammation of the breasts. This may be acute, when there is infection producing an abscess which may have to be opened—a type usually found in nursing mothers—or it may be chronic, a quite different condition found mostly in women at the change of life and caused by glandular upset. Acute mastitis is treated by



penicillin, sulphonamide, or surgical operation. Chronic mastitis is treated by ovarian extracts or other hormones (which see).

**Mastoid.** Mastoid is the name applied to the bone behind the ear. When infection from the ear reaches the inside of this bone, the condition is known as mastoiditis. This may be caused by measles, scarlet fever, and diphtheria, or by blowing the nose in such a way as to force infection from a cold up the Eustachian tube into the ear. When this happens, there is deafness, pain, and swelling behind the ear, which must be dealt with by a doctor. An operation may be necessary or the disease may settle down by the use of penicillin. Sometimes the infection becomes chronic and the ear may discharge for months or years. This is very common, but always potentially dangerous. It should always have specialised treatment.

**Measles.** An infectious disease marked by fever, a rash of pink spots, redness of the eyes, and mild bronchitis. It mainly affects children, and one attack seems to produce life-long immunity. Measles is caused by a virus and the most serious dangers of the disease are the result of complications, such as infections of the eyes, nose, or throat, and the bronchial tubes. The usual treatment is rest in bed and light diet. Sometimes patients are given injections of serum from the blood of those who have recently recovered.

Measles is not usually a serious disease, but its complications often are. Children should not be allowed to mix with those who have had measles for two weeks after recovery.

**Measles—German.** (Rubella.) An acute fever which is rather like a mild attack of measles. The patient has running nose, sore throat, and a slight rash. The glands of the neck and behind the ears are usually swollen. The temperature is only slightly raised, and the patient recovers in a few days. Prevention of infection is difficult because the disease is developing in the body for about three weeks before symptoms begin, and during all this time the patient can cause infection. Rubella, like measles, is caused by a virus.

**Medulla Oblongata.** A cone-shaped part of the nervous system which is the junction between the spinal cord and the brain. In it lie the vital centres which control breathing, heart-beat, and the movements of the intestines.

**Melancholia.** Depression; a mental disease which may be part of manic-depressive insanity (which see), or simply an attack of depression coming on at the change of life. The symptoms are anxiety and fear due to no obvious cause and more or less severe depression. In more severe cases, the patient may express strange ideas, such as the belief that he has committed some unforgivable sin, or that he is unworthy of the attention of others.

It is important to be able to recognise this condition, which is usually found in women between the ages of forty and fifty, and, less often, in men about ten years later. The most serious danger is that the patient may commit suicide, an event which is all the more tragic since nearly all cases of melancholia can be completely cured by modern methods.

**Memory.** Many people consider whenever they get run-down that their memory is failing. This is nearly always a wrong belief. Every act of remembering has three phases: (1) the taking-in of an impression; (2) the consolidation of a memory in the brain; (3) the retaining of a memory and the ability to recall it. Failure to remember may be caused by a defect in one or other of these processes: (1) when people are nervous or unhappy they fail to pay attention to what goes on round about them, and one cannot take in impressions unless interested in them. This is the explanation of the supposed bad memory of neurotics. It is not memory that is diseased, but interest which is lacking; (2) if someone is knocked unconscious in an accident their memory will be blank, not only for the time when they were unconscious, but also for a period of several minutes before the accident. This is because, as we have seen, a memory takes some time to be consolidated in the brain, and the accident has prevented this consolidation; (3) most other cases of failure to remember are due to a lack of desire to recollect particular facts (see *Amnesia*). Loss of memory of this type may range from the normal failure to remember un-

pleasant facts about ourselves, to the pathological loss of memory when, for instance, a soldier who is morally incapable of running away does so in a state of amnesia. The only time memories are ever really lost is when the cells of the brain containing them are destroyed by disease or old age. This is, however, much less common than the other types. To summarise, loss of memory is uncommon, lack of ability or desire to recall is frequent.

**Meniere's Disease.** A disease of the organs of balance in the inner ear in which there is deafness and sudden attacks of extreme giddiness, vomiting, and even collapse. It is not dangerous to life, but can only be treated by a specialist.

**Meninges.** A thin membrane which covers the brain and spinal cord. Inflammation of the meninges is called meningitis; a tumour in this area is called a meningioma.

**Meningitis.** An infection of the lining of the brain, caused by a germ called the meningococcus, when the disease is epidemic meningitis or "spotted fever." Other types, not occurring in epidemics, are caused by the germs of pneumonia, tuberculosis, and others. Epidemic meningitis is specially common under conditions of overcrowding. The disease begins like a cold with fever and sore throat which is followed by a rash of pin-point-sized red spots all over the body. Later, there is severe headache, vomiting, and sometimes delirium. The epidemic and streptococcal types are now curable with sulphonamide or penicillin, but tuberculous meningitis is a very grave disease which rarely recovers. The use of the new drugs streptomycin, however, holds out some hope. Meningitis may sometimes be followed, in children, by mental disorders or change of personality.

**Menopause.** (See *Change of Life*.)

**Menorrhagia.** Excessive bleeding during the monthly period—a condition which should always be referred to a doctor as it can usually be satisfactorily treated.

**Menstruation.** The monthly period. Beginning at puberty, the periods have the function of preparing the womb for pregnancy. Mid-way between two periods, an ovum is released from the ovary, which, if it is fertilised, carries on to pregnancy. If unfertilised, it passes out of the body. Each month, the lining of the womb is prepared for receiving the fertilised ovum and when fertilisation does not occur, the lining breaks down, and leaves the body in the form of blood and mucus. This is followed once more by the laying down of a new lining. Monthly bleeding should not be excessive or painful, and there should be no bleeding between periods. These symptoms are named respectively, *menorrhagia*, *dysmenorrhoea*, and *metrorrhagia*, and, if they occur, should be referred to a doctor. Brief accounts will be found under these headings. When the period stops at the change of life (which see) the stopping may be sudden or gradual, but, after it has taken place, there should be no further bleeding.

**Mental Disease.** (See *Hysteria*, *Neurosis*, *Psychosis*.)

**Metabolism.** The building-up and breaking-down processes of the body as a whole. The former are called anabolism, the latter katabolism. The rate of metabolism depends largely on the thyroid gland.

**Metritis.** Inflammation of the womb.

**Micturition.** The passing of urine.

**Migraine.** A disease, believed to be allergic, in which periodic attacks of headache are accompanied by spots or flashes in front of the eyes, and followed by gastric symptoms of nausea or vomiting. Between attacks the patient is quite normal. The disease can only be treated and diagnosed by a specialist. There are numerous modern drugs which are helpful; in mild cases aspirin may be sufficient, but in more severe cases a drug known as ergotamine (*Ergemex*) is useful.

**Miscarriage.** (See *Abortion*.)

**Mononucleosis.** (*Glandular Fever*.) A virus disease which sometimes occurs in epidemics, usually among young people. There is fever, sore throat, swelling of the lymph glands in the neck and elsewhere. The disease may be so mild as to pass unnoticed, and most cases recover in three or four weeks. There is no specific treatment.

**Mumps.** An infectious disease marked by swelling of the large salivary glands in front of the

ears, sometimes of other glands and even the breasts and testes. Mumps may be extremely painful, but the worst is over in a few days. Children and young adults should be kept away from patients. One attack usually gives lifelong immunity. The disease is caused by a virus. There is no specific treatment.

**Myocarditis.** Inflammation of the heart muscle. (See Heart.)

**Myxedema.** A disease due to failure of the thyroid gland. The symptoms are dry skin, increasing mental dullness, puffy face, and falling hair. The condition can be cured by giving tablets of thyroid extract, but this must be continued throughout life.

**Nevus.** (See Birth-mark.)

**Narcolepsy.** A nervous illness of unknown origin in which there are periodic attacks of sleep. Sometimes patients fall asleep while standing or talking, and these attacks may be associated with a condition in which all the muscles of the body seem suddenly to lose their strength and the patient collapses. These latter attacks are often brought on by strong emotions, such as laughter or anger. Narcolepsy is not dangerous to life and can be controlled by a drug known as Benzedrene. Obviously those who suffer from it should not follow occupations in which attacks of sleep may be a danger to themselves, or others. For instance, they should not drive.

**Narcotic Addiction.** People may become addicted to many different types of drug, such as opium or its derivatives (morphine or heroin), cocaine, hashish, or even chloroform. Much the commonest drug of addiction, of course, is alcohol (see Alcoholism). There is no space here to describe the treatment of these conditions, but it should be realised that, although there are many ways of making the breaking-off process less painful, the only method of curing the addiction is by treating the underlying psychological abnormality. No normal person ever becomes addicted to drugs.

**Nature Cure.** Any system of treatment which is based upon the belief that diseases may best be cured and health maintained by the use of "natural remedies," as opposed to artificial and man-made drugs. In practice, this usually means that only substances of vegetable origin are utilised and substances of mineral origin are avoided. Such methods of treatment as colonic lavage are also made use of.

While it is, of course, often possible to cure illness by such methods—at any rate in the case of certain diseases—the philosophy of nature cure (and of all other systems of medicine based upon a single idea) is a fallacious one. Although it sounds sensible on the face of it to say that "nature's way is best," this sort of statement is all too glib. For what is "nature's way," and what is "natural"? The fact is that to the type of individual referred to here "natural" things are the "nice" ones and "unnatural" things the "nasty" ones. Unfortunately, cancer is just as natural to the universe as a healthy tissue of cells, and iron, manganese, copper, and other metals are just as natural as vegetable substances. A "healthy" cancer makes an unhealthy human being, and a healthy tuberculosis germ makes an unhealthy lung; it all depends upon one's point of view what one considers natural and healthy.

Naturopaths tend to depict vegetable drugs as gentle, safe, and natural, although the most deadly poisons belong to this class, and the credulous client of the herbalist will buy a handful of dead leaves, take them home to be stewed, filtered, and what not, when he might have bought the same thing at a chemist's already purified and concentrated. Some of the things sold at the herbalist's have already been tested by chemists and found to have little or no effect, others which do work are used by all physicians. Going to a herbalist's, therefore, is, at the best, like going to Billingsgate to buy cod in order that one may eat its raw liver when the doctor has recommended cod-liver oil. At the worst, it is a waste of time and money.

Since 90 per cent. of all diseases get well of their own accord—that is to say, by virtue of the natural resistance of the body—most patients would be "cured" whatever treatment was, or was not, carried out. In such conditions "nature

cure" is harmless. There are other diseases which may well be benefited by "nature cure" in so far as it utilises sensible and common-sense remedies, such as dieting, fresh air, fresh uncooked food, and so on. But it must never be forgotten that in other instances the use of such methods may allow a serious or potentially serious disease to progress beyond help of more efficient treatment. Cancer, tuberculosis, and many other diseases come into this category, and the number of deaths which occur yearly in those who are given unorthodox treatment for these illnesses bears witness to the danger of all single-track systems of healing.

**Necrosis.** Gangrene. The death of a part of the body, such as the leg or foot. (See Gangrene.)

**Negativism.** A symptom in mental diseases, such as schizophrenia, in which the patient resists doing anything that others wish him to do, or even does the opposite.

**Neoplasm.** A tumour. It must be remembered, however, that the word "tumour" has a different meaning to doctors than it has for the layman. "Tumour" simply is the Latin word for swelling, and it does not necessarily mean cancer. To the doctor, a wart is a "tumour."

**Nephritis.** Inflammation of the kidneys (see Kidney). The inflammation may be acute, in which case it comes on fairly suddenly with swelling and puffiness of the face, hands, and feet, sometimes pain in the small of the back (although most pain here is not due to kidney disease), slight fever, and blood in the urine. In other cases the nephritis is chronic, the result of a long and more gradual process. In these cases, there may or may not be swelling or pain, but the blood-pressure is usually raised. Nephritis is often caused by the spread of germs of inflammation from elsewhere in the body, but it may also be caused by certain drugs or poisons which irritate the kidneys. Treatment can only be carried out by a doctor.

**Nerve.** (See Brain for a description of the nervous system.) The illness usually known as "nerves" has no relation to the physical nerves of the body. (See Neurosis.)

**Nettlerash.** (See Urticaria.)

**Neuralgia.** The word neuralgia simply means pain in a nerve—it is not, strictly speaking, a correct name for a disease due to a particular cause. Pain in a tooth may be called dental neuralgia, in the face, facial neuralgia, and so on. Sciatica and lumbago may also come under this heading, but will be described elsewhere, and the condition of pain in the chest may be due to a type of neuralgia known as pleurodynia or intercostal neuritis. Facial neuralgia, also known as tic douloureux or trigeminal neuralgia, is, however, the only proper disease entity in this group, since all the others may be caused by many different factors. In tic douloureux there are very severe attacks of pain in the face, often brought on by trifling stimuli, such as draughts of cold air or washing the face. The treatment here may be operation or injection of the nerve root with alcohol. In some cases, the inhalation of a drug known as Trichlorethylene may give relief.

**Neuritis.** Inflammation of a nerve. This may be caused by various poisons, such as lead, arsenic, alcohol, or those of germs or internal diseases, such as diabetes, gout, diphtheria, and malaria. The symptoms are pain, wasting of muscles, and defective sensation, whether loss of feeling, tingling, or "pins and needles." Treatment depends on the cause—rest, heat, and injections of vitamin B, are all helpful.

**Neurosis.** So-called "nerves" show themselves in many ways. The symptoms may be apparently those of physical disease (see Hysteria) or they may be obviously "mental," in the form of depression, worry, fear of the unknown, queer sensations inside, and so on. Whatever the symptoms, it may be taken as absolutely certain that there is no physical illness at the root of a neurosis, and that all neuroses are due to a wrong attitude to life. Generally speaking, neurotic people are suffering from a failure to face up to reality. This failure is the result of upbringing. Perhaps it will be simplest to show the meaning of neurosis by a few examples: (1) Before an examination, a student develops a "nervous breakdown." Reason: he has an unconscious



fear of failure and his breakdown is a means of evading this with honour. Overwork, for all practical purposes does not exist, and certainly never leads to mental upset, but the student attributes all his illness to exhaustion—a much more respectable excuse than the real one. (2) A woman looks after her widowed mother, and has a similar breakdown. Reason: she, perfectly naturally, wants to live her own life, but, thinking that this desire is immoral in the circumstances, refuses to admit it to herself. Her illness enables her to avoid doing what she does not want to do.

Nobody ever develops a neurosis unless they are, as these patients were, evading some issue—every neurosis is an excuse to avoid a difficulty. Terror, fright, horrible experiences, sexual indulgence or lack of it, alcohol, unhappiness—none of these things ever made anyone ill with mental illness (although they may sometimes be a sign of mental illness). Nobody with a neurosis ever goes mad, although many are afraid of doing so. No drugs will ever cure nervous breakdown (although some will make it more tolerable). The only treatment is to sit down and consider. "What is my illness keeping me from doing—for what am I using it as a cover?"

Neurosis causes much suffering, but it is nevertheless an evasion of responsibility (although, as in the case of so-called "shell-shock," there may be plenty of reason for the evasion). The only cure is to be honest with oneself. In simple cases this can be done by the patient himself, in more complicated ones, a psychiatrist may be necessary. Whenever the facts are admitted, the patient can be relieved at once. Nerve "tonics," it must be repeated, do not exist—there is no such thing. Rest is unnecessary because the neurotic is only tired from mental conflict.

**Night Terrors.** In children, night terrors are a form of "nerves." It must be remembered that babies are not born with specific fears, and all such fears are learned from the parents (whether the parents are aware of it or not). Children who have disturbed sleep should be seen by an expert at a Child Guidance Centre. Ordinary doctors are not qualified to deal with any but the simplest cases.

**Noma.** A form of gangrene of the mouth found in ill-nourished or weak children. It is a very serious disease. [children.]

**Nullipara.** A woman who has never had a child.  
**Nystagmus.** A jerking movement of the eyes which may be inborn or a sign of disease of the nervous system. It is found as an industrial disease among coal-miners, but the cause of this type of nystagmus is not definitely known.

**Obesity.** Excessive stoutness. It should be understood that the word only applies to pathological stoutness which is such as to interfere with the normal processes of the body. The fashionable definition of stoutness is something quite different, and, of course, many people who consider themselves too fat from the point of view of fashion are, in the medical sense, perfectly normal. Pathological obesity should always be looked on as indicating that something is wrong with the individual's mode of life, or with his body. In the first group whose mode of life is abnormal, we have cases which one might call psychological. For instance, people who are dissatisfied, especially in their love relations, tend to eat to excess—they are especially liable to eat sweet things or pastries, and this is quite a common cause of stoutness. Many individuals eat a great deal too much without realising it—or eat too much of the wrong sort of food: becoming used to this daily amount, they will quite genuinely state that they are "very small eaters." A rigid diet is necessary in such cases. Under-action of the thyroid gland or, more commonly, of the pituitary gland, produces particular types of stoutness which can be diagnosed by a doctor. The treatment is purely a medical matter and depends on diet and the use of drugs which should never be taken except under medical advice.

**Obstetrics.** The branch of medicine dealing with pregnancy.

**Œdema.** Dropsy (which see).

**Olfactory.** To do with the sense of smell.

**Omentum.** A large membrane which acts as a cover for the bowels.

**Oophoritis.** Inflammation of an ovary.

**Ophthalmia.** Inflammation of the eye. (See **Conjunctivitis**.)

**Orchitis.** Inflammation of the testicle. The symptoms are pain, swelling, and a feeling of weight. It is caused by germs, such as those of gonorrhoea, syphilis, tuberculosis, and is a complication of mumps and other illnesses.

**Orthopaedics.** A branch of medicine dealing with the surgery of bones and joints.

**Osteomalacia.** A disease of adults, mainly women, which is similar to rickets of children. There is bending and fracture of the bones due to lack of calcium and vitamin D. It is found mainly in Italy or Eastern countries where the diet of poor people is inadequate.

**Osteomyelitis.** An inflammatory disease of bone caused by infection with the streptococcus or staphylococcus. The germ is carried by the blood, but the part where it settles depends on local weakness or such factors as blows and injuries. The first sign is severe pain in the infected bone and fever. Usually the site affected is in the long bones of the arm or leg. Later, a chronic state may develop in which a small sinus, or hole in the limb, discharges large amounts of pus which comes from the inside of the bone. Operation may be necessary, but if caught in an early stage, the disease may be treated with penicillin or sulphonamide drugs. The main danger of osteomyelitis is that absorption of the bacterial poisons into the system leads to damage to the other organs of the body.

**Osteopathy.** A system of treatment based on the idea that diseases are caused by minor dislocations of the spine. They can therefore only be cured by manipulation. There is no scientific evidence for this belief and osteopathy is not accepted by orthodox physicians. In many cases osteopathy may be harmless or even useful but in our time when advances in orthodox medicine are taking place so rapidly and dramatically, it is foolish to take risks which might result in delayed treatment with serious results.

**Otosclerosis.** A type of deafness caused by hardening of the tissues in the inner ear. The symptoms are gradually increasing deafness and sometimes continuous ringing in the ears. The fundamental cause is not known. Treatment has not been satisfactory, but recently an operation has been devised which is helpful in some cases.

**Otitis.** Inflammation of the ear. (See **Deafness**, **Earache**, and **Mastoid**.)

**Otorrhoea.** (See the articles mentioned under **Otitis**.)

**Ovary.** The sex glands in women. Each is about the size of an almond, and is situated in the pelvis on either side of the womb. From the ovary a single sex cell or ovum is released each month into the womb. (See **Menstruation**.)

**Ozoma.** A disease of the inside of the nose which leads to the production of a foul-smelling discharge. It is now rather uncommon.

**Pædiatrics.** The branch of medicine dealing with the diseases of children and their cure.

**Palpitation.** Usually thought to be a sign of heart disease but is, in fact, hardly ever so. Palpitation is due in most cases to nervous upset, in some cases, to stomach trouble, and in a few cases to poisoning with tobacco. It is rarely of serious significance. The treatment depends on the cause. Sometimes palpitation is a symptom of exophthalmic goitre or severe anaemia.

**Palsy.** An old-fashioned word meaning paralysis, as in Bell's palsy (paralysis of the nerve of the face), or "creeping palsy" (a disease in which paralysis comes on gradually, properly known as disseminated sclerosis).

**Pancreas.** A large gland lying behind the stomach having the function of producing ferments which are passed into the stomach to help in the digestion of proteins. It is also the gland in which insulin is produced. (See **Diabetes** and **Glands**.)

**Pancreatitis.** Inflammation of the pancreas. This may be acute or chronic. Acute pancreatitis is a serious disease resembling in its symptoms a severe attack of appendicitis. Only an immediate operation can help the patient. In chronic pancreatitis, on the other hand, the symptoms are not easy to distinguish from chronic dyspepsia. Disease of the insulin-producing cells in the pancreas leads to diabetes.

**Pandemic.** A widely-spread epidemic, e.g., the

**Black Death in the Middle Ages or the influenza epidemic after the First World War.**

**Paralysis.** Loss of the power of movement in one or more parts of the body. This is usually due to interference with the nerves or the brain by injury, hemorrhage, or disease. When the damage is in the higher centres (see *Brain*), the result is a paralysis in which the limb affected becomes rigid and more stiff than normal—that is to say, the muscles are capable of movement, but cannot control the movement. When, on the other hand, the lower centres (the ordinary nerves of the body) are affected, the limb supplied by them is completely without power and lies flaccid and inert. Treatment of paralysis is always a matter for a specialist, but it should be remembered that even an apparently severe illness of this type may be entirely psychological. (See *Hysteria*.)

**Paraplegia.** The name given to any paralysis affecting the legs or lower part of the body. It is usually due to disease of the spine.

**Parasite.** Any animal or plant which lives inside or on the body of another animal or plant, e.g., the mistletoe is a parasite on the apple or oak-tree, the tape-worm is a parasite inside man and other animals.

**Parathyroid Glands.** (See *Glands*.) A group of six small glands situated around the thyroid gland. They are concerned with controlling the amount of calcium in the blood, and, if they are removed by accident in an operation on the thyroid gland, the result is a sudden fall in blood calcium which leads to cramps, tremors, and sometimes death. This condition is known as tetany, and can be controlled by injections of parathyroid extract or calcium.

**Paratyphoid Fever.** (See *Typhoid*.)

**Paresis.** Slight or incomplete paralysis.

**Paronychia.** Infection of the tissues at the base of a nail. This condition is not, in its cause, different from any other septic infection, but because of the situation within the nail bed, it may be more difficult to cure. Paronychia is often chronic and requires special treatment. It is not otherwise serious.

**Parotitis.** Inflammation of the parotid gland, a large salivary gland just in front of the ear. (See *Mumps*.)

**Parturition.** Childbirth.

**Pasteurisation.** A method of stopping liquid foods from going bad. This is done by heating under particular conditions. The process is named after Pasteur, the French scientist.

**Patch Test.** A test carried out by sticking a patch impregnated with a substance to which the person is thought to be sensitive on to the arm. A red area of inflammation on the spot shows hypersensitivity.

**Pathology.** The study of diseases for their own interest, rather than directly with a view to curing them.

**Pediatrics.** The study of the diseases of children.

**Pediculosis.** Infestation with lice (which see).

**Pellagra.** A disease found mainly in the southern States of America and southern Europe, due to malnutrition, and especially to lack of vitamin B. The symptoms are skin rashes, weakness, pain, and mental depression. It can be cured by giving a better diet.

**Pelvis.** The part of the body lying between the thighs and the abdomen. It contains the bladder, the large intestine, and the internal sex organs—the womb and ovaries in the female, the prostate gland in the male.

**Pemphigus.** A skin disease in which there are large blisters which are at first filled with fluid and later burst and leave behind pigmented spots. There are many types of pemphigus—one type is found in young infants.

**Penicillin.** A drug discovered in 1928 by Sir Alexander Fleming of St. Mary's Hospital, London. Sir Alexander, then Dr. Fleming, noticed that staphylococci growing on a culture plate near a window was being destroyed in the region of a small speck of mould. On investigating further, he found that this particular type of mould, known as *Penicillium notatum*, produced a substance which was deadly to many different types of bacteria. Unfortunately, it proved to be very unstable and far too easily destroyed to be, at that stage, of any use in the treatment of infectious diseases. It was not until 1939 that

Sir Howard Florey and Dr. E. Chain were able to produce a form of penicillin which was of service in medicine.

Penicillin has proved to be the most extraordinary drug known to science. It is practically non-poisonous to the human body, yet kills staphylococci in a dilution of one part of penicillin to one hundred million parts of water. It also destroys the bacteria causing pneumonia, gas-gangrene, anthrax, diphtheria, gonorrhoea, meningitis, syphilis, tetanus, infectious jaundice, and psittacosis. Staphylococcal blood-poisoning, once incurable, shows a recovery-rate of 80 to 90 per cent.; anthrax, once a very fatal disease, has a recovery-rate of 100 per cent.; pneumonia, 90 per cent.; gonorrhoea, 100 per cent.; syphilis in the early stages is cured in a week. It appears likely that new drugs will be produced in the near future from fungi and moulds, and already numerous such substances have been discovered. Most of them are, however, no more powerful than penicillin, and a good deal more toxic. One of these drugs is streptomycin which has proved useful in tuberculous meningitis, once uniformly deadly. During the 1939-1945 war, penicillin, either alone or in combination with sulphonamides (which see) was responsible for saving many lives.

**Penis.** The male sex organ.

**Pepsin.** A ferment found in the gastric juice which helps in the digestion of protein by breaking it down into simpler products.

**Pericarditis.** The pericardium is a sac surrounding the heart. Like the pleura, the corresponding membrane surrounding the lungs, it may become infected with germs causing the disease known as pericarditis. There is pain over the heart, fever, a rapid pulse, and other symptoms. Treatment can only be carried out by a doctor.

**Perineum.** The area between the sex organs and the anus.

**Periostitis.** Inflammation of the membrane lining a bone. The disease is caused by germs and may be acute or chronic. The symptoms are pain and swelling over the affected area, which, in the case of acute periostitis, may be very severe.

**Peristalsis.** The normal movements of the intestines which move the food along the digestive tract.

**Peritonitis.** Just as the heart, lungs, and other organs are covered by a thin membrane like cellophane, so also are the intestines and abdominal organs. The lining in this case is known as the peritoneum. Inflammation of the peritoneum is caused by infection by germs and is known as peritonitis. Anything which allows the contents of the intestines to enter the cavity of the abdomen may lead to the onset of peritonitis—for example, perforation of a gastric ulcer, rupture of an infected appendix, wounds, and so on, are common causes. Or the infection may come from the blood-stream. The usual infecting germs are streptococci, staphylococci, the germs of pneumonia, tuberculosis, or gonorrhoea. The symptoms of acute peritonitis are severe pain and tenderness, in the abdomen, fever, and vomiting. Treatment depends on the patient's condition and the cause of the illness. Chronic peritonitis, due usually to tuberculosis, is a less dramatic illness and may last for a considerable time.

**Pernicious Anæmia.** (See *Anæmia*.)

**Pertussis.** (See *Whooping Cough*.)

**Petit Mal.** A form of epilepsy in which the attacks are relatively slight. There may be a mere twitching of the eyelids or arm muscles, or the patient, while talking, may stare in a fixed manner for a few seconds and later be slightly confused. Treatment cannot be carried out until examination by an expert has made the diagnosis absolutely certain.

**Pharyngitis.** Inflammation of the pharynx, the area at the back of the nose and throat. Infection, usually caused by the streptococcus, often follows a cold in the nose. In minor cases, gargling with hot water in which two aspirin tablets have been dissolved will relieve the pain, but in more severe cases it may be necessary to visit a doctor and he will probably recommend sulphonamide tablets or penicillin lozenges.

**Phenolphthalein.** A drug used as a purgative. It is as safe to take as most purges (which are always best left alone), but some people are specially sensitive and may develop a rash on the skin after using it.



**Phimosis.** Excessive tightness of the foreskin.  
**Phlebitis.** Inflammation of a vein. This may occur in those with varicose veins, or from infection in a nearby area. It sometimes occurs as a complication of surgical operations or after childbirth. The vein becomes swollen, red, and painful, owing to the formation of a blood-clot inside. The most important point is to keep the limb at absolute rest as the main danger is that the clot may break loose and block a blood-vessel in a vital area, thus causing sudden death. Fortunately, this mishap is not very common. Treatment should be carried out by a doctor.

**Photophobia.** Abnormal sensitiveness to light.

**Phthisis.** Tuberculosis (which see).

**Physiology.** The science which deals with the working of the body.

**Pica.** An abnormal craving to eat dirt, not uncommonly found in children.

**Piles.** Piles are varicose veins in the rectum or around the anus. Some people are more liable to suffer from piles than others, but the immediate cause is pressure on the veins which prevents the free flow of blood. Constipation and pregnancy are therefore the conditions most liable to lead to hæmorrhoids. External piles are those which develop outside around the anus; they may lead to a good deal of itching, irritation, and pain. Internal piles form inside the rectum and, at first, lead to no symptoms. If they grow, the patient may suffer from pain and a feeling of fullness after the bowel has been emptied. Mild cases can be dealt with by removing the cause, *e.g.*, constipation, but more severe cases require treatment either by injection or operation. The ointments generally advertised are useless, except in relieving skin irritation. No such application can cure piles.

**Pineal Gland.** A small gland about the size of a pea in the lower part of the brain. Its function is unknown, but, in earlier days, it was believed to be the site of the soul.

**Pituitary Gland.** A small gland at the base of the brain which controls all the other glands of the body. (See Glands.) It is concerned with growth, and under-development leads to dwarfism while tumour or over-development leads to gigantism. Sexual development is also controlled from this centre. The pituitary gland is one of the commoner sites of brain tumour.

**Pityriasis.** A group of diseases in which the main symptom is a scaly skin. Treatment is a matter for a specialist.

**Placenta.** The organ by which the unborn infant is attached to the inside of the womb.

**Plague.** In the general sense, the word plague refers to any pestilence, but, more specifically, it refers to bubonic plague, a disease spread by fleas carried by rats. The fleas carry the germs from infected rats to human beings and the bite of the flea injects the germs into the blood-stream. Bubonic plague occurs in two forms depending on whether the lungs are mainly affected or the glands of the groin. The swelling which develops in the groin is known as a bubo. The outbreaks of plague ("The Black Death"), so common in the Middle Ages, are now rare in Europe, but still exist in Asia. People may now be inoculated against plague, and the treatment is now much more satisfactory than formerly.

**Plasma.** The practically colourless fluid part of the blood. By modern methods it is now possible to dry plasma and "reconstitute" it when necessary by adding water. Such dried plasma is used for emergency blood transfusions.

**Pleurisy.** The lining of the chest wall, which also forms a covering for the lungs, is known as the pleura. When this becomes inflamed, the illness is called pleurisy. Pleurisy is almost always due to infection with a germ and most often occurs in the course of another illness, such as measles, scarlet fever, tuberculosis, abscess, or sometimes following a blow to the chest. In the early stage, inflammation causes friction between the two layers of pleura and this causes pain, but later fluid is secreted and "pleurisy with effusion" results. Treatment in mild cases is mainly a matter of rest, but when fluid has formed it may be necessary to withdraw this with a needle or even by a surgical operation. Nowadays, penicillin or the sulphonamide drugs can be used. The commonest symptoms of pleurisy are pain in the chest, cough, and fever. When fluid has formed, the pain tends to disappear.

**Pneumonia.** Inflammation of the lungs which in the vast majority of cases is caused by a germ known as the pneumococcus. Other types are due to streptococci, influenza, plague, anthrax, and so on, but these are much less frequent. In pneumonia, the air cells of the lungs become filled with fluid and this causes breathing to be difficult. Since there is always a certain degree of pleurisy, there is also pain in the chest. Most types of pneumonia respond to penicillin or sulphonamide, and the death-rate from pneumonia has been reduced by the use of these drugs from about 20 per cent. to less than 1 per cent. Pneumococcal pneumonia is called lobar pneumonia since it occurs in one lobe of the lung; other types are usually found in the form of broncho-pneumonia in which the areas of inflammation are scattered throughout the lung instead of occurring in one part only.

**Pneumothorax.** The air pressure in the chest is lower than that of the outer air. When air or any other gas is permitted to enter the result is a collapse of the lungs. This may happen either by accident (for example, by a wound, or by rupture of some of the cells), or deliberately, as when air is injected in the treatment of tuberculosis in order to collapse the lung and permit rest and healing.

**Poisoning.** Almost any substance may act as a poison if given in sufficient quantities. In treatment it is usual to give a list of antidotes which counteract particular poisons, but these are more for the use of doctors than for first-aid use. The proper things to do when it is suspected that anyone has taken poison are as follows: (1) send for a doctor at once; (2) give drinks of milk, white of egg, or strong tea; (3) give afterwards as much as the patient can take of a mixture containing a heaped teaspoonful of ordinary salt to a cup of warm (not hot) water. This will make him sick.

The idea of this treatment is, first of all, to neutralise the poison, and then to get rid of it.

**Narcotic poisons** (those which make the patient sleepy) should be dealt with as above and cups of strong coffee should then be given.

**Poliomyelitis.** Infantile Paralysis. A disease of the nervous system in which the beginnings of the nerves of movement are affected—that is, before they leave the spinal column. The inflammation is caused by a virus (which see), and the condition is infectious, infection being spread by sewage, flies, and contaminated foodstuffs. In the earliest stage, infantile paralysis is no different from any other fever—the temperature is raised, the patient is flushed, and so on. Later, pains occur in the muscles and paralysis develops quite quickly. The full degree of paralysis develops in the first twenty-four hours. There is no specific treatment as yet, and the main effort is directed to resting and splinting the affected limbs in order to avoid deformities later. The Kenny treatment which has been so much advertised to the public is not considered by responsible doctors to be any better than more orthodox methods. Death in the acute stage, or deformities at a later stage, may occur. (See also p. 189.)

**Polycythæmia.** The opposite of anæmia. The red blood cells are greatly increased in number with the result that the blood is less able to flow through the veins and arteries. Symptoms are—dizziness, headache, nose bleeding, and sometimes a dark red or bluish coloration of the skin. Polycythæmia is not a common disease and the treatment is directed to reducing the amount of blood either by bleeding or by the use of drugs which destroy some of the excess cells.

**Polypus.** A wart-like growth found within certain organs, such as the nose, intestine, womb, and bladder. Polypi are usually harmless, but may cause trouble by bleeding. Occasionally, especially in the bladder, they may become malignant, and require operation.

**Polyuria.** An excessive secretion of urine found in certain diseases, such as diabetes and chronic kidney disease. Sometimes polyuria is caused by nervousness as, for example, just before an interview or an examination. Treatment depends on the cause.

**Pons.** A part of the brain which, as the name meaning a bridge implies, connects several other sections of the nervous system together. The parts thus connected are the cerebellum, the medulla, and the cerebrum.

**Post-encephalitic Parkinsonism.** A group of

symptoms found in two circumstances, (1) in old age, to a greater or less extent, (2) following encephalitis. The patient develops slurred speech, which makes it difficult to understand what he says, tremor of the hands combined with rigidity, which make it difficult for him to make any of the finer movements, a peculiar gait in which he moves forward, head down, with a sort of running step as if his feet were trying to keep up with his head and neck, and a tendency to salivate to excess. When the hands are at rest, the thumbs and the index fingers are often rubbed together in what is described as a "pill-rolling" movement.

Since these symptoms are produced by damage to the nervous system, and such damage is irreparable, it is not possible to cure this distressing complaint. On the other hand, by the use of certain drugs it is possible to greatly alleviate the symptoms. The main drugs used are hyoscine and drugs of the belladonna group, but recently a substance with the proprietary name of Artane has been shown to be most helpful. All these, however, can only be taken under medical supervision. Still more recently, in Germany, an operation has been devised which appears to be of service in alleviating the symptoms, but, in common with other treatments, this cannot be described as a "cure." Its sole function is to remove the symptoms, while leaving the underlying condition unchanged.

While the general tendency is for Parkinsonism to grow gradually more apparent, this may happen very slowly, and, with the help of the drugs described here, it may not get appreciably worse in the course of the patient's lifetime. There is no tendency to any apparent mental deterioration. Parkinson's disease is named after an English 18th-century physician.

**Pregnancy.** The state of being with child.

**Primipara.** A woman who has, or is about to have, a first child.

**Prognosis.** The medical name for the outlook of a disease.

**Prolapse.** The falling-down or sinking of an organ, such as the womb or the rectum. Prolapse of any organ is a matter for a specialist to deal with.

**Prophylactic.** The prevention of disease is called prophylaxis. Any process or drug which has this effect is said to be prophylactic.

**Prostate.** A small gland in the male situated at the base of the bladder and surrounding the urethra, the tube through which semen and urine pass to the outside. It may be the site of inflammation (prostatitis) or sometimes malignant tumours. These are more common in older men. The symptoms of both conditions are, pain in the bladder region and difficulty in passing urine. These symptoms require attention from a specialist, but the outlook is much improved with the recent discovery that they can sometimes be cured with female sex-hormones (see **Hormone**). Operation may help in other cases.

**Pruritis.** Itching (which see).

**Psittacosis.** A disease spread by parrots, love-birds, canaries, and other birds kept as pets. The germ is a virus which produces symptoms like influenza, and later pneumonia develops. Psittacosis may be a serious illness causing death or it may be so trivial as to pass almost unnoticed.

**Psoriasis.** A chronic skin disease in which red scaly patches develop on the back, chest, and abdomen, the back of the arms, and the front of the legs. It should only be treated by a specialist.

**Psychiatry.** The study of mental disorders.

**Psychosis.** The medical name for insanity, of which there are two main types. Organic psychoses are primarily caused by disease of the brain, for example, by infection with syphilis or by poisons circulating in the blood, as in the delirium resulting from certain fevers. Other poisons from outside may produce the same result, as in the types of insanity found in chronic alcoholism, in lead poisoning, or in gassing from carbon monoxide. In old age, senile changes in the brain cells may also lead to psychoses, and poor blood-supply to the brain caused by arteriosclerosis may produce mental symptoms.

The other type of psychosis is known as functional, and is due to a complete inability to face up to reality due, for the most part, to mental conflicts induced in childhood and to bad heredity.

Heredity in itself, however, is never the sole cause of insanity; nor is it true that horrifying experiences or worry in themselves cause mental illness. The commonest types of functional mental disorder are manic-depressive psychosis and schizophrenia.

The old outlook on mental disease as hopeless is no longer justified. Treatment must, of course, be by an expert; but the results of electric-shock treatment, insulin treatment, and such operative treatment as leucotomy are extremely good, even in the most severe cases.

**Psychosomatic Diseases.** Psychosomatic diseases are those physical ailments due to emotional causes. They include such complaints as high blood pressure, gastric ulcer, certain skin diseases, and certain glandular diseases (e.g., exophthalmic goitre). Most physicians nowadays believe that all diseases may show a greater or less degree of emotional causation; that physical and mental factors are both present in all illness. Even in psychosomatic illnesses, heredity and other factors play a large part. Briefly, the main cause of these diseases is worry. The importance of this lies in the fact that they cannot be completely cured without dealing with the fundamental cause. Individual illnesses will be found under their names.

**Ptomaine.** A word popularly used to refer to poisoning caused by putrified food. (See **Botulism**.)

**Ptosis.** Drooping of the upper eye-lid caused by paralysis of the nerve supplying the muscle.

**Puerperium.** The period immediately following childbirth. Puerperal fever is the name given to the form of blood-poisoning which may develop at this time if germs are allowed to infect the womb. Once all too common, puerperal sepsis has been very much reduced by the discovery of the sulphonamide drugs and, more recently, of penicillin.

**Pulmonary.** An adjective meaning to do with the lungs, e.g., pulmonary congestion (pneumonia).

**Pulse.** The movement of the arteries felt at any place where they are near the surface of the skin. It is caused by the beating of the heart.

**Purgative.** A drug to relieve constipation (which see).

**Purpura.** A disease caused by deficiency in the blood platelets (not the same as blood corpuscles), which are responsible for clotting. Purpura may be caused by certain drugs, allergy (which see) to certain proteins, certain germs, or disease of the spleen. The symptoms are areas of bleeding under the skin giving the appearance of bruising, bleeding without apparent cause in the mouth or nose, and sometimes internal bleeding. Treatment depends on the cause, but the use of vitamins C and P are often beneficial. In other cases removal of the spleen is necessary.

**Pyæmia.** A form of blood-poisoning in which the germs, usually staphylococci, are carried around in the blood and produce abscesses all over the body. Pyæmia is a very serious disease, but the outlook is greatly improved with the discovery of sulphonamides and penicillin.

**Pyelitis.** Inflammation of the pelvis of the kidney—that is, the area where the kidney is connected to the ureter, the tube leading down to the bladder. The inflammation may be caused by irritation from a stone or by a spread of inflammation from the bladder or elsewhere. In pregnancy, the pressure of a distended womb on the ureter may lead to stagnation of urine and pyelitis. The usual symptoms are pain in the small of the back, frequent passing of urine, sometimes with pain (see **Cystitis**); there may be blood or pus in the urine. Treatment depends on the cause and on the type of germ causing the infection. Various antiseptics, such as mandelic acid, have been used, but nowadays penicillin and sulphonamides are more satisfactory and easier to use. Occasionally surgery may be necessary.

**Pylorus.** The valve which lies at one end of the stomach and controls the entry of food into the intestine. It is a common site of stomach ulcer.

**Pyorrhæa.** An infection of the gums which causes the edges of the tooth sockets to bleed easily when the teeth are being brushed. There is a constant discharge of pus which causes the breath to smell and may lead to arthritis and



other diseases. Treatment should be carried out by a dentist. (See Gingivitis.)

**Pyrexia.** Fever.

**Pyuria.** Pus in the urine. (See Cystitis, Pyelitis.)

**Quarantine.** The enforced isolation of people suffering from, or considered to be likely to be suffering from, an infectious disease.

**Quinsy.** The formation of an abscess around one of the tonsils. Quinsy may develop as a complication of ordinary tonsillitis (which see). When this happens, the temperature rises higher, there is difficulty in swallowing, and swelling and pain in the neck. The abscess will burst of itself, but it may be advisable to open it. Treatment, apart from surgical, is the same as for tonsillitis.

**Rabbit Fever.** A virus disease found in America.

**Rabies.** (See Hydrophobia.)

**Rachitis.** (See Rickets.)

**Radium.** A rare metal discovered by Pierre and Marie Curie in 1899. It emits rays which have the power of affecting the growth of human tissues and has therefore been used in the treatment of cancer and certain other diseases.

**Ranula.** A small swelling under the tongue due to the blocking of a salivary gland.

**Rat-bite Fever.** An infectious disease passed to human beings by the bite of an infected rat. Rat-bite fever is found in most countries of the world and is not usually serious. It is treated by arsphenamine, an arsenic preparation. Rat bites should be cauterised by a doctor.

**Rectum.** The lowest six inches of the intestines, where they pass to the outside at the anus.

**Relapsing Fever.** A type of infectious disease in which periods of fever alternate with periods of normal temperature; it is found in tropical countries and is spread from one person to another by lice which carry the germs. Like rat-bite fever, it is cured by arsphenamine.

**Renal.** Concerned with the kidney, *e.g.*, renal calculus, a stone in the kidney.

**Resistance.** (See Immunity.)

**Respiration.** Breathing.

**Retinitis.** Inflammation of the retina, the innermost coat of the eye. It is caused by infection, hæmorrhage, diabetes, hardening of the arteries, or disease of the kidneys. The retina may also become detached, causing blindness.

**Rheumatism.** This word has come to refer to so many different illnesses that, in fact, it is almost meaningless. The disease known as rheumatic fever is a very definite condition in which there is fever, pain in the joints, and other symptoms, often followed by disease of the valves of the heart. Its cause is unknown; for, although it is associated with infection by the germ known as streptococcus, it is certainly not merely an infection. The other illnesses such as "muscular rheumatism," and the various aches and pains given this, or similar, names, are largely figments of the imagination. The idea that cold or damp, as such, are causes of rheumatism are also nonsense. It appears, however, that rheumatic fever, rheumatoid arthritis, and chorea, are all related to each other. Lumbago and other muscular pains, are either inflammatory or sometimes of psychological origin. Sciatica is a form of neuritis (which see) and not related to rheumatism. The main drug used in the treatment of rheumatism is sodium salicylate, but the treatment of this disease is a vast subject, and the word "rheumatism" should be banned (except in the three diseases mentioned above) for the next hundred years.

**Rhinitis.** Inflammation of the lining of the nose, as in a common cold.

**Rhinophyma.** A disease of the nose in which, owing to swelling in the glands of the skin, it becomes greatly enlarged (Potato Nose). The only treatment is plastic surgery.

**Rhubarb.** A drug formerly used as a purgative.

**Ribs.** The ribs may be fractured. When this happens, there is pain in the chest on taking a deep breath and pain when the chest is squeezed from side to side. An X-ray should be taken in suspicious cases, but usually the only treatment necessary is to strap the ribs affected tightly with sticking plaster.

**Rickets.** This is a disease caused by under nourishment, now, fortunately, much less common than formerly (at least, in this country). It is caused by lack of vitamin D, found in fats,

Symptoms, in bad cases, are bow legs, pot belly, bad teeth, and general poor health. Rickets is prevented by giving plenty of fat-containing foods, such as butter, margarine, milk, and, in a more concentrated form, cod-liver oil or vitamin capsules (Adexolin).

**Rigor.** The chill preceding a fever.

**Ringworm.** There are many different types of ringworm: Athlete's foot, which is found between the smaller toes; ringworm of the groin or "Dhobi Itch"; ringworm of the body, found in the form of round patches; finally, ringworm of the scalp.

Ringworm should be treated by a doctor; it is infectious, being caused by a fungus.

**Rodent Ulcer.** A form of curable cancer found as a small hard ulcer on the face in the region of the inner corner of the eye or round the nose. Any small ulcer in these areas which does not clear up very soon should be referred to a doctor. The results of treatment are excellent.

**Rosacea.** A skin disease of the face in which there is permanent redness over the nose and cheeks. The blood-vessels are distended. Rosacea is found in people who suffer from gastric symptoms, in those who eat unsuitable food and drink to excess (whether alcohol or tea!). At one time rosacea was known as "Grog Blossom," but it is more likely to affect the over-righteous than the *bon viveur*.

**Rubella.** German Measles. A mild fever the symptoms of which are similar to measles. There is slight fever for a few days, catarrh, sore throat, and muscle pains. A rash is present and the glands behind the ears are swollen.

**Rupture.** (See Hernia.)

**Sacroiliac Strain.** A type of backache (which see).

**St. Vitus's Dance.** (See Chorea.)

**Sadism.** A perversion in which sexual pleasure can only be obtained by inflicting pain on someone.

**Salpingitis.** Inflammation of the Fallopian tubes (which see).

**Sarcoma.** One of the two main types of cancer—the other being carcinoma. Carcinomata are formed from epithelial tissue (that is, skin of the tissues that cover or line the body); sarcomata are composed of connective tissues (*e.g.*, bone, cartilage, muscle, etc.).

**Scabies.** A very common disease of the skin caused by a mite which burrows under the surface and causes extreme discomfort and itching—hence its common name, "the itch." The areas most affected are the groin, the fronts of the elbows, the wrists, and between the fingers. The disease is caused by contact with someone else who has the disease. In treatment, it is usually best to go to the nearest Cleansing Centre, but treatment may also be carried out by the physician. Sulphur ointment, once the main drug used, is now given up in favour of benzyl benzoate and other more efficient methods. The exact details are given on the bottle. Scabies is unpleasant, but not dangerous.

**Scarlatina.** Scarlet Fever. The symptoms are shivering attacks, followed later by fever, sometimes vomiting, sore throat, and on the second day of illness, a rash of bright red spots which begins to fade on the third or fourth day. By the end of a week, under favourable conditions, the patient begins to feel better, and the period of convalescence begins in the third week. Complications of scarlet fever are—ear disease, kidney inflammation, and heart disease. Scarlet fever is a serious disease, but with adequate medical help all should go well. The cause is the germ known as streptococcus against which an antitoxin has been discovered; sulphonamide drugs are also used in treatment. The doctor will advise about methods of preventing spread of infection to others.

**Schizophrenia.** Schizophrenia was originally named dementia præcox, and is a serious mental disease due to psychological causes. That is to say, unlike certain other diseases, there is no sign of brain damage. As the original name implies, it is a form of mental deterioration (dementia), coming on usually in early life (præcox). In the popular Press schizophrenia is usually called "split mind," a misnomer, since we all have "split minds"—what we say or think and what we do are often at odds with each other. Many politicians, for example, show this trait to a

marked degree, but are not (necessarily) suffering from schizophrenia. Typically the schizophrenic has been a sensitive, retiring child and may have been above average intelligence, but in the early twenties peculiar behaviour starts to develop. There may be hallucinations (*i.e.*, hearing of imaginary voices) or delusions (*e.g.*, that he or she is being persecuted), and the patient tends to become more solitary, sitting alone and smiling to himself. On other occasions there may be violent outbursts. (It must be remembered that what is described here are the symptoms of schizophrenia in general. Every patient individually does not necessarily have all these symptoms; he may be violent a large part of the time, or no violence may ever occur.)

Schizophrenia may also develop in later life, usually in a less dramatic form; it is then called paraphrenia. Paranoia (persecution mania) is usually classified as a form of schizophrenia of later life.

The outlook of this condition is always serious, although modern treatment, for example with insulin, has greatly improved the outlook. It is a psychological disease due basically to the inability to face up to a hard reality. Heredity sometimes plays a part. Essentially progressive maladjustment in early life leads to an escape into a dream world. Such a state is not unhappy, and a great deal of distress and sympathy on the part of relatives might be spared if they realised this fact.

Sciatica. The name given to inflammation (neuritis) of the sciatic nerve in the back of the thigh. Although this is a quite definite disease, it must be remembered that there are many other illnesses which cause pain of a similar type. For example, disease in the pelvis, disease of the spine, fibrositis, psychological upsets, may all cause sciatica-like pain. The very first essential in "sciatica" which lasts for more than a few days is to find out from an expert whether it really is sciatica. All treatment depends on first of all discovering the cause, but it should only be carried out under medical advice. There is no "patent medicine" likely to have any effect whatsoever.

Scirrhus. A hard cancer.

Scleritis. Inflammation of the outer lining of the eyeball.

Scleroderma. A skin disease of unknown origin in which patches of skin become thickened, hard, and white or yellowish.

Sclerosis. The hardening of a tissue, as in disseminated sclerosis (hardening of areas in the spinal cord) and other diseases of the eye, breast, etc.

Scoliosis. A curvature of the spine in which the curve is to one side or the other. (In kyphosis the curve is forwards or backwards.)

Scurvy. A disease due to lack of vitamin C which is found in fresh fruit. It is now rare in this country, but was once common among sailors going on long voyages, until British scientists discovered that lime juice, which contained vitamin C, prevented scurvy. Hence the slang word "Limey" applied by Americans and others to Englishmen.

Scrofula. An out of date name for the condition of tuberculous glands of the neck.

Sea Sickness. This is a condition which is partly due to physical over-stimulation of the visceral nerves by the rolling of the ship, and partly due to psychological causes. In experiments carried out during the war, it was found that the most efficient drugs in preventing sickness were hyoscine and benzedrene. But these drugs can only be prescribed by a doctor and, in mild cases, they are unnecessary. The best common-sense remedies are—a mild sedative before sailing, a tight belt, an empty stomach, and holding a paper bag over the nose periodically and breathing in and out.

Sebaceous Cyst. A wen. A swelling, sometimes of considerable size, caused by the blocking of a duct of a sebaceous gland (the glands which supply the natural grease of the skin). They may occur anywhere on the body, but most commonly on the scalp or back. Treatment is a minor surgical operation. The condition is harmless, but unsightly.

Seborrhea. A condition of excessive oiliness of the skin caused by glandular upset. It is more common in some people than others, and more

common in adolescence than in later life. Those who have a tendency to seborrhea are more liable to certain other diseases, such as dandruff (which see), seborrheic dermatitis, an irritating skin eruption, and acne. A doctor should be consulted.

Septicæmia. Blood poisoning. Whenever germs invade the blood in large numbers the disease is known as septicæmia. Once a very fatal illness, septicæmia is now curable by the use of penicillin or sulphonamide drugs. The symptoms are fever, exhaustion, and sweating. The most acute type is caused by streptococci, but the more dangerous type and most difficult to cure is the more chronic staphylococcal septicæmia. The germs may enter the blood from an infected wound, an abscess, or boil, or following child-birth or abortion (puerperal sepsis).

Serum. The clear fluid which separates from blood when it clots; a serum is also the name given to the serum of animals after it has been made capable of antagonising germs of a particular disease.

Shingles. (See Herpes.)

Shock. A state of affairs which may develop after an injury. It is caused by nervous over-stimulation, loss of blood, and dilation of the blood-vessels which enables the fluid part of the blood to escape into the tissues. The symptoms are—pallor, weak rapid pulse, clammy cold skin, shallow rapid breathing. Treatment is a matter for the doctor, but as a first-aid measure the patient should be kept at rest with the head lower than the rest of the body, warmth should be applied in the form of blankets and hot-water bottles, and if the patient is conscious, he should be given hot, sweet tea to drink in as large amounts as he can take.

Silicosis. A disease of the lungs found in those who work amongst stone dust—such as miners, knife grinders, masons, etc. The small particles are absorbed into the lungs and produce symptoms of chronic bronchitis (which see). Patients are more liable to develop tuberculosis. Nowadays industrial legislation attempts to control silicosis. Similar diseases are asbestosis, found among workers of asbestos; byssinosis, found among cotton workers; anthracosis, among coal workers. Anthracosis is practically harmless, the others are serious.

Sinusitis. The sinuses are certain cavities naturally found in the bones of the skull. The chief ones are the frontal sinus between the eyes at the base of the nose; the maxillary sinuses beneath the cheek bones on either side; and the ethmoid sinuses within the nose. All these cavities communicate with the inside of the nose. When the lining of a sinus becomes infected with germs it becomes swollen and the exit into the nose may become blocked; this causes severe pain over the area of the sinus—*e.g.*, between the eyes, or in the upper jaw. Sinusitis may require operation, but, with the discovery of sulpha drugs, and penicillin, it is often possible to cure it without surgery. This, however, is a matter for the ear, nose, and throat specialist.

Sleep. (See Insomnia.)

Sleeping Sickness. Trypanosomiasis. A serious and chronic tropical disease common in certain areas of Africa. It is caused by a germ spread by the tse-tse fly. The symptoms are swelling of glands and excessive sleepiness. Unless treatment is applied the disease results in death.

Small-Pox. Variola. A serious infectious disease with fever, pains, vomiting, and an eruption of red spots which later become blisters and afterwards are filled with pus. This eruption leads to disfiguring scars if the patient lives. Small-pox occurs in epidemics, but is uncommon in this country since the use of vaccination. There is no specific treatment.

Social Medicine. Medicine has passed through many phases from the time when disease was regarded as a punishment from the gods or a sign of devil-possession to the present era, when more and more there is a tendency to regard society as the patient.

The early primitive stage came to an end when, in Greece, five centuries before the birth of Christ, Hippocrates began to teach that all diseases were due to natural causes. Even epilepsy, which, because of its mysterious symptoms, had been



named the "sacred disease," was described by Hippocrates as being no more sacred than any other sickness. But, in spite of these great advances, the later history of medicine was one of deterioration, and the Middle Ages saw a return to the theory of devil-possession. The 18th-century physician, although more enlightened, was too mechanistic and too individualistic; he saw disease as being a breakdown in a machine and, when confronted by great plagues and epidemics, was quite helpless. For many centuries it had been realised that leprosy, for example, was spread from one person to another, and some attempts had been made to segregate lepers from the community. In Boccaccio's *Decameron* we read about a group of men and women who had fled from the plague-ridden town to the country. But, for the most part, no state action was taken to deal with the problem of infectious diseases.

However, during the late 18th and early 19th centuries a series of discoveries began to change the picture so far as infectious diseases were concerned. Jenner's promotion of vaccination began to aid in the control of smallpox; Pasteur's discovery of the germs which caused such diseases enabled them to be traced; and, finally, the discovery of antiseptics provided a weapon with which to fight them. When the methods by which infectious diseases were spread became known by the work of many researchers—the part played by infected water supplies in the case of typhoid and dysentery and cholera, the role of the mosquito in malaria, the louse in typhus, and the rat flea in plague, it became necessary to take large-scale preventive measures in order to deal with such problems. One of the first instances of work in what we now call Public Health was that afforded by Chadwick and others, who, in the first quarter of the 19th century, took measures to purify the water supply of London, and thereby greatly reduced the deaths from typhoid fever, which had been one of the commonest diseases in this country. It is a basic principle of social medicine that many diseases are better dealt with by removing their causes in the social environment than by treating them in the individual once they have developed. Thus, while a patient with malaria may be cured with quinine, thousands of cases of malaria may be prevented by killing the carrier mosquitoes by the use of D.D.T. Dirt-borne diseases can be prevented by popularising the use of soap and water and educating the population in measures of hygiene, and venereal diseases by instruction in preventive techniques and the control of prostitution.

In more recent times it has begun to appear that the concept of social medicine will have to be enlarged; for, while the fight against the great epidemic diseases—tuberculosis, typhus, cholera, typhoid, smallpox, and the venereal diseases—is well on the way to being won, it now seems that we shall have to consider another group of disorders which are also largely social in origin. The neuroses, for example, and the psychosomatic disorders (which see) are definitely correlated with social stress. These forms of sickness are found predominantly in competitive and industrial societies. What steps may be taken to combat them will form another chapter in the history of medicine.

The modern tendency is to extend considerably the meaning of the term "social health"—for example, the suicide rate, birth-rate, and incidence of crime and neurosis are all regarded as indices, of social health. Crime, neurosis, suicide, and psychosomatic disorders are found most frequently in areas of social disintegration where established customs and habits have broken down, or amongst racial and religious minorities which are in conflict with the mass of the population. If, for example, it is found that crime and neurosis are more frequent amongst Poles in Britain than amongst the general population, this does not mean to say, as at one time might have been supposed, that Poles have inherently criminal or psychopathic tendencies. The reason is that, in a strange land, their native culture is breaking down, and nothing has as yet taken its place. Similarly, the fact that in South Africa a far higher rate of criminal behaviour and venereal disease rate is found amongst the Negro population than amongst the Whites does not indicate that Africans are criminally disposed, or

lazier or stupider than Whites. On the contrary, their behaviour is related to their social position. In the United States, Negroes have a higher incidence of high blood-pressure than the White population, while in their own country of origin the disease is almost unknown. The same is true of Chinese in America and in China.

The time is perhaps not far distant when the effectiveness of a government may be measured, not only by its ability to maintain the physical health of a community, but also by the use of statistics which measure the mental satisfaction of the population and its health in a more all-round sense.

**Sore Throat.** (See *Laryngitis*, *Pharyngitis*, and *Quinsy*.)

**Spasmophilia.** A tendency to spasms. Tetany. A disease found mainly in infants in which the child is abnormally sensitive to stimuli. Any minor upset is liable to lead to spasms and convulsions. The illness is caused by lack of calcium in the blood and is therefore related to rickets. The treatment is similar.

**Spinal Cord.** The part of the nervous system enclosed within the backbone. It is the part of the nervous system which transmits impulses to and from the brain. (See *Brain*.)

**Spleen.** An organ situated in the left upper part of the abdomen. Its function is to manufacture blood cells and destroy old ones. The spleen is not absolutely necessary for life and sometimes has to be removed by operation. It may be attacked by various diseases, such as malaria, typhoid, and many blood disorders.

**Sprain.** An injury of a joint caused by overstretching of the ligaments. The usual treatment, when it is quite certain that no bones are broken and there is no dislocation, is to apply heat, or hot and cold alternately, and bind firmly with a bandage.

**Sprue.** A tropical disease in which the patient becomes thin, anemic, and weak. He suffers from sickness and diarrhoea with large pale frothy motions; the tongue is swollen and sore. The cause of sprue is unknown, but it appears to be due to some dietary deficiency. Treatment is to give vitamins, reduce the amount of fats, and inject liver extract.

**Squint.** Cross-eyes; an affection of the eyes in which their axes are differently directed. Squint is usually caused by extreme near-sightedness of one eye in childhood. It is therefore of the first importance to take the child to an eye specialist immediately the defect is discovered; the results become less satisfactory when treated after the age of seven.

The doctor will probably recommend glasses, but sometimes an operation is necessary.

**Sterility.** Sterility, or the inability to have children, appears to be on the increase in this country. The reason for this is unknown, but there are certain clear-cut circumstances which may lead to sterility. In the woman inflammation in the pelvis which has blocked the tubes (the Fallopian tubes) which lead from the ovaries to the womb will lead to sterility, since the ova are unable to reach the womb. In some cases ova fail to be produced. In the man (who it is often forgotten is as often the cause of sterility as the woman) deficiency of spermatozoa may be an important factor. Some cases improve with a course of Vitamin E.

In most women the mid-period is the time when pregnancy is most likely to occur, and there exist various techniques to discover when ovulation is taking place—i.e., when the ovum is released from the ovary, and, therefore, the time when pregnancy is most likely to occur.

When all this has been said, the fact remains that in a large number of cases of sterility no cause whatever has been discovered. It appears that individuals who are quite fertile with others may be infertile with their husband or wife. Some cases are almost certainly of psychological origin, as can be seen from the frequency with which previously sterile parents suddenly start to become fertile and have children of their own following the adoption of a child in the home. It may be supposed that in such cases the woman has an unconscious fear of childbirth or motherhood which is relieved following the experience of mothering an adopted child. There is no evidence that the practice of contraception leads to

sterility. Under modern conditions the outlook of the sterile couple is good. Most large hospitals have Fertility Clinics, which deal with this problem, and the family doctor may refer the would-be parents to such a clinic.

**Stomach Ulcers.** (See *Dyspepsia*.)  
**Stomatitis.** Inflammation of the mouth. The symptoms are burning pain, excessive saliva, and bad breath. Treatment depends on the cause.

**Stone.** (See *Calculus*.)  
**Strabismus.** (See *Squint*.)

**Stricture.** Narrowing of any tube in the body by disease.

**Stroke.** (See *Apoplexy*.)

**Stuttering.** This is a psychological disorder and can only be treated by a child guidance expert, or, in an adult, by a psychiatrist.

**Stye.** A stye should be treated by hot bathing as frequently as possible. If styes are frequent, a doctor should be consulted.

**Sulphonamide.** A name referring to the group of new drugs used in the treatment of various bacterial diseases. Sulphonamide was created from coal-tar in 1903 by the Austrian chemist Gelmo, but was not used medically until, in 1932, Domagh, of the German firm of Bayer, discovered that a related product was capable of killing streptococci (the bacteria responsible for septic infections) in mice. Bayer patented this product, but the patent became useless when two French chemists re-discovered sulphonamide itself and found that it was simpler to make and just as potent as *Prontosil*, the Bayer product.

Sulphonamide was first tried out in this country at the Queen Charlotte Maternity Hospital in 1935. There, the death-rate of puerperal fever was reduced from 20 per cent. to less than 5 per cent. The British drug sulphapyridine (M. and B. 693) has reduced the death-rate of pneumonia from 25 per cent. to 6 per cent.; of cerebro-spinal meningitis from 30 per cent. to 3 per cent. In gonorrhoea, a venereal disease, the results are 90 per cent. of patients cured in ten days. Bacillary dysentery is treated by another sulphonamide drug, sulphaguanidine, with excellent results. In warfare, it has been found possible to reduce the number of cases of sepsis in wounds by the immediate use of a dusting powder of sulphonamide. Other diseases and bacteria are only slightly affected by the drug, or not at all. In particular, the bacillus known as the staphylococcus which is responsible for many cases of sepsis, boils, and blood-poisoning, has not been found treatable by sulphonamide. To a certain degree, the form of the drug known as sulphathiazol kills staphylococci, but it is not always satisfactory. However, this difficulty has largely been overcome by the discovery of penicillin which is very potent against the staphylococcus. (See *Penicillin*.)

**Sunstroke.** Until recently, it was usual to distinguish between sun-stroke and heat-stroke. It is now known that all so-called sun-stroke is produced by over-heating. The sun's rays, as such, have no effect on the head and the use of sun-helmets is quite unnecessary. So long as the body does not become over-heated, the sun can only produce sunburn of the skin. In the last war, soldiers went to tropical countries equipped with topees, but it was soon realised that these were uncomfortable and useless, and that, provided the heat was not too great, exposure to the sun had no effect in producing sun-stroke. In experiments it has been shown that the head can be exposed to the hottest sun without harm, so long as the body is kept cool. Symptoms of heat-stroke are headache, dizziness, high temperature, stomach cramps. The treatment is absolute rest, cold sponging, and cold drinks.

**Sycosis.** (See *Barber's Itch*.)  
**Syncope.** (See *Fainting*.)

**Syndrome.** Any group of symptoms, not yet recognised as a separate disease which commonly occur together.

**Synovitis.** Inflammation of the lining of a joint.  
**Syphilis.** The more serious of the two common venereal diseases. Syphilis is said to have been introduced into Europe towards the end of the 15th century by the sailors of Columbus, and there were serious epidemics throughout Western Europe during the whole of the 16th century. The disease is caused by a germ spread by sexual intercourse with an already infected person; it is

extremely unusual, although not unknown, for syphilis to occur in any other way. In a few cases it is spread by kissing but infection from a lavatory seat is most improbable, since the germ dies very soon after leaving the human body. This means that syphilis is very easily avoided and need not be considered as a danger by anyone who does not come into sexual contact with another who has the disease. The disease occurs in three stages: the *primary* stage comes on usually about three weeks after contact when a small, hard, sore appears on the spot where the germ has entered, generally on the sexual organs, but occasionally on the lips. This disappears in a few weeks and no further symptoms appear for several weeks more, when the *secondary* stage shows itself with the appearance of a rash all over the body and a slight fever. There may be a sore throat and sometimes the hair begins to fall out. This stage gradually disappears and there are no further symptoms for two or more years when the *tertiary* stage begins. This shows itself in various ways and usually strikes at the weakest point in each individual. Some patients develop large ulcers (*gummata*), others heart disease, or disease of the liver. At a late stage, up to twenty or more years after infection, the nervous system may be affected producing paralysis or insanity (*tabes dorsalis* or general paresis).

It is a tragedy to let the disease get beyond the primary stage since it is at this stage readily curable and, although it is still curable at later stages, the treatment takes much longer and is less certain of success. The disease can, of course, be passed on to a wife or husband, especially during the primary and secondary stages, and a child may be born with congenital syphilis (that is, it may be infected before birth). The treatment is injections of arsenic and bismuth carried out weekly for a period of eighteen months to two years or more, depending on how early the injections are begun. It appears that penicillin may prove more successful and, if it fulfils the promise of recent trials, it may be possible to cure syphilis in a week or ten days.

The consequent results of syphilis are very serious and nobody who becomes infected should hesitate for a moment before going to a doctor for treatment. He will be given efficient treatment and nobody will criticise him adversely; if necessary, injections will be given free. Syphilis never recovers by itself.

**Tabes Dorsalis.** A disease of the nervous system leading to paralysis and caused by syphilis.

**Tachycardia.** Rapid beating of the heart coming on in sudden attacks. Tachycardia is not usually due to physical disease of the heart, and in most cases is a symptom of a neurosis. Sometimes, however, it is caused by certain drugs, such as tobacco, and may be caused by internal poisoning, for example, by a septic tooth.

**Talipes.** Club-foot (which see).

**Tape-Worm.** A type of intestinal worm. Its presence can only be made known for certain by finding portions of the worm in the motions.

**Temperature.** The body temperature is regulated by a small area at the base of the brain. Normally it should be about 98.4°, with slight variations depending on which part of the body is selected. In infections the temperature usually rises as part of the body reactions against the invading bacteria, but the degree of fever is no indication of the seriousness of the disease. Thus in tonsillitis or colds, the temperature may be quite high (102-103°), whereas in diphtheria, a more serious illness, it is usually lower (99-100°). Young children react much more violently to infection than adults, and temperatures of 104° in quite trivial conditions are not uncommon. While the heat of the body is controlled centrally by the area in the brain already mentioned, the main accessory way in which it is regulated is through the skin. When we become heated after exercise the skin becomes flushed—that is, more blood passes through it in order to be cooled by the air. On the other hand, when we are cold, the skin becomes pale—less blood flows through it, in order to conserve the body warmth. The same mechanism occurs in fevers; when the temperature is rising the skin is pale, when it is going down the skin is flushed.

Drugs such as aspirin and phenacetin lower temperature by drugging the heat-regulating



centre in the brain; but since the fever is a reaction to infection, it is obviously inadvisable to do this unless the reaction is excessive. Tepid sponging is another way to lower temperature; this acts by increasing evaporation and therefore heat loss.

Temperature rarely rises above 110°, and patients in whom it reaches this height rarely survive; on the other hand, temperatures as low as 65° have been followed by recovery.

**Tennis Elbow.** Pain in the arm, particularly on twisting inwards, caused by excessive strain at tennis or similar exercise. Treatment is rest and application of heat.

**Tetanus.** (See Lockjaw.)

**Tetany.** (See Spasmophilia.)

**Thorax.** The chest.

**Thrombosis.** The formation of a clot within a blood vessel. The usual causes are sluggish action of the blood produced by weak heart action and, sometimes, mild infection in the neighbourhood. The main danger of a thrombosis is that it may become loose and pass along the vessel, blocking it. It is then known as an embolus. (See Embolism, Apoplexy.)

**Thrush.** A disease of the mouth, usually in infants, caused by a fungus. It results in white spots and ulcers on the gums and the inside of the cheeks. Since the child nearly always has digestive upsets, it is better to take it to a doctor. Thrush is not serious.

**Thyroid.** (See Goitre.)

**Tic.** The name given to spasm of the face, or other muscles, and due, in most cases, to psychological causes. Treatment should be referred to a psychiatrist. **Tic douloureux** is the name given to the very painful condition of trigeminal neuralgia, in which severe attacks of pain in the face occur. The treatment of this disease is usually surgical.

**Tinnitus.** Noises in the ear which may take the form of buzzing, clicking, or thudding. Tinnitus may be caused by disease of the ear or by neurosis. The different causes can only be distinguished by a specialist.

**Tobacco.** It has for long been known that tobacco-smoking, in constitutionally sensitised people, may lead to disease (see, for example, *Bürger's Disease*). Only recently, however, has smoking been connected with the serious disease of lung cancer. A number of researches have been done, but one of the most significant is that of Doll and Bradford Hill, who carried out a questionnaire upon the smoking habits of 40,000 British doctors in 1951. The certified causes of death of those doctors who have since died were then investigated, and their smoking habits compared with the causes of death. Thirty-six of the 789 deaths were due to lung cancer: the death-rate amongst non-smokers was nil; for heavy smokers (more than 25 cigarettes a day) 1.14 per thousand; for light smokers (1-14 cigarettes daily) 0.48 per thousand; and for moderate smokers (about 20 daily) 0.67 per thousand. In San Francisco Dr. Cuyler Hammond has surveyed nearly 200,000 men between 50 and 70 for the American Cancer Society. His conclusions are:

(1) That those who smoke more than 20 cigarettes a day have a death-rate more than twice as high, between the ages of 50 and 64, as that of non-smokers.

(2) That five moderate smokers die of lung cancer to every one non-smoker, and 15-16 heavy smokers to every one non-smoker.

These results may seem to the layman to be conclusive in proving that smoking is a basic cause of lung cancer (and, indeed, many doctors accept them as such). But three things must be borne in mind:

(1) That there is also a close correlation between lung cancer and life in cities—that is to say, there can be no doubt that atmospheric pollution plays an important part. Lung cancer is less common in the country, even in heavy smokers.

(2) No less an authority than Sir Thomas Price (who treated the late King George VI for this disease) believes that excessive smoking does not cause cancer, but only determines the site of origin. In short, that these people would have suffered from cancer in any case and

their smoking habits merely result in it developing in the lungs.

(3) It must be considered that those who smoke heavily are people of a certain type—i.e., those who are under stress. It is, therefore, not inconceivable that lung cancer may be a stress disease—that is to say, that both excessive smoking and lung cancer may be the result of some more fundamental process. It is interesting to note that pipe-smoking and cigar-smoking are not associated with a high incidence of lung cancer, and also that the incidence of lung cancer is not equally high in all countries where smoking is common.

It is certain that we must wait the results of further research before we fully understand this interesting and serious matter. In the meantime it would be foolish to prejudge the issue.

**Tonsillitis.** An infection of the tonsils, the lymphoid tissue at the back of the throat. Usually caused by streptococci. The symptoms are pain and discomfort on swallowing, foul breath, and a raised temperature. In mild cases gargles or penicillin lozenges may be sufficient, but more often it is necessary to give penicillin injections or one of the sulpha drugs. Frequent attacks may lead to chronic tonsillitis, with permanently enlarged tonsils, and as this condition has a harmful effect upon the general health, the best solution is operation.

**Torticollis.** Wryneck. An abnormal twisting of the neck caused by injury to the muscle or nerve. Other cases are neurotic—that is, they are not due to any physical disease.

**Toxæmia.** Any illness due to poisons absorbed from germs in the system.

**Trachea.** The windpipe. **Tracheitis** is inflammation of the trachea.

**Trachoma.** An infectious disease of the eyes found mainly in Egypt. There are scars underneath the eyelids which may later cause deformities. Only an eye specialist can treat trachoma.

**Tuberculosis.** Tuberculosis is an infectious disease which takes many forms. It may cause lung disease, meningitis, glandular disease, bone disease, peritonitis, and so on. There are two main forms—the human and the bovine; the latter being spread, mostly in children, by milk from infected cattle, the former by other human beings. The bovine type is less serious. The human type is most common among women of twenty to thirty, and men at all ages. It must be remembered, however, that 75-80 per cent. of the whole population of this country have been infected before the age of twenty-one. If disease develops later it may be either a fresh infection or a reactivation of the old condition. Practically speaking, tuberculosis is not a very infectious disease in adults; it is rather doubtful whether an otherwise healthy person is in much danger from a tuberculosis patient. Children, however, are a different matter.

When we speak of tuberculosis, we generally refer to the pulmonary type, the early signs of which are loss of weight, general debility, and night sweats. Cough is a later sign. The treatment may be medical or surgical. The former includes such measures as rest in bed, good food, and fresh air; the latter such treatments as pneumothorax, pneumoperitoneum, lobectomy, and so on. Pneumothorax is the collapse of the affected lung by the introduction of air into the chest through a needle, in the case of pneumoperitoneum the air is introduced into the abdominal cavity. Lobectomy is the cutting away of the affected area in the lung. Other measures include the use of antibiotic drugs such as streptomycin. (See Antibiotics.)

**Tumour.** A swelling. To a doctor, any swelling of the body is a tumour and the term does not necessarily apply to cancer.

**Typhoid Fever.** Enteric. An infectious fever caused by the typhoid bacillus. The course of the illness can be divided into three stages: in the first week, there are the usual signs of an infectious disease—fever, headache, and general malaise. In the second week, the fever is at its height, there is diarrhoea, and a rose-coloured rash on the chest and abdomen. The third week is the week of improvement if the patient is going to recover; if his condition is more serious, complications may set in, such as peritonitis,

pneumonia, perforation of the intestine, and so on. Typhoid fever is very infectious, and precautions must be taken against its spread. The vaccine known as T.A.B. protects against the disease. Treatment requires specialised medical attention; there is, so far, no specific treatment.

**Typhus.** A fever caused by a germ which, being carried by lice, is spread by their bite. It is uncommon in Britain, but common in Eastern Europe. Since dirt, and the presence of lice, favour its occurrence, it is frequent after wars or whenever large numbers of hungry, ill-clothed, refugees are crowded together. It was once common in prisons—hence the old name of "Jail Fever." The patient develops extreme weakness, fever, and has a coated tongue and crusts around the lips. Later, there is a rash, and delirium. Forty per cent. of patients die. There is no specific treatment yet. It is not possible to develop typhus fever unless bitten by lice; therefore the main preventive measures are directed against this.

**Ulcer.** Ulcers may be due to many causes: continual irritation, injury, bad blood supply, varicose veins, and various germs, including those of tuberculosis and syphilis. Treatment, of course, depends on the cause, and any ulcer which is long in healing should be referred to a doctor. The following are general observations: ulcers often fail to heal because of poor blood supply—in the leg, where the circulation may be poor, an ulcer may not heal unless the limb is kept at rest and raised on a stool. Patent ointments should never be used on ulcers—at the best, they contain mild drugs which any doctor can supply much cheaper; at the worst, they may be very dangerous. In any case, no moist surface should ever be treated with a greasy substance (except, perhaps, penicillin cream). Strong antiseptics should never be used, and boracic fomentations should be realised to be out of date a long time ago. A large number of the ulcers which refuse to heal have, in fact, been poisoned by the patient's use of strong antiseptics and wet soaks. It is always best to go to a doctor because the best treatments, such as penicillin and other drugs, can only be supplied by him.

**Uremia.** The last stage of kidney disease, when the kidneys fail to excrete all the waste products of the blood. Minor degrees may occur when the urine, in spite of the kidneys being normal, cannot escape, owing to blocking of the channel on the way out. This happens in prostatitis. Symptoms of serious degrees of uremia are—fits, high blood-pressure, defective vision, vomiting, and headaches.

**Ureter.** The tube leading from the kidneys to the bladder.

**Urethra.** The tube which carries the urine from the bladder to the outside.

**Urethritis.** Inflammation of the urethra, which may be caused by various germs, the only serious one of which is the germ of gonorrhoea (which see). The symptoms are burning pain on passing water and frequent desire to do so.

**Urticaria.** A skin disease in which small blisters occur as a result of hyper-sensitivity to some substance (see Allergy). Urticaria is also known as hives or nettle-rash. Treatment depends on finding the food or other substance which causes the disease, and avoiding it. A new drug (Benadryl) has been successful in many cases. During an attack of urticaria, the doctor may give an injection of adrenaline.

**Uterus.** The womb.

**Varicella.** (See Chicken-pox.)

**Varicocele.** Varicose veins in the scrotum—the bag beneath the penis containing the testicles, when these veins become enlarged, there may be pain and there is a swelling which feels like a bag of worms. The condition is not serious, but may be inconvenient. The treatment is surgical—a slight operation.

**Varicose Veins.** This usually applies to varicose veins in the legs, although piles and varicocele are also varicose veins. A firm elastic bandage may help to control the veins, but the only cure is surgical. Either the veins are injected with a substance which causes clotting or they are tied high up in the thigh in a minor operation. There is no need for treatment unless the veins cause disability.

**Varicella.** (See Smallpox.)

**Vertebra.** (See Backbone.)

**Vertigo.** Dizziness. This may be caused by many different conditions. Ear disease, gastritis, heart disease, anaemia, or merely wax in the ears, or neurosis may be causes. It is therefore necessary to see a doctor in order to discover the cause.

**Viruses.** Viruses are organisms which cause certain diseases, and, unlike bacteria, are too small to be seen with an ordinary microscope. They can, however, be photographed by an electron microscope, which uses a magnetic field instead of a glass lens. Viruses cause such diseases as measles, mumps, typhus, poliomyelitis, smallpox, and chicken-pox; they also cause various plant and animal diseases, such as tobacco mosaic disease and foot-and-mouth disease. Unlike bacteria which can live even in dead matter, viruses can live only within the living cell. An interesting fact about viruses is that they represent a half-way point between inorganic matter and living things. For example, it is possible to get viruses in crystalline form. Another peculiarity is that, so far, no specific treatment has been found for most virus diseases: the drugs which destroy bacteria have little effect on them. Smallpox, however, can be prevented by vaccination, and typhus by control of the lice which carry the virus.

**Vitamins.** Vitamins are substances found naturally in certain foods, the absence of which leads to one or other of the so-called "deficiency diseases." Thus lack of vitamin A leads to night-blindness; of vitamin B, to beri-beri and pellagra; of vitamin C, to scurvy; of vitamin D, to rickets and osteomalacia; and of vitamin E, to sterility. The early scientific work on vitamins was mainly carried out by Hopkins and Mellanby in this country early in the present century. At the present time more than twenty of these substances are known, and to the original A, B, C, and D have been added E (the fertility factor), K (the anti-bleeding factor), not to mention vitamins B<sub>1</sub>, B<sub>2</sub>, and so on, right up to B<sub>12</sub>. Many superstitions have arisen in the popular mind as to the need for vitamins. They have been taken in order to prevent colds, to give energy, as a "general tonic," and so on. But all informed medical opinion is agreed that this attitude is nonsense. Under ordinary circumstances vitamins are only of service in those who are undernourished and suffering from deficiency diseases. Deficiency diseases do not exist in this country except in those who live under unusual circumstances and are too lazy, too old, or too sick—or too ignorant—to buy the correct foods. There are, however, a few diseases not due to vitamin deficiency in which, under medical supervision, these substances may be taken for their curative effect. For example, vitamins B<sub>2</sub> (nicotinic acid) and vitamin K have proved successful in the cure of chilblains; it appears that in high concentrations they stimulate the circulation. Vitamin E, the fertility factor, has been used in certain organic nervous disorders, in certain heart diseases, and in the condition known as Dupuytren's contracture. Vitamin C is given, together with iron, in anaemia, since it is believed to aid the absorption of iron. Vitamin A seems to be effective in some skin rashes, and so on.

**Volvulus.** A twisting of the bowel causing obstruction.

**Wart.** Warts are caused by a virus or very small germ. Many treatments are successful—but usually caustic is applied. In severe cases, X-rays may be necessary. (See also p. 817.)

**White Leg.** Swelling of the leg produced by thrombosis (which see) of the veins. Usually it is a complication of child-birth or typhoid fever.

**Whitlow.** Septic finger. (See Paronychia.)

**Whooping Cough.** Pertussis. An infectious fever. There are three stages: the first, lasting about a week, is similar to an ordinary cold; in the second, the typical cough begins, and may last for a month or more. The third stage is that of gradual recovery. Treatment is a matter for the doctor.

**Wryneck.** (See Torticollis.)

**Yellow Fever.** An infectious fever found in tropical Africa and other tropical lands. The symptoms are jaundice, weakness, black vomit, and fever. It is spread by germs carried in a mosquito whose bite causes infection. Yellow fever is very deadly, but is less so with modern treatment.



# FIRST AID

THIS brief summary of First Aid is intended for the person with no medical knowledge or experience who is suddenly faced with an emergency. It is, of course, not intended for members of the St. John's Ambulance Association and other associations who not only have been trained in the use of First Aid but also have considerable knowledge of the anatomy and physiology of the body. All genuine training must be based on such knowledge, and without it only the merest general principles can be given. Nevertheless, situations may arise in which untrained people have to deal with emergencies, and an acquaintance with such general principles may become a matter of life and death. It is with such an end in view that the following notes have been written.

When the layman is faced with such an emergency, he should remember that there is as great a danger in doing too much as too little. For example, if a leg is fractured, an unskilled attempt to straighten it may easily cause the bone to break through the skin, thus transforming a simple fracture into a compound one, which is infinitely more serious for the patient. Another reason for caution (which in this case may apply even to the trained First Aider) is that modern medical treatment often uses methods not available to the most highly trained expert in First Aid, and may be hindered if other methods, at one time quite good in themselves, have been used previous to admission of the patient to hospital. For instance, the use of tannic acid for burns was a great advance in treatment, and is still valuable if no other methods are likely to be available, but it will seriously interfere with the most modern treatment used in the best hospitals. Similarly, the use of antiseptics on wounds, while good in itself, may prevent the effective use of penicillin when the patient has been admitted to hospital. The most important First Aid principle for the inexperienced is to make arrangements as quickly as possible for more skilled treatment or admission to hospital. On no account should more than the bare necessities be carried out, unless it is certain that skilled treatment will be delayed to a degree likely to endanger the patient's life.

For these reasons, no detailed information is given here as to the various types of bandages, splints, etc., since their use can be learned only by practical work and experience which cannot be taught by any book. Unskilled use is often worse than no treatment. For practical purposes, a bandage is something to cover and protect an injury. Provided it does this effectively, its appearance is a relatively unimportant matter; it must be so applied as to stay on, but not so tight as to interfere with the circulation. Similarly, a splint should maintain the broken bones in a safe position, prevent movement which might cause pain or damage, and not be so tight as to harm the limb or its blood supply.

The following general principles are important:—

1. Unless the injury is trivial, move the patient as little as possible. The patient may have to be removed from the cause of his injury (fire, electric cable, gas, smoke, etc.) or better still have the cause removed from him, but otherwise he should not be moved even from the middle of a busy street.
2. Never on your own initiative assume that the patient is dead or beyond help; always give him the benefit of the doubt.
3. Hæmorrhage, if severe, must be treated first, and shock second.
4. Shock is treated by wrapping the patient up, keeping him warm with hot-water bottles (not so hot as to burn), reassuring him as far as possible, and giving hot drinks (tea with plenty of sugar) if he is able to swallow. Never try to force drinks into an unconscious or semi-conscious patient. Unless bleeding is severe, the above measures come first.
5. The only exception to the above rule is when breathing has stopped, in which case artificial respiration (see in "Medical Dictionary") must be applied as described.
6. Once the above measures have been carried out, proceed, with as little fuss as possible, to see what else can be done. Finally, in case of legal complications, see that no evidence is destroyed.
7. To summarise: send someone for the nearest doctor; treat shock first, unless bleeding is severe or breathing has stopped; don't move the patient unless absolutely necessary; don't try to do too much.

## BLEEDING.

The only bleeding we can deal with directly in First Aid is that near or on the surface. Internal bleeding can be dealt with only by treating for shock. Slight bleeding is harmless and even helpful, as it tends to clean the wound. For severe hæmorrhage, have the patient lying down, treat as for shock (i.e., keep warm, wrap up, and give hot, sweet tea to drink), raise the bleeding part unless the limb is fractured, and stop the hæmorrhage either: (a) by direct pressure with a clean pad over the wound or (b) by the use of a tourniquet twisted around the limb above the wound and on the side of the injury nearest to the heart. It is most important not to have the tourniquet so tight as to harm the limb—it should be twisted just sufficiently to stop the bleeding. The easiest method is to tie a handkerchief loosely round the limb above the injury, place a pencil under it, and twist slowly until the bleeding stops. Every ten minutes or so, the tourniquet should be slowly loosened to see whether the bleeding has slowed down. It is also important to tell those who take charge of the patient that the tourniquet is in position, otherwise it may be forgotten and the stopping of the blood supply may lead to gangrene and the loss of the limb.

**Other Forms of Bleeding.** Internal bleeding is shown by the following symptoms: (a) pale cold and clammy skin; (b) weakness and a feeling of faintness; (c) weak, rapid pulse; (d) rapid, sighing breathing, frequently with yawning; (e) unconsciousness.

**Signs Due to Bleeding in Special Areas.** (a) Bleeding from the lungs results in bright-red frothy blood being coughed up. (b) In bleeding from the stomach the vomit usually has the

appearance of coffee grounds. (c) In bleeding from the kidney and bladder blood is passed in the urine. In all these cases treatment should be as for shock, but no liquid should be given by mouth.

**Bleeding from the Mouth.** (a) Wash the mouth out with cold water. (b) Place a thick pad of cotton-wool over the tooth socket and get the patient to bite on it.

**Bleeding from the Nose.** (a) The patient should sit with the head thrown back and breathe through the mouth. (b) Place a cold pad at the back of the neck and over the base of the nose.

## FRACTURES.

There are two main types of fractures—simple and compound. In the first case the skin over the fracture is not broken, in the second it is. Compound fractures are much more dangerous, as they are liable to become infected.

Without special training, the only way a fracture can be diagnosed is by seeing obvious deformity of the limb, or by feeling the deformity through the skin. Unnatural movement (e.g., in the middle of a limb) or grating may be noted. But no unskilled person should handle a limb with a view to discovering whether it is fractured or not; it is safest to treat all doubtful cases as fractures.

The only purpose of First Aid treatment of a broken limb is to ensure that it does not become worse by movement of the broken bones. The idea of splinting the limb is to avoid this movement and thus prevent further damage and pain to the patient.

1. The patient must not be moved until splints have been applied. If severe bleeding is present it must, as stated above, be treated first.

2. In order to splint the limb proceed as follows:—

Cover up all injuries and abrasions, as described below, with clean dressings and bandages. Then, using great care, place the limb in as natural a position as possible. The splint should be long enough to prevent movement in the joints both above and below the fracture; it may be improvised from walking-sticks, brush-handles, umbrellas, pieces of wood, or even tightly rolled-up newspaper. If none of these is available the arm may be bound firmly to the chest with bandages or, in the case of the leg, it may be bound firmly to the sound one. Bandages must not be too tight. If it is remembered that the function of a splint is to prevent the broken bones moving, it will be easier to ensure that the bandages are placed properly.

**Other Fractures.** Fractures may occur elsewhere than in the limbs, notably in the skull, the spine, the jaw, and the collar-bone.

1. Fractures, or suspected fractures, of the skull should be treated only for shock. Especial care must be taken in fractures of the base of the skull, which should be suspected when there is bleeding into the eye, or blood or clear fluid running from nose or ear. Immediate removal to hospital is necessary in these cases.

2. In fractures, or suspected fractures, of the spine keep the patient lying flat, treat for shock, and bind the legs together at the ankles, knees, and thighs. Immediate help must be sent for.

3. In fractures of the collar-bone, place a pad under the armpit and place the arm in an ordinary sling.

4. In suspected fractures of the ribs, take a strong towel, fold it to about a foot wide, bind tightly round the chest, and pin in position.

## SCALDS AND BURNS.

Burns may be caused by fire, heated metal, electric current, strong acids, or caustics. Scalds are caused by hot liquids, steam, and other forms of moist heat. All degrees of severity may be found from reddening of the skin and blistering to deep burning of the muscles. The greatest dangers are from infection and shock. Shock is by far the most important cause of death from burns.

1. Treatment when a doctor or hospital will soon be available. Treat for shock (i.e., keep warm with blankets and hot-water bottles, and give hot, sweetened tea to drink) and cover the burnt parts with dry cotton-wool. Bandage lightly (*not* firmly).

2. When expert treatment is likely to be delayed.

(a) Remove clothing, except where it sticks to the skin, when it should be cut around carefully with a pair of scissors. On no account attempt to pull the clothing from the skin if it sticks. Do not burst any blisters.

(b) While dressings are being prepared place the injured part in water at body temperature (e.g., in a bath), adding a dessert-spoonful of bicarbonate of soda to the pint.

(c) Prepare strips of linen, lint, or gauze soaked in a solution of baking-soda of the above strength, keeping them moist until the doctor arrives.

(d) Warm, strong tea may be used instead to soak the bandages in.

**Acid and Alkali Burns.** Before treating as above bathe with sodium bicarbonate in the case of acid burns, and vinegar or lemon juice in the case of alkaline burns.

## UNCONSCIOUSNESS, TREATMENT OF.

The layman need not trouble about the various causes of unconsciousness, but should apply the following general principles:—

(a) If breathing has stopped, use artificial respiration.

(b) Otherwise the patient should be kept lying flat on his back. If the face is flushed the head and shoulders should be raised; if pale the head and shoulders should be kept low and feet raised.

(c) Loosen all tight clothing and open the windows to allow fresh air into the room.

(d) Never give anything to drink until the patient is conscious.

(e) If there are convulsions keep the patient from hurting himself without restraining him more than necessary. Wrap a pencil in a handkerchief and put between the teeth at the back to prevent the tongue being bitten.

(f) It may help, especially if unconsciousness is due to a blow on the head, to use cold compresses on the brow.

## WOUNDS, TREATMENT OF.

1. If the blood from the wound has already begun to clot and bleeding has practically stopped, the wound is best left alone and simply covered with a clean piece of boracic lint.

2. Since an important part of treatment is to take care that no further germs get into the wound, care should be taken that everything touching the surface is absolutely clean. Thus the surface of the lint about to be applied to the wound should not be touched. If no absolutely clean dressing is available and skilled treatment is unobtainable for several hours, it is best to bathe gently with a solution of mild antiseptic, preferably Dettol or Milton (one teaspoonful to a cupful of warm water).

3. All bathing should be from the wound outwards so as not to carry further dirt from surrounding areas into the wound. Any pieces of dirt or grit deeply embedded into the wound should be left alone.

4. If hospital treatment is necessary and will soon be available it is much better not to use antiseptics at all but to pour over the wound water which has been boiled and allowed to cool. A teaspoonful of salt to each pint of water may be added.

5. No strong antiseptics should ever be used, and it is particularly important to avoid those containing alcohol, such as tincture of iodine, since this causes unnecessary shock and pain. Patent medicines, ointments of any sort, and sticking-plaster should be avoided. In fact, greasy or oily dressings should never be put on moist surfaces.

6. After the pad has been placed in position bandage the wound gently.

## FIRST AID FOR CHILDREN

The minor emergencies described here are such as are more likely to happen to children than to adults; it need hardly be said, however, that what is said is equally applicable to adults who find themselves in the situations described.

## BEE OR WASP STINGS.

When the sting is left behind, it should never be pulled out, but stroked out with the blade of a pocket knife. The area should then be dabbed with weak ammonia or baking-soda.

## CHOKING.

In the first place, it is most important to be as calm as possible and keep the child from being excited unduly. The reason for this is that emotional tension tends to keep the throat in a state of spasm, and bones that otherwise would be swallowed quite easily may remain stuck. Fish-bones may be softened by drinking diluted lemon juice or white of egg. If the bone is not too big, several glasses of water or other liquid should be drunk. If, however, the child is choking, it will be necessary to call a doctor, explaining the circumstances so that he may come prepared.

## SAND, DUST, OR GRIT IN THE EYES.

It is usually recommended to attempt to remove the piece of grit, if it is visible, with the corner of a clean handkerchief, but this should not be persevered with (a) in a very young or very upset child, or (b) if the grit does not come away immediately. The safest thing to do is to put a drop of warmed castor oil or liquid paraffin in the eye and leave it alone. If this is done, the grit will either come out of itself, in which case nothing further need be done; or at least the eye will be kept relatively comfortable and without more damage until skilled help is obtained.



# THE NATIONAL HEALTH SERVICE

THE interest of the State in the health of the people is not a new thing. As long ago as 1642 Parliament accepted the principle that those who fought in the service of the State and were sick or wounded must be cared for by the State. This principle was applied in the wars with the Dutch of 1653 and 1664. There was, however, no extension of this state care to civilians for a very long time, and it was not until the appalling living conditions resulting from the Industrial Revolution threatened to spread disease throughout the country that any further national action was taken. The first medical officers of health were appointed just over one hundred years ago, and their main task was to deal with the fearful epidemics, such as cholera and smallpox, which were then prevalent. For the remainder of the nineteenth century the control of infectious disease and the improvement of sanitation and water supplies were the main concern of Parliament and the local authorities, and much progress was made in the prevention of disease. The diagnosis and treatment of illness remained a personal matter between the patient and the doctor. It is true that the State made provision for destitute patients under the Poor Law and that the voluntary hospitals provided free treatment to those who could not afford to pay, but there was no general organisation of medical care. Many people subscribed to clubs and societies to provide medical treatment when they were ill, and it was not until the beginning of the present century that the State began to take an active interest in the medical care of the individual. The health of school children was protected by the formation of the school medical service in 1907, and about this time measures to protect the health of expectant mothers and young children were introduced. The National Health Insurance Act of 1911 provided for the first time a service whereby the bread-winner of a family when he was ill could receive treatment by his "Panel" doctor and obtain certain other benefits. These benefits were limited and the National Health Insurance Service did not cover the dependants of the insured persons, nor did it make provision for hospital care.

From the time of the Great War of 1914-1918 up to and during the last war remarkable advances were made in medical and surgical skill, and these advances are continually being added to. New aids to diagnosis and new forms of treatment, for example the sulphonamides and penicillin, were discovered, and the great advances in medical care and in surgery were aided by blood transfusion, improved X-ray diagnosis, physiotherapy, and many other new services. The range of treatment now available is wide. It is also very costly. Indeed, many hospitals found it difficult to carry on before the last war, and many patients were unable to afford the expensive investigations and treatment which modern science has made available. For these reasons alone some form of national health service was inevitable, but there were other equally important reasons. For a long time doctors and others who have studied the subject of medical care had felt that a national medical service was essential in order to make the best use of hospitals in each area and to bring the full range of modern medicine within the reach of everyone. Towards the end of the last war a number of social measures were introduced, such as the National Insurance Act and the National Assistance Act. These measures and all the other welfare measures introduced at that time depended on a national health service for their medical requirements. It was to meet these needs that the National Health Service Act was passed in 1946. The new Service came into operation on July 5th, 1948.

## THE NATIONAL HEALTH SERVICE ACT 1946.

This Act was intended to provide a comprehensive health service in England and Wales. A similar Act was passed for Scotland. The health services to be provided fell under three principal headings:—

- (1) Hospital and Specialist Services.
- (2) General medical and dental services outside the hospital.
- (3) Local Health Authority Services.

### HOSPITAL AND SPECIALIST SERVICES.

The Hospital and Specialist Services make provision for every kind of hospital care, including general hospitals, maternity hospitals, infectious disease, and special hospitals such as the mental hospitals and mental-deficiency institutions and sanatoria for tuberculosis. They also provide for convalescent treatment and rehabilitation. These hospitals are staffed by consultants and specialists, numbering approximately 6,000, employed on a full-time or part-time basis, who work in the wards, out-patients departments, and in special units, such as X-ray and pathology departments. At the request of the general practitioner domiciliary visits to the patient's home are made by consultants in cases of emergency. The hospital consultants are assisted by medical and surgical registrars, and by house surgeons and house physicians, many of whom reside in the hospitals.

The total number of available beds in hospitals in the National Health Service in England and Wales is about 500,000, of which nearly 50 per cent. are in mental hospitals and institutions. To nurse the patients in these hospitals there are more than 200,000 nurses and midwives, including student nurses, and a domestic staff of 175,000 is also employed. In addition, there are many special workers, such as almoners, records officers, radio-graphers, physiotherapists, speech therapists, teachers of occupational therapy, etc., so that it will readily be understood that the hospital service

is one of the greatest employers of labour, especially of women, in the country.

There are also many special activities within the hospital service, including the supply of surgical and other appliances. To give only one example, more than 400,000 hearing aids have been distributed from the special distribution centres since the service began.

A most important part of the hospital and specialist services is the National Blood Transfusion Service, which takes blood from a civilian Donor Panel of about half a million people and distributes this to the hospitals as required. In a recent year (1954) the total distributions of blood were 619,922 bottles, each containing about  $\frac{1}{2}$  pint and being the gift of one donor. An important part of the work of the Blood Transfusion Service is the testing of the blood of expectant mothers for the rhesus (Rh) factor. Many maternal and infant lives have been saved by detecting this incompatibility.

On July 5th, 1948, the Minister of Health became responsible to Parliament for the efficient administration of hospital services. To secure this he set up fourteen Regional Hospital Boards, four for London and the Home Counties, and ten for the remainder of England and Wales. The 36 great teaching hospitals in England and Wales have their own governing bodies responsible direct to the Minister. In Scotland the arrangement is that all hospitals are included in the Regional Hospital Board areas. The Regional Hospital Boards are responsible for planning and administering the hospital and specialist services of their areas. For day-to-day administration they are divided into small groups under the care of 388 local Hospital Management Committees. This arrangement also ensures that the best use is made of the hospital beds in each area and that the limited building and staff resources available are not wasted by competition between adjoining hospitals. At the same time it is the duty of the Regional Hospital Boards to arrange for the medical staffing of the hospitals and to see that special facilities are available for the treatment of

patients requiring chest surgery, plastic surgery, brain surgery, and other special forms of treatment which can best be provided on a regional, rather than a local, basis. The members of the various boards and committees serve entirely voluntarily and receive no payment for their work. They number between nine and ten thousand people. Were it not for these voluntary workers the permanent administrative staffs, secretaries, accountants, clerical officers, etc., would require to be much larger than is now the case.

Many patients stay in hospital only a short time, or receive all the care and investigation they need in the out-patient departments, and it is necessary to ensure that there is a close link between the hospital and home care services. This may be ensured in a variety of ways, notably by communication between the consultants and the general practitioners engaged in medical care in the home, and also by close liaison between the hospitals and the Local Health Authorities in the area.

#### GENERAL MEDICAL SERVICES OUTSIDE THE HOSPITAL.

The number of persons in England and Wales whose names were recorded as being on doctors' lists at the beginning of 1954 was 42,900,000, *i.e.*, over 90 per cent. of the population. The general medical services, which include medical and dental services, pharmaceutical services, and supplementary ophthalmic services, are administered locally by Executive Councils. The areas of the Councils coincide with those of the Local Health Authorities, except where two or more Executive Councils have been merged by agreement.

The members of the Executive Councils, who give their services voluntarily, include twelve lay and twelve professional people. The latter include doctors, dentists, and pharmacists. The work of the Councils is mainly executive, but they may deal with complaints and disagreements, and also with applications from doctors who wish to set up practice in their area or to succeed to a vacancy.

(a) **Medical.** Under the Service every person in the country is entitled to advice and treatment from a doctor. This care includes the prescription of medicine and appliances and arrangements for specialist advice and hospital treatment where necessary. There are approximately 19,500 general medical practitioners in the Service.

(b) **Dental.** Every person is entitled to dental treatment, including emergency treatment as well as the provision of dentures and the preservation of existing teeth.\* There are about 9,600 dentists in the Service, and they have treated between 8 and 10 million people each year since the National Health Service came into operation. In view of the importance of doing all that is possible to preserve teeth (rather than wait until they are so bad that the only remedy is to remove them), priority is given to expectant and nursing mothers and to children. The school dental service, operated by the Local Health Authorities, plays a vital part in securing the dental fitness of children, including education in the care of the teeth.

(c) **Care of the Eyes.** The Service provides for sight testing and supply of spectacles, either at hospital or by means of the supplementary eye service whereby patients may get their eyes tested by general practitioners with special knowledge of the diseases of the eye, or by sight-testing opticians. Opticians undertake the supply of spectacles.\* Approximately 4 million spectacles were supplied in 1954.

(d) **Pharmaceutical Services.** The prescriptions given by the doctors under the National Health Service are dispensed by chemists and pharmacists. The 15,764 chemists in the Service deal with about 219 million prescriptions each year.

#### LOCAL HEALTH AUTHORITY SERVICES.

The Act has placed important new duties on the County Councils and County Borough Councils. There are 146 of these Local Health Authorities in England and Wales, and they administer their health work by means of a Health Committee and the medical officer of health and his staff. These local authorities provide services which help both the hospitals and the general medical services out-

side the hospital. For example, they provide a midwifery service in the home, and arrange for home nursing, domestic help, ambulance services, and a number of other facilities. It will be best to describe these services one by one.

(i) **Midwifery.** The County Council or County Borough Council arranges for trained midwives to care for the expectant mother in her own home either by employing the midwives directly or by arrangement with the district nursing associations. There are approximately 7,500 domiciliary midwives in England and Wales. Arrangements are also made for care before and after the confinement. The midwives must be able to call for medical aid when they are in difficulty. General practitioners skilled in midwifery are available in each area, and they may in turn call on the obstetric consultants of the hospital service. Thus these home services are linked with the maternity departments of the hospitals. Many women nowadays prefer to have their babies in hospital because the home conditions are not suitable or because of other young children in the house. In such a case the expectant mother may make arrangements direct with the hospital and may have her ante-natal care done in the hospital clinic. If on examination everything is found to be normal the mother may be referred back to her own doctor or to the local maternity and child welfare clinic for regular ante-natal examination. Obviously it is not possible or desirable for every mother to have her baby in hospital, and where home conditions are suitable she may prefer to stay at home. The provision of home helps will assist with the domestic work, and many women also prefer to have the care of their own doctor. Some mothers, particularly those who have already had children, may not go in the first instance to the hospital or to their doctor but will go to the midwife whom they know. The midwife, in addition to arranging for the confinement, will advise the mother to be examined regularly at the welfare clinic or by her own doctor. It is also important that every mother, after confinement, should be examined before resuming work and again a few weeks later. Only by this means can any minor defects resulting from the confinement be found and corrected before they give rise to permanent disability. This post-natal examination can be carried out by the general practitioner, or at the clinic or hospital out-patient department. It is one of the essential features of a comprehensive midwifery service.

(ii) **Child Welfare.** For the first year of life, the health of the mother and the infant are so closely bound up that they may be considered as one person. There are, however, a number of conditions affecting the child which may require specialist knowledge, and indeed disorders and diseases of childhood have for a number of years been a separate branch of medicine under the title of Paediatrics. The physicians specialising in diseases of children are therefore known as paediatricians, and it is one of the duties of the hospital service to provide a paediatric service with children's beds, out-patient and clinic facilities, and trained staff. It is, however, necessary to go farther than this. The study of diseases of children has shown that many of these can be prevented or diagnosed at an early stage. It was to detect such departures from the normal that the maternity and child welfare clinics were first set up, and the work they have done has been invaluable. It is clearly most important to see that the young child is examined regularly by the family doctor or at the Welfare Clinic.

(iii) **Vaccination against Smallpox.** It is advisable to consider at this stage another provision of the National Health Service, which deals with vaccination against smallpox and immunisation against diphtheria. Compulsory vaccination against smallpox has been abolished by the National Health Service Act, but every Local Health Authority must arrange for anyone who wishes to be vaccinated free of charge. This can be done either by the patient's own doctor or at the local authority clinics. Although compulsory vaccination is abolished it is nevertheless still advisable that every person should be vaccinated in infancy. Smallpox is now rare

\* The National Health Service Act, 1951, imposed certain charges on dentures and spectacles, and these have been continued by subsequent amending Acts.



in this country, but when it does occur it is just as serious as ever it was and can quickly prove fatal. Only by vaccination can its epidemic spread be prevented.

(iv) **Diphtheria immunisation** has produced the most remarkable results in reducing the number of deaths from diphtheria in the British Isles. Local Health Authorities now arrange for free immunisation against diphtheria to be available to everyone, either by the patient's own doctor or through the local health clinics. It is, of course, essential that every infant should be immunised against diphtheria. The child may also be immunised against whooping cough, where the family doctor or the doctor at the Welfare Clinic considers this to be advisable.

(v) **Home Nursing.** The responsible duty has been laid on the Local Health Authorities of ensuring that trained nurses are provided for people who require nursing in their own homes. The Local Health Authority does this either directly or by entering into arrangements with district nursing associations. District nurses in some areas act also as the district midwives and health visitors. The need for an efficient home nursing service becomes obvious when it is remembered how many people have to be cared for in their own homes, and in particular those suffering from chronic diseases and the aged and infirm. There is, however, another reason. An efficient home nursing service means that patients who now go to hospital for relatively minor conditions can be nursed at home, and other patients can be discharged from hospital earlier to be nursed at home. By this means valuable hospital beds can be saved for serious cases. The home nursing service is organised so that the district nurse is in the closest possible touch with the general practitioners whose cases it is her responsibility to nurse. Normally it is for the doctor in charge of the patient to arrange for the services of the district nurse, but in an emergency she can be called in direct. In 1954 home nurses in England and Wales, numbering about 9,000, paid nearly 24 million visits.

(vi) **Home Help.** If sick or aged persons are to be cared for at home the provision of home help is often necessary, and it is also important that a mother who has her baby at home should not be burdened by domestic care. Local Health Authorities now have the power to provide domestic help for these mothers and for any household where there is a sick person, a mentally defective, or an aged person, or where there are young children. Clearly this is a most important service. It is useless to provide home midwifery and home nursing services without someone to do the general work. At the present time there is a serious shortage of woman-power, but this home help service offers a new field of work, whole-time or part-time, for the middle-aged and elderly woman. The Local Health Authority may make a charge for the services of home helpers. In 1954 home help was provided in 215,784 cases.

(vii) **Health Visitors.** Local Health Authorities have for a long time employed specially trained nurses to act as health visitors to give advice at home or at clinics to expectant mothers and mothers with young children. These health visitors have proved so successful that under the National Health Service their duties were extended to the giving of advice on the welfare of the family. They also advise, in conjunction with the family doctor, on the prevention of the spread of illness within the home. This advice is particularly necessary in such diseases as tuberculosis. There are approximately 7,000 health visitors, whole or part-time, in England and Wales.

(viii) **Ambulance Services.** A most important duty laid on the Local Health Authority is the provision of ambulance services. Every Local Health Authority must arrange for ambulances and, when necessary, sitting-case cars to convey sick or injured persons or expectant mothers or nursing mothers or other types of patients to and from hospital as required. These ambulances and cars travel about 92 million miles in a year. The ambulances are also available to take cases of infectious diseases to and from hospital, but special precautions are taken to prevent the spread of such diseases.

(ix) **Care and After-care of the Sick.** It is not enough to make provision for efficient hospital

treatment unless some arrangements are made whereby patients can also receive proper care and attention in their own homes. The National Health Service Act gives the Local Health Authorities power to make arrangements for the prevention of illness and the care and after-care of persons suffering from illness, including mental illness, and the care of the mentally defective. This care and after-care of the sick may include such things as the provision of special foods, blankets, and extra comforts required by the sick person. Equipment for home nursing may be provided so that district nurses and midwives can obtain such items as water-beds, bed-rests, bed-blocks, crutches, and wheel-chairs for their patients. Local Health Authorities can make grants to voluntary organisations for doing work of this kind, but they cannot make any cash payments to the patient, as this is provided for under other Acts of Parliament, such as the National Assistance Act.

(x) **Tuberculosis.** The extent of care and after-care provided will be governed very largely by the needs of a particular area and the resources of the local authority concerned, but the Minister of Health has given specific directions that every Local Health Authority must make arrangements for the prevention of tuberculosis and the care and after-care of persons suffering from this disease. By this means any person suffering from tuberculosis may be helped before entering and after discharge from the sanatorium or hospital, and the health of his family is also safeguarded. Local Health Authorities must not make any charge for the care of the tuberculous patient.

(xi) **Health Centres.** Under the National Health Service Act provision was made for the building and equipment of health centres. These are intended to be places where general medical practitioners and dental surgeons may see their patients, and specialists from the hospital may attend if necessary. There may also be other clinic facilities. It will take a long time before the ideal type of health centre has been devised, and the restriction on building may also hinder the general development of health centres. Meanwhile there is scope for experiment, and a number of different kinds of health centres are coming into use in various parts of the country, particularly in the new towns and housing estates.

### MENTAL HEALTH SERVICES.

The importance of safeguarding mental health, in addition to providing treatment for mental illness, has come increasingly to be recognised in recent years. In this connection it is necessary to distinguish between mental disease, which affects the developed mind, and mental deficiency due to failure, or partial failure, of the mind to develop fully. In the one treatment and cure may be, and very often are, possible. For the other, i.e., mental defectiveness, true cure is usually impossible, but much may be done to help and teach the mentally defective to become useful and happy members of society.

In addition to disease of the mind, and the existence of mental deficiency, it must also be remembered that mind and body are so closely associated that disability of the one may affect the other. Thus the simplest of bodily ailments, such as a cold in the head, or a bilious attack, may cause temporary mental depression. The pace of modern life is also a factor of importance in the production of mental stress and anxiety.

The care of the mentally ill has in the past been handicapped by the fear which many people had of this type of illness, and also because it was believed to be incurable. Modern experience has shown that illness of the mind is often as amenable to treatment as bodily illness, particularly when treated early, and both mental and general hospitals now have many patients receiving out-patient care in the same way as those with physical disabilities.

It has also been demonstrated that prevention is better than cure, and the subject of preventive psychiatry is now an important one, particularly in the early years of life.

The National Health Service makes special provision for mental illness. The mental hospital usually provides both in-patient and out-patient accommodation, and psychiatric clinics are also

held at many general hospitals. Long-stay annexes are provided for old people who are mentally infirm, and day hospitals are being developed whereby patients may spend the nights in their own homes, and attend the hospital during the day. Increasing attention is also being paid to rehabilitation of the mentally ill. Mental defectives may be retained in special hospitals or colonies, or they may remain in the community under the care and supervision of the Local Health Authorities.

Mental hospitals and mental-deficiency colonies now form part of the hospital and specialist services. The care and supervision of mental patients and mentally defective people in their own homes is carried out by officers of the Local Health Authority. These officers have special experience in dealing with this type of patient, and the hospital specialists are also available to help. They are assisted by trained psychiatric social workers, one of whose functions is to investigate the social background of the patient and to assist him to return to his place in society when treatment has been completed.

### THE AGED AND THE INFIRM.

The introduction of a comprehensive health service has revealed many groups of people in the community who were, in the past, ill cared for, including those suffering from permanent disablement as a result of injury or disease, and also those who by reason of age and infirmity required prolonged care. The old Poor Law infirmaries provided accommodation for many of these people, and once admitted there, they usually stayed for life. Today it is realised that many disabilities can, if treated early, be prevented from becoming serious, and that the best way to prevent the aged and infirm from becoming a burden to themselves and to others is to keep them actively interested within the community. Rehabilitation after accidents, injury, or disease, is therefore an important part of the health service, and many different ways of ensuring this are employed. Convalescent homes, a short stay in hospital, and home-care schemes are some examples. So important has the care of the older members of the community become that special Geriatric Units have been established at many hospitals under the care of a physician sometimes known as a geriatrician. The preservation of the link between the hospital and the home is particularly important with these cases, for unless there is a reasonable prospect of return to their home after hospital care they will remain in hospital, and thereby block the beds required for others. In doing so, their own return to full usefulness in the community may also be delayed.

### COST.

The cost of the National Health Service is met from three sources. The major contribution comes from the taxes; a small part comes from insurance contributions under The National Insurance Act, and about half of the Local Health Authority costs are borne by the local ratepayers.

The estimated gross cost of The National Health Service in England and Wales for 1954-55 was £453,805,035, of which approximately £278 million was for hospital services.

The increase in cost of the service as compared with the estimates when it was first planned is due in part to the great advances in medical care, and also to the rise in cost of salaries, wages, and materials.

### HOW TO OBTAIN THE SERVICES.

The detailed arrangements inevitably vary from district to district. It is therefore necessary to enquire locally for the precise arrangements, but the following general guide may help:—

1. **Hospital and Specialist Services.** Through the family doctor.

In case of accident or grave emergency go direct to the hospital if a doctor is not available.

2. **Medical Advice and Treatment.** If you have not already done so, or when you move to a new area, you should choose your family doctor immediately. The simplest way is to ask him to accept you, and if he agrees to do this give him

the official application form when you have filled it in. A separate form must be filled in for each member of the family. If you do not know a doctor you will find a list of those practising in the area at the Post Office.

In emergency apply to any doctor practising in the area who has joined the Service.

The names of doctors specialising in midwifery are kept on a special list. Your own doctor will advise you on this.

3. **Medicines and Appliances.** Take your doctor's prescription to any chemist. In country districts your doctor will advise you where to go. He may dispense the medicines himself.

4. **Dental Treatment.** Expectant mothers and children get priority care. Apart from these priority classes you may choose any dentist who provides dental treatment in the Service. The procedure is simple. You call on him by appointment, and he will begin treatment immediately after you and he have signed the appropriate form.

5. **Eye Services.** Your family doctor will recommend you to an eye specialist or ophthalmic optician. If your spectacles need repair you can go direct to the optician.

6. **Supplementary Services.**

(1) *Ambulances* through your own doctor. In emergency an ambulance may be summoned through the police or by dialling 999 on the telephone.

(2) *Home Nursing* through the family doctor or directly to the nurse in an emergency.

(3) *Midwifery Service* through the family doctor or the district midwife or the local welfare clinic or the hospital.

(4) *Health Visitor* through the family doctor or the local welfare clinic or local health department.

(5) *Home Helps* through your doctor or the district nurse, midwife or health visitor, or the local health department.

(6) *Vaccination against smallpox and immunisation against diphtheria* through your own doctor or through the welfare clinic or local health department.

7. **Care and After-care of the Sick, including Equipment.** Arrangements may vary from one district to another. Your own doctor and the district nurse will be able to advise you.

For care in cases of tuberculosis ask at the hospital or chest clinic or the local health department.

On the home care of mental patients or mental defectives consult your own doctor in the first instance. In case of doubt enquire at the local health department.

### THE FUTURE.

The British National Health Service is one of the greatest experiments in health care ever undertaken, and is being watched critically by countries all over the world. For the first time in our history every man, woman, and child in the country is entitled to free medical care. It is, therefore, very important to see that this new Service is not abused. If doctors are consulted for trivial conditions they cannot get on with their proper work. Hospital care is now very costly, and should be reserved for those who are going to benefit by their treatment or who cannot be cared for at home. At present the energies of those employed in the National Health Service are devoted mainly to curing the sick, but it must not be forgotten that the main purpose of this Service is to improve the health of the people. To be, and remain, healthy requires many things such as a healthy environment, good food, and healthy working and home conditions. Above all it depends on the intelligence and common sense of the individual concerned. Many of the conditions treated to-day by the doctors in their surgeries or at hospital could have been prevented altogether or cut short. The spread of such a disease as tuberculosis, for example, is preventable. Again, many people fear cancer and will not go to a doctor until it is too late. The ideal for everyone is a happy, healthy, well-balanced life. The National Health Service is a step towards this, but it remains for the individual to ensure that by common-sense application of the simple rules of health, and the avoidance of excesses, he makes the most of his life. State services can help a man, but they cannot live his life for him. That remains his responsibility.



## BABY CARE

### THE HEALTH OF THE MOTHER.

The health of a baby during its early years of life is so bound up with the health of the mother that the two must be considered together. Indeed the intimate relationship which exists between the two before birth is, in normal circumstances, continued after birth and throughout the whole of the first year. It is therefore necessary to consider first the health of the mother before the birth of the child.

It has now been established beyond doubt that the health of the expectant and nursing mother affects profoundly the health and well-being of her infant. It is not merely a question of good bodily health. Mental contentment and freedom from anxiety are also important. It is necessary, therefore, to encourage a placid state of mind from the outset. This can best be done by making the arrangements for adequate care and supervision as early as possible. As soon, therefore, as pregnancy is suspected the mother should seek the advice of her family doctor.

When the pregnancy is confirmed the question whether to have the baby at home or in hospital must be decided. Much will depend on the opinion of the doctor, who may consider confinement in hospital advisable on medical grounds. Other considerations will also enter into this decision, such as the suitability of home conditions, the care of other children in the family, the availability of domestic help and so on. If it is decided to have the baby at home, arrangements must be made for securing the services of a midwife or, if the doctor is going to attend the confinement, of a maternity nurse. The sooner these arrangements are made, and other matters such as the provision of home help and care for the other children decided, the sooner will the mother be able to settle contentedly to prepare for the baby. Subject to the advice given by the doctor and midwife the more natural the life the expectant mother lives the better.

Experience in a number of countries, including Great Britain, in the Second World War confirmed the view that the nutrition of the expectant mother is of vital importance, both to her own health and to that of the baby. That is so throughout pregnancy, and especially in the earlier months. From the moment that pregnancy is diagnosed, therefore, it is essential that the mother should have a good and varied diet, with plenty of fruit, salads, and vegetables, in addition to fresh meat and fish, milk, butter, eggs, and cheese, for it is from these materials that the essential proteins, the fats, carbohydrates, and mineral salts required by the developing infant are drawn. Adequate supplies of vitamins are also required, especially when the baby is growing rapidly in the later months of pregnancy, and these are usually supplied in the form of cod-liver oil or halibut-liver oil which contains vitamins A and D, and fresh orange or tomato juice or concentrated orange juice, rose-hip syrup, blackcurrant syrup, etc., which contain vitamin C. Multi-vitamin preparations containing a number of vitamins may be taken on the recommendation of the doctor or welfare centre.

Mineral salts, and especially calcium and iron, are essential for both the mother and the child, especially during lactation. Calcium is supplied naturally by means of milk, cheese, and vegetables, and iron by way of green vegetables, egg yolk, liver, peas, beans and lentils, oatmeal, wholemeal flour, and green vegetables.

The old tradition that the expectant mother should attempt to eat enough for two people is, of course, a fallacy. A good, well-nourishing diet taken at regular meal-times is all that is required. Similarly, the other elementary principles of healthy living should be followed, with adequate fresh air, exercise and sleep, and a rest during the day. Before attempting anything exceptional, such as hard exercise or swimming, medical advice should be taken.

### MEDICAL SERVICES.

It is no part of these notes to describe the arrangements for the confinement, but it is obvious that this will be made much easier if adequate preparation has been made. The expectant mother should therefore make sure that she is

getting all the help which the health and welfare services can give. These services are now very extensive, and they are available to everyone. Under the National Health Service, for example, the help and advice of a doctor and midwife are freely available, and so also are the welfare clinics of the local authority and the expert care of the hospitals. These services are described in detail in the notes on the National Health Service on p. 806.

The Local Health Authorities now provide a free ambulance service for those who may need it, and also a home help service whereby a helper experienced in the running of a home can come to assist the family during the time of confinement, and also if necessary during the nursing period. Local Health Authorities may make a charge for this home-help service.

If there are other young children in the family it may be possible to make use of day or residential nurseries where these are provided by the Local Health Authority, and old people in the house may be encouraged to go to an old people's club during the day, or be found temporary residential accommodation elsewhere. In making these arrangements the advice of the health visitor will be valuable. Local Health Authorities are empowered, under the National Health Service Act, to provide nursing equipment and additional comforts in the home. These may take the form of bedding and blankets, and nursing equipment may include such items as bed-pans, macintosh sheeting, air-rings, and bed cradles. Local authorities can make a charge for lending this equipment. Another helpful provision is that of a recuperative holiday after confinement.

It goes without saying that regular examinations of the expectant mother's health should be made, and these ante-natal examinations may be carried out by the general practitioner, at the welfare centre, or at hospital. Similarly, an examination to detect that no minor disability remains as a result of the confinement is also essential to prevent subsequent ill-health. This post-natal examination, which is usually made about six weeks after the confinement, may be undertaken by the family doctor or at the welfare clinic or the hospital.

### GENERAL PREPARATION.

Two of the important things to prepare in advance are the baby's clothing, and equipment and furniture.

*Clothes* have undergone revolutionary changes in the past thirty years. Whereas it was formerly the fashion to provide elaborate sets of clothing, often in three or four layers, the objective to-day is to provide the simplest and lightest clothes which will keep the baby warm and comfortable and at the same time allow free movement and exercise. It is essential to remember when buying or making baby's clothes, and also later on when washing them, that a baby's skin is very sensitive and liable to chafe easily. The under-garments must be of soft and fine material that will wash and wear well, and the layer next to the baby's skin should be the same in summer and in winter and night as well as day. A common mistake is to put too many clothes on the body. A baby loses heat quickly from the whole skin, including the legs, and in cold weather the legs should be covered. The old tradition of wearing bonnets is now nearly dead. Provided that the baby is not directly exposed to draughts and keen winds, there is no need to wear any head covering except in very cold weather, when a woollen bonnet which covers the ears should be worn out of doors.

*Vests* should be of soft, fine wool, silk or silk merino, and long enough in the body to ensure that there is no gap between vest and napkin. A wide piece of tape can be sewn to the bottom of the front of the vest so that the napkin can be pinned to the vest without tearing it. The neck of the vest should be wide enough to go over the baby's head without force.

*Napkins* are usually of two kinds; soft muslin squares to be worn next to the skin, and turkish towelling worn over these as an added protection. The various ways of putting on and changing napkins are best learnt by demonstration by the midwife or at the clinic.

In cold weather the baby will need, in addition to vest and napkin, a woollen jersey and knickers and good woollen socks long enough to reach almost to the knee. As woollen socks are easily kicked off they should be drawn in by a ribbon and tied above the ankle. In really cold weather a long-sleeved double-breasted matinee coat of wool should be worn.

In hot weather the baby may need only vest and napkin, but care must be taken to add clothes as soon as it turns cooler. Incidentally it is wiser not to speak of summer and winter clothes when dealing with young children. In the British Isles, at any rate, a winter day can be warm, and cold spells occur in the summer. If the system is adopted of adding warm garments to the foundation of vest and napkin according to the temperature indoors or outdoors, the child will be most comfortable. In this, as in all other matters relating to the care of the baby, common sense plays a very large part.

Bibs are needed to save the clothes when the child dribbles or regurgitates its food after feeding. They should be of soft, absorbent material, such as drill or cotton, with tapes to tie round the neck and the waist. Bibs made of plastic material are not recommended, as they may cover the child's face if he falls asleep, and a young baby was stifled in this manner not long ago.

Binders are not necessary after the first ten days of the baby's life. Once the stump of the umbilical cord has separated and the scar at the navel has healed the binder should be discarded.

The equipment and furniture required are simple and will vary with the type of home and financial circumstances, but the underlying principles are the same for all homes. The first essential is cleanliness. This means not only provision for bathing the baby, but also facilities for washing the baby's clothes and napkins, and for the clean preparation of the baby's food and clean surroundings generally. It is essential also that the mother should be able to see to her own cleanliness and in particular the care of her clothes and hands.

A low chair on which the mother can sit to nurse and bath the baby is useful, and this can be improvised by cutting down an ordinary wooden chair. It can be painted a bright colour and it should be scrubbed at regular intervals—for example, once a month.

The cot for the young baby can, if necessary, be improvised from such things as a wicker basket. During the late war, cots were even improvised from orange boxes! It is, however, worth while to buy a wicker cradle and later a large dropside cot, as this will last well into infancy. A point to be remembered about cots and also about play-pens is that the bars should not be more than 3 inches apart, so that the baby cannot get his head through. Also there should be no collapsible parts which can suddenly give way and trap the fingers.

Bedding for the cot will include a blanket to go under the mattress. Next comes the under-blanket on top of the mattress. Over this comes the macintosh or other waterproof material with the flannelette drawsheet over it. The baby is wrapped in a shawl or soft blanket and covered with a top blanket. An extra blanket may be needed in cold weather. Many leading authorities on baby care recommend that a pillow should never be used, and certainly not a soft pillow, for babies have been known to be suffocated by these. When discussing later on the preparation of food, the washing of the baby and the washing of baby's clothes, reference will be made to some other items of equipment required.

With quiet and orderly preparation for the coming of the baby, pregnancy can be a very happy time. Indeed, that is what Nature intended it to be, and most women are never so well as during the months of pregnancy.

### **THE HEALTH OF THE BABY.**

So far these notes have dealt primarily with the health of the mother. Independent life begins for the baby from the moment he is born. The stimulus of the external air makes him draw his first breath, and immediately his own circulation replaces that of the mother on which he has been dependent for the past nine months. But a new association begins. It is the baby's birth-right that he should be nursed and fed by his mother,

and the intimate relations which exist between mother and baby render them, in effect, one person for nearly the whole of the first year of life. The more the mother knows about babies in general, and her own baby in particular, the better, and it will be helpful to give some facts about the normal baby before describing such matters as general management and breast feeding.

### **Care of the Newly Born Baby.**

This is, of course, the province of the midwife, who, in addition to cleaning the eyes and freeing the mouth from mucus, will bath the baby and wrap up carefully to prevent chilling. After weighing, the baby is put into his cot while the midwife looks after the mother.

*The Cord.* Before birth the baby gets his nourishment from the mother through a cord which enters his body at the navel and at the other end is fixed to a large sponge-like structure (the placenta) attached to the inner wall of the mother's womb. The baby is therefore really a part of the mother and shares her blood supply. That is one reason why the expectant mother should not over-indulge in tobacco or alcohol!

Directly after birth the midwife or doctor ties off the cord and the stump falls off in about seven days. The scar at the navel heals about the tenth day. If strict cleanliness is not observed in handling the baby during that time the cord stump may become septic and the baby's life be endangered. The directions of the doctor and midwife must therefore be followed carefully.

*Weight and Length.* The weight at birth varies usually between 6½ and 8 lb. It is sometimes as high as 10 lb. or as low as 5 lb. Boys usually weigh more than girls; the length of a baby at birth is usually 19 to 20 in.

*The premature baby* is not necessarily one which is born before the end of the normal pregnancy, and often babies born three weeks before they are expected are normal in size and do not require special care. The newly born baby weighing less than 5½ lb. is usually regarded as premature and treated accordingly. Premature babies have not got the natural resistance of the normal baby and require special care. For example, the results of a cold or influenza, or any septic infection, are more serious in these babies, and it is therefore necessary to exercise strict watch over them and keep them apart from other children and adults. Again, the body temperature of these babies is often low and requires to be kept up to normal by artificial means, such as hot bottles and extra clothing or electric blankets. Some babies are so small and delicate that they have to be nursed in an incubator. Premature babies are difficult to feed and they do not suck so vigorously as a normal infant. On the other hand, it is even more important that they should be breast-fed, if possible, than with normal infants. Extra care is therefore necessary with the premature infant, and many Local Health Authorities have arrangements for nursing these babies either at hospital or at home with a specially experienced nurse. It is important to remember that premature babies need special attention throughout the first year of life, for if neglected they are especially liable to bronchitis and pneumonia. The care taken by health and hospital authorities to save such babies is well worth while, for once they pass the critical early months they develop fully, both in mind and body, into normal healthy people.

*The Skin.* At birth the skin of a baby is red and covered with a protective fatty substance which comes off with the first bath; the redness persists for a few days. The skin of a baby is extremely delicate and needs very careful attention. This will be emphasised later when the question of washing and bathing is considered.

*The Head* of the new-born baby may look a little out of shape. This is because of the pressure during birth and it rapidly becomes normal. The bones of the skull are separated from each other in the new-born baby, and on the middle of the top of the head there are two diamond-shaped soft spaces where the skull bones meet. The space towards the front of the top of the head is known as the anterior fontanelle, and the doctor and midwife often gain useful information on the child's condition from the bulging or depression of this area. The other opening towards the back of the skull is smaller and is known as the posterior



fontanelle. This closes in six or eight weeks, but the anterior fontanelle remains open for about eleven to eighteen months.

*Chest and Abdomen.* No special comment is needed concerning the chest of the baby, but the abdomen is normally more prominent than in older children. This is due partly to the very large liver of the young baby and also to the fact that the stomach stretches to take in as much as 3 or 4 oz. of milk at one feed.

*Nervous system.* Even a newly born baby can grasp an object and hold it. It can also suck and swallow from birth, but the special senses are not well developed. Loud noises will startle the baby, but he cannot at first recognise where a particular noise comes from. Babies are particularly sensitive to bright lights, but for some time cannot properly control the movements of the eyes and head so as to be able to gaze steadily at anything. The sense of smell and taste develop in a few days. Movements of arms and legs are not co-ordinated at first, but at the end of the third or fourth month of life the child can usually hold up his head. At the end of five or six months the baby makes an attempt to sit up, although this may be delayed until the seventh or eighth month. By the ninth month the child begins to crawl and can usually stand at the end of ten months. At twelve or fourteen months he walks. The young baby is very sensitive to his surroundings. If these are unfamiliar he may, for example, refuse to feed. Also if the mother or a relative is nervous in handling him he will immediately become frightened. It is therefore very important to learn how to handle a baby properly and firmly so as to gain and hold the child's confidence.

*Speech.* Sounds are made a few weeks after birth, but single words are only said towards the end of the first year. Real talk does not occur until about twenty months or two years.

*The Teeth.* One of the reasons why it is important to ensure the adequate nutrition of the mother during pregnancy is that the infant's first, or milk teeth, are developing at this time, so that they are already present within the gums at birth. They appear through the gums in the following order:—

Lower central incisors	5th to 6th month
Upper central and outer incisors	7th to 8th month
Lower outer incisors	10th to 12th month
First molars	14th to 16th month
Canine teeth (eye teeth)	17th to 18th month
Second molars.	24th to 30th month

Although there are wide variations in the time of appearance of teeth, eight teeth should be present by the end of the first year, and all twenty of the milk teeth by the end of the second year.

The prevention of dental decay depends, therefore, partly on the good nutrition of the mother, but also on freedom from illness of the infant, especially one which affects the intake of food for any length of time. The preservation of the teeth depends on the presence of an adequate supply of mineral salts, and especially calcium, and also of vitamin D. Exercise for the jaws by the gnawing of hard crusts, or rusks, is also necessary.

#### GENERAL MANAGEMENT.

It is important to have a clear idea of the needs of the young baby, in order that a regular routine may be worked out which will place the least strain on the mother and give the baby the maximum degree of comfort and security. It is also necessary to know where to turn for guidance and advice in a difficulty. The family doctor is, of course, the stand-by in emergency and if illness is suspected. He is, however, a very busy man, and the young mother may not want to worry him with enquiries which, although important to her, are relatively trivial to him. The midwife, the health visitor, the district nurse and the Welfare Centre are all available to advise. When in doubt do not hesitate to ask for advice. The mere sharing of an anxiety with another is helpful.

The baby's material requirements are simple. They are food, cleanliness, warmth and sleep and, above all, an orderly routine.

#### The Daily Routine.

Opinion varies as to the frequency of baths for the newly-born infants, but it is now a common

practice to bath the baby immediately after birth, and then to leave him until the stump of the cord has separated, at the seventh to the tenth day, the skin being cleaned, when necessary, with olive oil.

After this time the baby will take a bath each day. The decision whether this should be in the morning or evening is a matter of choice, depending on the feeding times, but the evening is usually chosen, as the infant settles down more quickly after an evening bath, and thus develops a habit which is carried on into childhood.

After the early morning feed the baby will sleep until it is time for the morning "wash and brush up" but, before this, all the preparations for washing will have been made so that he is not kept waiting. Warm water tested with the elbow or thermometer to see that it is not too hot (not more than 100° F.); two basins, one for the face and the other for the body; soap, olive oil, cotton wool swabs, towels and clean napkins, a pot, and a bucket for the dirty napkins and used swabs. The mother will not forget to wash her own hands thoroughly before making these preparations. Obviously the room should be comfortably warm. First, the napkin is removed and the baby held out on his pot. It is most important to train the baby into clean habits from the earliest days, and he should always be held out at the same time even if wet. The midwife or nurse will have shown the mother the best way to do this, but, in essence, it consists of holding the baby firmly with the mother's arms so that he sits comfortably with his back resting against her chest.

*The Daily Bath.* Like the morning wash, the daily bath should take place half an hour before a feed. Everything should be prepared before the baby is disturbed. After washing her own hands the mother will arrange the bath, swabs, soap, olive oil, towels, pot and "dirty" bucket as for the morning wash. The child's night clothes will be laid near at hand. The routine of the baby's bath is best learnt by example from midwife and nurse, but the basic rules are, first, to remove the napkin and hold out the child. Then to wash the face, next the head, then the body and lastly the buttocks.

*The Care of the Skin.* A baby's skin is very sensitive and will quickly chafe and get sore if roughly handled. It is therefore necessary to exercise the greatest care in the choice of materials used for washing and in the handling and drying of the skin. Great care should be taken to select the finest soap and the softest of washing flannels or sponges. Towels must be soft, dry and clean, so that the skin can be dried thoroughly by gentle rubbing. Gentle handling is particularly necessary for the creases of the skin and behind the ears. Some experts say that powder is unnecessary after bathing, but there is little doubt that a good dusting powder helps to preserve and soothe the baby's skin and to keep it dry.

If the skin becomes inflamed and sore expert advice should be sought, as the baby is very susceptible to septic infections which can enter through small abrasions or cracks in the skin.

#### Sun and Air.

Many skin conditions in infancy, and indeed other illnesses, are predisposed to either by neglect or excessive care. Leaving the baby to lie in wet and dirty napkins is one example, and at the other extreme is the failure to allow free access of air and sunlight to the skin by over clothing. The human skin has many important functions, including the maintenance of the temperature of the body, and it is also concerned with the manufacture of vitamin D by the action of sunlight on the skin. It is therefore essential that the body should obtain a reasonable amount of fresh air and sunlight.

*Sore Buttocks.* The best way to prevent a baby from developing soreness of the skin of the buttocks is early training in clean habits, as in many instances the inflammation of the skin is due to irritation set up by the child's urine or motions. Obviously a clean dry napkin will not cause this soreness, and the well-trained child soon learns to keep clean and dry. Accidents will, of course, happen and some little upset in the diet may cause frequent stools. It is therefore essential to change the napkins regularly and to clean the buttocks thoroughly after a motion.

All fecal matter should be removed with cotton wool swabs (which are put immediately into the "dirty" bucket), and the buttocks are then cleaned gently with warm water, dried and powdered. If the skin is red and sore, olive oil may be used for cleaning instead of water, and zinc and castor oil ointment or cold cream instead of powder. If the soreness is marked the daily bath can be stopped for a day or two, but expert advice should be sought if it does not clear up quickly.

### CARE OF THE CLOTHES.

Apart from the fact that every mother likes her baby to look clean and neat it is essential to keep the clothes clean because of the sensitiveness of the young infant to infection of all kinds. Cracks or abrasions of the skin may turn septic if dirt comes in contact with them, and dirty clothes or towels are particularly liable to cause infections of this kind. Apart from this, badly washed clothes may also set up inflammation of the skin by being hard, and thereby chafing the skin, or because irritating fatty acids from the wrong kind of soap have not been completely rinsed out. The first essential is therefore to wash all articles which may come into contact with the baby regularly and frequently.

The mother must see that her own clothes and body are clean and in particular that her hands are washed thoroughly before the baby is handled. Her aprons and overalls should be washed frequently and discarded at once if soiled. This is particularly important if soiling takes place when the baby's napkins are changed.

Towels must be clean, soft, and thoroughly dry, before they are used.

Flannels and sponges should be washed frequently in hot water and thoroughly rinsed free of soap. Face flannels should be boiled once a week.

Napkins require special care. They should first be sluiced under running water to wash out all solid matter, and then left in a bucket of cold water until ready for washing. Washing should be done in warm water with a good soap lather with thorough rubbing, and rinsed in several lots of water until all the soap is rinsed out. After wringing they are hung up to dry. Drying should not take place too quickly, as the napkins will then be hard. For this reason it is best to dry them out of doors. Mangling will help to make the napkins soft after drying.

*Baby's Clothes.* Different materials require different methods of washing, but the principles set out above hold good for all clothes. The washing must be thorough, in water which is hot enough to enable dirt to be removed but not so hot that the clothes cannot be well cleaned by hand. It is particularly necessary to see that neck and cuffs are cleaned properly, and the same comment applies to the lower edge of the vest which may be soiled from the napkin.

Bibs should be boiled at regular intervals, as they are liable to get smelly from regurgitated milk.

### SLEEP.

If a baby is warm and comfortable and well fed its natural reaction is to sleep. The newborn infant sleeps for eighteen to twenty hours each day, waking only to be fed, and even at twelve months he will require fourteen or fifteen hours sleep each day. Sound sleep is essential to good health, and bad management of the young baby may result in faulty habits which last throughout life. Thus undue excitement before being put down to sleep, or irregular hours, may sow the seeds of insomnia. Ideally the baby should be made so comfortable that he will sleep from ten o'clock at night until six o'clock the next morning, but hunger may prevent this, and feeds may require to be re-arranged accordingly.

Restless sleep, with sudden nervous starts, is not a normal condition, and expert advice should be sought if this persists. A common cause is some digestive upset, such as colic or constipation, and coughs and colds also disturb the normal sleep rhythm, especially if there is a rise of temperature. It may then take a few days for the normal regular sleep habit to return.

### CRYING.

It is normal for the young baby to cry, and a lusty yell is a good way to expand the lungs.

Attacks of crying and screaming do not always signify pain or colic. Although it is a mistake to pick up a baby every time he cries, it is necessary to exclude sources of discomfort, such as hunger, a wet napkin, colic, constipation, and pain. Apart from these, the child may quite easily get into the habit of crying, or the baby, even the very young baby, may realise that he can readily attract attention by a display of tears or temper and thus be spoilt. It is advisable to seek expert advice if the fits of crying persist without apparent cause.

### CARE OF THE MOUTH, NOSE AND EARS.

Common sense applies in the cleanliness of the mouth, nose and ears, just as in all other matters relating to the care of the baby. The lining of the mouth is very delicate and easily scratched. It should not, therefore, be cleaned. Indeed, any attempt to clean the mouth may result in an infection which will result in difficulty in feeding and fretfulness. As mentioned earlier, the nostrils must be cleaned regularly, but this only means the entrance to the nostrils. Sneezing and discomfort are caused if the cotton wool is pushed up too far. The cotton wool swabs used to clean the nose should be moistened in warm water and twisted to a point. The ears may also be cleaned gently in the same manner as the nostrils, but no attempt to remove dirt or wax with a solid instrument, like a match-stick or hair-pin, must be made. Permanent injury to the ear-drum and hearing may easily result.

### BREAST-FEEDING.

Every baby has the right to expect that his mother will feed him herself. That is the natural way and has advantages to both mother and baby. The baby gets the best possible food without any of the risks of contamination that may occur with the preparation of artificial food. The temperature of breast milk is that of the infant's body and it contains various protective substances which help to shield the baby from infection.

The mother, for her part, has the satisfaction of knowing that she is "mothering" her baby in the fullest sense. Incidentally, breast-feeding costs nothing, whereas artificial feeding can be quite an expensive matter. There are certain medical conditions where a mother should not feed her baby herself, but they are very few in number.

As in everything else in life confidence arises from the knowledge of the right way to do a thing. Breast-feeding is no exception to this rule, but it is particularly important that the mother should have full confidence in her ability to feed the baby, as any nervousness and anxiety on her part are soon transmitted to the child. This is one of the reasons why regular visits should be made during pregnancy to the doctor or clinic, in order that the mother's general health may be investigated and such important details as the care of the nipples attended to. The midwife will see that a regular routine is taught during the first fortnight of the baby's life, so that by the time the mother assumes full responsibility for the baby she will have had quite a lot of experience.

The general rules are, of course, quite simple. Regularity is the cardinal rule both for the sake of mother and baby. The latter must be able to have his food at the same times each day, and the regular routine helps the mother to lead her normal life. The mother will already have had instruction on the care of the breasts, and in particular the preparation of the nipples so that they will not become tender when the baby starts feeding. The next essential is, of course, cleanliness. The nipples must be carefully washed before and after feeding and particular care should be taken in drying after feeding, as a little crack or fissure in the skin of the nipple, in addition to causing pain and discomfort, may let organisms enter to cause a breast abscess.

The third essential is to persevere. Many young mothers get discouraged at what proves to be in fact only a temporary upset. For example, the baby with a cold in the nose has difficulty in breathing and feeding at the same time, but a little patience will soon ensure that he does not suffer, by taking a little longer at each feed.

The last great requisite is calmness. Breast-feeding is a natural process, and countless millions of women have successfully fed their babies since the world began. It is not therefore a matter for



nervous speculation and anticipation. Any nervousness or sense of strain on the part of the mother is quickly felt by the infant, who will in turn be restless and irritable. A comfortable position in quiet surroundings, and a regular routine, will ensure that the baby can give his entire attention to feeding, and the supply of milk almost invariably keeps pace with the demand. If any little anxiety or doubt arises in the mother's mind she should seek competent advice and not listen to "old wives' tales". The doctor, midwife, or health visitor, are the best people to advise.

### WEANING.

No sensible grown-up person would contemplate changing suddenly from a normal diet to one entirely different. In the same way, weaning should be a gradual process. Between the sixth and twelfth month of life the baby will be changing from four-hourly feeds to the "three good meals a day" routine which he will hope to continue for the rest of his life. To begin with, therefore, it will be natural to change his diet by altering *one* of his feeds, for example that at 2 p.m. This may be at first one of the recognised proprietary milk foods, and later such items as milk pudding, potato and gravy, and green vegetables, may be given. From the sixth month onwards, the baby will want to nibble a rusk or hard-baked crust, which may be smeared with butter, egg, honey, etc. It is not necessary to continue breast-feeding beyond the ninth month and many mothers stop earlier. Much depends on the health and energy of the mother. Generally speaking she should try and continue breast-feeding during the hot weather and not wean until the autumn. By this means the anxiety of protecting the baby's food from contamination during the summer months is avoided. It is also inadvisable to wean if the baby is suffering from illness. It is much better to continue with breast-feeding until he is well. It is sometimes necessary suddenly to wean a baby. For example, the illness of the mother may make this imperative. In that event expert advice should be taken, as the sudden transfer to an unsuitable food may upset the baby's digestion. Again, the amounts of food taken by different babies vary very much, and one may take several ounces more than another in the course of twenty-four hours. It may therefore be necessary to try different kinds and amounts of artificial food before the right one is found, and expert advice on this is most helpful.

### ARTIFICIAL FEEDING.

It would be unwise in these notes to attempt to describe the various kinds of artificial food for a baby. Babies vary in their likes and dislikes from one to another just as grown up people do. The basis of artificial food is cow's milk modified in various ways. Very few infants will tolerate whole cow's milk as the amounts and nature of the fat, sugar, and protein, are different from human milk. Expert advice should be sought on the best type of artificial food for the baby, but there are certain fundamental rules which must be followed in all cases. In addition to the essentials already set out for breast-feeding, namely, a regular routine, quiet surroundings, and personal care all the time the baby is being fed, particular attention must be paid to cleanliness. It is very easy to contaminate the baby's food in the course of artificial feeding and infections caused in this way may prove to be serious.

First, the mother must make sure that her own hands are clean by scrubbing with soap and water and drying on a clean towel before each feed is prepared. This precaution is particularly necessary if the mother or one of the other members of the family has an intestinal upset, such as diarrhoea. Next, the room in which the food is prepared must be scrupulously clean and free from dust and dirt. The outside of tins and containers must be cleaned before they are opened and so must the table or tray on which the food is kept. Much time is saved by neat and methodical preparation. If everything required is kept always in the same place, and used articles are cleaned and replaced immediately, the risk of contamination by constant handling of unnecessary articles is thereby reduced. Saucepans and bowls and basins must also be absolutely clean, but the most frequent source of infection is in the feeding-bottles

and teats. If these are not cleaned properly after each feed the film of milk left behind makes an ideal breeding-ground for bacteria. Feeding-bottles should be washed after each feed, rinsed, and kept in cold boiled water until required again. They should also be boiled for two or three minutes every twenty-four hours. Teats should be turned inside out and cleaned thoroughly after each feed, and boiled once a day for a minute in water to which a little salt has been added; the salt helps to preserve the rubber. Between feeds they also should be kept in cold boiled water.

It is advisable to boil all milk for babies, especially in hot weather. Indeed, where there are no proper facilities for keeping fresh milk, it may be wiser to use dried milk in very hot weather. It is also essential to see that jugs and bottles containing milk are securely covered to keep out dust and flies.

The actual feeding of the infant should follow the same routine as for breast-feeding. The baby feeds best when he is quiet and comfortable, and the napkin should therefore be changed before feeding. In no circumstances must the baby be given a bottle and left to his own devices. The mother should stay during the whole feed and hold the bottle herself. Only by this means can the little encouragement and attention which mean so much to the health of the infant be given.

### Vitamins.

Milk, fruit, and vegetables make the basis of the baby's diet, but by the age of nine months he is able to digest tender and finely divided meat, and also fish. At this age all fruits can be eaten, but fruit with pips and skins, e.g., black and red currants and gooseberries, require to be strained and given in the form of gooseberry fool, etc.

Similarly, all vegetables can be taken, provided that they are young and tender and well cooked, and small amounts of lettuce, carrot, and other salads can be given, provided that they are finely divided.

It is essential to ensure that the infant receives an adequate supply of vitamins, especially in the winter. This may be done by adding fresh or concentrated orange juice or rose-hip syrup, and cod-liver oil or halibut-liver oil, to the diet, or by means of vitamin concentrates. It is advisable to take expert advice on the most suitable way of supplementing the vitamin content of the diet especially following an infection, for coughs, colds, and other infections, tend rapidly to lower the reserves of vitamins in the body.

Foods containing iron include green vegetables, and bone and vegetable broths. Calcium, so important for bone formation, is supplied with the milk in the diet.

### THE SYMPTOMS AND SIGNS OF ILL-HEALTH.

It is, of course, essential to seek advice immediately illness is suspected. The signs and symptoms of illness in the baby are not so clearly defined as in grown-ups, nor can the baby tell where he has pain or discomfort. Again, anxiety or doubt in the mother's mind is best shared with an expert as soon as possible. The following notes may, however, serve as a guide in interpreting some early departures from the normal.

**Temperature.** A young child will often develop a rise of temperature for no apparent reason, as the mechanism for controlling the heat of the body is not so well regulated as in older people. A slight temporary rise in temperature may not therefore be so significant as in older children, but if at the same time the child is restless, irritable and "off his food", it should not be neglected. The thermometer should be placed under the arm-pit with the arm held closely to the side, or in the fold of the groin with the legs held closely together. As the skin temperature is a little lower than the body temperature it should be kept in position for five minutes before reading the result. The normal temperature is 98.4° F.

**General Appearance.** The mother will be able to tell when a child is ailing, as she sees the baby constantly. Restlessness, irritability, pallor or undue flush, sweating, crying and unusual movements or positions, may all give an indication that the child is unwell. Colic, or vomiting and diarrhoea or constipation, may also help to show abnormalities.

*Restlessness and disturbed sleep in a baby who*

had previously been sleeping and eating well are obviously indications that there is something not quite right. This is especially the case if at the same time there are other symptoms, such as sweating and a rise in temperature. Lying in an abnormal position, or the development of rigidity in the back or neck, should be enough to seek expert advice at once.

**The Air Passages.** The common cold may be quite a serious matter in the young baby. In addition to making him feverish and fretful it interferes with his feeding because the nose is stuffed up. A cold in the head should not be treated lightly, and every effort should be made to keep away people who have a cold so that the baby does not catch it. When nursing a child with a simple cold make sure that he has plenty of fresh air. A stuffy atmosphere delays recovery, and the child will come to no harm if he is warmly clad. Patience in feeding is required, as he will need frequent rests to get his breath. Plenty of warm, sweetened, boiled water will help to relieve thirst. The nostrils should be kept clean and soreness prevented by lightly rubbing vaseline round the nose and upper lip.

**Cough and Shortness of Breath.** If the baby develops cough, and shortness of breath, expert advice should be sought at once. There is, of course, no need to assume that the child has some serious condition such as pneumonia. Probably he has some simple condition which will get better in a few days with expert treatment. On the other hand, it would be sheer stupidity not to take advice, as even a simple bronchitis can cause the baby distress and interfere considerably with his feeding.

**Refusal of Food.** A young child refuses food either because he does not want it, or he is "full up," or because he is not feeling well, or because he is feeling cantankerous and is "playing up" in consequence. The first and last reasons are soon cured by hunger, but the onset of illness, and especially the early stages of infection, are not easy to detect, and it is inadvisable to delay too long before seeking advice.

**Vomiting and Diarrhoea** occurring together should lead the mother to seek advice at once, particularly if this happens during the hot weather and other cases are known to have occurred in the neighbourhood.

**Vomiting without Diarrhoea.** It is normal for the child to regurgitate a little food after feeding particularly if he has had too much. Again he may bring up a little milk with the wind, but the vomiting of sour curdled milk is not a normal event. Persistent vomiting, particularly if "explosive," or not related to food, will need expert advice, as it may be the first symptom of illness.

**Diarrhoea.** Slight changes from the normal, righting themselves in a few hours, are only to be expected from time to time. If diarrhoea persists, and particularly if the child is also out of sorts, expert advice must be taken. A change of colour of the motions from orange-yellow to a green and slimy stool is an indication for seeking advice at once. In any attack of diarrhoea, however slight, particular attention should be paid to the skin of the buttocks, as this readily becomes inflamed and sore. The treatment for sore buttocks is described earlier in this article.

**Constipation** is not a cause for anxiety unless it is persistent, or the child is ill in other respects. In fact most babies tend to be constipated. Drastic measures are not called for. It is, of course, essential to persevere with the regular routine each day in order that regular habits may be acquired. The first essential in treatment is to see that the baby is getting enough food, and adequate exercise, together with plenty of sweetened water, or fruit juice and water to drink. Constipation is more frequent in the older infant who is taking mixed or artificial food, and he can be given such simple (and usually effective) remedies as a teaspoonful of prune juice or a teaspoonful of honey in warm water. Persistent constipation requires expert advice, and remedies such as glycerin suppositories or enemas should not be given without that advice.

**Feeding Troubles.** In addition to the above indications of ill-health there are other signs and symptoms which help to show when the baby is not feeding properly. Distension and discomfort

may be indications that all is not normal. Some distension after a feed is not abnormal, but it should subside before the next feed. Persistent distension, especially if it is increasing, should lead the mother to seek expert advice.

Discomfort after feeding is not normal. It may vary from mild restlessness and fretfulness to attacks of colic with screaming and the legs drawn up. Examination of the motions may show that they are loose and green or contain white undigested lumps, in which case expert advice should be sought.

**Failure to Gain Weight and Wasting.** It is essential to remember that babies are not machine made. Therefore they vary from one to another. One may be big and sturdy with a loud cry and a lusty appetite. Another may be small and quiet with only slow gain in weight. Too much attention must not be paid, therefore, to the weighing machine. If the baby is placid, healthy, and sleeping well, the fact that he is not gaining rapidly in weight does not matter. If, on the other hand, the child looks tired and thin with sunken eyes and the fontanelle on top of the head drawn in, expert advice must be sought. If he also has diarrhoea and is irritable or apathetic, then expert advice should be sought immediately.

**Teething.** There is no doubt that teething causes temporary disturbances in most babies, but it is important that illness due to other causes should not be dismissed as teething trouble. It is safer, therefore, to assume that any illness is not due to teething and to seek advice. The kinds of disturbance that may occur in teething are local and general. The local symptoms are pain in the mouth with sore and inflamed gums. The child resents any attempt to see the teeth. There may also be dribbling and enlargement of the glands in the neck. The general symptoms may include a tendency to eczema, and bronchitis, and nervous symptoms, such as fretfulness, irritability, sleeplessness and convulsions. Expert advice should be sought for such conditions as eczema, bronchitis or convulsions. Beyond this no treatment is required except patience and watchful care. Common sense will show the wisdom of studying the child's needs for soft and easily digested food, and avoiding hard crusts and rusks until the tooth is through.

**Convulsions.** The occurrence of convulsions is a danger signal indicating the need for immediate medical advice. In many instances the cause, and the remedy, is simple, such as faulty feeding with insufficient vitamins in the diet. On the other hand, they may be an indication of the onset of an acute infection, or some other condition requiring careful investigation. Fortunately convulsions are rarely fatal, and the first-aid treatment, pending the arrival of the doctor, is to put the baby into a tepid bath and to sponge the head with cold water.

**Head Injuries.** Babies and young children can fall in the most alarming manner without sustaining anything more serious than a bruise. If, however, following a head injury, the baby is pale and drowsy, with vomiting, then expert advice must be sought.

### PREVENTION OF ACCIDENTS.

Each year about 6,000 people die, in England and Wales alone, as the result of accidents in the home. More than one-quarter of these are children under the age of fifteen, and between the ages of one and five years a fatal accident in the home is the third most frequent cause of death. Many of these are either due to accidental suffocation or to burns and scalds.

Down pillows for small babies were formerly a common cause of suffocation. Burns and scalds may result from an unguarded fire, or one in which the fire-guard is faulty. Electric flex with worn insulation is a particular danger to the toddler, for he may fall over it, or get an electric shock if he plays with it. A saucepan handle put within easy reach of the child, or an over-hanging table-cloth with a tea-pot on the edge of the table, may result in a bad scald if the child can reach to pull it down.

Medicines or garden chemicals, etc., left lying about may tempt the child to eat them, and in this connection it should be remembered that young children are more susceptible to poisons than adults.

Finally, a very young child, like an old person, falls readily, and care should be taken not to put



obstacles in its path, such as a loose mat on a slippery floor, or a worn carpet with loose strands.

The young baby should be so well protected that accidents do not happen, but they do sometimes occur, even in the best regulated families! The first essential is, of course, prevention, and the wise parent will look carefully round the rooms in which the baby lives to see that all fires are protected by guards, electric light and power flexes and switches are not exposed, and that hot kettles and taps are out of reach. The table must be so laid that sharp knives cannot be touched and table-cloths cannot be pulled, and teapots, and other vessels containing hot liquids, thereby spilled over the infant.

#### *Protection against Smallpox, Diphtheria and Whooping Cough.*

Smallpox is now rare in the British Isles because of the care taken at the sea and airports to keep it out of the country, and because vaccination prevents it from spreading if it is introduced. It is a very serious disease with a high mortality, particularly in young children.

Although compulsory vaccination has been abolished it is still essential that every baby should be vaccinated. This can be done either by the family doctor or at the Welfare Centre.

*Diphtheria and Whooping Cough.* During the late war the diphtheria immunisation campaign was so successful that the number of cases and the deaths from diphtheria were reduced beyond all expectation. Diphtheria remains, however, a very serious disease and the baby must be protected against it. Immunisation is a simple procedure and does not leave any after-effects. It can be done by the family doctor or at the Welfare Centre. It is now possible to immunise also against whooping cough, and the injections may be combined with those for diphtheria immunisation.

### MATERNAL AND CHILD CARE IN THE SO-CALLED BACKWARD AREAS OF THE WORLD

People living in wealthy countries, with highly developed medical services, soon come to take those services for granted. In many parts of the world, and particularly in tropical and sub-tropical regions, the combination of poverty, the great killing diseases such as malaria, and malnutrition, make the problems of care of mothers and children peculiarly difficult to solve.

Fresh milk and feeding-bottles for infants may be unknown, and the scarcity or pollution of water supplies may render the preparation of infant food a hazardous undertaking. The simple nature of the houses renders elaborate provision impossible, and there may not be storage space for food. There is often a shortage of fuel, and few cooking-utensils are available. In many areas the food for the infant is prepared in the same pot and at the same time as that of the adults. The result is that breast feeding is prolonged, often for two years or more, with a sudden change to the diet of adults. As this may consist largely of carbohydrates, and because first-class proteins in the shape of meat and fish are only rarely available, children tend to be kept on starchy food. They are thus deprived of the balanced diet of fats, carbohydrates, and proteins, and of the essential vitamins which are required for healthy development. As their mothers may also be undernourished, they start life with a double handicap. The result is then only too clearly seen, in the form of anaemia due to deficiency of iron, and various conditions due to lack of proteins and vitamins. Avitaminosis, as it is called, may take a number of forms, including the onset of blindness or rickets. Indeed, rickets is now more common in such countries as India, tropical Africa, the Middle East, and some areas in South America than it is in temperate climates, in spite of the adequate amount of sunshine.

A condition which is receiving much attention at the present time is the disease known as kwashiorkor, due to deficiency of first-class protein, and seen in many tropical and sub-tropical countries. The child victims of this disease not only fail to grow but also show marked mental changes, manifested by lack of

interest in their surroundings and a general appearance of misery. Other symptoms include widespread skin lesions, changes in the colour of the hair, loss of appetite, and vomiting. In more extreme cases the infant may display the wizened, shrunken appearance of extreme starvation, a condition then known as marasmus.

It will readily be appreciated that such infants are particularly susceptible to infections of all kinds, in addition to those peculiar to the region in which they may live. Besides the common infectious diseases of childhood, these undernourished children are at risk from tuberculosis, malaria, yaws, worm infestations, and dysentery. It is not surprising, therefore, that as many as 40 per cent. of children born in such areas may fail to survive the early years of life. Poverty, a low standard of health, and a general shortage of medical and nursing services, combine to produce high infant and maternal death-rates, and these are usually associated with high birth-rates.

After the Second World War two international agencies were established which have a special interest in maternal and child care. They are the United Nations Children's Fund (UNICEF), and the World Health Organisation (WHO). (See also p. 138.) UNICEF is particularly concerned with the feeding of undernourished children, but also deals with the provision of medical supplies and education in child welfare.

One of the first tasks of WHO was to survey health problems on a world basis, and this it did by means of its regional organisation. The work of WHO showed that in many areas environmental sanitation required to be improved, and the purity of water supplies safeguarded, and that the general health of the adult population must also be cared for, for they may convey malaria, tuberculosis, worm infestations, and other diseases to children. The first and most urgent need, however, was for trained staff.

The World Health Organisation works in close association with UNICEF, with WHO responsible for the technical aspects of the work and for providing international personnel, while UNICEF furnishes supplies and equipment. It is a basic principle of both WHO and UNICEF to help governments only in their own efforts to improve their health services. By this means it is possible to integrate the work for mothers and children with the general projects of environmental sanitation, the control of communicable diseases, the improvement of nutrition, and health education.

Many countries have now created a central maternal and child health organisation to supervise and co-ordinate the development of services throughout the country, and also to provide facilities for training staff.

The first essential is, of course, to improve the health of the expectant mother, and particularly her diet. In addition, it is necessary to consider supplementing the infant's diet from about the age of six months, and here, also, the problem is very different from that in temperate climates, for milk can be a dangerous fluid in tropical areas. The experience of WHO and UNICEF teams has been that the wholesale distribution of condensed and dried milk has disadvantages, particularly in those areas where children are usually reared without animal milk being used at all.

It is clear that any programme for the protection of maternal and child health in the so-called backward countries must be based on adequate knowledge of the area concerned, including its climate and culture, the standard of health of the population, the economic circumstances of the country, the level of education, and the efficiency of the government organisations. Shortage of trained personnel and administrators is one of the main handicaps in the development of adequate services for mothers and children in the areas under discussion, and the World Health Organisation, in collaboration with UNICEF, has therefore been concentrating recently on the development of training programmes for doctors, nurses, and midwives.

There is no short cut towards the "attainment by all peoples of the highest possible level of health," as laid down in Article I of the Constitution of the World Health Organisation, but much progress has been made.

# Hygiene and Cosmetics



## Foundations of Beauty

### LIST OF CONTENTS

Structure of Skin, Hair, Teeth, Nails	818-20	Baths, Perfumes	829
General Hygiene	820-21	Carriage and Deportment	830
Care of Skin, Eyes, Hair, Lips, Teeth, Hands, Nails, Feet, Legs	821-22	Clothing	830
		Diet	830-31
		Glossary of Cosmetic Terms	831-34



# Hygiene and Cosmetics

## INTRODUCTION.

THE history of modern beauty culture and cosmetics really begins in the early years of the present century, which saw the first application of scientific principles to the formulation, manufacture, and application of cosmetic preparations. The result of such study is seen in the amazing growth of the cosmetic industry and the tremendous increase in the standard of personal hygiene that has taken place over the past 50 or 60 years.

Certainly, the woman of to-day believes, and rightly so, that it is a matter of importance to look as charming as she can to the end of her life. Man, too, subtle and gradual though his approach may be, has benefited from the development of the modern cosmetic industry: hair preparations, shaving-soaps, creams and lotions have all reached a degree of refinement and efficiency that makes them indispensable. Even so, research and manufacturing developments continue to produce new and often exciting forms of the various toilet preparations to keep pace with the demands of fashion and the gradual increase in standards of living, both here and in other countries.

The basis of good looks is cleanliness and good health. Then comes the finding of the right cosmetics to suit the skin and personality. With good looks come confidence, poise, and achievement.

The aim of this section is to give basic information on the structure and working of the skin, teeth, hair, and nails, and broad guidance upon the use of cosmetics. The skill and ingenuity of cosmetic chemists, perfumers, and manufacturers have made available a bewildering variety of attractive products to suit all tastes and pockets. This section can do no more, therefore, than offer general advice on the principles to be observed in choosing cosmetics and toilet preparations; the final choice must obviously depend upon personal preferences as regards price, perfume, packaging, and the like. For quick reference a glossary of cosmetic terms is given at the end of this section.

## THE HUMAN SKIN.

The skin is one of the most important parts of the body. It is, in fact, one of the largest organs, with an area of about 20-25 square feet and a total weight of 8 or 9 lb. It serves as a sense organ, by means of which the body is made aware of changes in environment, and for this reason it is plentifully supplied with nerves.

In warm-blooded animals, including man, the skin also serves to regulate the body temperature. This is of great importance, as health is preserved only when the temperature is kept between certain limits. The human skin varies in thickness from about  $\frac{1}{8}$  inch on the eyelids to  $\frac{1}{4}$  inch or more on the palms of the hands and soles of the feet, surfaces which have to withstand a good deal of friction.

The structure of the skin itself varies considerably in different types of animals; for example, in the crocodile it has been developed in the form of horny plates; in snakes in the form of scales, and in many varieties of fishes as mucous glands. The

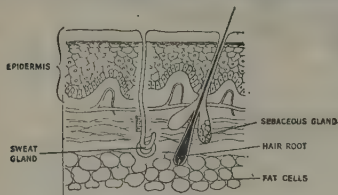


FIG. 1.—Diagrammatic Section through the Skin.

development of hair is a feature peculiar to warm-blooded animals, and it is one which serves to retard the loss of heat from the body. The hairs also act as organs of sensation (touch), and in fact, in human beings, where the hair is rudimentary except in certain areas of the body, this is its most obvious function.

The fundamental structure of the skin is shown in diagrammatic form in Fig. 1. It can be conveniently divided into three main layers: (a) the epidermis or cuticle; (b) the dermis or "true skin," more accurately described as the corium; and (c) the sub-cutaneous or underlying tissue, known as the hypoderm—this is just a mass of fibrous tissue containing many fat cells. The corium and the epidermis, which rests upon it, are themselves divided into other layers, but in the latter the separation of the layers is not distinct. The epidermis, with which the subject of hygiene and beauty culture is most concerned, grows by a multiplication of the deepest layers of cells. These are formed in the corium, to which nourish-

ment is brought by the blood, and push towards the surface those previously formed; in the process the cells undergo a change, becoming horny and "dead," and they are finally shed from the surface of the skin as minute scales. This outward progression of skin cells is continuous, and literally billions are manufactured and billions are shed each day.

**The Excretions of the Skin.** The main excretion of the skin is perspiration or sweat, which is produced by glands in the form of coiled tubes and discharged through ducts which open on to the surface of the skin (see Fig. 1). The openings are termed sweat pores, and they are most abundant on the forehead, palms of the hands, and soles of the feet, where there may be as many as 3,000 to the square inch. It has been estimated that the average human body contains about 2 million sweat glands, which in normal conditions discharge nearly a quart of perspiration each day, but under the influence of heat or exercise this quantity can be greatly increased. The secretion of perspiration helps to regulate the body temperature; when one becomes hot, more perspiration is produced, which, by evaporating, absorbs heat from the skin surface. Perspiration when fresh has a peculiar, though not unpleasant odour, but it quickly ferments, or is changed by skin bacteria, thereby producing what is commonly known as body odour.

In addition to sweat glands and ducts the skin is provided with sebaceous glands, which produce a fatty substance called sebum. These glands discharge their sebum into the sockets or follicles in which the hairs are set, where it is picked up by the hairs, imparting sheen and softness, and it also spreads over the skin surface, helping to keep it soft and supple. The presence on the skin of both sebum and perspiration residue causes dust and dirt to stick to it, so that regular bathing and washing is necessary to keep it clean and healthy.

This applies particularly to the skin of the face when cosmetics are to be applied; a clean skin is essential not only for ensuring an even and artistic result but also to avoid the possibility of those skin blemishes which are caused or encouraged by neglected or dirty skin.

## NATURAL SKIN BLEMISHES.

Very few people are fortunate enough to have a skin which is completely free from every kind of blemish, though many of these are not unsightly, and some may even add to the attractiveness of the features.

**Freckles.** One of the underlayers of the skin contains a colourless chemical substance to protect the skin against sunburn. It does this by changing into a brown or black pigment, which screens the skin against further attack. In most people this protective chemical is evenly distributed throughout the skin, but in others (chiefly

blonds and red-heads of both sexes) it is unevenly spread, and under the influence of sunshine changes into pigment to form the markings known as freckles. At the same time the unfreckled parts of the skin are less well protected, and hence reddened and blister more easily than normal skins. Freckles cannot be "cured," but can be made less obvious by shading the face from strong sunshine and by masking with dark shades of make-up.

**Moles.** Most people have moles on some part of the body, but it is only when they appear in large numbers on the face that they are objectionable. One or two moles appropriately situated on the cheeks or chin, however, may add to the attractiveness of the features, and of course in former times moles on the face were imitated by means of "beauty spots."

On no account must moles be treated except under medical advice. Indeed, unless they are positively unsightly they should be left severely alone. They are caused by changes in the outer layers of the skin, and if interfered with are capable of becoming malignant. They can be at least partly disguised by dabbing with calamine lotion, allowing it to dry, and then dusting off the excess powder.

**Warts.** A wart is caused by a localised increase in cell growth in one of the upper layers of the skin. It is due to irritation resulting from infection by a virus, and hence warts can be transmitted from one part of the body to another or to other persons. Warts are harmless, though sometimes unsightly, and there is no universally successful method of treatment. Very often warts (especially in children and adolescents) disappear spontaneously without special treatment. They yield readily to treatment with strong acid or caustic pencils.

### THE HAIR AND SCALP.

The human hair is complex in structure; but it is useful to know something of its formation and development in order to understand the effects on it of various cleansing preparations and hair cosmetics.

Each hair projects from a follicle, which is a long, narrow pocket in the skin. The hair grows from a small group of cells (the papilla) at the base of the follicle, and the part of the hair lying within the follicle is known as the root.

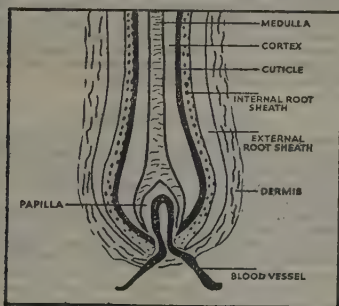


FIG. 2.—Diagram of a Section of a Hair Set in its Follicle.

The diagram (Fig. 2) shows the principle features of a hair. The stem or shaft consists of three parts: (a) the outer layer or cuticle; (b) the middle part or cortex; and (c) the central canal or medulla.

The hair grows upwards from the root, but has a limited life, at the end of which it falls out and is replaced, in a normal healthy head, by a new hair. The part of the hair which shows above the skin is dead, and can therefore be cut and manipulated without discomfort or harm. Cutting and shaving have no effect whatever on the rate of growth of the hair or upon its thickness and texture. The practice of singeing the hair seems to have arisen from a belief that hairs are hollow with open ends

that are best sealed up to "keep the cold out" or to "prevent the juices running out." This is a complete fallacy, and singeing does more harm than good.

Human hair can be straight or curly, but the basic reason why it should grow in one form or another is not known, though it has been noticed that straight hairs often have a round cross-section, whereas curly hairs are commonly oval or flattened.

It has been calculated that the average scalp has about 1,000 hairs per square inch, so that there are some 120,000 hairs on the whole head. The finer the hairs, the more numerous they are, and one authority states that blond heads contain about 140,000 hairs, red heads about 90,000, brown heads about 109,000, and black heads about 108,000. The thickness or diameter of the hair varies considerably. Children's hair is finer than that of adults, and blond or flaxen hair is usually finer than brunette or black hair. The finest hairs are about  $\frac{1}{100}$  inch in thickness, and the coarsest about  $\frac{1}{16}$  inch.

The rate at which hair grows is also subject to much variation; growth is quicker in summer than in winter, and short new hairs grow more rapidly than longer and older ones. When the hair is just above the level of the skin, it grows at the rate of about  $\frac{1}{2}$  inch each month, but when it is, say, 10 inches long, the rate of growth is only half as rapid.

It is just as important to keep the hair clean as it is to have a clean skin, and it is a mistake to suppose that frequent washing weakens or damages the hair, provided, of course, that a suitable soap or shampoo is used. Generally, the hair should be washed at least once weekly, but should be kept clean and free from dust by regular daily brushing and combing. The correct way to brush and comb the hair is described later (p. 821), together with the value of scalp massage in maintaining hair health.

Neglect of the hair and scalp quickly causes it to become lank and greasy, with very often the development of dandruff or scurf. Furthermore, a dirty head is an ideal breeding ground for micro-organisms, such as fungi, and for insects like the common louse. Details of the common disorders and diseases of the scalp are given in the Medical Section (q.v.).

### THE TEETH.

Teeth start to grow in the unborn infant, but do not break through the gums until the age of about six months. They then appear fairly regularly, until at about 2-2½ years of age the child should have all its "baby" or "milk" teeth. There is no need to worry if the teeth do not appear exactly at the expected times, since the rate of growth varies a good deal in different children.

When the child is about six or seven years old the baby teeth begin to be pushed out by the permanent teeth, which have been growing underneath them, until all have been shed. The age at which the last baby tooth is shed may be as early as nine years or as late as twelve years.

Some parents think that, because the baby teeth are only temporary and will eventually be replaced by others, there is no need to pay much attention to their cleanliness. This, however, is a great mistake. Baby teeth require just as much care as the later permanent teeth, because the dangers associated with decay and neglect in a child's mouth are just as serious, if not more so, than they are in the case of an adult. One of the most common results of neglecting baby teeth is that the permanent teeth which follow are crooked and badly shaped. This is because if one or more of the baby teeth are lost prematurely, the positions of nearby teeth may be altered, and so there may not be adequate space for the permanent teeth to grow through the gum.

The diagram below (Fig. 3) shows the essential structure of the tooth.

The portion of the tooth which is seen above the gum is known as the crown. Below this is the neck of the tooth, which is surrounded by the gum while the roots of the teeth are embedded in sockets of the jawbone and are held in place by millions of tiny fibres which act as shock absorbers.

The crown of the tooth is covered with enamel which is the hardest substance in the whole body



while the neck and roots of the tooth are covered with a less hard, bony substance, called cementum.

Immediately underneath the enamel and the cementum is the dentine, which is a kind of ivory which is threaded with small tubes carrying nourishment from the blood. At the centre of the tooth there is a mass of dental pulp which contains a sensitive system of blood vessels and nerves.

If properly cared for, permanent teeth should last a lifetime, but dental decay is probably the

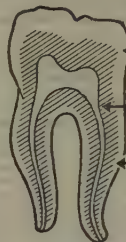
When the skin which surrounds the nails sheds its outer cells they collect around the edges of the nail and form what is usually referred to as the cuticle. Because this is irregular in shape, it is not very slightly, and is therefore usually removed by special preparations sold for the purpose.

The nail itself, unlike the rest of the skin, contains practically no oil or fatty substances, but it does contain about 10 or 12 per cent. of moisture. It is believed that the brittleness which sometimes

CROWN

NECK

ROOTS



ENAMEL

DENTINE

CEMENTUM

FIG. 3.—Details of the Structure of the Teeth.

commonest ailment that affects the human body. The chief cause of decay is the lodging of food particles in crevices, between the teeth, along the margins of the gums, and on the rough surfaces of the crowns.

Starchy foods, such as bread, cakes, biscuits, porridge, and sweets, are the worst offenders in this respect, because they form an ideal breeding ground for the bacteria which are normally present in the mouth, which latter can produce from these food particles an acid which gradually eats away the tooth enamel. Once a hole has been pierced in the enamel, the germs rapidly spread through the dentine and eventually reach the dental pulp, while in severe cases the infection spreads right down to the roots of the teeth, where abscesses may be formed. The best safeguard against premature decay is the removal of adherent food particles after each meal. This may be achieved by brushing or, according to some authorities, a simple rinsing of the mouth with warm water or an antiseptic mouth wash is effective. Hints on the correct and the most effective way of brushing the teeth are given later in this section (pp. 826-27).

To make sure that the teeth and gums are kept in a healthy condition, it is advisable to have them examined by a dentist at regular intervals, say twice a year. If this is done, the beginnings of attack on the tooth enamel and any disorder of the gums can be detected and checked before they become serious. Good oral hygiene and correct brushing are just as important for keeping the gums hard and healthy as for keeping the teeth sound. Many teeth are needlessly sacrificed because of failure to keep the gums healthy.

### THE NAILS.

Nails consist of projecting semi-transparent plates which cover the top surfaces of the last bone joint of each finger and toe.

They are made up of the same substance as the hair and skin, but whereas in the case of skin the dead cells are constantly shed from the surface, in the nails these cells are built up into a protective structure. The nails are dead in the sense that they contain neither blood vessels nor nerves, and they can therefore be cut and filed without any sensation of pain. The nail rests upon a bed of cells which cover a mass of sensitive nerves, and it is for this reason that finger- and toe-nails show extreme sensitivity to shock or pressure.

Nails continue to grow indefinitely unless they are kept short by frictional wear or by cutting, and the average rate of growth is about 1 inch every eight or nine months. At the base of the nail is the Lunula or half-moon, and this occurs at the point where the nail bed is separated from the reproductive part of the nail plate. The characteristic appearance of the half-moon is believed to be due to the way in which light is bent when it passes through this space.

results from the continual use of nail lacquers and varnishes may be due to the abstraction of moisture from the nail. There may, however, be other causes of brittle nails, connected with diet and bodily characteristics. In general, however, it can be said that the moderate use of lacquers will have no adverse effect on the nails, especially if a nail cream which contains oils emulsified in water is applied when the nails are not varnished.

To keep the nails in good condition they should be cut or filed regularly so that they are always of moderate length, and it is generally easier to keep the nails of the right length and of attractive shape by regular filing than by cutting at longer intervals. If, however, the nails are cut with scissors they should first be soaked in warm, soapy water, and this may conveniently be done while taking a bath. After soaking and trimming, a suitable cream should be applied if there is any tendency towards brittleness. This can be either a cream specially made for the purpose, or one of the so-called skin foods or lubricating creams can be used instead.

Well-kept nails can enhance the beauty of the hands very considerably. Dirt should not be allowed to accumulate behind the nail, but should be removed when necessary with a blunt-ended manicure tool, such as an orange stick, and the nail subsequently scrubbed with a not too hard brush.

### GENERAL HYGIENE.

Personal cleanliness and hygiene involve not only regular care of the body surface but also of the clothes that cover the body. Cleanliness, both of body and of clothes, is essential to a feeling of comfort and well-being.

By washing the body frequently and regularly, the skin is kept free from the deposits which result from the excretion of perspiration and sebum, and which, if neglected, readily give rise to unpleasant odours. The ideal is a warm bath each day, but this is not always possible, and in such cases, as much of the body surface as possible should be washed daily, paying particular attention to those places where there are folds in the skin—the armpits, between the toes, the groin, and between the buttocks.

The hands should always be washed before meals and after each visit to the toilet, and at all times the nails should be kept free from dirt, which often harbours disease-producing germs.

The nose and ears should not be neglected in the daily routine, though both must be treated very gently. Dirt which has been filtered out of the inhaled air should be removed periodically by gentle blowing of the nose, aided if necessary by a clean handkerchief wrapped round the little finger. Similarly, dust and dirt should be wiped from the crevices of the outer ear, but on no account should the inner ear be touched; if wax has accumulated and has to be removed, the assistance of a doctor must be sought.

A clean body necessarily demands clean clothing, especially underclothes which are worn next to the skin.

These should be changed frequently, at least once a week in winter and more often in summer, while the practice which exists among some people of sleeping in their underwear is to be deplored; the garments become quickly and excessively soiled, and are usually not changed very frequently.

The type of clothing worn is of considerable importance in connection with bodily comfort and the maintenance of skin health. The skin needs to be kept warm in all parts of the world except the tropics, and some form of clothing is necessary for this purpose, apart from considerations of modesty and personal adornment. To conserve the warmth of the body, the material of which clothing is made must be a relatively poor conductor of heat, or since air is a very bad heat conductor, the clothing should hold a layer of air between itself and the skin.

Fabrics made wholly or mainly of wool help to keep the body warm, because this fibre is a poor conductor of heat. Woollen fabrics are also so constructed that a considerable amount of air is contained in the meshes of the fabric, whereas materials made of cotton and linen, which are tightly woven, do not contain much air, and hence are not so useful as wool in keeping the body warm. A further advantage of wool is that it is able to absorb a considerable quantity of moisture before it actually feels wet, but in spite of all these advantages, many people do not wear wool next to the skin because of its comparatively rough feel. Woollen garments are also more expensive than others and, because of their tendency to shrink when washed, do not have such a long life; hence it is common practice to mix wool with other materials, such as cotton, rayon, or nylon, and to construct underwear fabrics so that they contain a number of air-holding spaces. In recent years nylon and similar synthetic fabrics have become very popular for clothing, especially underwear, but they are not capable of absorbing very much moisture, and if worn next to the skin, fabrics of these materials should be open-meshed, so as to allow a free circulation of air to carry away evaporated moisture.

The colour of clothing is of some significance in connection with general bodily comfort, because dark fabrics can absorb heat from the sun more readily than light-coloured ones. It is therefore usually better to wear dark-coloured clothes in winter and lighter ones in the summer.

### BEAUTY CULTURE AND COSMETIC PREPARATIONS.

**Application of Cosmetics ("Make-up").** Apart from specific skin disorders, most people's skins are classified as "normal," "dry," or "greasy." Those who possess "normal" skins may count themselves fortunate because of the ease with which their skin can be kept clean and healthy and because they have little or no difficulty in choosing cosmetics to suit them. On the other hand, women with "dry" or "greasy" skins are restricted in their choice of cosmetics, and must exercise more care in the methods and materials

they use for cleansing and preparing the skin for the application of make-up. In the case of cosmetic preparations which impart colour to the skin, the natural colouring of the user's complexion and hair must also, of course, be taken into account.

**Preparation of the Skin for the Application of Cosmetics.** Those with "normal" skin can best provide a good foundation for make-up by simply washing in soap and water, using a good-quality toilet soap. The ordinary type of foundation or "vanishing" cream generally provides a satisfactory basis for the make-up, since all that is required is a film of cream that will keep the powder sticking to the surface of the skin. The best way of applying vanishing cream is to dot small portions of it on the forehead, tip of the nose, chin, and each cheek, and then to spread it evenly over the face with the finger-tips. As little as possible of the cream should be used. Vanishing or foundation creams can be either white or pale pink, or flesh colour, but the coloured ones do not influence the final appearance of the make-up.

In the case of "dry" skins there is often some degree of sensitivity to some of the cosmetic preparations, because a "dry" skin is deficient in the natural sebum or grease which plays so big a part in protecting the skin against external influences. People with "dry" skins may, in fact, find washing with soap and water an uncomfortable procedure, and in such cases the skin is best cleansed and prepared for make-up by the use of a cleansing milk. These preparations are very mild, and usually contain emollient oils in emulsified form. The conventional vanishing cream may not be suitable as a foundation on "dry" skin because it tends merely to increase the dryness, and in that case it is preferable to use one of the special foundation creams sold for "dry" skins, because these contain a proportion of oily material which helps to make up the skin's natural deficiency. Alternatively, a sparing application of one of the so-called "all-purpose" creams may be used as a foundation on "dry" skin. Make-up preparations to be avoided by the possessor of a "dry" skin include astringent lotions and tonics, liquid powder-base preparations, and face packs.

"Greasy" skins require altogether different treatment. In these cases special cleansing lotions and milks which contain oil should be avoided and the skin prepared for make-up by a thorough washing in soap and water. This can be followed by the application of a mild astringent lotion, while in cases of severe greasiness, hot face packs may be employed with advantage.

Quite often "greasy" skin requires no special foundation cream or lotion, because there is sufficient natural grease present to act as a powder base. If desired, however, one of the liquid powder preparations can be used before face powder is applied.

**Colour Harmony.** The application of make-up can change considerably the general appearance and apparent contours of the face, according to the shades of cosmetics that are applied and their relative dispositions on the face. This applies particularly to the application of rouge, and to a lesser extent of face powder and lipstick.

Due attention must also be paid to the natural

Hair.	Dress Colour.	Shoes and Handbag.	Toning Lipstick.	Face Powder.
Dark Brown	All Browns—Lemon—Grey—Rust—Bright Green	Nigger Brown Tan Green	Deep Red	Dark Rachel Apricot Suntan
Blonde	Pastel Blues—Pinks—Lime Green—Oatmeal—Grey	Black Grey	Delicate Rose Pink	Light Rachel Pastel Pink
Silver Grey	All Blues—Grey—Deep Pink—Mauve—Black	Black Wine	Rich Pink	Light Peach Dusty Pink
Blonde or Raven Black	Pale Blue—Pinks—Black—Off-White	Blue Black	Cyclamen	Dusty Pink
Red	Greens—Tan—Yellow—Beige—Tangerine	Nigger Brown Tan	Orange	Apricot Suntan
Mid-Brown	Royal Blue—Pillar Box Red—Navy—Black—White—Dark Grey	Black Grey Red	Clear Red	Peach Dark Rachel



hair and complexion colouring and the colours and styles of dress which are worn. Women with fuller figures usually look their best in dark-coloured clothing, while the lighter and gayer colours are better reserved for those of slighter build. Usually, too, the older woman should dress in either dark or plain pastel shades. The chart on p. 819 may be taken as a general guide to dress and make-up shade harmony.

**Application of Rouge.** The discreet use of rouge can contribute considerably to the attractiveness of make-up, but it should always be applied sparingly and in such a way that it merges imperceptibly into the surrounding skin. There should never be a hard line of demarcation between the rouged part of the skin and its surroundings.

Rouge is normally supplied in the form of a cream or as a compressed block of powder. On "normal" skins either type can be used effectively, but on "dry" skins cream rouge should be used in preference to the powder, while on "greasy" skins the reverse procedure should be adopted. The correct shade of rouge which should be applied is the one that is the closest match to the natural colour of the cheeks when the skin is flushed from heat, exercise, or blushing.

The position in which the rouge should be applied depends upon the basic shape of the face, and the following table gives an indication of the method that should be adopted in applying rouge to faces of various shapes.

#### APPLICATION OF ROUGE.

Shape of Face.	Placing of Rouge.
Round	High on the cheek-bones, near the nose, and just under the eyes. This makes the face look longer and less broad or round. Avoid the outer edges of the cheeks.
Oval	Within the triangles high at the sides of the cheeks, from just below the temples down to a point level with the nose tip, and then outwards and upwards towards the ears.
Long	Low down on the cheeks, spread over a wider area than normal.
Broad	In a comparatively long and thin line down the sides of the cheeks.

**Application of Lipstick.** Like rouge, lipstick when properly applied can alter the characteristics of the face and improve the general appearance. Narrow lips can be made wider and fuller, while broad lips can be narrowed and made to look more attractive. As a general rule, the best plan when applying lipstick is to outline the natural arches of the lips to form an attractive "Cupid's bow" and to blot the excess of lipstick with a paper tissue. If the mouth is wide, the lipstick should not extend right to the corners, whereas if it is narrow, the corners of the mouth can be accentuated by continuing the lipstick to the fullest width of the mouth.

The shade of lipstick to employ varies a good deal with fashion, but it should always be chosen to harmonise with the natural colours of the hair and complexion and with the general colour scheme of the clothing (see table p. 821).

**Artificial Light and Make-up.** Many cosmetics, especially face powders and lipsticks, alter in appearance when seen in artificial light. In general, for evening wear a brighter or pinker shade of powder should be used than that which is applied during the day-time. If, in the case of fresh-complexioned people, a pinkish powder is employed for day-time use, the corresponding shade for evening wear is a slightly more bluish or

mauve shade. Women with sallow complexions in particular, should pay more attention to the shade of their face powder in artificial light and avoid the purely yellow shades of powder, e.g., Rachel and Ochre, otherwise the effect of yellow artificial light merely increases the sallow appearance of the skin.

Much the same considerations apply to the choice of lipstick for night use. Because of the yellowness of artificial light, lipsticks containing a little blue or mauve can be used, even by those people who would not be suited by them in the day-time.

Eye cosmetics are also influenced by the type of lighting (see eye shadow and mascara charts below).

**Toilet Equipment.** It is important to keep the various equipment used for cleansing and adorning the face scrupulously clean, by frequent washing whenever possible. This applies particularly to hair-brushes, face-flannels, and nail-brushes. Powder-puffs should be kept covered and also washed occasionally, while cotton-wool should not be used more than once, and should be burnt or thrown away after use. The following list of toilet accessories will cover most needs:

1. A wash-cloth, fairly rough in texture and conveniently made from terry towelling or similar fabric.
2. A hair-brush with long bristles but of medium hardness. Very soft or very hard brushes should be avoided.
3. A comb with smooth, rounded teeth, preferably not made of metal, since this tends to damage the hair.
4. A stiff nail-brush. The modern ones with nylon bristles will be found very efficient and have a long life.
5. Cotton-wool or paper tissues.
6. A powder-puff of adequate size, preferably washable.
7. A tooth-brush of medium hardness.
8. Eyebrow tweezers.
9. A nail file. This often forms part of a complete set of manicure tools conveniently boxed. Other essential aids to manicure are orange sticks, an emery board, and nail clippers.
10. Hair-net for protecting the hair after setting.
11. Setting pins.

#### EYE COSMETICS.

**Eyebrows.** The shape and character of the eyebrows can have a big influence on facial expression. Eyebrows which are almost invisible, either because of the sparseness of the hairs or because they are very fair in colour, can be accentuated with a brown or black eyebrow pencil. Before the pencil is applied, the eyebrow should be carefully trimmed with tweezers if necessary. When doing this, remove only the hairs which are outside the natural line of the brow and those which are on the bridge of the nose. The plucking of eyebrows can be made less painful by first bathing them with warm soap and water and after drying softening them with a little greasy cream. If the hair of the eyebrow is thick and bushy and would benefit by thinning, the hairs should be plucked only from the underside. By doing this, the eye itself is made to look larger and more attractive. Eyebrow pencils, or indeed, any kind of eye cosmetic, should never be applied under the lower lashes. Either a brown or a black eyebrow pencil will suit most needs. The brown pencil should be used by those with medium or blonde hair and the black for those with dark brunette hair. Sometimes a reddish-brown eyebrow pencil can be used effectively by red-heads.

**Eye Shadow.** The purpose of eye shadow is to make the eye appear deeper and brighter or more luminous. It is not advisable to use eye shadow at all during the day-time, but for evening wear a

#### EYE SHADOW CHART.

Eyes.	Pale Blue.	Deep Blue.	Grey.	Hazel or Green.	Brown.
Day	Pastel Blue	Deep Violet	Pastel Blue	Grey Green	
Night	Light Mauve or Silver Blue	Deep Blue	Silver Blue	Green or Silver Green	Green

sparing application to the outside of the upper eyelid can give a pleasing effect. Eye shadow should never be used on the lower eyelid. Eye shadows are made in a very wide range of shades, and are in the form of creams, which should be applied very lightly with the finger-tip. A little should be put on to the centre of the eyelid and smoothed outwards to give an even appearance. The chart on p. 820 gives an indication of the shades which are best suited to the various eye colours. Eye-shadow shades for day-time use have been included, but except for special occasions, it is not generally advisable to use eye shadow in the day-time. Often a little oil or brillianine smeared over the top lid provides a more natural touch for day use, but if eye shadow is used, great care should be taken to apply it extremely lightly.

**Mascara.** The use of mascara enables the darkness and the apparent length of the eyelashes to be increased. By using it intelligently, the brightness and expressiveness of the eyes can be improved. It needs a little practice in order to apply mascara successfully and to avoid getting the mascara on to the eyes or on to the upper lids. Mascara is best applied to the upper lashes only, because if the lower lid is treated, it gives the appearance of a shadow under the eyes. Mascara is normally made in the form of a small block which is moistened and the colour applied to the eyelashes by means of a specially made brush. In applying it, it should be put on lightly in the centre of the eyes and more heavily at the outer corners. This creates an illusion of the eyes being set wide apart. After the mascara has been put on with the brush, any excess which can be seen clinging to the lashes or which has strayed on to the eyelids, should be removed by means of a little pad of cotton-wool wrapped round the end of an orange stick.

The main shades of mascara are black and blue. The black should be used on dark-brown or black eyelashes, and the blue by women with blue or grey eyes. The effect in this case is to accentuate the apparent blueness of the eyes. Green mascara is occasionally used by red-heads and blondes, but it produces a very striking and exotic effect, and is not to be recommended for everyday use.

**Glasses—Styles to Suit Faces.** Those who are obliged to wear glasses should pay some attention to the shape of the frames, because they can influence one's attractiveness for good or bad. Thus the upper curve of the frames can follow the arch of the eyebrows or the curve of a high cheekbone. People with round, broad faces will benefit by choosing glasses with wide frames, narrow in depth, like the shape of a cat's eye. Such frames can do a great deal to lessen the apparent width of the face. Now that it is possible to obtain glasses without the lower rim, more of the natural beauty of the eye can be seen, and indeed, these have much to recommend them, as compared with the conventional heavy tortoiseshell, which too often give the face an owl-like look, especially if they are of a dark colour.

Spectacles which are so made that they sit well up on the nose can make a short nose look longer, and vice versa.

There is a wide choice of colour in spectacle frames, but, in general, it is best to avoid very striking shades. The idea should be to make the spectacles inconspicuous in themselves but allow them to contribute to the general smartness of one's appearance. One of the safest and smartest materials to choose is a light-coloured tortoiseshell, which looks elegant on most faces, while for those who wish to experiment a little with colour, blue frames can bring out the colour of the eyes, while green frames, like many other accessories of this colour, seem to suit red-heads.

**Lip Cosmetics.** Adornment of the lips is usually achieved by the use of lipsticks in various shades (see "Application of Cosmetics"). There are also available, however, lip salves, which are either white or lightly coloured, and whose primary function is not so much to beautify the lips as to keep them in good condition. They are of especial

value in cases of cracked or chapped lips, and can be used with advantage to protect the skin of the lips in severe weather.

In recent years preparations have been made for the lips which are of the nature of lacquers, and they are sometimes referred to as "lip rouges." They really consist of varnishes, suitably coloured with different dyestuffs, and they leave a film over the lips which is waterproof, and yet which lacks the soft greasiness of lipstick, and so does not mark off on to crockery, cigarettes, etc. These lacquers are the nearest approach yet achieved to a kiss-proof lipstick, but their regular use is not to be recommended, because they so easily cause dryness and even cracking of the lips.

## THE HAIR.

**Brushing and Combing.** Hair which is to look attractive must be kept clean and in good health. This means that the natural supply of oil to the hair must be maintained, and one of the simplest methods of stimulating the flow of natural grease is by scalp massage. This is not necessary in the case of naturally greasy hair, but dry scalps benefit considerably by a daily massage treatment, coupled with the application of a suitable lotion.

Apart from this, the hair should in any case be combed and brushed at least once daily, preferably before going to bed, because this helps to distribute the natural grease evenly throughout the hair, as well as to remove the dust which has accumulated on it during the day. It is best to use a brush with relatively stiff bristles so as to stimulate and cleanse the scalp as well as the hair, but the brush should not be so hard that it becomes slightly painful to use it. In this case there is a risk that some of the hair, especially if it is fine in texture, may be broken or even pulled out by the roots. For similar reasons, the comb should have teeth with rounded ends, and a useful type is one which consists half of widely spaced teeth and half of finely spaced teeth. The hair should first be combed through with the wide comb in order to remove tangles without too much pulling, and then the fine end of the comb should be passed through the hair to straighten it out and to remove the clinging dust more effectively.

Brushing should always be in the direction of the hair growth from the crown outwards, and it should be continued for two or three minutes each day.

Massage of the scalp with the finger-tips assists the secretion of the natural oil, as well as loosening dandruff, and it is best to give the massage treatment before a final brushing and combing. The finger-tips should be placed firmly on the scalp, which is then rubbed over its whole area until the skin can be felt to move over the underlying skull. Tonic lotions and spirit hairdressing preparations can very suitably be applied in conjunction with scalp massage.

**Shampoos.** Regular washing of the hair is essential to keep it in good health and condition (see "The Hair and Scalp"). There are very many excellent shampoos on the market, and these are to be preferred to washing with ordinary toilet soap, because they are specially made for the purpose.

Soap shampoos in powder or cream form give excellent results, especially in soft-water districts, and they have the great advantage of leaving the hair nice and soft, but easy to set. If soap shampoos are used in hard-water districts, it is an advantage to follow the shampoo with a mild acid rinse to free the hair from any hard-water deposits. Many soap shampoos are provided with a suitable rinsing powder, but if this is not used, the hair should be rinsed through with water to which a little lemon juice or vinegar has been added.

Generally, however, in hard water soapless shampoos will be found more satisfactory, and these can be obtained in powder, liquid, or cream form. The various types all give excellent results, and the choice between them is a matter of personal preference and convenience.

The best method to follow in shampooing the hair is first thoroughly to wet it and then to add the shampoo a little at a time, rubbing it well into



the scalp with the finger-tips. Soap shampoos are usually used with a single application, whereas soapless shampoos are best divided into two portions, applied separately with a rinse in between. The shampoo should be worked well into the hair, until a good lather is obtained, and then rinsed off. The best and most convenient method of rinsing is by means of a spray, but if this is not available, a wide-mouthed jug or even a tumbler can be used. Rinsing should be thorough, and no trace of lather should be left on the hair. During both the shampooing and the rinsing, the hair should be rubbed from the crown of the head outwards, as by this means it becomes less tangled and is easier to comb later.

Special types of shampoo are made containing mild colouring agents, such as camomile and henna, and these should be used by blondes and brunettes respectively, following the maker's instructions. Their main value is not actually to colour the hair, but to add a little brightness to its appearance.

**Oil Shampoo.** This is a special type of shampoo, and as its name implies, it is oily in appearance and yet can be easily rinsed away with water. Oil shampoos are particularly suitable for people with dry and brittle hair, and in contrast to the normal type of shampoo, they do not produce a lot of lather. The oil shampoos are applied directly to the dry hair and massaged well into the scalp and along the length of the hair so that the whole head becomes saturated. They are then rinsed off and the hair combed and set as usual.

**Conditioning Treatments for the Hair.** Although oil shampoos provide a form of conditioning treatment, special preparations in liquid or cream form are available for improving the feel and texture of dry and brittle hair. Hair sometimes loses much of its "nature" through overbleaching, exposure to the sun, or as a result of permanent waving. In such cases a conditioning treatment can be of considerable benefit. The conditioning cream or lotion can be given as a separate treatment rubbed into the hair and scalp, or it can be applied immediately after a shampoo while the hair is still wet. The effectiveness of the conditioning treatment can be improved by wrapping the head in a hot towel after the cream or lotion has been applied and leaving it for 2 or 3 minutes before rinsing off. Hair which is excessively greasy benefits from an after shampoo friction treatment with Eau de Cologne or Toilet Water. This can be sprinkled on to the wet hair after shampooing, massaged well into the scalp, and then dried off with a towel, followed with a good combing and brushing.

**Dry Shampoos.** Dry shampoos for women's use are absorbent powders which are intended for those people who find it inconvenient or undesirable to wash the hair with water. The powder is distributed evenly throughout the hair and on the scalp, so that it has a chance to absorb all the grease and dust, and is then removed by vigorous brushing.

Dry shampoos for men consist of soap dissolved in spirit, the liquid being applied to the dry hair and rubbed in until a lather is worked up. The surplus lather is removed with a damp sponge and the hair towelled dry. Both types of dry shampoo are intended to provide a quick means of cleansing the hair, though neither is as thorough in its cleansing action as that of a normal soap or soapless shampoo.

**Drying and Setting.** After shampooing or any other hair treatment which involves wetting the hair, the larger part of the water is removed by rubbing with an absorbent towel, preferably a warm one, and the hair should then be well combed to make sure that it is free from knots and tangles. To set the hair into a desired style is not easy, unless a comparatively simple style is desired, and in any case the use of a setting lotion will be found of considerable help. These can be applied by sprinkling on to the hair, or better, by dipping the comb into the lotion and then passing it through the hair several times. The application of a setting lotion speeds up the drying time of the

hair, makes it more easy to set into waves and curls, and confers more permanency on the waves when the hair has dried.

Successful setting of the hair without assistance can only be achieved with practice, although modern short hair styles make setting much easier than it was at one time.

It is, of course, best to set the hair at night so that the set style can be kept in place by wearing a hair-net during sleep. A good idea is to set the hair before having a bath—the steam which usually fills the bathroom helps to set the hair.

Hairdressing styles are subject to changes in fashion, and it is best to find from experience which particular style best suits the shape of the face and one's height and colour.

**Permanent Waving.** Curly or wavy hair is generally considered to be more attractive than straight hair, and from the earliest times women have sought to impart a wavy appearance to their otherwise naturally straight hair. It is known, for example, that in ancient Egypt women used wet mud for curling their hair.

It is only during the past 50 years that waving of hair has been systematically studied. Prior to that, hot irons or tongs were used, but to-day there are available a number of different methods of producing attractive waves in straight hair.

Professional permanent waving demands a considerable degree of skill, as well as the necessary suitable equipment. The basic principle of the permanent wave is that the hair is softened by means of a special chemical reagent, and then heat is applied to it while it is wound on curlers. This process causes chemical changes to take place in the structure of the hair so that it remains in a permanently curled state after the treatment. Any new growth of hair after waving is, of course, in the original straight condition, and the wave is therefore only relatively permanent and lasts an average time of about six months. At the end of this period the hair has grown to such a length that only the ends retain the original wave. The choice of any particular system of permanent waving must depend upon individual preference and on the style of wave which it is desired to produce. By varying the method of application of the waving treatment and its time, the hairdresser can produce tight or soft curls, and can adjust the treatment to suit individual heads of hair.

In recent years what is known as "cold waving" has been very considerably developed. As the name implies, no heat is necessary, and the hair is first wound on curlers in the usual way and then moistened with a special chemical reagent which softens the hair while it is in the curled state. After sufficient time has elapsed for adequate softening, the hair is hardened again by the application of a second lotion referred to as the "neutraliser," and it then remains fixed in a wavy or curled form. Some modern cold waves for home use, however, do not require any neutraliser. In general, cold waving produces a slightly softer wave than the majority of the hot methods, and it is, of course, more comfortable to the client, and does not require the use of comparatively expensive and elaborate equipment for heating the curled hair.

Other systems of so-called "tepid" waving have been devised, and these employ a combination of the hot-waving technique and that of the cold wave.

**Home Permanent Waving.** With the discovery of the cold waving process for hair, it has become possible to provide waving preparations for self-application at home. These work on exactly the same principle as the professional cold wave, but some skill is required on the part of the user in dividing the hair into appropriate sections and winding them on curlers for treatment with the lotion. In all cases the manufacturer's recommendations should be carefully followed, and home perms should be applied very cautiously to hair that has been bleached or dyed. Bleached hair reacts very vigorously to cold-waving lotions, and over-treatment can result in damage; while in some cases dyed hair may change colour as a result of permanent waving. In such cases, the manufacturers of home perms give special instructions.

With practice, the home permanent wave can

produce very satisfactory results, but it is usually much easier if the assistance of a second person is obtained to manipulate the hair during the process.

**Hair Dyeing, Tinting, and Bleaching.** Bleaching the hair consists, of course, in removing some or most of its natural colour by chemical treatment. Care should be exercised in the application of bleaching preparations, and on no account should they be used other than according to the maker's instructions, or if simple peroxide of hydrogen is employed it should be applied in a diluted form and the treatment given very gradually over a period. If the bleaching is done quickly with strong concentrated lotions, the hair loses a good deal of its strength, and is apt to split and even break off when it is combed.

It is generally preferable and safer to use a proprietary bleaching preparation and to follow the instructions provided.

Dark or mousy hair can often be improved in appearance by the application of brightening preparations, of which the commonest are based on camomile for blonde hair and henna for dark hair. These are often in the nature of shampoos containing small amounts of colouring matter, which is deposited on the hair and produces a superficial lightening of colour. They are available in both powder and liquid form, and are quite suitable for home use. Hair dyeing is best undertaken by a professional hairdresser, because it is extremely difficult, if not impossible, to apply dyes to one's own hair and obtain an even and pleasing result. The hair must first be thoroughly cleansed, and it is usual to give a preliminary mild bleaching treatment, especially if the desired shade is lighter than the natural colour of the hair. The dye must also be applied with due attention to the gradations of shade which are always present in naturally coloured hair. Furthermore, a few people are sensitive to some widely used types of hair dye, and it is necessary to make a preliminary test on the skin in order to avoid trouble when the dye is finally applied.

Of the hair dyes available, natural henna, which produces a coppery red shade, and various modifications of henna to produce other shades have been used for a very long time. They have the advantage of being completely safe and of not affecting the skin, but they do not produce such naturally pleasing shades as the more modern dyes.

Perhaps the main value of hair dyeing is in retouching grey or white hair, but it is, of course, necessary to re-apply the dye at regular intervals to the new growth of hair, because this appears in its natural colour.

**Brilliantines and Other Hair Dressings.** Brilliantines, which now consist of light mineral oil suitably perfumed and sometimes coloured, are used by both men and women for keeping the hair in place and for imparting a gloss to the hair. They are of special value to people with naturally dry hair, because this type of hair, being deficient in natural oil, tends to appear dull and to feel harsh.

For women, brilliantine should be applied sparingly, and it is often useful to rub a little brilliantine over the surface of the hair while it is still wet after shampooing and to comb it through the hair, so that after drying an increased gloss is obtained. Alternatively, the brilliantine can be sprayed lightly over the surface of the hair, which should then be combed or brushed to distribute the brilliantine evenly over the surface.

Some brilliantines are known as "separable," and they consist partly of oil and partly of spirit lotion. They must be well shaken before being applied, and they are less greasy than the non-spirit brilliantines, which consist entirely of oil without spirit.

Brilliantines of both types are suitable for men with fine or sparse hair, but those with heads of thick, coarse hair usually require a preparation with greater fixative qualities than brilliantine to keep the hair in position.

Hair-fixative preparations can be either oily or non-oily, the latter being more suitable for people with naturally greasy hair. They contain special fixative materials which when allowed to dry on the hair stiffen it slightly and keep it in a fixed

position. They are usually in cream form, and only sufficient should be applied to the hair to keep it in position. Other preparations available for applying to the hair are lotions which can contain various tonics or medicaments designed to cleanse the scalp and to be combined with a massage treatment. One of the earliest of these lotions was bay rum. They usually contain a considerable amount of spirit, and when applied they should be well rubbed into the scalp with the finger-tips. They are of considerable assistance in freeing the scalp from dandruff and keeping it clean and healthy. People with naturally greasy hair should use a plain spirit lotion, whereas those with dry hair should use a preparation that contains a proportion of oil.

In recent years dressings for the hair have been made in the form of lacquers, which are usually sprayed on to the hair and which are intended for use on special occasions. Their effect is to fix the hair in its special style, and they are therefore of most value when a rather elaborate or exotic style has been chosen for a special occasion. The lacquers can be either plain, or special effects can be produced by coloured lacquers, including gold, silver, and copper.

Special effects can also be produced by treating selected parts of the hair with lacquers or with metallic powders and liquid creams. The application of these, however, is best left to a professional hairdresser.

**Hair Styles.** Hair styles are very much subject to fashion, and it is not, therefore, possible to give more than a little general guidance on this subject. It is best to consult a professional hairdresser as to the style of hair which will suit one's face and be in line with the current fashion of the day. The style in which hair is dressed can help to alter the apparent shape of the face and to make less noticeable facial peculiarities. For example, a round face can be made to look longer by a style of hairdressing in which the top hair is built high above the forehead, and the sides combed away from the face and dressed close to the head. For a long face, on the other hand, the side hair should be curled or built out from the face to give increased width and the top hair dressed fairly flat. Women who have a naturally oval face, can generally wear a much wider variety of hair styles than others, and almost any style can look attractive with this type of face.

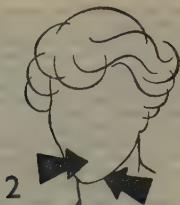
**Face and Skin Massage.** The skin of the face and also that of the neck and shoulders can be kept smooth and supple by gentle massage treatment carried out regularly. The massage is applied with the fingers or knuckles using a greasy cream, such as a cold or cleansing, to ease the passage of the fingers over the skin.

Regular massage of the face can help to delay the development of wrinkles and keep the complexion clear. Once a week is the ideal, but even an occasional massage will be found refreshing and stimulating. The routine to be followed is indicated by the series of diagrams below. Smear the cream generously over the whole of the face and neck then:

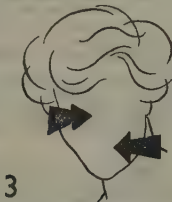


1. Start with the neck and throat—places that are often neglected, yet it is here that looseness and wrinkling of the skin can be so obvious, giving a "scraggy" appearance. Massage the cream into the neck with the backs of both hands, using firm, upward strokes—from the base of the throat to the chin. Finish by flipping the hands under the point of the chin in a vigorous slapping movement.

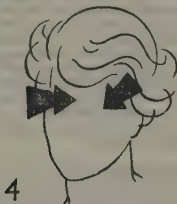




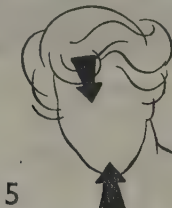
2. Massage outwards from the point of the chin along the lines of the jaw-bones, using the finger-tips in a firm, circular movement. Make sure you have enough cream to allow the fingers to slide easily over the surface of the skin without dragging.



3. Continue with the same full circular movements up each side of the face to the temples. Cover the whole of the face from the corners of the mouth, up under the cheekbones and outwards to the ears, but avoiding the skin under the eyes and at the sides of the nose.



4. Now use a gentle patting with the finger-tips to work the cream well into the skin under the eyes, moving downwards and inwards to the nose. Do not massage the eyelids, but a gentle circular massage at the corners of the eyes is beneficial in helping to smooth away wrinkles.



5. Finish the treatment by massaging upwards and slightly outwards from the point of the chin to the lower lip, using a circular movement with the finger-tips. In the same way, work upwards from the bridge of the nose and outwards across the forehead to the temples.

At the same time as the face massage is applied the hands can also be given a simple yet useful massage treatment. Apply plenty of cream and then let each hand massage the other by drawing them over each other from finger-tips to wrists, rubbing the surfaces of the fingers and the spaces in between. Give a special circular massage to the

knuckles and joints, flexing them continuously while doing so.

For massaging the throat, the backs of the fingers or the knuckles should be used. The movements should start low down on the throat and continue upwards, with firm pressure, to the chin and jaw-bone. Following this, the sides of the jaw and the chin should be slapped vigorously in order to preserve the contour.

For the base of the neck and to avoid the development of folds and wrinkles giving a scraggy appearance, massage with the knuckles away from the neck and along the line of the shoulders.

Massage treatment on both face and neck should be followed by the removal of the surplus cream with a pad of cotton-wool, or a tissue, leaving enough of the cream on the skin to soak through during the night. If the skin is naturally greasy, however, it is better to follow the massage by treatment with an astringent lotion or milk.

**Sun-bathing Preparations.** Sun-bathing should be indulged in with moderation, when it can be a valuable tonic. It is unwise to expose one's skin to blazing sunshine for more than short periods, because excessive exposure will produce headaches and very often burns and blisters which spoil the texture of the skin. The most vulnerable spots, which are likely to be attacked first by bright sunshine, are the nape of the neck, the shoulders, the knees, the hands, the backs of the legs and heels, and the V of the neck which is usually exposed when wearing a summer frock.

Even when the skin has become accustomed to exposure to sunshine, it is always better to apply some protection to it before sun-bathing. Specially prepared oils and creams are available, some of which contain brown colouring which stains the skin and enables the sun-bather more rapidly to acquire the desired tanned appearance. Sun-bathing oils and creams will not protect the skin completely, but their use will enable tanning to take place gradually and pleasantly, without excessive redness and blistering. They act by filtering out some of the heat rays in natural sunshine, and they allow the development of protective pigment in the skin to take place gradually and evenly. Special care should be taken to protect the neck and shoulders before sea-bathing. Because the body feels cool in the water, it is often forgotten that the sun's rays are still exercising their burning action. The area of skin not covered by the bathing costume, should be treated with cream or oil before sea-bathing.

In summer-time, whether the skin is deeply tanned or not, deeper shades of face powder can be used than in the winter months. A good plan is to provide oneself at the beginning of the summer with two boxes of powder, one with the shade normally used and the other of a darker suntan colour. As the summer proceeds and the skin becomes tanned, more and more suntan powder can be mixed with the normal shade.

**Superfluous Hair.** In the summer-time especially it is desirable to rid oneself of superfluous hair under the arms and on the legs. Various methods are available for removing unwanted hair, the cheapest and easiest of which is shaving with a razor. Other methods which are effective are to apply a special type of wax which is brushed on the area to be treated while warm, allowed to cool, and then pulled off, bringing the hair with it. This, however, is a method which requires some skill, and is probably better carried out by a trained beauty specialist.

Special depilatory creams are available which soften the hair to such an extent that it comes away from the skin, but care should be exercised in the use of these preparations, and they should be applied only at intervals of about a week. Superfluous hair on the legs, unless it is very coarse and strong, can be removed and kept in check easily and painlessly by the use of a special abrasive block, cloth, or glove, which remove the hair by rubbing it off. After the use of a depilatory or any other treatment for removing superfluous hair the cleansed skin should be treated with a little cold or cleansing cream to soothe and protect it.

#### THE TEETH AND DENTAL PREPARATIONS.

Regular brushing of the teeth and gums and cleansing of the mouth are the surest safeguards

against the development of premature decay (see pp. 819-20). In brushing the teeth a systematic technique should be employed which is illustrated in the diagrams below, Figs. 4-7. The choice of tooth-brush is important, and except where the gums are unusually tender, it is best to choose a medium/hard brush with bristles that are stiff enough to remove all the particles of food lodged between the teeth, and yet not too stiff to damage the sensitive surface of the gums.

Many excellent preparations are available to assist the action of the brush, and these all consist of a cleansing agent especially designed for the purpose, together with a polishing ingredient to



FIG. 4.—Clean the inside and the outside surfaces of the back teeth by rolling the bristles over the gums and teeth toward the grinding surfaces.



FIG. 5.—Clean the outside surfaces of the front teeth with the same brushing motion, rolling the bristles firmly into all the grooves and spaces from the gums to the biting surfaces.

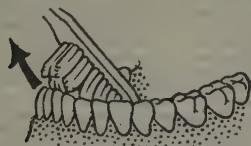


FIG. 6.—Clean the inside surfaces of the front teeth, drawing the brush forward from the gum line to the biting edge. Spend the same amount of time on each tooth so that all are cleaned equally.



FIG. 7.—Clean the grinding surfaces (top and bottom teeth) by forcing the bristle well into the grooves and vibrating the brush backwards and sideways. Make sure you have brushed every surface of every tooth.

impart a good lustre and whiteness to the teeth. Dentifrices are sweetened and flavoured in various ways, and since they are all efficient cleansers, a choice between the different types is a matter of personal preference.

Solid dentifrices are made in cake form, and are probably the most economic of the various kinds. Tooth powders, which were very popular at one time, are not so commonly used to-day but they, too, are economical in use, since very little powder need be sprinkled on the brush. The most popular type of dentifrice is the toothpaste packed in a collapsible tube. This has the advantage that there is no waste, and there is a very wide variety of brands available, which differ in flavour and foaming qualities, so that individual tastes can be met. The use of special mouth washes has

much to commend it, and indeed, if it is not always possible to brush the teeth, rinsing the mouth with an antiseptic preparation after meals can assist considerably in freeing the teeth of food debris.

Artificial teeth should be kept scrupulously clean, and should be thoroughly brushed, using a specially designed denture brush at least once a day, and preferably after every meal, though this, of course, is not always possible. Special preparations are available in which the dentures can be soaked in order to keep them perfectly clean and fresh. Ideally the dentures should be left in the mouth during sleep, but for those who remove their dentures at night, an overnight soaking in one of the special denture cleansers is an efficient way of keeping them clean. In any case, they should be given a soaking treatment of about 20 minutes, and this can conveniently be done while some other part of the toilet is being attended to, such as taking a bath or shaving.

It should be a golden rule that the dentist should be consulted at regular intervals, preferably once every six months. Such regular visits enable the development of decay to be discovered in its very early stages, and appropriate treatment can then be given which is both effective and usually painless. Once decay has been allowed to progress and to bite deeply into the tooth, then the treatment is more lengthy, but may still be carried out with local anaesthetics and a minimum of pain. Regular dental inspection is of particular importance in childhood, and all children should be taught to look after their teeth by daily brushing and cleansing. If this is done there is no reason why a complete set of perfect teeth should not be kept during one's lifetime.

### THE HANDS AND NAILS.

**Effect of Soaps and Detergents on the Hands.** The skin of the hands, like that of the rest of the body, is protected and kept in a soft and healthy condition by the natural grease which the skin is constantly secreting (see p. 818). When the hands are immersed for long periods in soap or detergent solutions, most of this grease is removed, and strange as it may seem, the skin also loses some of its natural moisture. The result is that it becomes more sensitive to atmospheric conditions and also to mechanical friction, such as it is subjected to in washing clothes or scrubbing floors. The busy housewife must, therefore, take especial care of her hands if she wishes to keep them in an attractive and good condition.

A number of preparations specially made for the hands are available, and it is advisable to apply one of these whenever the hands have been exposed for long periods to the action of water or washing agents. A simple mixture of glycerine and rose water, or glycerine in the form of jelly can help a good deal in keeping the hands soft and smooth, but the modern creams and lotions are even more effective. By regularly applying a liquid lotion or a cream containing a proportion of oil after the hands have been exposed to water, the natural moisture and grease contents of the skin can be replaced. Skin which is deficient in grease is much more susceptible to chapping by the drying action of wind, because it loses moisture more rapidly than the moisture is replaced by the secretions of the sweat glands.

In recent years protective or barrier creams have been devised which can be applied to the skin before undertaking household tasks which are apt to affect the skin adversely. These barrier creams are of two main types, one of which is water-resistant and should be applied before doing jobs which involve the use of water, and the other is an oil-resistant type which is applied to protect the skin against various kinds of soiling, including oily dirt. The barrier creams should be well rubbed into the skin until they have disappeared, paying particular attention to the nails and the crevices between the fingers. If a barrier cream is not used, a very effective method of protecting the nails is to dig them into a tablet of household soap and fill the space between the tip of the nail and the finger with soap. This prevents the entry of dirt, and when the hands are subsequently washed, the soap comes out carrying any deposited dirt with it.



### MANICURE PREPARATIONS.

**Cuticle Removers.** What is usually termed the "cuticle" of the nail is really the result of the outer dead cells of the skin (which are continually being shed) combining with the natural fatty secretion to form an irregularly shaped appendage around the grooves of the nails. Because of its somewhat unsightly appearance it is usual to remove the cuticle by means of an alkaline preparation generally applied by a little cotton-wool wrapped round the end of an orange stick. More recently cuticle removers have become available in cream form packed in plastic tubes with a pointed nozzle so that the cuticle cream can be easily applied.

**Nail Bleaches and Whiteners.** Bleaching preparations are available for removing various stains such as ink, tobacco, and vegetable juices, from the nails and finger-tips. Such preparations are sold either in liquid or cream form, and they contain a mild bleaching agent. If one of the special nail bleaches is not used, most stains can be removed by treatment with cotton-wool soaked in peroxide of hydrogen.

An even and opaque white border to the nails can be produced by means of nail-whitening preparations, which were originally creams, but which have now largely been replaced by the nail white pencil. The tip of the pencil is simply moistened with water and then applied to the under surface of the nail to give a dense white appearance to the tip.

**Nail Polishes and Lacquers.** A nail polish is an abrasive preparation which increases the gloss on the surface of the nail in the same way that a metal surface can be polished. They are usually powders which are applied by means of a chamois-leather pad specially shaped. Another form of nail polish is a wax pencil which is equally effective in imparting a soft, unobtrusive gloss to the nails.

For a higher degree of gloss, a lacquer or varnish must be used, and these are now available in a very wide range of colours as well as the colourless form. The use of a carefully chosen coloured varnish can effectively contribute to giving the nails and hands an attractive appearance.

In applying nail varnishes the nails should be evenly coated by using the brush provided, and the application should be by even strokes from the base of the nail towards the tip. The extreme edge of the nail should then be wiped free of varnish by means of a tissue or the tip of the finger so as to leave a clear white edge. People who have a tendency towards dry and brittle nails should use varnishes with care, and it may often be advisable not to use this type of preparation at all but to rely on a polishing agent. The drying effect of nail varnishes has been modified a good deal in modern manufacture by incorporating softening oils in the varnishes.

Some of the newer nail varnishes have been made opaque by the incorporation of pigments, and these have the advantage of covering up any minor imperfections in the nail. Similarly the incorporation of gold, silver, or other metallic powders in the varnish enables exotic effects to be obtained, which, however, should normally apply only to evening wear.

As soon as the nail varnish begins to show signs of wear it should be removed and a fresh application made. Special solvents are sold for dissolving nail varnish, and these enable the remains of the old varnish to be removed very quickly and completely.

### CARE OF THE FEET AND LEGS.

It has been said that well over half the adult population suffer some form of foot discomfort, and it is certain that a good deal, if not all of this, could be avoided by giving more personal attention to the care of the feet. Tiredness in the feet affects both physical and mental well-being and often produces bad temper as well as a general feeling of weariness.

The feet have to support the whole of the body, and in addition, because of the conditions of modern civilised living, have to be encased in a sock or stocking and then in a leather shoe or boot. The sole of the foot contains more sweat glands

than any other part of the body except the palms of the hands, and the result is that both socks and shoes very quickly become saturated with perspiration residues left behind by the continuous evaporation of the sweat. It is obvious, therefore, that socks and stockings should be changed and washed frequently so as to prevent the development of undesirable bacteria which may not only cause offensive odours, but may actually lead to skin affections.

**Choice of Footwear.** Provided there is nothing organically wrong with the feet, it is easy to maintain them in a healthy condition by following a simple routine, but it is equally essential that well-designed and well-fitting shoes or boots should be worn. Shoes that are too large can result in the feet gradually becoming malformed, and the whole carriage is affected because an unnatural style of walking is developed. Shoes that are too small, apart from being uncomfortable in themselves, very quickly result in the development of corns and bunions because of the continued pressure and friction of the shoe against the skin. Well-fitting shoes are especially important to people whose work demands a considerable amount of standing, and in such occupations there is sometimes a tendency for the arches of the feet to drop. In such cases arch supports should be fitted by a chiropodist or foot expert (see Medical Section—"Flat Foot").

It is a good investment to buy well-fitting shoes made of good-quality leather. These not only last longer and retain their shape during wear, but they adapt themselves to the movements of the feet during walking and give a greater degree of comfort.

**Foot-baths.** Because the feet are extremities of the body and a comparatively long distance away from the heart, they are particularly sensitive to inefficient circulation of the blood. By themselves the feet get very little exercise, and inadequate circulation is often encouraged by ill-fitting shoes or by tight elastic or suspenders around the leg. Bathing the feet in plain hot water helps to increase the blood circulation and at the same time enlarges the sweat ducts and eliminates stale perspiration residues. If the foot-bath is made alkaline it has an increased softening effect on the outer horny layers of the skin and enables corns and callouses to be more readily removed. Many preparations for foot-baths are designed to provide an alkaline medium, often in conjunction with an oxygen-producing ingredient which assists in cleansing the feet from sweat residues and bacterial infection. Other foot-baths are similar in composition to sea-water and, indeed, paddling or bathing the feet in salt water provides an easy and refreshing means of relieving fatigue in the feet.

**Foot Powders.** Dusting powders for the feet can be very effective in relieving tiredness and keeping the feet in a healthy condition. They are absorbent powders which are able to soak up excessive perspiration, and they usually contain an antiseptic ingredient. Some also contain substances such as alum which have the effect of slightly hardening the skin of the feet and rendering it less susceptible to the effects of friction. People who suffer habitually from tired feet, or from excessive perspiration, are well advised to use a dusting powder, preferably after the feet have been bathed or washed. A good plan is to sprinkle the powder inside the sock or stocking before it is put on.

**Care of the Legs.** The cosmetic treatment of the legs consists mainly of the removal of unwanted hair. Superfluous hair can be removed from the legs without harm, but it is sometimes a lengthy and tedious process. For the various methods of removing hair, see under "Superfluous Hair."

It is not usually necessary to apply any other cosmetics to the legs when stockings are worn, but in the summer specially tinted leg creams can be used to darken the skin and give an attractive "bronzed" appearance. The various sun-tan oils and creams which are normally applied to

other parts of the body are equally useful for treating the legs.

For increasing the whiteness of the legs if this is desired, or necessary, liquid creams which contain white powders of high-covering power are available. These are similar in composition to the "wet-white" used in the theatrical profession, and are often useful for covering up the brown colour of sun-tanned legs when it is desired to do this during the early winter months.

### BATHS AND BATHING.

Bathing the body with water is one of the very oldest hygienic treatments, and it has been practised for centuries, both for cleanliness and pleasure. The building by the Romans of public baths wherever they went is well known, and some of these baths are still standing, and even in use at the present time. In many cases Roman baths were built at the site of natural springs which provided water having medicinal qualities.

A warm bath is both cleansing and stimulating, because it encourages a flow of blood to the surface of the body. A good toilet soap should always be used, and it is better to employ a large or "bath-size" tablet, because this makes the soaping of the body so much easier. The temperature of the bath water should be pleasantly warm but not hot, in order to avoid the risk of chills afterwards. For those with bath thermometers, a suitable temperature is 100-110°. Any bath should be followed by a brisk drying with a roughish towel, and a special indulgence is to follow the drying with an application of a bath dusting powder or talcum. This prevents any possible chafing of the skin and adds to the pleasure of the bathing ritual.

Cold baths have little to recommend them, apart from the psychological effect which they produce. They are not primarily intended for cleansing the body, and are often taken without the use of soap, but the plunging of the body into cold water causes an increased flow of blood to the surface, and provided the time of immersion is not too long, a cold bath can be pleasantly stimulating. For the same reasons, sea-bathing, providing it is indulged in moderately, is very beneficial.

In country districts or in houses where no fixed baths are available, a large hip-bath may be used, or if that is not possible a good substitute for a bath is to soak a large towel in very hot water, wring it out as soon as possible and wrap the body in it. Soapy water is better than plain water for this purpose, and after the body has been wrapped up for a few minutes, it should be rubbed dry with a clean towel.

**Shower or Spray Baths.** Relatively few people are able to indulge in the luxury of having a fixed shower in their bathrooms, but it is possible to have a spray fitted to any ordinary bath with hot- and cold-water taps, both taps being connected by rubber tubes to one spray, which can be directed anywhere on the body. The use of a spray or shower bath not only adds to the pleasure of the bath, but it ensures that the soapy water is thoroughly rinsed from the body before drying. Wherever possible, some kind of rinsing after bathing should always be practised. It is interesting to recall that in tropical countries where water is relatively scarce, the natives always rinse the body after bathing by pouring over it plain water from a small vessel or cup.

**Foam Baths.** Preparations have been marketed for producing foam baths in the home, but they are relatively expensive and must be used in a special way. They are usually in powder or tablet form, and are placed under the direct stream of the tap so that the force of the water assists in building up a foam. Foaming preparations for the bath cannot be used with soap, and it is therefore necessary to massage the body with the foam, using no soap at all. Foam baths taken in this way are inferior in cleansing efficiency to the ordinary soap-and-water bath, but they have a certain psychological value.

Regular foam baths are provided by establishments which specialise in medicated baths, and in these the body is completely covered by a fine

foam produced by blowing compressed air into a small quantity of foaming agent placed in the bottom of the bath.

**Bath Salts.** The purpose of bath salts is primarily to soften hard water and at the same time to give it a refreshing and attractive odour. Because of this, bath salts are in fact used in water that requires no softening. They consist of crystals of water-softening chemicals such as soda, to which have been added colour and perfume. The most costly bath salts are those which contain delicate and expensive perfumes. Sufficient bath salts should be added to the water to soften it adequately, and for the average bath a small handful of crystals is usually adequate. The crystals should be allowed to dissolve completely before one steps into the bath. Bath salts are also made in cube form, and these consist of the water-softening agent which has been powdered and then compressed. In some cases a lathering agent is incorporated in the bath salts so that an attractive foam is produced on the surface of the bath water.

**Bath Oils.** These are transparent oily liquids which nevertheless mix completely with water without separation of oily globules. Colour and perfume are incorporated, and the oils are sometimes packed in soluble gelatine capsules. The sole use of bath oils is to impart a pleasant perfume to the water and, unlike bath salts, they have no water-softening properties. Occasionally bath oils are made up in the form of emulsions which are milk-like in appearance.

**Talcum Powder.** Talcum powders are manufactured for the dual purpose of dusting the body after bathing and for local application to certain parts of the body to absorb perspiration. They are made of highly absorbent materials, and when applied to the body produce a pleasant cooling effect because they increase the rate of evaporation of moisture from the skin. The perfumes which are used in talcum powders are carefully chosen to be non-irritant and, indeed, the special talcum powders sold for use on the tender skins of babies are very often left unperfumed. Talcum powders are also useful after shaving, especially if the skin is inclined to be sensitive, and to avoid chapping in cold weather.

### PERFUMES.

The discreet use of perfume can add charm to the personality and supply an aura of pleasing freshness and appeal. The choice of perfume is largely a matter of individual taste, but the selection of a particular perfume should be made with care, having regard to time and occasion.

For day use, special types of perfume are available, and these are less concentrated and have a fresher and more delicate odour than perfumes suitable for evening wear. Lavender water and various types of Eau de Cologne are in the same class as these day-time perfumes, and are sometimes described as "toilet waters." Indeed, they can be added to the bath water as a special indulgence.

As a general rule, the lighter perfumes are more suitable for fair people than for brunettes, but in any case it is usually easy to make a successful choice of perfume from among the many tried and well-known blends produced by the leading perfumers. It is not advisable to use cheap perfume, because although the initial odour may be attractive, the inferior oils and essences used in their manufacture quickly become stale and the original odour disappears.

Toilet waters, colognes, and other day-time perfumes can be applied directly to the body, and because they have astringent properties, they are effective in reducing the flow of perspiration from areas such as the soles of the feet and the underarms. The heavier and more exotic perfumes should never be used lavishly, but should be sprayed or dabbed lightly behind the ears, on the wrists or temples, or even massaged sparingly into the hair. The warmth of the skin soon brings out the perfume and surrounds the wearer with fragrance.

As a general rule, no perfume should be applied directly to the clothing, since many of the dyes



used on textiles will dissolve in the spirit with which a perfume is compounded, and it is very easy to produce stains in this way. The sprinkling of a few drops of perfume on a handkerchief is probably the best and most effective means of using perfume regularly. A handkerchief treated with Eau de Cologne or lavender water is a most refreshing accessory to carry in hot and stuffy atmospheres.

### CARRIAGE AND DEPORTMENT.

A woman blessed with good looks and clothed in the height of fashion will never be anything more than an ordinary member of the crowd unless a graceful carriage lends her distinction. In these days, a woman with good natural deportment is comparatively rare, and there is often a tendency to shuffle along with uncertain control of the knees. A woman who knows how to walk properly strides along as if she enjoys living, unhampered by her body and feet and seemingly unconscious of her clothes. In Victorian times a good deal of attention was paid to deportment, and young ladies were taught to cultivate correct carriage by means of a heavy book carried on the head. This is still a good method, although the same effect can be achieved by remembering always to hold the head high and the chin well drawn in when walking, standing, or sitting. Special exercises, most of them of a very simple kind, have been devised for improving the carriage and, incidentally, developing the figure. Details of these can be obtained from many sources. In general, an attractive style of deportment can easily be cultivated if one remembers when walking to keep the shoulders still, the head well up, and let the movements be from the hips. The pace at which one walks should be even, with the toes pointing straight in front. One has only to study the movements of a trained mannequin to appreciate the beauty of correct posture and carriage.

### DIET AND SLIMMING.

On no account should drugs or substances sold as slimming preparations be used except under medical advice. In cases where fatness is due to over-eating, controlled dieting can obviously effect considerable improvement. Any systematic course of dieting, however, should be followed only after taking medical advice, and the doctor's instructions should be carefully followed. Many women, finding themselves growing a little stout, make the mistake of cutting down their meals to such an extent that the body receives insufficient nourishment, with the result that their general health is impaired. Exercise taken in moderation is always a good thing, but it will have no value as a slimming treatment if at the same time large quantities of starchy foods (bread, potatoes, sweets) are eaten, because these replace the calories which are expended during the exercise. As with most things, moderation is the golden rule to follow in eating, drinking, and exercise.

### CLOTHING.

**Hygienic Considerations.** The general comfort and maintenance of the body in a healthy condition depend largely on the type of clothing that is worn (see "General Hygiene," p. 821). This applies particularly, of course, to underwear, and the manufacturers and designers fully realise the importance of suitable clothing, so that it is an easy matter to obtain warm, yet healthy clothing at prices to suit all pockets. There are available fabrics in great variety, made from natural fibres such as wool, silk, and cotton, or of the newer man-made fibres, including rayons, nylon, terylene, orlon, and ardil. These all have their own special properties, and choice becomes largely a matter of preference. In many fabrics one or more fibres are blended together so as to obtain the beneficial properties of both. The general rule is to wear clothing which is as light in weight as possible, but which keeps the body adequately warm in winter and pleasantly cool in summer. All clothing should be loose, and the quality of the material is of much greater importance than quantity or number of garments. Underwear should be made of fabrics which are

easy to wash, so that frequent changes can be made.

**The Care of Clothes.** It always pays to look after one's clothes carefully in order to prolong their usefulness and to retain their original smartness and shape. If means permit, it is a good plan to avoid wearing the same dress or suit two days running, and on removing the clothes at night they should be carefully shaken or, if appropriate, brushed and put away on hangers. Washable frocks should not be allowed to get obviously soiled, but should be frequently washed, while other outer garments of heavier material, such as suits, should be dry-cleaned from time to time to restore their freshness. Clean stockings and panties should be worn each day; vests and slips changed at least twice weekly. If these garments are made of one of the many nylon fabrics that can now be obtained so easily, frequent changing and washing is a simple matter. The garments can be washed at night, and will be dry and ready to be worn again without ironing the following morning. Collars and cuffs must be spotless and changed as soon as they become soiled. Dark suits, dresses, and coats should be periodically freshened up with a clean piece of linen, wrung out in warm vinegar. This treatment should be combined with the removal of grease spots by means of carbon tetrachloride or one of the proprietary dry-cleaning solvents. Petrol and other inflammable liquids should not be used for stain removal because of the fire risk, but if nothing else is available, petrol treatment should always be given out of doors. Shiny patches and marks on outer garments can be lessened by pressing with a hot iron over a damp cloth and then gently brushing to restore the pile.

Tea, coffee, fruit juice, and wine stains should be dealt with as soon as possible, before the stain has become "set." The stained portion of the garment should be soaked or sponged with cold water. Never plunge stained articles into hot water, as some stains are permanently fixed by this treatment. Ink spots can sometimes be removed by treatment with oxalic acid or salts of lemon, but since both these substances are poisonous, they should be used with care.

Shoes will last longer if the soles and heels are repaired before they are worn right down. Regular polishing with cream or wax will help to preserve the leather, or in the case of suede shoes, regular brushing with a specially designed brush will preserve the appearance.

**Storage of Clothes.** All washable clothing should be washed, ironed, and thoroughly dried before being stowed away in drawers or cupboards. Delicate white silks should be wrapped in blue or opaque paper to exclude the light and to prevent yellowing if they are likely to be stored for a long time.

Outer garments, especially those made of wool, should be thoroughly brushed, and if possible enclosed in paper or cellophane for protection against moths. If no such protection is given, the clothes should be taken from the wardrobe periodically and given a good shaking and brushing to make sure that any moth eggs and grubs are removed. Fur coats should be similarly cared for, and if they are of especial value it pays to have them put in a cold store during the summer months. Most reputable furriers provide such a service at relatively low cost.

Woolen or silk articles stored in drawers can easily be damaged by moth grubs unless precautions are taken. One of the proprietary anti-moth preparations should be used, or some crystals of paradichlorobenzene can be sprinkled amongst them. This substance will kill not only live moths and their grubs but also the eggs.

### DIET AND A HEALTHY SKIN.

The importance of a generally healthy body in maintaining skin health has already been mentioned. Nevertheless, it is a mistake to assume that perfect health automatically ensures a beautiful skin. The porcelain-like complexion of many tuberculosis patients and the spotty faces of vigorous adolescents contradict this belief. On

the other hand, deficiencies or excesses in the diet sometimes show themselves on the skin before their effects are apparent in other organs of the body. This is also true of people who are allergic (abnormally sensitive) to certain foodstuffs, such as eggs, tomatoes, strawberries, shellfish, etc. The first adverse reaction in such cases is nearly always an eruption of the skin; in other words, the condition of the skin gives the first and sometimes the only warning that there is something wrong with the normal working of the body. This is also true in many cases of food poisoning, the first symptom of which is often a well-defined skin rash.

It is often said that failure to eliminate waste matter from the body regularly and completely is likely to show itself in the appearance of the skin and that people who are "constipated" will almost certainly have muddy complexions and be susceptible to pimples and acne. There is, however, little medical evidence to support this view. Constipation may be due to a very large number of causes, some of them serious, and if the degree of constipation is marked, medical advice should be obtained. The habitual use of laxatives and purgatives is to be deplored, and indeed it is preferable to be slightly constipated than always to have loose motions.

**The Choice of Diet.** In general, it can be said that, provided the diet is varied and well balanced, there is no need to worry about such things as vitamins, neither is ill-health likely to be caused by deficiencies in the diet or its unsuitability. The following foods, eaten regularly and in moderation, will ensure ample variety and balance in the diet: meat or fish or both; eggs, raw or cooked; green vegetables, including raw salads; other vegetables, especially carrots; fresh fruits; butter or margarine, or both; milk, either liquid or in the form of milk puddings, blanc-manges, custards, etc.; bread and/or other cereals. All of these, of course, need not be eaten daily or even weekly, but meals should be arranged so that too much of one kind of food is not eaten to the regular exclusion of others on the list.

The quantity of food eaten obviously depends upon such things as the size and weight of the individual and their degree of activity and expenditure of physical energy in the course of their daily work. No rules can be given, except the one that applies to so many things, and that is to observe moderation. There is a good deal of sound advice in the words of the old music-hall song "A little of what you fancy does you good," provided, of course, that you know from experience what foods, if any, must be particularly avoided.

Special or fancy diets, such as the "Oslo Breakfast" or the "Hay Diet," which have been claimed to preserve and improve both health and figure, should not be followed without medical guidance, for excessive fatness and weight-gain can be due to causes other than over-eating (see *Diet and Slimming*).

**Alcoholic Drinks and the Skin.** The effect of alcohol in the diet is to cause an increase in the flow of perspiration, and hence in the rate at which heat is lost from the body. This is accompanied by a rush of blood to the tiny vessels below the skin surface (capillaries) so that they become enlarged and produce a visible reddening or flushing of the skin. If this enlargement takes place regularly and excessively some of the capillaries may be ruptured, producing the red-veined noses and cheeks that are popularly associated with immoderate addiction to alcohol. Alcoholic drinks, however, are not the only possible cause of such conditions. Where skin diseases of any kind are present, alcoholic beverages are best avoided (together with excessive quantities of strong tea and coffee), but the advice of the doctor will naturally be followed in such cases.

When the body and skin are normally healthy, alcoholic drinks in moderation are not deleterious in any way. Apart from their social value, they may stimulate the gastric juices and thus improve the appetite and digestion. The rule of drinking in moderation applies especially to spirits, which should be well diluted, except when taken in small quantities and sipped slowly, as in the case of cocktails and liqueurs.

## GLOSSARY OF HYGIENE AND BEAUTY PREPARATIONS.

**After-shave Cream (Lotion).** Preparations to cool and soothe the skin after shaving. The cream is a simple emollient one, semi-greasy, and slightly perfumed. The lotion is astringent (q.v.) and often contains an antiseptic. Both cream and lotion may also be mentholated.

**All-purpose Cream.** An emulsion (q.v.) cream less greasy than a cold cream but more so than a vanishing cream. It can be used sparingly as a foundation and more lavishly as a night, massage, or cleansing cream.

**Antiseptic.** A substance which prevents the growth (multiplication) of germs or bacteria without actually killing them (see "Disinfectant," "Germicide").

**Anti-wrinkle Preparations.** Creams, oils, and lotions designed to keep the outer horny layer of the skin soft and supple. Applied with massage, they can delay the onset of wrinkles and improve the appearance of already wrinkled or elderly skin.

**Astringent.** A liquid or cream which has a tonic or freshening effect when applied to the skin and which is often used to "close the pores." Witch-hazel extract is a commonly used astringent; alum is a more powerful one.

**Baby Powder.** The most widely used of all baby preparations. A soothing absorbent powder, generally and preferably unperfumed. A powder prepared by a reputable manufacturer should be used, since "home-made" mixtures of fuller's earth, boracic, etc., are seldom sterile, and may cause serious harm.

**Barrier Creams.** Creams used industrially and in the home to protect the hands; they must always be well rubbed into the skin (especially the nails) before starting work. Of two main types, the water-resistant barrier creams give protection during "wet" jobs, such as washing-up, vegetable preparation, and house cleaning, while the oil-resistant creams protect the hands during gardening, cleaning the car or bicycle, etc.

**Bath Essences.** A perfume of a light type for imparting a pleasant fragrance to the bath water. Eau de Cologne and lavender water can be used as bath essences, in addition to preparations specially compounded for this purpose.

**Bath Salts.** Water-softening chemicals in crystal or powder form suitably perfumed and coloured. They should be dissolved completely in the water before taking a bath, in order to enable them to exert their water-softening action.

**Bleaching Creams.** Creams containing special ingredients which have a bleaching action on the colouring matter of the skin. They are intended for the removal of unwanted sun-tan, and sometimes freckles can be made less obvious by the application of such creams. They should, however, be used with caution, and it is generally preferable to lighten the skin by means of a powder cream of fairly high covering power.

**Brilliantine.** An oily hair dressing whose main function is to impart a gloss to the hair. Brilliantines are of two types, one of which, described as non-separable, consists of light mineral oil, perfumed and sometimes coloured, while the other, or separable, is a mixture of oil and spirit. The latter type must be well shaken before use. The separable brilliantines are especially suitable for thin hair, which is usually easily kept in place. The non-separable brilliantines are better for people with dry hair, and they have greater fixative properties than the other type.

**Brushless Shaving-cream.** A cream in emulsion form which is applied directly to the face after washing and which acts as a lubricant for the razor during shaving. In America more men use brushless creams than any other type of shaving preparation, and they are consistently becoming more popular in this country.



**Cake Make-up.** Foundation preparation made in the form of a solid block or cake, and often applied by means of a moistened sponge or pad. Cake make-up can take the place of both foundation cream and powder, but many people prefer to add a dusting of powder on top of the cake make-up. They are not very satisfactory for women with dry skins.

**Calamine.** Calamine is a preparation of zinc in powder form which is generally used as a lotion for the relief of sun-burn. It is also a main constituent of baby powders, but because of the susceptibility of burnt or irritated skin to infection, calamine preparations should also contain an antiseptic.

**Chignon.** An additional coil or plait of hair dressed into a flat circle, cone, or bun, usually attached to the hair of the nape of the neck. Worn in this way, it may be found a practical hair style when a permanent wave has almost grown out and a new one has not been given.

**Cleansing Preparations.** Cosmetics in the form of cream, lotion, or milk intended for cleansing the skin as a basis for make-up. Cleansing creams are soft and greasy in character, and after being well rubbed into the skin the surplus is wiped off with tissue, when much of the surface dirt will be removed with it. Cleansing milks and lotions are less greasy in character, and are designed for use on skins which are naturally greasy.

**Cold Cream.** One of the earliest types of cosmetic cream. It was originally made from a mixture of pure lard and rose-water, and produced a cooling sensation when applied to the skin—hence its name. Modern cold creams are generally described under some other name such as “night cream” (*q.v.*) or “cleansing cream”, and are commonly applied last thing at night and left on the face until the next morning. Dry-skinned people can use cold cream sparingly applied as a foundation for make-up.

**Cold Wave.** A chemical means of softening the hair while it is tightly wound on curlers and then hardening it again so that it retains its curls as a permanent wave. The outfits supplied for permanently waving the hair at home are all of the cold-wave type.

**Cologne.** The original Eau de Cologne was a blend of various aromatic oils diluted with pure spirit. Modern manufacturers have produced variations of the original cologne which have characteristic perfumes of their own. The name “cologne” is sometimes applied to any light perfume with a fresh, flowery odour.

**Complexion Milk.** A lotion in emulsion form for cleansing the skin prior to make-up (see “Cleansing Preparations”).

**Cuticle Cream.** A preparation containing alkali for softening and removing the dead skin around the curves of the nails (see “Cuticle Remover”).

**Cuticle Remover.** A solution of caustic potash mixed with glycerine and suitably perfumed for softening and removing the cuticle around the nail. Its use contributes substantially to the well-kept and neat appearance of the nails.

**Dentifrices.** Any preparation for cleaning and polishing the teeth. In common parlance, the term “dentifrice” is applied more especially to the block form of tooth cleanser which is rubbed off on to the moistened toothbrush. This type is probably the most economical form of dentifrice.

**Denture Cleaner.** A powder for dissolving in water to form a bath in which artificial teeth can be left to soak. Denture cleaners usually contain oxygen-producing substances which remove the stains from the dentures, as well as traces of food particles and film. Dentures should be soaked for at least 20 minutes, and preferably overnight.

**Deodorants.** These are preparations for reducing or eliminating the unpleasant odour of

stale perspiration from the body. They are of two types—those which contain very powerful astringents and diminish the flow of perspiration and those which merely mask the perspiration odour. Deodorants are available in four forms, liquids, creams, sticks, and powders. The most effective of these are the ones which contain powerful astringents, especially aluminium compounds. They should, however, be used in moderation, as while perfectly safe when applied at intervals of a few days, they may cause skin irritation if used more frequently. Many deodorant preparations, especially those in powder form, contain antiseptic substances which do not affect the flow of perspiration but remove its odour.

**Depilatory.** Any material designed to remove hair from the skin surface. Chemical depilatories in liquid or cream form are the easiest and most effective to use, but can irritate the skin if applied too frequently. The hair of the legs is often removed by rubbing with an abrasive block, and there are also wax depilatories, by the use of which the hairs are pulled out by brute force. Chemical depilatories should never be used on the face, and superfluous hair here is best treated by a trained expert.

**Detergent.** The word “detergent” literally means any substance capable of cleansing and removing dirt. In recent times it has come to be applied more particularly to household cleaning agents which do not contain soap as an active ingredient.

**Disinfectant.** Literally, a material which destroys or removes infection. Another name for a germicide (*q.v.*).

**Dry Shampoo.** Of two types, depending upon whether they are used by men or by women. A dry shampoo for men's use is a solution of soap in spirit which enables a lather to be produced on the dry hair and removed by sponging with a minimum use of water. For women's use a dry shampoo is an absorbent powder which is rubbed into the hair and then brushed out again, carrying much of the dirt and grease with it. It is intended for occasional use when the normal wet shampoo is not practicable.

**Dusting Powder.** A powder made of absorbent materials for completely drying the skin after washing. Dusting powder includes both baby powders and talcum powders (*q.v.*).

**Emulsion.** The intimate mixture of an oily substance with a watery one. Oil and water do not normally mix, but if certain substances known as “emulsifying agents” are present, the two can be made to blend together. Common examples of emulsions are milk and salad cream.

**Eyebrow Pencil.** Eyebrow cosmetic in stick form like thin crayons or in the usual pencil style encased in wood. In the latter form they are stronger and more easily applied. They are used for modifying the outline of the eyebrows, especially after plucking, and are obtainable in various shades of brown as well as black.

**Eye Shadow.** Generally a cream with a greasy base containing blue, green, or brown colouring material. They are applied to the upper eyelids, and are more particularly suitable for evening wear.

**Face Pack.** Sometimes called face masks. They are usually in powder form which is mixed to a paste with warm water before use. They produce a sensation of warmth and tightening which gives the impression that something beneficial is happening to the skin. Some face packs contain astringents and bleaching agents, but their main value is in the absorption of impurities from the skin and the removal of surface debris. Their main ingredient is an absorbent earth, such as kaolin or fuller's earth.

**Face Powder.** Tinted and perfumed powder designed to give a pleasing matt finish to the skin. These powders can be made to give high covering

power, in which case they are very opaque, or they can be translucent and therefore less obvious when applied. These latter are generally described as "fine" powders, a description which has no relation whatever to the particle size of the ingredients.

**Foot Powder.** A dusting or talcum powder especially prepared for use on the feet, it generally contains an antiseptic ingredient with deodorant properties, and may also be formulated to harden the sole of the foot slightly.

**Foundation Cream.** A cream whose main purpose is to form a sticky layer on the skin to which face powder will adhere. Foundation creams can be of the non-greasy type, in which case they are especially suitable for greasy-skinned subjects, or of the greasy type for dry-skinned people. Foundation creams should always be applied on a clean skin, and a fresh application should not be made without first washing off all the old make-up. The non-greasy type of foundation cream is also known as vanishing cream (*q.v.*), because when rubbed into the skin it is scarcely visible.

**Germicide.** A substance which is capable of killing germs or bacteria outright and not merely, like an antiseptic, preventing their growth. Apart from fire, there is no germicide which will kill all types of germs, and different germicidal substances are therefore employed for different purposes, according to the kind of germs that have to be attacked.

**Hair Bleach.** A preparation for destroying some or all of the natural colouring matter of the hair. Perhaps the most commonly used is ordinary peroxide of hydrogen, but there are proprietary bleaches which are safer and easier to apply. The bleaching of dark-coloured hair should always be carried out in stages, giving a comparatively weak treatment each time. The application of strong bleach to the hair will weaken it, and may cause serious damage.

**Hair Cream.** A dressing for the hair used almost exclusively by men. Some hair creams are merely fixatives and contain gummy substances which keep the hair in place, while other hair creams contain large quantities of oil, and besides fixing the hair, they impart an attractive gloss, similar to that produced by brillantines.

**Hair Dye.** There are many different types of dye for altering the existing shade of hair, or for restoring white hair to its normal colour. The chief varieties are the various forms of henna and the so-called "oxidation dyes," which require considerable skill in their application, and they should therefore be applied by a professional hairdresser. Oxidation dyes are available in a wide variety of colours, including some not found naturally on the hair.

**Hair Fixative.** The name given to a gummy dressing for the hair, the main function of which is to keep the hair in place. Fixatives are normally used only by men, and they may be compounded with or without oil, the latter type being more suitable for people with greasy hair.

**Hair Lacquer.** Setting lotions which are thin enough to be capable of being sprayed. They can be made up with water or with spirit, the latter having a much quicker drying time than the former. They are particularly useful for keeping an elaborate hair style in place for a special occasion or for retaining obstinate "ends" in position.

**Hair Rinse.** A preparation usually in the form of crystals to dissolve in water for use as a final rinse after shampooing the hair. The purpose is to counteract the dulling effect of some soap shampoos in hard water and to give a slight crispy feeling to the hair. Special rinses are not required with soapless shampoos.

**Hair Tint.** Sometimes used synonymously with hair dye (*q.v.*), but generally taken to mean a preparation for imparting extra brightness to the hair or adding just a little colour. Some tints,

especially those based on henna or camomile, are incorporated in shampoos.

**Hand Cream.** A bland cream for soothing and softening the hands, especially after the skin has become dried and roughened through long immersion in water or by exposure to the weather.

**Hand Jelly.** Used in the same way as a hand cream, but less greasy in character. Hand jellies generally contain a considerable proportion of glycerine, and are the modern successor to the simple glycerine and rose-water mixture so popular many years ago.

**Hormone Cream.** Creams containing one or more of the sex hormones, the theory being that after about the age of 30, the manufacture of these hormones by the body practically ceases, thereby hastening the ageing of the skin and the onset of wrinkles. The use of hormone creams is not without risk, and expert medical advice should be sought before they are used to any considerable extent.

**Iron Wave.** The wave produced in straight hair by compressing it between the heated tongs of a specially designed waving-iron. The waving is more effective if the hair is slightly damp, but the repeated application of hot irons to the hair is apt to make it become excessively dry and brittle.

**Lip Salve.** A colourless or lightly tinted greasy preparation in stick form for protecting the lips against chapping and for promoting the healing of already chapped or cracked lips. Lip salves are usually softer and more greasy than lipsticks.

**Lipsticks.** A greasy cream in stick form for covering the lips. Lipsticks are made in a wide variety of shades, which vary with fashion and which should be selected to suit the general colouring, style of dress, etc., of the wearer. Some lipsticks are claimed to be kiss-proof, but this is a relative term, and a really permanent lipstick has yet to be devised.

**Liquefying Cream.** Usually a cleansing cream or one intended for night use which is made from a blend of oils and waxes of low melting point, so that the warmth of the skin is sufficient to liquefy the cream when it is applied.

**Liquid Foundation.** A suspension of face powder in a watery solution which sometimes also contains emulsified oil. Designed specially for women with greasy skins, a liquid foundation provides a less oily base than a foundation in cream form.

**Marcel Wave.** A system of producing temporary waves and curls in the hair by heated irons, and named after its originator, the French hairdresser Marcel.

**Mascara.** An eyelash cosmetic for darkening and increasing the apparent length of the eyelashes. The most popular type is in block form, and is applied by a special brush moistened with water and rubbed over the surface of the block. More permanent types are made with a greasy base, which is slightly warmed and applied with a fine brush.

**Medicated Soap.** Fine toilet soap containing a medicament such as sulphur or an antiseptic ingredient, used for treating affections of the skin. Medicated soaps should be used only on doctor's instructions.

**Mouth Wash.** An antiseptic solution for rinsing the mouth after meals, and of especial value when septic conditions are present, as after the extraction of teeth or in cases of gum infections.

**Nail Polish.** A fine abrasive powder which is applied to the nail and then polished with a chamol-leather pad. Other types of nail polish are waxy in character and are made in the form of pencils.



**Nail Varnish.** Sometimes referred to as nail lacquer. These are cellulose lacquers similar to those used for metalwork and other surfaces but containing pigments to give a wide variety of shades. Nail varnishes are specially formulated to have extra rapid drying properties.

**Nail-varnish Remover.** A liquid solvent which will dissolve the dried film of varnish and enable it to be wiped off the nail. In place of the proprietary nail-varnish removers, solvents such as acetone or amyl acetate can be used, and these are obtainable from any chemist.

**Nail Whitener.** A paste or cream incorporating a white pigment for producing an even opaque white edge to the nails. Nail white is also available in pencil form, which is simpler to apply than the creams.

**Night Cream.** A greasy cream for applying to the face and leaving all night. Many cold creams and liquefying creams (*q.v.*) can be used as night creams.

**Oil Shampoo.** A shampoo in the form of a thick liquid which is applied to the unwetted hair and which produces little or no lather. Oil shampoos are specially suitable for women with dry or brittle hair because they have a conditioning effect.

**Perfume.** The name perfume is usually applied to a compounded blend of flowery oils and other aromatic substances dissolved in spirit.

**Permanent Wave.** A wave or curl produced in the hair by softening it, moulding it into shape around curlers, and allowing it to become hard again. In hot waving the softening is achieved by the combined action of an alkaline lotion and heat, while in cold waving (*q.v.*) the hair is softened by special chemicals.

**Postiche.** The hairdresser's name for a wig or for made-up artificial hair used on dummies and to demonstrate hair styles.

**Powder Cream.** A blend of face powder and vanishing or foundation cream which produces an even matt appearance when applied to the skin. A subsequent application of powder can be given if desired.

**Pre-shave Lotion.** A spirit preparation often containing a small quantity of resinous material which is designed partly to protect the skin during shaving and partly to make the hairs more easy to cut by the razor. These lotions have been especially recommended for use in conjunction with dry-shaving machines.

**Rouge.** Pigments in various pink and red shades made up as powder blocks or cream. The judicious use of rouge can considerably improve sallow or pale complexions.

**Setting Lotion.** A liquid for application to the wet hair after rough towelling following a shampoo, which enables the hair to be dried more rapidly and to be combed and set more easily. The use of a setting lotion also helps to keep the hair style in place.

**Shampoo.** Any preparation for washing the hair. Available in powder, liquid, and cream form, and made of either soap or soapless lathering ingredients.

**Shampoo Rinse.** A special rinse for the hair, often incorporated in a packet of soap shampoo (see "Hair Rinse").

**Shaving.** Comfort in shaving depends in the first place on the softening of the beard. Water, preferably warm or hot, is the best for this purpose, but it needs to be in contact with the face for about two minutes.

All good shaving preparations retain moisture in the lather and thereby assist in softening the beard as well as lubricating the passage of the razor over the face.

**Shaving Soap.** A highly refined soap similar to toilet soap but specially formulated to produce a close, dense lather which does not break down during the process of shaving. Available as sticks, bowls, or cream.

**Skin Food.** The name given to creams or lotions for softening the skin and keeping it supple. They "feed" the skin only in the sense that leather or a cricket bat can be "fed" with oil. The real food of the skin comes from the blood stream.

**Skin Tonic.** Generally a lotion containing some spirit or other mild astringent for use after a cleansing cream or massage and for "closing the pores."

**Sun-tan Cream.** Creams designed to protect the skin against excessive sunburn by filtering out some of the heat rays. Such creams can also contain brown colouring matter to stain the skin and enable a tanned appearance to be gained more rapidly. Similar preparations are made in the form of oils.

**Talcum Powder.** A perfumed absorbent powder, the main ingredient of which is very often talc or French chalk, used for dusting the skin (see "Dusting Powder").

**Toilet Soap.** Soap made from highly refined raw materials and containing no trace of irritant substances. Toilet soaps are more concentrated than household soaps, and can be obtained in a wide range of perfumes and colours. The price largely depends on the quality of the perfume that is used.

Pears Transparent is a toilet soap made by a special process, and is of extreme purity and mildness.

**Toilet Water.** A generic name which includes light perfumes, such as Eau de Cologne, lavender water, and the so-called day-time perfumes.

**Toothpaste.** A dentifrice (*q.v.*) in paste form containing a polishing material and a cleaning agent which usually lathers. Some toothpastes contain specific ingredients for which special claims are made.

**Tooth Powder.** Dentifrice in powder form containing the same ingredients as toothpaste, but more concentrated because of the absence of water.

**Vanishing Cream.** A foundation cream of a non-greasy character which is invisible when applied to the skin.

**Vitamin Cream.** Foundation or cold creams containing extracts of the fat soluble vitamins, usually vitamin A. The value of vitamins in toilet preparations has, however, yet to be proved.

# Cookery and Household Hints



## LIST OF CONTENTS

I. Cooking Equipment	836	IV. Recipes	844-70
II. Basic Cooking Methods	837-42	V. Reference Tables	871
III. Wines	843	VI. Household Hints	872-76



# Cookery and Household Hints

By "Good Housekeeping Institute"

## I. COOKING EQUIPMENT

Soundly constructed and well-designed cooking-utensils add immeasurably to the pleasure and ease of cooking. Careful and selective buying is well worth the trouble, and should result in a well-equipped cupboard that does not require constant replacements. The following points are among those to be observed:

1. Good cooking-utensils should be easy to clean. Look for a smooth interior, but avoid one that is too highly polished, as foods tend to stick and burn on an excessively high finish. Lids should fit well and be free from crevices.

2. Examine the handles to see that they are firmly fixed and sufficiently insulated to stay cool when in use.

3. Sharp angles where the base and sides meet are to be avoided, as they make cleaning difficult.

4. For cooking on solid electric or other flat hot plates utensils must have a reasonably heavy machined base to ensure quick transfer of heat and eliminate waste. For non-solid plates thinner gauge pans are suitable, though too lightly made ones should be avoided, as they soon tend to lose their shape.

5. Avoid buying unnecessary gadgets without being certain of their ultimate usefulness. They should be easy to store and clean, and should be simple and effective to use.

### SPECIALISED COOKING-UTENSILS

**Pressure Cookers.**—These are becoming increasingly popular, largely because of the time and fuel they save. Pressure cookers are specially constructed pans, usually of aluminium, with a special fitting lid, a pressure weight, or spring-loaded valve, and some type of safety device. The modern pan type is reasonably light and simple to handle. Manufacturers' instructions for cooking must be followed closely, and when buying a cooker the choice should lie between those of reliable manufacture which have passed standard tests. The size should be chosen according to the number in family, and the cooker must have a base suitable for the type of hot-plate or burner on which it will be used.

**Steamers.**—For large households the tiered steamer is a most useful item of kitchen equipment. As a rule there are three separate pans which fit on top of each other over a base pan. One or more tiers can be used at a time, and the steam to each compartment can be separately controlled. Aluminium is the most suitable metal for this type of pan, and the handles and knobs should, of course, be insulated.

A simpler steamer, for small households, is a pan with a perforated base designed to fit over another saucepan. These are usually aluminium or enamel, and should have a well-fitting lid.

**Preserving-pan.**—Fairly heavy gauge aluminium is a good choice for a preserving-pan. It should have a fairly wide top to allow for the necessary evaporation during jam-making. The handles must be sturdy. Tinned copper pans are also satisfactory. Unlined brass and copper pans are suitable for jam-making only, and must be avoided for pickles and chutney, as vinegar reacts with them to form traces of a poisonous salt.

**Electric Mixers.**—A good electric mixer can save considerable time and energy, especially in large households. A reliable machine that is easy to operate and simple to adjust is essential.

Most electric mixers are primarily designed for making cakes and puddings, and for all whisking processes. Some have attachments for mincing, coffee-grinding, grating, blending, liquidising, juice extracting, dough-making, potato peeling, etc. Success in using a mixer depends largely on the careful following of directions. Best use can be obtained from a mixer if it has a permanent position in the kitchen where it can always be ready for use.

**Knives.**—It is really essential to have a good set of cooking-knives—

**Vegetable Knife.**—A small pointed knife with a blade 3 to 4 inches long. Some types have a serrated edge, and these are useful for slicing purposes.

**Cook's or French Knife.**—This knife is used for cutting up and chopping food, and has either a long or medium blade tapering to a sharp point.

**Round-ended Knife.**—A general-purpose tool.

**Carving Knife.**—There are various different shapes and sizes of carving-knives. For ordinary joints a knife with a long and fairly broad blade, slightly curved and sharply pointed, is satisfactory. For game and poultry, a pointed knife with a shorter blade is necessary. For ham, tongue, etc., a long, thin, even-bladed knife without a pointed end is usually preferred.

### CARE OF COOKING UTENSILS

**Aluminium Saucepans.**—Wash in hot water using a stiff brush. Avoid using scratchy abrasives and soda, even if the pan is discoloured. This typical discoloration is quite harmless, and is due to traces of iron in the water or commercial metal. It can be removed, if desired, by boiling water with a weak acid, such as vinegar or fruit parings, in the saucepan. The outside of aluminium pans can be polished with fine dry steel wool.

**Baking-tins.**—Wash in hot soapy water, rinse and dry in a warm oven, or on the rack of a closed stove. Discoloured greasy tins should be stewed for an hour in water to which soda has been added in the proportion of 1 oz. to 1 gallon.

**Casseroles.**—Steep earthenware casseroles in cold water and then wash in hot soapy water, using a stiff brush.

**Enamel Ware.**—Soak immediately in cold water, and clean in hot soapy water. Salt can be used to remove any stains, but scratchy abrasives must be avoided, as they damage the surface.

**Frying and Omelet Pans.**—Pour off any grease and wipe the pan with a pad of absorbent paper. Wash only occasionally. New pans which are inclined to stick should be heated with a little fat. Remove from the heat and add a handful of salt. Wipe round vigorously with an old cloth or paper. Do not repeat this treatment too often, or the surface of the pan will be damaged.

**Glass Ovenware.**—Soak in cold water. Wash in hot water and soapless detergent, using a pad of fine steel wool or a cloth dipped in borax to remove any obstinate stains. Rinse well.

**Kettles.**—In hard-water districts kettles need to be de-furred occasionally. Pour in a little vinegar, heat slightly, and leave to stand for an hour or two, when it will be easy to remove the fur. Rinse very thoroughly before using again.

**Mincer.**—Take to pieces and remove all scraps of food, using a skewer if necessary. Wash in hot, soapy water, rinse and leave in a warm place to dry thoroughly. Reassemble before putting away.

### EQUIPMENT REQUIREMENTS

The following is a comprehensive list of cooking-utensils sufficient for two people setting up house. Those considered essential are marked with an asterisk.

**Saucepans and Kettles, etc.**

\*6 saucepans (assorted sizes: 2 large, 2 medium, and 2 small)

Double boiler

3-tiered steamer

\*1 shallow frying-pan

Deep-fat pan and basket

\*2 kettles (1 large, 1 small)

Pressure saucepan or cooker (optional)

**Baking-tins, etc.**

- \*12 patty pans (or 2 sets bun tins)
- 2 sandwich tins
- 2 pie plates
- \*Baking-sheets
- Swiss-roll tin
- Flan ring
- \*Set of pastry cutters
- \*3-4 cake tins (assorted sizes)
- 2 wire cake-trays
- \*Meat tin
- \*Trivet for meat

**Utensils for Food Preparation**

- \*Colander
- \*Whisk
- Grater and shredder
- Potato masher
- \*Pointed strainer
- Lemon squeezer
- Funnel
- \*Pastry Board
- \*Rolling-pin
- \*Flour dredger
- \*Pastry brush
- Salad shaker
- \*Fish slice
- \*Graduated measure
- \* $\frac{1}{2}$ -,  $\frac{1}{4}$ -, and 1-pint measures or one graduated measure
- Standard measuring-cups and spoons
- \*Mincer
- Hair sieve
- Wire sieve

**\*Chopping-board**

Vegetable and icing forcing pipes

**Cutlery and Small Tools**

- \*Set of kitchen knives (round-edged, cook's, vegetable, palette, and saw-edged)
- \*3 or 4 forks (large, small, and two-pronged)
- \*2 or 3 wooden spoons (assorted sizes)
- \*Kitchen spoons (cook's, perforated, scoop)
- \*Potato-peeler
- Apple-corer
- Bottle-opener
- Tin-opener
- \*Kitchen scissors
- \*Knife-sharpener

**China, Heatproof Ware or Enamel**

- \*Mixing bowl
- \*4 pudding basins (assorted sizes)
- \*2 or 3 pie dishes (assorted sizes)
- \*2 or 3 casseroles (1 will suffice at first)
- \*3 or 4 plates
- \*3 or 4 jugs
- 1 soufflé case
- \*2 jelly moulds (1 will suffice at first)

**Other Equipment**

- \*Kitchen scales
- \*Store jars and containers
- \*Bread bin
- Sugar thermometer
- \*Flour bin
- \*Cake and biscuit tins
- Preserving-pan
- Small refuse bin

**II. BASIC COOKERY METHODS****BAKING**

This is a method of cooking foods by dry heat in the oven. It is a suitable way of cooking many foods, and nutritive loss other than that of Vitamin C is low. Times and temperatures, of course, require to be regulated according to the type of food.

**Vegetables**

Not all vegetables bake satisfactorily, as a moist heat is often required to soften the cellulose. The following, however, bake well, although (with the exception of potatoes) it is necessary to add a little fat, milk, or water to provide some moisture—potatoes, carrots, parsnips, turnips, Jerusalem artichokes, onions, and marrow. Beetroot bake extremely well when placed in a greased casserole and cooked until tender at about 300° F. Peel and serve hot or cold, either sliced or diced.

**Times for Baking Vegetables.**—*Potatoes.*— $\frac{1}{2}$ – $1\frac{1}{2}$  hours, according to size.

*Artichokes and Parsnips.*—1 hour.

*Onions.*— $\frac{1}{2}$ –1 hour.

*Beetroots.*—1–2 hours.

*Macedoine in Stock.*— $\frac{1}{2}$ –1 hour.

**Fruit**

Most fruits can be baked very successfully, with the addition of a little water to prevent shrivelling. Cook slowly in a covered dish, and at the start of cooking add sugar to taste.

**Meat**

Meat baked in the oven is usually referred to as roasted, see p. 840.

**Fish**

This is a very suitable way of cooking fish. The fish should be weighed and wiped, and then placed in a greased fireproof dish. Sprinkle with salt, pepper, a little lemon juice, and then add a little milk or water. Dab with shavings of butter or margarine and cover with greaseproof paper.

The temperature required for baking fish is about 400° F. Allow 6–10 minutes to the pound and 6–10 minutes over, according to the thickness. Thin fillets take about 15 minutes. When the fish is cooked the flesh will appear white and firm, and will come away easily from the bone. A curd forms between the bone and the flesh.

Whole fish or round outlets such as hake or cod can be stuffed before baking. The stuffing is placed in a cavity where the entrails have been removed. In the case of whole fish, the scales and eyes should be removed, but the head left. For plaice, sole, etc., using a sharp knife cut the flesh right down the back bone and loosen it away from the bone as far as the fin. Place the stuffing in the cavity.

A suitable stuffing is forcemeat, see p. 858. Garnish with tomato, lemon slices, fennel, olives, or grapes, serve with parsley, fennel, egg, or anchovy sauce.

**Cakes and Pastry**

These are practically always cooked by baking. Times vary according to type and size of cake or pastry involved. It is important not to disturb cakes or pastry by opening the oven door too often while cooking. The following table will serve as a general baking guide:

Cakes, etc.	Temperature.	Time.
<b>Plain Cakes:</b>		
Small (e.g., Rock Cakes) . . . . .	Hot (450–475° F.)	10–15 minutes
Large . . . . .	Moderately hot (400° F.) lowering to Moderate (350° F.)	Approx. 1 hour per 1 lb. of mixture (varying with depth of tin)
<b>Rich Cakes:</b>		
Small (e.g., Queen Cakes). . . . .	Moderately hot (400° F.)	15–20 minutes
Sandwich Cake . . . . .	Moderately hot (375° F.)	30–40 minutes (depending on depth)
Large (e.g., Madeira) . . . . .	Moderate (350–375° F.)	Approx. 1 hour per 1 lb. (varying with depth of tin)
Large (e.g., Fruit) . . . . .	Moderate (325–350° F.)	1– $1\frac{1}{2}$ hours per 1 lb. of mixture (according to amount of fruit)
<b>Scones</b> . . . . .	Very hot (475° F.)	8–10 minutes
<b>Biscuits</b> . . . . .	Moderately hot (400° F.)	15–20 minutes



## TEMPERATURES AND TIMES FOR BAKING PASTRY

Type of pastry and dish.	Temperature.	Time.
<i>Shortcrust:</i>		
Fruit pies . . . . .	425-475° F.	35-40 minutes
Jam tarts . . . . .	450-500° F.	10-15 minutes
Cornish pasties (with cooked meat) . . . . .	450-500° F.	30-40 minutes
<i>Flaky Pastry:</i>		
Meat pies (with cooked filling) . . . . .	425-475° F.	30-40 minutes
Patties . . . . .	475-500° F.	10-20 minutes
<i>Puff and Rough Puff:</i>		
Flan cases . . . . .	475-500° F.	10-20 minutes
<i>Choux Pastry:</i>		
Eclairs . . . . .	450-475° F.	30-40 minutes
<i>Potato Pastry:</i>		
Vegetable pies . . . . .	450-500° F.	30-40 minutes
<i>Hot-water Crust:</i>		
Pork pies . . . . .	350-400° F.	1 hour
<i>Suet Pastry:</i>		
Jam roll . . . . .	350-400° F.	1-1½ hours

For recipes and methods of making each see pp. 858-61.

## BOILING

The essence of boiling is the immersion of food in boiling water, and it is the simplest process in all cookery. In actual fact many so-called boiled foods are cooked at slightly below boiling point (212° F.) and are, therefore, strictly speaking stewed or simmered.

## Boiled Meat and Poultry

Weigh the joint, wash or wipe it, and then tie or truss it according to type. Plunge into boiling salted water, having just sufficient water to cover the joint. Boil rapidly for about 5 minutes, and then reduce the heat and maintain the water at simmering point until the meat is cooked.

The preliminary fast boiling coagulates and sets the proteins so that a casing is formed, and the flavour and some of the juices are retained in the joint. Fast boiling must not be prolonged over the five minutes, or shrinkage and toughness will result. Simmering temperature is indicated by gentle bubbles rising up the side of the pan.

Vegetables and herbs can be added to the water for flavour. Salt meat should be soaked for several hours before cooking. Place it in cold water and bring slowly to the boil, skim and simmer the required time. Ham and bacon which is to be served cold should be cooled in the liquor.

**Joints of Meat Suitable for Boiling.**—*Beef.*—Brisket (fresh or salted), silverside (salted), flank, ox tongue.

*Pork.*—Leg, loin, best end of neck, belly (salted), hand and spring, head (fresh or salted), tongue and brains.

*Lamb or Mutton.*—Leg, breast, tongue, brains.

*Veal, Calves' feet.*

*Ham and Bacon.*

*Fowls.*

**Times for Cooking.**—For fresh meats allow 20 minutes to the lb. and 20 minutes over; for salt meats allow 25 minutes to the lb. and 25 minutes over.

A young fowl should be boiled for ½ hour, and an old one for 2-3 hours.

**Cooking Times for Tongues.**—*Sheep's* tongues, 1½-2 hours; *calves'* tongues, 1½-2 hours; *ox* tongue, 4½-6 hours; *ox* tongue (pickled), 2½-3 hours.

## Boiled Fish

This method is suitable for large whole fish, or thick cuts of white fish or salmon. Small fish are better steamed.

To prepare a whole fish, wash quickly in cold water, remove the guts, scales, fins, and eyes, and rub off any black skin from the inside of the fish, using a little salt. Thick cuts of fish only need wiping or scaling. Have sufficient water in the pan to cover the fish, and add a teaspoonful of salt to each quart of water, or for white fish a teaspoonful of vinegar. Draw the pan off the heat, place the fish in the water, and cook very gently for the required time. As fish is very tender and breaks easily, it is best to cook it at just under simmering point.

**Times for Cooking.**—For a large fish allow 10

minutes to the pound and 10 minutes over. Cook small fish until the flesh is firm and will leave the bone quite clean (10-15 minutes).

## Vegetables

Boiling is a very satisfactory way of cooking vegetables, as it softens the cellulose, but in order to retain the maximum amount of nutriment the "conservative" method should be followed. Allow sufficient water to just cover the vegetables—for green vegetables approximately ½ pint water to 1 lb. greens. Add salt in the proportion of 1 teaspoonful to 1 pint water. Bring the water to the boil, and retaining boiling point throughout, add the vegetables a handful at a time. The outside leaves of green vegetables should be added first, followed by the medium green ones, and lastly the heart. Place a well-fitting lid on the pan to prevent steam escaping, and shake two or three times during cooking.

**Times for Cooking.**—*Green Vegetables.*—Shredded, 7-10 minutes; brussels sprouts, 10-15 minutes; spinach, 15-20 minutes; peas, 10-15 minutes; beans, 20-30 minutes; beans (runner), 15-20 minutes.

*Root Vegetables.*—Diced, 20-25 minutes; sliced, 30-35 minutes; quartered, 30 minutes or more, according to age.

## Puddings

With the exception of suet puddings, it is more satisfactory to steam, rather than boil, puddings. Boiled puddings tend to become waterlogged. A suet pudding should be wrapped in a scalded cloth which has been well floured on the inside. Place the pudding in rapidly boiling water, and keep boiling gently for the required time.

**Time to Allow.**—A meat or fruit pudding for 4 people, i.e., ½ lb. flour will take about 2 hours.

## Cereals and Pulses

Oatmeal, rice and macaroni, pulses such as peas, beans, and lentils all boil well.

**Oatmeal Porridge.**—Bring 1 pint water to boiling point, and sprinkle in 2 tablespoonfuls medium oatmeal, stirring well. Continue to stir until boiling point is again reached, and boil for a few minutes, then allow to simmer, in a double saucepan if possible, for ½-2 hours, according to the size of the grains, until the oatmeal is well swollen and tender. More boiling water may be added if necessary, to make the porridge of a good pouring consistency. Salt to taste.

Commercially prepared oats or rolled oats can be cooked very quickly, according to the directions on the packet.

**Rice (To Serve as a Vegetable or Garnish).**—Allow about 2 oz. rice for each person. Wash thoroughly and put into a pan with plenty of boiling salted water. Boil rapidly without a lid for 15-20 minutes, until the grains are tender but not crushed. During boiling the grains of rice should dance about in the water. Drain the rice through a sieve, saving the water for soups, then hold under the running cold tap to rinse the rice thoroughly. Spread the rice on a cloth, turn the edges over and keep in a warm place to heat through and dry off. At intervals fork the rice, so that every grain is dry and separate.

**Macaroni.**—Allow a quart of salted water to 4 oz. macaroni. Place the macaroni in fast-boiling water and boil rapidly, stirring occasionally to prevent sticking, for 20–30 minutes. Some proprietary brands cook quicker—see directions on packet.

**Pulses (Dried Peas, Beans, and Lentils).**—Soak for 12–24 hours in warm water, with a good pinch of bicarbonate of soda. Place the pulses in a pan of fresh salted water, and simmer for 2–3 hours, or until tender; lentils take only 1 hour.

### GRILLING

Grilling is one of the simplest and quickest methods of cooking. The grill should be well heated before use. The heat can be adjusted during the cooking by raising or lowering the grill pan. This can be done either by an adjustment in the pan itself or in the fitting in which it slides. Failing either of these facilities, raise it by placing a suitable tin under the pan.

**Re-heating Foods under the Grill.**—When serving vegetables *au gratin* or similar dishes, heat the vegetables in the sauce in a pan, and then empty into a hot fireproof dish, choosing a shallow one if possible. Sprinkle the top with grated cheese, breadcrumbs, etc., and immediately place under the grill, keeping the surface of the food directly under the heat until evenly brown. The dish should be fairly close to the heat, and it may be necessary to raise your grill pan by putting a tin or plate under it.

**Choice of Meat.**—Only tender and juicy cuts of meat are suitable for grilling, and the piece of meat you choose must be well hung, otherwise it will be tough and stringy when cooked. Fresh, underhung meat will never grill satisfactorily. Rump and fillet steak, chump chops, cutlets, tender liver, and kidneys, all make delicious grills.

**Preparation and Cooking.**—Wipe the meat with a damp cloth, cut steak into portions if necessary, leaving where possible a rim of fat; remove the spinal cord from chops; wash and wipe liver and kidneys, cutting them in half and removing the core. Brush all meat with oil or melted fat before placing on hot grid.

The heat should be intense to begin with, so have the grill red-hot. Place the meat on the greased grid and heat quickly, so that the surface juices coagulate and form a skin, keeping in the flavour and goodness. Allow about two minutes for the "sealing," until the meat has changed colour. As soon as one side of the meat has been sealed, turn and treat the other side in the same way. Do not wait too long, or the surface will become hard and overcooked. Thick chops or steaks require 10–15 minutes, and during this time they should be turned four or five times. Turn the meat with two spoons, taking care not to pierce the flesh, or the juice will run out.

**Choice of Fish.**—Herrings, mullet, mackerel, cod and salmon cutlets, plaice and soles, are all suitable for grilling.

**Preparation.**—Wash whole fish, remove scales, score with a sharp knife in three or four places, and brush with melted fat. Place on the hot greased grid and cook rather slowly, so that the fish is thoroughly cooked without any fear of burning. Turn once or twice, but handle the fish very carefully, as the flesh breaks easily. Insert the back of the knife next to the bone to see when the fish is cooked. Serve with lemon-juice and chopped parsley sprinkled over the fish.

**Cutlets of Fish.**—Tie the cutlets, to keep them a good shape; brush with fat, place on the greased grid and grill on both sides until the fish is cooked—about 10 minutes. Salmon cutlets are grilled in the same way.

**Grilled Bacon or Ham.**—Place the rashers or ham on the grid, place under the grill and cook for two or three minutes, or longer if the rashers are thick. As soon as the fat is transparent on one side, turn and cook on the other side. If eggs are cooked in the grill pan, the grid should be removed and the egg broken carefully into the fat and cooked until set.

**Sausages.**—Prick sausages, arrange on the grid, and place under the grill. Cook rather slowly until well browned all over, turning them frequently.

**Times for Grilling Meat.**—The following table gives approximate times which vary according to thickness of the meat:—

Steak: under-done	10–15 minutes
well done	15–20 minutes
Lamb or mutton chops	10–20 minutes
Pork chops	25 minutes
Veal cutlets	15–20 minutes
Liver	5–10 minutes
Kidneys	10 minutes
Bacon rashers	2–3 minutes
Ham	10–15 minutes
Sausages	10–15 minutes

### FRYING

There are two main methods of frying, shallow frying and deep frying.

#### Shallow Frying

This is suitable for foods like chops, sausages, bacon, fish, pancakes, eggs, cooked potatoes or vegetables, which only require sufficient fat to prevent them from sticking to the frying-pan, or made-up dishes, such as fish cakes or rissoles, which need sufficient fat to half-cover the food.

Heat the fat until just smoking hot in the pan before putting the food in. Cook the food quickly on both sides until the surface is lightly browned. Reduce the heat and finish cooking gently. When cooked lift from the pan, allow fat to drain off, and then place on a crumpled piece of kitchen paper to finish draining; arrange on a hot dish, and serve at once. Any remaining fat should be strained into a bowl for further use. Fat used for frying fish should be kept separately. It is important to avoid over-heating of the pan and fat when shallow frying, or particles of food may become burnt and spoil the flavour of the dish.

#### Special Directions

**Bacon.**—Cut the rinds off the bacon, then put these and the rashers in a cold frying-pan, place over a gentle heat and cook until the bacon fat is transparent and the rashers just begin to curl. Remove from the pan, then, if convenient, use the fat for frying potato cakes, cooked sliced potatoes, or an egg. When frying an egg remember to baste it with the hot bacon fat in order to cook the top surface properly.

**Sausages.**—Heat about a tablespoonful of fat in the pan. Prick the sausages with a fork and put them in the hot fat and fry over very gentle heat, turning them until they are lightly browned on all sides. The secret of cooking sausages is to cook them very slowly—but they must be thoroughly done and nicely browned.

**Fish.—Fillets.**—Wipe and dip in seasoned flour. Have a small quantity of fat smoking hot in the pan and place the fillets in this. Fry until lightly browned, then turn and fry on the other side. Cook gently until the flesh is white and firm. As fish breaks easily, it must be handled carefully.

**Herrings.**—Very little fat is required for frying herrings, as they are a naturally oily fish; in fact, it is quite possible to fry herrings without any fat in a really strong iron frying-pan. Scale, clean, wash, and dry the herrings. Sprinkle the pan with salt and heat gently at first, shaking occasionally. Continue heating until the pan is almost red hot, then lay in the herrings. Fry on each side until golden-brown and crisp—3 to 4 minutes each side. Serve piping hot.

**Chops and Steaks.**—Wipe the meat and place in a little hot fat in the pan. Fry quickly on both sides until lightly browned, then reduce the heat and cook very gently until the meat is tender. (Test with a thin skewer if necessary.) Remember when once the outside surfaces are brown the heat must be reduced, otherwise the meat will be dry on the outside and unpleasantly raw inside. The time for cooking chops and steaks depends on the thickness and texture of the meat, but a thin chop or steak will take about 10–12 minutes.

**Liver.**—Slice the liver across the grain in pieces  $\frac{1}{2}$  in. thick, toss in seasoned flour, and fry as for chops and steaks.

#### Deep Frying

This is suitable for made-up dishes such as croquettes, rissoles, fritters, fish coated with batter or egg and bread-crumbs, whitebait, doughnuts, etc. For this method a deep-fat frying-pan is used with a fitted wire basket, and there must be sufficient fat to allow the food to be completely submerged, *i.e.*, about three-quarters filled. Suitable fats are olive oil, lard,



block suet, or clarified dripping. All food cooked in deep fat, with the exception of potatoes and pastry, must be coated with egg and bread-crumbs or batter; flour is not a suitable coating for deep-fat frying. Heat the fat until a faint blue smoke rises from it. Any excess bubbling or spitting is due to moisture in the fat, and the pan must be heated very gently until this ceases. The prepared food should be placed in the basket, and the pan of fat drawn to the side of the heat. Lower the basket into the fat and replace over the flame or hot-plate. If the food is added while the fat is over the heat it may bubble over and catch on fire. Cook the food until it is golden-brown, lift the basket and drain off surplus fat. Turn the food on to crumpled kitchen paper to finish draining, and finally arrange in a dish and serve very hot. When large quantities of food are to be cooked, fry a little at a time to avoid lowering the temperature of the fat.

Should the fat accidentally catch on fire, turn off the current or burner immediately, and place a lid quickly over the pan of fat.

The used fat can be strained into a container for further use.

The temperature for deep-fat frying is very important. If it is not hot enough the food becomes sodden with grease, and if too hot the outside will be burnt. Average temperatures vary between 395° and 350° F., according to different foods.

If a thermometer is not available the temperature may be tested as follows: put one or two 1-in. cubes of bread into the hot fat; if they take 60 seconds to brown, the fat is about 350–365° F.; if they take 40 seconds, it is about 365–382° F.; if they take only 20 seconds, the fat is about 382–390° F.

### Special Directions

**Egging and Crumbing.**—This is suitable for fillets of fish, cutlets, rissoles, fish cakes, and croquettes. First coat the food lightly with seasoned flour. Have some beaten egg on a plate, and taking one piece of food at a time, brush it all over with the beaten egg, using a pastry brush. Have ready some fine bread-crumbs on a piece of kitchen paper. Lift the coated food on to the crumbs, carefully draining off any excess egg. Holding the sides of the paper, toss the crumbs so that they cover the food. Pass from one hand to the other to remove any loose crumbs, then place in the frying-basket.

**Coating Batter.**—Batter is a suitable coating for fritters (fruit or vegetable), fillets of fish, kromeskis, etc. Any good batter recipe can be used—it should be mixed to the consistency of thick cream. Place the food to be cooked, a piece at a time, in the batter, allow any excess batter to drip off, and place immediately in the smoking fat. When golden brown and cooked through, drain carefully and dish.

**Chipped Potatoes.**—Special care must be taken when frying potatoes in deep fat. They must be thoroughly dried, otherwise when they are placed in the fat will splutter and an accident may be caused.

First peel the potatoes and cut them into chips, straws, or scallops. If they have to be prepared in advance leave in cold water. Just before frying drain off the water, spread them out on a clean dry cloth, rub them carefully with the cloth so that all surfaces are dry, then place in the frying-basket. When lowering the basket into the fat take great care that the fat does not froth over.

Chipped potatoes take about 20 minutes to cook. To ensure they are not sodden cook them until tender, but not crisp, then lift out the basket and reheat the fat. When at smoking point, replace the basket in the fat and cook until brown and crisp. Drain carefully, and sprinkle with salt before serving.

### To Render Down Fat

Any pieces of meat fat can be used to prepare frying-fat. Cut the fat into pieces about  $\frac{1}{2}$  in. square, removing any scraps of meat or gristle, put into a pan, cover with water, and allow to boil slowly for several hours until the water is driven off and the pieces of fat are fried and shrivelled. Strain off the fat.

Another method is to place the cut-up fat in a tin and cook it in a slow oven to extract the fat.

This method is easier but is more wasteful of fat, as much of it is left in the particles of skin when drained.

### ROASTING

This is one of the most popular ways of cooking meat, poultry, and game. There are two different methods of roasting: one for good-quality and tender joints, the other for poorer-quality meats. In either case the preparation of the meat is the same.

Wipe and weigh the meat, tie in shape if necessary, and stand on a trivet in a shallow roasting-tin. Always place the meat fat side up to allow it to melt, and baste the meat as it does so. A tablespoonful or so of fat should be placed on the meat, and a piece of fat bacon on lean meats, such as game or veal. Basting is not necessary. Small joints such as breast or loin of lamb or veal can be boned and stuffed. Prepared vegetables should be placed round the joint. When the joint is cooked, it should be taken out of the oven and the gravy made in the tin. Remove the meat and vegetables from the fat, and place on a dish to keep warm. Pour off the dripping, leaving the sediment in the bottom. Add to it sufficient fat to soak up the fat—about 2 teaspoonfuls to every 1 pint of gravy needed—mix with the sediment and then place over the heat and stir until the flour is a golden brown. Pour on liquid, which should be stock or vegetable water. Bring to the boil and season. It may be necessary to add a few drops of gravy browning. Gravy should be of a thin pouring consistency, and free from grease.

If a covered roasting-tin is used the top should be removed 30 minutes before the meat is done, in order to brown the outside.

### Times and Temperatures for Roasting Meat

**Method 1.**—Place the joint in an oven heated to 425° F. Reduce the temperature to 400° F., and allow the following times for cooking: beef, 15 minutes to the lb. and 15 minutes over; beef, thick cut or rolled, 30 minutes to the lb.; mutton, 25–30 minutes to the lb.; mutton, stuffed, 30–35 minutes to the lb.; veal and pork, 30–40 minutes to the lb.

**Method 2.**—Put joint into a cold oven, raise the temperature to 300–350° F. and allow: beef, 25–35 minutes to the lb.; beef, thick cut or rolled, 30–40 minutes to the lb.; mutton, 30–40 minutes to the lb.; mutton, stuffed, 35–45 minutes to the lb.; veal and pork, 40–50 minutes to the lb.

Bird	Time
Chicken . . .	1 hour
Duck . . .	1–1½ hours
Goose . . .	1½ hours or longer
Guinea Fowl .	30–45 minutes
Pigeon . . .	20–30 minutes
Turkey . . .	15 minutes per lb. (weight after dressing) for birds up to 14 lb.; 10 minutes per lb. for larger birds
Pheasant . . .	30–60 minutes according to size
Grouse . . .	½–¾ hour
Partridge . .	25 minutes

### POT ROASTING

This is a particularly suitable method for tough joints, and is also an alternative to roasting when no oven is available.

Rub the meat over with seasoned flour. Melt some dripping, allowing about 1 tablespoonful to each lb. of meat, in a saucepan with a well fitting lid. Brown the meat on all sides, and add about a  $\frac{1}{2}$  pint of water. Slip a trivet under the meat, cover tightly, and leave to cook gently until tender, turning the joint from time to time. The average joint takes 1½–2 hours. Vegetables such as diced carrot, turnip, or onion can be added to the pot an hour before serving. Herbs can be used for flavouring.

### STEAMING

One of the most economical methods of cooking food, and one which has the advantage of retaining mineral salts which otherwise may be dissolved out when food is boiled in water. The chief points to remember are that the steamer must never be allowed to boil dry and the water must not be allowed to go off the boil.

## Methods of Steaming

1. *In a Steamer with Perforated Base Placed over an Ordinary Saucepan.* The steamer must fit the saucepan well. Soups or a vegetable can be cooked in the bottom of the steamer, a pudding with some vegetables round it can go in the top, and if required fish can be steamed on a plate on top of the steamer.

2. *In a Tiered Steamer.* This is an extremely useful utensil, but care must be taken to see that the steam enters all compartments, and the regulator knobs should be checked each time it is used. Different dishes can be cooked in each tier without any fear of flavours becoming mixed.

3. *In Jam-jars, Basins, or Moulds in a Pan of Boiling Water.* The water should reach half-way up the jar or basin. For a delicate dish, such as a soufflé, the mould or tin should be placed on an upturned saucer, pastry cutter, or tin. The water in the pan may be replaced by soup, or vegetables can be cooked in the water and different foods in each jam-jar.

4. *In a Compartment Steamer—Saucepan.* These pans are sold with several compartments fitted into the saucepan, and are useful for small families. The method is the same as when using pudding-basins.

5. *In a Double Saucepan.* This is a suitable way of cooking sauces, stews, porridge, etc. They take longer, but there is no fear of their boiling or burning, and sauces do not need constant stirring.

**Meat.**—Any joint of meat can be steamed. Allow twice as long as for boiling. Soak salted meat for 3 hours beforehand.

**Poultry.**—The time depends very much on the size and age of the bird. A good way of cooking an old fowl is to steam it until it is tender, then to brown it in a hot oven (450° F.) for ½ hour.

**Fish.**—Prepare the fish as for boiling. Place large cuts or whole fish directly in the steamer. Small fillets or thin cutlets will cook satisfactorily if laid on a greased plate with a tablespoonful of milk and seasoning. Cover with a lid, then lay the plate on top of the steamer or pan.

## Time for Steaming

**Fish.**—For a large fish allow 15 minutes to each lb. and 15 minutes over. Cook fillets until the flesh is firm—about 20 minutes.

**Vegetables.**—Steaming is only suitable for root vegetables, as in green vegetables the loss of vitamins and mineral salts is too high, and flavour and colour are likely to be impaired. Potatoes can be scrubbed and steamed in their jackets. Other root vegetables should be peeled. Sprinkle the prepared vegetables liberally with salt. Allow half as much time again as for boiling.

**Puddings.**—To keep out the moisture caused by condensation, the pudding should be covered with greased paper or a cloth dipped in hot water and floured. A basin-cover or string should be tied round the basin, so that it may be easily lifted out of the steamer.

Suet puddings need 3 hours or longer. Sponge puddings in small dariole moulds cook in 20 minutes; larger puddings take ½–2 hours, according to the size. Allow plenty of room in the basin for the pudding to rise.

**Custards.**—The water should be only just boiling for these, as they curdle if the temperature becomes too high. Remove as soon as they are set (about ½ hour.)

## STEWING

A long, slow method of cooking in a liquid kept just below simmering point. A good strong pan with tightly fitting lid should be used, or alternatively a casserole, steamer, or double boiler. Stewing can be done either in the oven or over a low heat. It is important not to raise the temperature above boiling point, or the food becomes tough or broken up.

## Stewed Fruit

**Preparation.**—Peel, core, or stone and, if necessary, cut up into neat pieces.

**Cooking.**—To keep individual pieces of fruit whole and of good shape (e.g., to serve as stewed fruit, for fruit in jelly, fruit trifle, and so on) stew them gently in a syrup made from sugar and water. The proportions will vary with the juiciness and sweetness of the fruit, but ½–1 pint water and 2–4

oz. sugar to 1 lb. fruit is the average. Lift out the fruit, simmer the juice until it is slightly syrupy, and pour over the fruit.

If the fruit is required stewed to a mash to make into a purée (for fruit fools, creams, and so on), it is better to cook it without sugar and in the minimum of water until tender, and then to sweeten it, since the addition of sugar to the raw fruit toughens the skin and may prevent it mashing properly.

Some fruits are improved by the addition of other flavouring. Apples may be flavoured with lemon juice, grated lemon rind, cloves, cinnamon stick, or marmalade (remove cloves or cinnamon before serving), pears with cloves or cinnamon stick. Plums may be flavoured with their kernels or a few sweet almonds, rhubarb with root ginger, cinnamon stick or strip of lemon rind; remove before serving.

## Stewed Dried Fruit

Wash ½ lb. fruit, such as prunes, very thoroughly, add ½ pint water, and allow to soak for at least 12 hours. Put the fruit in a saucepan with the water and 1–4 tablespoonfuls sugar, according to fruit, and bring to the boil, simmer gently until tender. Remove the fruit, boil the juice for a few minutes, until syrupy, then pour it over the fruit. Alternatively, the fruit may be steamed until tender—it will take at least half as long again as stewed fruit.

## Meat Stews

**Brown.**—For this type the meat, vegetables, and flour are fried before stewing. Stewing steak is commonly used for brown stews, but other meats such as oxtail, kidney, and liver may be used.

**White.**—Mutton, veal, or rabbit is generally used for white stews, and the meat and vegetables are not fried first. Irish stew is an example of a thin white stew, while a fricassee is a thickened white stew.

The cheaper and coarser the meat, the longer it takes to cook. Most types of stew require at least 2 hours, and some varieties, such as oxtail and brisket, may take 3 or even 4 hours. Herbs, spices, and vegetables should be added in moderation to give flavour and interest to the stew.

For recipes see following chapter.

## PRESSURE COOKERY

By cooking foods in specially designed pressure cookers it is possible to cook at temperatures above the normal boiling point of 212° F. This is a particularly valuable method of cooking foods which normally require long, slow cooking, such as stews, soups, root vegetables, tough joints of meat, etc. Considerable time and fuel can be saved.

There are many varieties of pressure cooker now on the market, in each case the manufacturers' instructions should be carefully followed, and the directions for sealing the cooker and controlling the pressure thoroughly understood.

With most cookers the prepared food is placed in the pan with the required quantity of liquid. The lid is fixed into position and the pan is placed over a high heat, and the contents brought to pressure point. The heat is then reduced, and the cooking time is calculated from that point.

The following points should be remembered:

1. The cooker should never be filled too full—not more than two-thirds full for solid foods and half-full for liquids, cereals, and preserves.

2. The times given in the charts should be followed, but there will probably be slight variations due to the thickness and quality of the food, especially meat and poultry, etc.

3. Always allow pressure to drop to normal before attempting to open the pan; either reduce pressure immediately by running cold water over the side, or in the case of milk puddings, cereals, dried vegetables, and stewed fruit, allow the cooker to cool slowly for 5–10 minutes at room temperature.

4. After use the cooker should be carefully washed. Store with the lid off so that the air can circulate.

Times for pressure cooking cannot be guessed. The following tables will serve as a guide, though fuller instructions should be followed from the manufacturers' or other special recipe book.



## PRESSURE-COOKING TIME-TABLE FOR MEAT OR BIRD

Meat or bird.	Water.	Cooking time (at 15 lb. pressure).
Beef—Boil . . . . .	1 pt.	9-10 minutes per lb. plus 10 minutes
Roast—pre-fry . . . . .	$\frac{1}{2}$ pt.	
Mutton, Lamb, and Veal—Boil . . . . .	1 pt.	10-12 minutes per lb. plus 10-12 minutes
Roast—pre-fry . . . . .	$\frac{1}{2}$ pt.	
Pork—Boil . . . . .	1 pt.	12 minutes per lb. plus 12 minutes
Roast—pre-fry . . . . .	$\frac{1}{2}$ pt.	
Chops (Veal, Pork, Mutton, and Lamb)—pre-fry . . . . .	$\frac{1}{2}$ pt.	5-6 minutes according to thickness
Young Chicken, Duck, Guinea Fowl, Pheasant, and Grouse . . . . .	"	6-8 minutes
Partridge and small birds such as Snipe and Woodcock . . . . .	"	15 minutes in all
Old Fowl (approx. 3 lb.) . . . . .	1 pt.	30-35 minutes, according to age

## PRESSURE-COOKING TIME-TABLE FOR STEAMED FISH

Fish.	Water.	Cooking time (after 15 lb. pressure is reached).
Bream, Halibut, Fresh Haddock, Hake, Skate, Turbot . . . . .	$\frac{1}{2}$ pt. water or to level of rack, but extra water when fish is in greaseproof paper	3-4 minutes for cutlets; 4-5 minutes per lb. for whole fish
Cod . . . . .	" " "	3-4 minutes for cod steaks; 4 minutes per lb. for whole fish
Haddock (dried)	$\frac{1}{2}$ pt. milk and water	3-5 minutes, according to size
Herrings, Trout, Mackerel . . . . .	$\frac{1}{2}$ pt. water	Melt a small knob of fat at bottom of cooker, dip fish in seasoned flour and cook rapidly on both sides in hot fat. Lift on to rack and add $\frac{1}{2}$ pt. water, and continue cooking as above, allowing 4-6 minutes according to size
Plaice or Sole . . . . .	$\frac{1}{2}$ pt. water or to level of rack, but extra water when fish is in greaseproof paper	Whole fish, 2-4 minutes per lb. according to size. Fillets, 2-3 minutes
Salmon Steaks . . . . .	" " "	6-7 minutes, according to thickness. Be sure to wrap fish in well-greased paper
Scallops . . . . .	" " "	4-5 minutes

## PRESSURE-COOKING TIME-TABLE FOR VEGETABLES

Vegetables.	Water.	Cooking time (at 15 lb. pressure).
Artichokes (Jerusalem) . . . . .	$\frac{1}{2}$ pt. or to level of rack	8-10 minutes
(Globe) . . . . .	" "	10 minutes
Asparagus . . . . .	" "	2-3 minutes
Beans (Broad) . . . . .	" "	3-4 minutes
(French) . . . . .	" "	3 minutes
(Runner) . . . . .	" "	2-3 minutes
Beetroot . . . . .	" "	10-35 minutes, according to size and age
Brussels Sprouts . . . . .	" "	3-4 minutes
Cabbage, Spring Greens . . . . .	" "	2 minutes
Carrots (diced) . . . . .	" "	2-3 minutes
(whole, young) . . . . .	" "	3-5 minutes
(large) . . . . .	" "	8 minutes
Cauliflower (sprigs) . . . . .	" "	2 minutes
(whole) . . . . .	" "	5-6 minutes
Celery . . . . .	" "	2-3 minutes
Corn on the Cob . . . . .	" "	4 minutes
Leeks . . . . .	" "	3-5 minutes
Onions (whole) . . . . .	" "	10 minutes
(sliced) . . . . .	" "	3-4 minutes
Parsnips . . . . .	" "	As for carrots
Peas . . . . .	" "	1-2 minutes
Potatoes (new) . . . . .	" "	10 minutes
(old) . . . . .	" "	8-10 minutes
Spinach . . . . .	" "	1-2 minutes
Swedes . . . . .	" "	5 minutes
Turnips . . . . .	" "	5 minutes
Vegetable Marrow . . . . .	" "	3-4 minutes

## PRESSURE-COOKING TIME-TABLE FOR CEREALS

Cereal (4 oz.).	Water.	Cooking time (at 15 lb. pressure).
Macaroni . . . . .	1 pt.	5-8 minutes
Noodles . . . . .	"	4-6 minutes
Spaghetti . . . . .	"	6-8 minutes
Rice . . . . .	"	5-7 minutes
Pearl Barley . . . . .	"	20-25 minutes

## PRESSURE-COOKING TIME-TABLE FOR FRESH FRUIT

Fruit (1 lb.).	Water.	Cooking time (at 15 lb. pressure).
Apples (sliced) . . . . .	$\frac{1}{2}$ pt.	1-2 minutes
Blackberries . . . . .	"	2 minutes
Black-currants . . . . .	"	2 minutes
Cherries . . . . .	"	2 minutes
Gooseberries . . . . .	$\frac{1}{2}$ pt.	2 minutes
Pears (hard cooking) . . . . .	"	6-7 minutes
Plums . . . . .	$\frac{1}{2}$ pt.	3 minutes
Raspberries . . . . .	"	Merely bring to pressure
Rhubarb . . . . .	"	2 minutes

## PRESSURE-COOKING TIME-TABLE FOR DRIED VEGETABLES

Vegetable (4 oz.).	Water.	Cooking time (after 15 lb. pressure is reached).
Butter and Haricot Beans (soak 2 hours) . . . . .	$\frac{1}{2}$ pt.	15-20 minutes
Lentils . . . . .	"	20-25 minutes
Peas (soak 2 hours) . . . . .	"	15-20 minutes
Split Peas . . . . .	"	10-15 minutes

PRESSURE-COOKING TIME-TABLE FOR DRIED FRUIT  
Previously soaked for 12 hours

Fruit (1 lb.).	Water.	Cooking time (at 15 lb. pressure).
Apple rings . . . . .	$\frac{1}{2}$ pt.	5-6 minutes
Figs . . . . .	1 pt.	10-15 minutes
Prunes . . . . .	$\frac{1}{2}$ pt.	6-10 minutes
Apricots and Peaches . . . . .	$\frac{1}{2}$ pt.	6-10 minutes

### III. WINES

The finest of the world's wines come from France, Italy, Spain, Portugal, Rumania, Switzerland, the Balkans, and Germany, although much wine is now made in Algeria, Australia, South Africa, North and South America. Wine is the suitably fermented juice of fresh grapes. The flavour of a wine depends not only on the species of grape used, but also on the methods of fermentation and the different salts contained in the soil where the grape is grown. Therefore the quality and flavour of wines vary greatly according to different vineyards. The degree of fermentation also affects the sweetness of the wine; in dry wines all the grape sugar is converted into alcohol, whereas in sweet ones the process is stopped or arrested.

#### TYPES OF WINE

*Beverage wines* are the cheapest wines, and are commonly drunk in the country where they are produced. They are of a good colour and body, but do not improve with keeping. The alcoholic content varies between 8 and 12 per cent of their volume. These wines can be drunk alone or diluted with water. Beverage wines such as Claret and Burgundy travel well, and are widely exported, but those such as Chianti or Vin Rosé tend to travel badly, although they are available in different parts of the world.

*Sound wines* come as the result of fermentation of the grapes only. They are well balanced and distinct from fine wines, which are perfectly balanced.

*Fine wines* are the most expensive wines, and are so perfectly balanced that they will go on improving for many years in the bottle. Most of these wines come from the Côte-d'Or and Gironde regions of France.

*Sparkling wines* are bottled before fermentation is complete, and because of this the corks must be wired to the bottle. These wines keep well. Champagne is the best known example of a sparkling wine.

Among the best-known wines are the following:

Sherry is made in Spain from the best wine of each year's vintage blended with brandy. Dark sherry has a special sweet liqueur wine added to give colour and flavour, while light sherry is "dry" in flavour. Sherry is also imported from South Africa.

Champagne is made from grapes grown within the boundaries of the ancient province of Champagne. It is a sparkling wine and is the traditional wine served at weddings. Vintage Champagne is a champagne bearing the date of the year in which the grapes making it were gathered.

Hock is the name given to white wines from the Rhine Palatinate and other parts of Germany. The alcoholic content is about 11 per cent. There are sparkling varieties of Hock.

Moselle is very similar to Hock and of very fine flavour. The sparkling Moselles are the best.

Sauternes is the sweet white wine from Gironde. The average alcoholic content is about 10 per cent. One of the best known of the Sauternes is Chateau Yquem.

Burgundy is a fine, dark-red wine from the French province of Burgundy. There are also white Burgundies, the best known being Musigny, Montrachet, Corton, and Chablis. All Burgundies have a high alcoholic content, but as a rule deteriorate after ten to twelve years.

Claret is the ruby wine from the Bordeaux district of France. The flavour of claret varies a great deal from vineyard to vineyard, and the alcoholic strength is from 8 to 12 per cent.

Port is the rich heavy red wine made originally in the Oporto district of Portugal. It is traditionally served as an after-dinner drink. Legally port wine must be fortified with brandy, and must come from the upper Douro valley, and subsequently be exported through the port of Oporto.

Brandy is a spirit distilled from wine which darkens in the casks as it matures. The quality depends on the type of wine used, the manner of distillation, method and time of storage. Cognac and Armagnac are among the best known and finest brandies.

#### CHOICE OF WINE

The choice of wine for a meal will depend very much on personal taste, but the following rules will serve as a general guide:—

For an apéritif—Sherry, Dubonnet, Chilled Champagne.

With hors d'œuvre—White Moselle, Chablis, Alsace, or Graves.

With Soup—Sherry or Madeira.

With fish, poultry, or white meat—White Hock, Burgundy or Champagne.

With red meat and game—Red wine—Claret, Burgundy, Beaujolais, etc.

With Sweets—Sauternes, Champagne, Anjou, or Palatinate Hock.

With (or after) Coffee—Port, Brandy, Liqueurs.

The preparation and service of wine is important. Bottles must always be carried carefully to avoid disturbing the sediment. White wines are chilled to 50° F. by standing them on ice or in a cold place. Red wines should be brought gradually to the room temperature of about 60° F. Light wines should not be decanted, but it is permissible to do so with red wines, particularly if the whole bottle is not to be drunk at one sitting.

#### WINE-GLASSES.

Wine should always be served in carefully chosen glasses if the full bouquet is to be appreciated. Serve it in colourless glasses so that colour of the wine itself can be enjoyed. Thick glasses should be avoided and also very small ones, because there must be a fair volume of wine for the bouquet to show off. See that the glasses are well washed and polished with a clean cloth before using them, and do not fill them too full. Many differently shaped glasses of various sizes are made for serving wines. These have all been designed for special reasons, and the most usual ones are given in the list below:—

Sherry.—A fairly small long-sided glass.

Burgundy, Claret and White Wines.—A large bowl-shaped glass. Claret is sometimes served in a tulip-shaped glass so that it can be held in the hand and its contents maintained at body temperature.

Hock and Moselle.—A long-stemmed glass with a fairly small cup-shaped bowl. The length of the stem keeps the hand away from the wine, and so avoids spoiling the temperature.

Champagne and Sparkling Wines.—A large saucer-shaped glass. The expanse of surface allows the bubbles to dance on the wine. Some people prefer a tulip-shaped glass so that a steadily rising stream of bubbles can be maintained.

Port.—A glass similar to that used for sherry, but slightly larger.

Brandy and Liqueur glasses are included in most sets of wine-glasses. Liqueur glasses are small with a narrow opening. These can be used for brandy, although old Liqueur brandy is often served in large goblets known as brandy balloons.

#### STORAGE AND BUYING OF WINES

Wine should be stored in suitable racks, with the bottles lying on their sides, in order to keep the corks damp. They should be in a cool, dark cellar or cupboard. Leave the bottles undisturbed, as movement does not improve the wine.

It is best to buy from a reliable merchant, as even the best wines can be ruined by bad storage, bad bottling, or too much shaking in transit. Vintage wine bears a date on the label, and it is expected to mature well, being the product of a year when climatic conditions were good. The date, however, serves only as a guide to the buyer, as there are good and bad wines in vintage and non-vintage years. The following are good vintage years.

Ports	1027, 1935, 1941
Clarets	1929, 1934, 1937, 1943, 1945, 1947
Burgundies	1929, 1933, 1943, 1945, 1947
Champagnes	1934, 1937, 1943, 1945
Hocks	1934, 1937, 1942, 1945



## IV. DIRECTIONS AND RECIPES FOR TYPICAL DISHES

## SOUPS

The basis of all good soup is stock, and it should be used when available. Stock can be made from any scraps of meat, bones—cooked or uncooked—and root vegetables. Fish stock must be made separately and used only for fish soup.

**Bone Stock.**—Use a large pan with well-fitting lid and place the bones in it with pieces of root vegetable, and a *bouquet garni* (bunch of herbs). Cover with cold water, season, and simmer for 2-3 hours. If there is any fat with the bones strain off the liquid, allow to cool, and skim off the fat. Stock should be boiled up every day with additional bones and vegetables. The pot must be emptied and cleaned about every third day.

**Vegetable Stock.**—Cut up a variety of vegetables, being careful to avoid including too much of a strong-flavoured variety such as turnip. Cover with cold water and flavour with seasoning, a bay leaf, clove, a blade of mace, and herbs. Simmer until a good flavour is obtained. Use fresh.

**Fish Stock.**—Put fish bones and skin with herbs, spice, and seasoning into a pan. Cover with water and simmer for 1 hour. Use same day.

Soups can be divided into the following groups: purées, thickened soups, clear soups, or consommés, broths, and fish soups.

**Purées** are made from puréed vegetables and seldom require additional thickening.

**Thickened Soups** are made from vegetables and other ingredients simmered in stock. They are usually sieved and then thickened according to their ingredients.

**Clear Soups or Consommés** consist of good stock carefully cleared, and entirely free from fat, and served with a garnish which has been cooked separately. Sherry can be added if desired.

**Broths** are made of stock, diced meat, and vegetables. They are thickened with barley or rice, and are never sieved.

**Fish Soups** are made from a foundation of fish stock.

## Consommé

½ lb. lean beef	12 peppercorns
1 small carrot	2 cloves
1 small onion	A blade of mace
A piece of turnip	The whites and shells of
A small stalk of celery	2 eggs
2 quarts best-quality	Salt, if necessary
(or first) stock	A little sherry
A bouquet garni	

Shred the meat very finely, put it into a bowl with enough cold water just to cover, and allow it to soak for about ½ hour. Prepare the vegetables and cut each into four. Put the stock, from which all trace of fat has been removed, into a deep, lined saucepan, add the meat and the water in which it has soaked, the vegetables, herbs, and spices. Lastly, add the whites and crushed shells of the eggs. Put over gentle heat, whisk continuously and bring almost to boiling point; a thick froth should form on the top of the liquid. Stop whisking and continue heating until the froth rises in the pan, then reduce the heat and allow the soup to simmer for a few minutes. Tie a clean white cloth to a jelly stand or to the four legs of an upturned chair and scald with boiling water, then gently pour in the soup. When the consommé has dripped through, strain it a second time—passing it through the frothy egg-whites, etc., to make it clear and sparkling. If necessary, the consommé may be strained a third time.

Reheat the consommé, add salt if necessary, and a little sherry to improve the flavour, but add nothing that would make it cloudy.

## Tomato Soup

1 lb. tomatoes	2 oz. margarine
1 pint vegetable water	Seasoning
2 onions stuck with	2 teaspoonfuls sugar
cloves	1 pint hot milk or milk
4 oz. breadcrumbs	and water

Cut up the tomatoes and put them into a saucepan with all the other ingredients, except the milk. Bring to the boil and simmer with a lid on for 20 minutes, then strain and rub through a sieve. Return to the pan and reheat, then add the milk. Serve with croûtons of toast.

## Potato Soup

6 potatoes	½ pint milk
2 small onions	A small bunch of water-
1 ½ pints water or stock	cress
1 tablespoonful flour	Seasoning

Cook the potatoes and onions in the water until tender. Strain, then press through a sieve. Return to the saucepan, add the flour, blended with the liquid, and bring to the boil, stirring continuously. Wash and chop the cress, and add this to the soup, together with the seasoning. Boil for 3 minutes and serve.

## Lentil Soup

½ pint lentils	A pinch of herbs
1 ½ pints water	½ oz. flour
1 onion	½ pint milk
1 carrot	Salt and pepper
½ oz. dripping	Chopped parsley
A clove of garlic	

Wash the lentils, and if possible soak overnight in the water. Fry the onion and carrot in the dripping, add the lentils and water in which they were soaked, the crushed garlic, and the herbs. Bring to the boil, simmer gently until soft, and pass through a sieve. Blend the flour and milk, add to the purée and season, bring to the boil, and boil for a few minutes to cook the flour. Sprinkle in the chopped parsley and serve.

## Artichoke Soup

1 ½ lb. Jerusalem arti-	2 pints stock or water
chokes	Salt and pepper
1 stalk of celery	1 oz. flour
2-3 bacon rinds	½ pint milk
A little fat if required	Chopped parsley

Peel and slice the artichokes, chop the celery and sauté them in the fat from the bacon rinds, adding a little more fat if necessary. Add the liquid and seasoning, bring to the boil, and simmer until the vegetables are tender. Pass through a sieve and return to the saucepan. Add the flour, blended to a smooth cream with the milk, bring to the boil, and cook for 2-3 minutes, re-seasoning if necessary. Add the parsley.

## Green Pea Soup

2 lb. peas	1 oz. flour or ½ oz. corn-
1 quart stock or water	flour
A sprig of mint	½ pint milk
Seasoning	

Shell the peas and wash the pods in several waters. Place the pods in a pan, cover with the stock or water, and allow to simmer gently for about ½ hour, to extract flavour and colour. Strain off the stock, return to the pan with the peas, mint, and seasoning, and simmer until the peas are tender. Pass through a sieve. Blend the flour or cornflour with the milk, add to the soup, re-boil, stirring all the time, and serve.

## Celery Cream Soup

Outside stalks of 1	Salt and pepper
large head of celery	A bouquet garni
1 medium-sized onion	1 oz. flour
½-1 oz. fat	½ pint milk
2 pints stock or water	Chopped parsley

Prepare and slice the celery and onion, and sauté in the fat for about 10 minutes. Add the stock or water, seasoning, and bouquet garni, bring to the boil and simmer until the vegetables are quite tender. Pass the soup through a sieve and return to the saucepan. Stir in the flour, blended to a smooth cream with the milk and allow to boil for a further 2-3 minutes. Re-season if necessary, and add the freshly chopped parsley just before serving.

## Pot au Feu

2 lb. lean beef	2 small leeks
2 ½ quarts water	2 stalks celery
Salt	A bouquet garni (in-
1 carrot	cluding a small blade
1 turnip	of mace, 12 pepper-
1 onion	corns, and 2 cloves)
1 parsnip	1 oz. seed pearl tapioca
1 small cabbage	or semolina

Tie the meat into a neat shape, put into a large saucepan, add the water and 1 teaspoonful salt

and simmer for 2 hours. Prepare the vegetables, cut each into quarters, with the exception of the cabbage, and add to the broth with the bouquet garni. Continue to cook for another 2 hours. Cut the cabbage in two, but tie together so that it does not break whilst boiling, put into the pot and boil until tender. Serve the meat on a dish with some of the liquor; garnish with the vegetables. If liked, the cabbage may be dished separately.

To make soup from the liquor sprinkle in the seed pearl tapioca or semolina, cook for 15 minutes and serve.

The meat and broth may be served separately or together, whichever is preferred.

### Simple Minestrone

- |                         |                                   |
|-------------------------|-----------------------------------|
| 1 lb. carrots           | A bouquet garni                   |
| A small piece of turnip | 2 tablespoonfuls macaroni         |
| 2 stalks of celery      | A little ketchup                  |
| 1 lb. artichokes        | 2 tablespoonfuls chopped parsley  |
| 1-2 onions or leeks     | Grated cheese to serve separately |
| 1 oz. fat               |                                   |
| 2 pints stock           |                                   |
| Seasoning               |                                   |

Prepare the vegetables and cut into small, neat pieces. Melt the fat, and sauté the vegetables in it for 5-10 minutes. Add the stock, seasoning, and bouquet garni. Cover and simmer for about 1 hour, then add the macaroni and continue cooking for a further 1 hour, or until the vegetables are quite tender. Re-season and add a little ketchup to taste. Just before serving remove the bouquet garni and add the finely chopped parsley. Serve with grated cheese handed separately.

### Scotch Broth

- |                           |  |
|---------------------------|--|
| 1-1½ lb. lean beef,       | 1 turnip                                 |
| either runner or top-side | 1 medium-sized onion                     |
| 2 quarts water            | 2 leeks                                  |
| Salt and pepper           | 1½ oz. pearl barley                      |
| 1 carrot                  | 1 dessertspoonful finely chopped parsley |

Put the meat into a pan, add the water and salt, bring to boiling point slowly, then simmer gently for 1½ hours. Add the vegetables, previously cut into dice, and the barley. If you do not want the broth to be cloudy it is advisable to blanch the barley before adding it to the stock; to do this, put the grain into cold water and bring it to boiling point, strain, and add to the soup. After adding the barley and vegetables continue to simmer until both are cooked—this will take approximately 1 hour. Serve the meat separately on a dish with a little of the broth. Put the chopped parsley into the soup tureen and pour in the broth. (If the parsley is cooked it loses its green colour.) Should any fat appear on the surface of the broth it must be removed with a spoon or by gently passing a piece of clean unglazed kitchen paper over the top.

### Chicken Broth

- |                     |                        |
|---------------------|------------------------|
| 1 chicken           | 1 dessertspoonful seed |
| Cold water to cover | pearl tapioca          |
| (approx. 2 quarts)  | 1 heaped teaspoonful   |
| Salt                | chopped parsley        |
| 1 onion             |                        |

If using a whole chicken, cut in half, after usual preparation, wash thoroughly, and remove any fat or grease, but retain the skin. Put into a pan and add the water and salt to taste. Peel the onion, cut in half, and add to the contents of the saucepan. Simmer slowly for 3½-4 hours, and if the water boils away, add more. Strain, stand aside until cold, and remove any grease that may have settled on the top of the stock. If time will not permit waiting for the stock to get cold, the grease may be removed by passing a sheet of kitchen paper over the top of the broth. Return the stock to the saucepan, bring to the boil, add the seed pearl tapioca, previously blended with a little of the cold broth, and cook for 10 minutes. Put the chopped parsley in the bottom of a soup tureen and pour the broth over it.

This is an excellent method of utilising an old chicken; if a young one is used, the breast and wings can be removed beforehand and used for grilling or frying.

### Oxtail Soup

- |                          |                             |
|--------------------------|-----------------------------|
| 1 oxtail                 | 1 bay leaf                  |
| 2 onions                 | 2 cloves                    |
| 1 carrot                 | 6 peppercorns               |
| 2 stalks of celery       | Salt and pepper             |
| 1 oz. butter or dripping | 1 oz. flour                 |
| 3-4 pints stock          | A little port wine if liked |
| 1 oz. lean ham or bacon  | Squeeze of lemon juice      |
| A bouquet garni          | or a little ketchup         |

Wash the oxtail, then joint it, and dry the joints. Prepare and cut up the vegetables. Melt the fat in a saucepan, and sauté the jointed oxtail and the prepared vegetables in it for a few minutes. Well cover with stock and bring to the boil. Add the ham or bacon, the herbs, and seasoning, then cover and simmer gently for about 4 hours, or until the tail meat is tender, skimming occasionally. Strain the soup, remove the meat from the tail joints, cut it up neatly and replace it in the strained liquor. Return to the saucepan, stir in the flour, blended to a smooth cream with a little water or port wine. Bring to the boil, stirring, and cook for about 5 minutes. Add more seasoning, if necessary, and a squeeze of lemon juice or ketchup to taste.

### Court Bouillon

To each quart of water (or water and white wine mixed) allow:—

- |                    |                             |
|--------------------|-----------------------------|
| 1 onion            | A small clove               |
| 1 clove of garlic  | 1 tablespoonful vinegar     |
| 1 carrot           | 1 teaspoonful salt          |
| Small stalk celery | Freshly ground black pepper |
| A bunch of herbs   |                             |

Put ingredients into a pan, cover, simmer for 1 hour or longer, strain, and use for cooking fish.

### Fish Cream Soup

- |                   |                                 |
|-------------------|---------------------------------|
| 1 cod's head      | A bouquet garni                 |
| 1½ pints water    | Salt and pepper                 |
| A small carrot    | 1 pint white sauce              |
| 1½ of a turnip    | 1 tablespoonful chopped parsley |
| 1 onion           |                                 |
| 1 stalk of celery |                                 |

Thoroughly wash the cod's head, place in a saucepan, and add the water; bring slowly to the boil and skim well. Prepare and chop the vegetables and add with the bouquet garni to the cod's head and water. Add salt and simmer for about 1 hour. Strain, remove any flesh from the head, and cut into neat pieces. Make the white sauce or re-heat it and blend with the fish stock. Season well and add the fish and chopped parsley just before serving.

### Soup Garnishes

**Bacon.**—Cut into small strips or dice and fry lightly.

**Cheese.**—Grate the cheese (preferably Parmesan or dry Gruyère), and if desired mix it with either chopped parsley or watercress; hand it separately or sprinkle it on the soup just before serving.

**Cheese or Herb Dumplings.**—Mix together bread-crumbs and grated cheese in equal proportions. Season with salt, pepper, mustard, and mixed herbs, and bind with beaten egg, adding a few drops of piquant sauce if desired. Form into small balls and poach in the soup 15-20 minutes before serving.

**Fried or Roasted Croutons.**—Cut bread into slices ½ in. thick, and then into triangles or fancy shapes; bake until golden-brown and crisp, or fry in smoking hot fat, drain, and serve hot. Alternatively, the slices of bread may be toasted first and then cut up.

**Leek.**—Chop and fry.

**Macaroni, Spaghetti, Noodles, Shells, etc.**—Break into short lengths if necessary, and add to the soup about 1 hour before serving.

**Mushrooms.**—Cut into thin slices and fry.

**Onions.**—Slice into rings or chop finely and fry. **Rice.**—Add dry-boiled rice and freshly chopped parsley or chives just before serving the soup. Rice may also take the place of barley in mutton broth.

**Vegetables.**—Cut raw carrot, turnip, etc., into "matchsticks" or small balls, shred cabbage and slice celery, and cook them separately for 10 minutes in some stock; alternatively, tie them in muslin, to keep them together, and cook them in the soup. Sprinkle the pieces into the individual soup plates or cups before serving.

**Watercress.**—Float leaves on cream soups.



## FISH

For success in cooking fish good-quality fish in a fresh condition is essential. This should have firm flesh, bright eyes, red gills, clear markings, and be free from unpleasant smell. Sea-water fish is divided broadly into two categories, white fish, such as cod, sole, plaice, haddock, whiting, etc., and oily fish, such as herring or mackerel. Fresh-water fish and shell-fish are more expensive, and usually require special attention for cooking and serving.

Most fish can be steamed, poached, baked, grilled, or fried as directed on pp. 805-9. Fish should always be carefully prepared by washing under cold water, removing the head or scales, and trimming the fins and tail. Sole and plaice may be skinned or filleted.

## Fish Pie

1 lb. cooked fish	Salt and pepper
1½ oz. margarine	1 tablespoonful parsley
1 oz. flour	Squeeze of lemon
½ pint milk	Creamed mashed potato

Skin and bone fish and flake finely. Melt 1 oz. fat, stir in flour and cook for a few minutes without browning. Stir in milk and bring to the boil. Add seasoning, parsley, lemon juice, and the fish, put in a fireproof dish and cover with mashed potato. Dot with margarine and heat in a moderately hot oven (400° F.) for about 20 minutes.

## Fish Cakes

Flour	About 1 lb. boiled potatoes
½ pint milk	½ lb. cooked fish
½ pint fish stock	2 teaspoonfuls chopped parsley
Salt and pepper	Fat for frying
A knob of margarine or butter	Egg and bread-crumbs if required
½ teaspoonful mustard	
A few drops of vinegar	

Blend 1 tablespoonful of flour to a smooth cream with the milk, add the fish stock and bring to the boil, stirring. Cook for 2-3 minutes, then season with salt and pepper and beat in the knob of fat and the mustard, blended with a few drops of vinegar. Mix well and cool slightly.

Mash the potatoes, rubbing them through a sieve if necessary, and mix them with the flaked fish and chopped parsley. Bind with the sauce, adding more seasoning if required, then spread the mixture on a plate and allow to cool. Divide into 6-8 portions and shape into flat cakes or croquettes. Dust with flour and fry in a little hot fat until well browned and crisp on both sides, or coat with egg and crumbs and fry in deep fat. Serve with a good sauce, such as parsley, mustard, or anchovy sauce.

## Fried Fish with Tomatoes

8 fillets of flat fish	Button mushrooms
1 egg	Tomato lilies
Brown breadcrumbs	Lemon butterflies
Fat for frying	Parsley

Coat the filleted fish with egg and breadcrumbs. Heat the fat, fry the fish to a golden colour, drain thoroughly, and keep hot. Fry the mushrooms, grill the tomato lilies, put them round the fish and garnish with lemon and parsley. Alternatively, halve the tomatoes and fry them to serve with the fish.

## Baked Curled Whiting

4 medium whiting	Browned breadcrumbs
Fat	Carrot balls
Seasoning	Parsley and lemon

Prepare the fish and remove the eyes. Curl each whiting round, the tail in the mouth or through the eye-sockets. Brush with melted fat, sprinkle with seasoning and fine breadcrumbs. Dot with fat and bake in a greased tin in a moderate oven (350° F.) for about ½ hour. Garnish with carrot balls, parsley, and lemon, and serve with tomato sauce.

## Baked Stuffed Sole

1 large sole	Lemon butterflies
Fish forcemeat	Cucumber cones
A little fat	Duchesse potatoes

Trim the fish, make an incision down centre back and loosen flesh close to the bone on each

side. Stuff with good fish forcemeat and put on a greased baking-tin. Cover with greased paper and bake 20-30 minutes in a moderately hot oven (400° F.). Lift on to a hot dish and garnish with the lemon butterflies, cucumber cones, and duchesse potatoes.

## Baked Stuffed Haddock

1 fresh haddock	Flour
Savoury stuffing	Shavings of margarine

The head of the fish may be removed or not, according to individual taste. If it is left on, the eyes should be taken out. Wash and trim the fish, then dry and stuff it, sewing or skewering the opening to keep the stuffing in place. Curl the fish to form an "S" and put into a greased tin. Dredge lightly with flour, dot with margarine, and bake in a moderately hot oven (400° F.), basting occasionally for about 30 minutes.

## Creamed Fish au Gratin

½ lb. white fish	2 tomatoes
½ pint milk and water	1 oz. margarine
1 small onion	1 oz. flour
A bunch of herbs	2-3 oz. cheese
Salt and pepper	Chopped parsley
1 lb. boiled potatoes	

Place the fish in a saucepan with the liquid, sliced onion, herbs (tied in muslin), and seasoning, and simmer gently for 10-15 minutes, or until the fish is cooked. Lift out the fish, remove any bones and thick skin, and place in flakes in a fireproof dish lined with a layer of sliced, boiled potatoes. Skin and slice the tomatoes and arrange in a layer on the fish, sprinkling with salt and pepper.

Melt the margarine and add the flour to make what is called a "roux." Add the liquor in which the fish was cooked (making up to ½ pint if necessary) and bring to the boil, stirring continuously. Boil for 2-3 minutes, then add half the cheese, season with salt and pepper, and pour over the fish. Sprinkle with the remainder of the cheese and place in a moderate oven (350° F.) to heat through and brown the top. Before serving garnish with chopped parsley.

## Grilled Salmon Steaks

Salmon steaks about 1 in. thick	Lemon
Oil or melted fat	Maitre d'hôtel or anchovy butter
Seasoning	

Wipe the steaks, brush with oil or melted fat, and sprinkle with seasoning. Cook under a hot grill for 10-15 minutes, until the flesh comes away from the bone when tested with a skewer. Serve garnished with lemon and a pat of maitre d'hôtel or anchovy butter on top of each steak.

## Grilled Trout

Clean and dry the fish, split them open and remove the backbone. Brush the trout over with melted fat or olive oil, and season with salt, pepper, and lemon juice. Lay them on a hot grill and cook for 5-10 minutes on each side. Serve at once with cut lemon and watercress, or peas.

## Oysters au Naturel

Fresh oysters	Bread and butter
Salt	Lemon and parsley or cress to garnish
Cayenne pepper	
Lemon juice or vinegar	

Serve the oysters very cold, opened, and on the deep shell. Sprinkle with salt, a touch of Cayenne, and a squeeze of lemon juice or a little best-quality vinegar. Serve with thin slices of bread and butter or with rolls, and garnish with lemon and parsley or cress.

## Fried Oysters (Pigs in Blankets)

Cut thin rashers of bacon in half. Wrap each oyster, previously dried, in a slice of bacon, and fasten together with a tiny wooden skewer. Lay on a towel till the last minute to get entirely dry, and brown very quickly in a hot frying-pan. Place two "pigs" on a square of hot toast, and serve with a little of the liquid from the pan poured over; garnish with parsley and serve at once.

## Dressed Lobster

Twist off the claws and the legs and crack each one carefully, using either a hammer or heavy

weight. Hold the lobster firmly and bend it in order to separate the body from the tail section. Using scissors, then a sharp knife, cut the tail in half lengthways from underside. Remove dark cord. Remove bony part from the body; discard the "dead men's fingers" and stomach, found in head. Leave the tail meat in the shell. Mix the rest with a little mayonnaise, salt, pepper, and a squeeze of lemon juice. Pile on to a bed of lettuce, and serve with watercress, sliced tomato, and cucumber. Garnish with some of the small claws and coral, if present. If preferred, the large claws may be served already cracked so that the flesh can be easily removed.

#### Lobster au Gratin

1 lobster	$\frac{1}{2}$ pint milk and stock
2-3 mushrooms	mixed
1 onion	Salt and pepper
$\frac{1}{2}$ oz. fat	1 teaspoonful browned
$\frac{1}{2}$ oz. flour	breadcrumbs
	Watercress

Cut the lobster in half lengthwise, remove the meat and divide into neat pieces. Peel and slice the mushrooms, and peel, slice, and chop the onion roughly; fry both lightly in the fat. Add the flour, mix thoroughly and pour in the liquid, stirring until the sauce boils and thickens. Season, simmer for several minutes until the onion and mushrooms are tender, then add the lobster meat and a little of the grated cheese. The mixture should be of a thick, creamy consistency. Re-heat the meat in the sauce, pile into the two halves of the lobster shell, sprinkle with the remaining cheese and the breadcrumbs, and brown quickly under the grill or in a hot oven (450° F.) on the top shelf. Serve immediately, garnished with watercress.

#### Creamed Shrimps

$\frac{1}{2}$ pint shrimps	Seasoning
$\frac{1}{2}$ pint white sauce (hot)	Breadcrumbs
1 oz. cheese	

Put the picked shrimps in the white sauce, grate the cheese and add half of it, with seasoning, to the mixture. Place in small fireproof ramekin dishes, sprinkle with the rest of the cheese and a few bread-crumbs, and heat through in a hot oven (425° F.) for about 10 minutes. Serve very hot, garnished with hot shrimps.

#### Prawn Cutlets

4 oz. shelled prawns	A few drops vinegar
1 oz. margarine	A pinch of nutmeg
1 oz. flour	Egg and breadcrumbs
$\frac{1}{2}$ pint milk	Fat for frying
Salt and pepper	Whole prawns to garnish

Chop the prawns. Melt the fat, add the flour, and make a roux. Gradually add the milk and cook the sauce thoroughly. Add all the seasoning, then spread the mixture on a plate and allow to cool. Shape into eight cutlets, and egg and crumb them. Fry in smoking hot fat until golden-brown. Garnish with whole prawns, and serve either hot or cold.

#### Crab Salad

1 cooked crab	1 lettuce
Salt and pepper	Tomatoes
Salad cream	Watercress

Remove the meat from the crab shell, keeping the dark and white meats separate. Season with salt and pepper and add a little salad cream. Arrange the lettuce on a glass dish, put the dark meat in the centre and the white meat around. Garnish with sliced tomatoes, the watercress and the crab legs.

#### Mussels à la Marinière

2-3 dozen mussels	$\frac{1}{2}$ pint mussel liquor
(cooked)	$\frac{1}{2}$ pint milk or wine
1 oz. butter	1 teaspoonful chopped
1 small onion	parsley
1 tablespoonful flour	Pepper and salt

Heat the mussels. Melt the butter in a saucepan, add the onion (very finely chopped), and cook slowly for a few minutes. Stir in the flour and allow it to cook, then add the mussel liquor and milk or wine, and stir until boiling. Allow this sauce to simmer slowly for at least 5 minutes, add the parsley and seasoning and pour over the mussels.

#### Stewed Scallops with Cheese

6 scallops	1 oz. grated cheese
Salt and pepper	Toast snippets and
Lemon juice	lemon to garnish
$\frac{1}{2}$ pint white sauce	

Wash and drain the scallops, discard the beard and the black part, and cut the remainder into quarters. Put into a greased pan, sprinkle with salt, pepper, and lemon juice and pour over the white sauce. Simmer very gently for about 10-15 minutes, until tender, and stir in the cheese. Serve garnished with toast snippets and lemon.

#### Herrings in Oatmeal

2 herrings	$\frac{1}{2}$ teaspoonful salt
1 oz. medium oatmeal	$\frac{1}{2}$ teaspoonful pepper
1 teaspoonful dry mustard	1 oz. dripping

Clean the herrings and split them open, removing the backbone. Mix the oatmeal and seasonings together. Brush the herrings with melted dripping and coat with seasoned oatmeal. Fry or cook under the grill for 5-6 minutes.

#### Soused Herrings

Wash and trim the herrings. Season and roll up from head to tail. Place in a pie-dish and cover with vinegar and water (equal quantities), spiced with 2 cloves, 1 bay leaf, and seasonings. Bake in a slow oven (300° F.) for  $\frac{1}{2}$  hour. Serve hot or cold.

#### MEAT

Roasting is the most popular method of cooking meat, but it should be reserved for good-quality and good-sized joints. Poorer-quality joints braise or pot roast well, while the cheaper cuts of meat are better stewed. Small cuts of meat like chops, fillet steak, cutlet, liver, etc., are usually grilled or fried.

Directions for roasting are given on p. 808, but the following accompaniments can be served with roast meat:

*Beef*.—Yorkshire pudding and horseradish sauce.  
*Mutton*.—Red-currant jelly or onion sauce.  
*Lamb*.—Mint jelly or mint sauce.  
*Veal*.—Forcemeat balls and bacon rolls.  
*Pork*.—Sage-and-onion stuffing and apple sauce.

#### Mixed Grill

This consists of a selection of foods suitable for grilling, such as a chop, kidney and sausages, or a steak, liver and sausages, served with grilled halved tomatoes, mushrooms, chipped potatoes, and maitre d'hôtel butter (see p. 854). Prepare the various items for grilling, and season all meats on both sides with salt and pepper and a little lemon juice, if liked. Brush all the pieces over with melted fat, and start by grilling the foods which require the longest time, so that they are all ready at the same time.

#### Grilled Lamb Chops and Peas

Lamb chops	New carrots
Oil or melted fat	Mint sauce
Green peas	

Skin the chops and trim away any excess fat. Brush them over with oil or melted fat and put them under a hot grill. Cook for a few minutes on one side, then turn the chops over, using two wooden spoons or a palette knife, and cook the other side. Continue to cook, turning them occasionally, and allowing about 8-10 minutes altogether. Decorate the end of each chop bone with a cut paper frill and serve them on a hot dish with green peas and new carrots, and mint sauce served as an accompaniment.

Pork chops must be grilled for 20 minutes at least, and are delicious served with fried apple rings or apple sauce.

#### Pork Chops Baked and Stuffed

Flatten the chops and trim them if necessary, lay them on a baking-dish and cover the lean part of each chop with a layer of sage-and-onion stuffing. Cover with greased paper and bake in a moderately hot oven (400° F.) until the lean is well cooked and the fat crisp and brown—about  $\frac{1}{2}$  hour. Serve with baked tomatoes and apple sauce.



## Boiled Leg of Mutton and Caper Sauce

½ leg mutton	4 medium-sized carrots,
Boiling water	turnips, and onions
Salt and pepper	Caper sauce

Wipe the meat. Have ready sufficient fast-boiling water to cover the joint completely, place it in the pan, and when the water again reaches boiling point, allow it to boil for a few minutes. Then add the seasoning and the vegetables, cut into quarters. Simmer gently until the joint is cooked, allowing 20 minutes to the lb. and 20 minutes over. When cooking is almost complete, prepare the caper sauce, using the liquid from the pot. Serve the meat on a hot dish, put the vegetables round and pour over the caper sauce.

## Brown Stew

½–1 lb. stewing steak	1 oz. flour
1 onion	1 pint stock or water
2–3 carrots	Seasoning
A piece of turnip	A bouquet garni
A stick of celery	Gravy browning, if
1 tablespoonful dripping	necessary

Wipe the meat and cut into neat pieces. Peel the onion and cut into thin rings. Prepare the other vegetables and cut into rings or dice. Melt the dripping in a pan, place half the meat in the fat and fry quickly until it is lightly brown, then turn and fry on the other side; fry the rest of the meat. (If all the meat is put in the pan at once, it will cool down the fat and the frying will be very slow.) Lift the meat out on to a plate, re-heat the fat, add the onion, and fry for a few minutes until lightly coloured. Remove from the fat, then add the flour and fry until browned. Add the liquid gradually, season and bring to the boil. Put in the meat, vegetables, and bouquet garni, cover and simmer gently for about 2–2½ hours. If stewing in the oven, turn the contents of the pan into a casserole and allow to cook gently in a slow oven (325° F.) for 3–4 hours. Before dishing, remove the bouquet garni, re-season and, if necessary, add a few drops of gravy browning to colour. If fat meat is used, the stew sometimes becomes greasy; this can easily be rectified by blending 1 teaspoonful of flour with a little cold water, stirring it into the stew and re-boiling; the flour will then absorb the excess fat.

Brown stew can be varied by: (1) adding potato dumplings; (2) adding 1 tablespoonful of piquant sauce and a clove or garlic to sharpen the flavour. Potatoes can be cooked in the same pot as the stew; they should be peeled and placed whole on top of the stew and cooked for at least an hour. If available, 2–3 mushrooms, a few tomatoes, or a cupful of cooked beans may be added to enrich the flavour.

## Irish Stew

1 lb. middle neck of mutton	Salt and pepper
2 lb. potatoes	Cold water
2 large onions	Chopped parsley

Prepare the meat by wiping thoroughly, removing the marrow and cutting into neat pieces. Cut the potatoes and onions into rings and place alternate layers in a pan, finishing with a layer of potato. Add salt and pepper and sufficient water to half-cover. Bring to the boil and simmer gently for about 2 hours, or until the meat and potatoes are tender.

Pile the meat, gravy, and some of the potatoes in the centre of a hot dish, placing the rest of the potatoes at either end of the dish. Sprinkle with a little chopped parsley.

## Beef Olives

1½ lb. thick beefsteak	1 pint stock
Veal forcemeat	Mashed potatoes
Diced mixed vegetables	1 oz. flour

Cut the meat into slices about ½ in. in thickness, and then into oblongs of about 2½ by 3 in. Spread with the veal forcemeat, roll up, and tie with string. Braise on a bed of vegetables in the seasoned stock until tender—about 1½–2 hours. Remove the string and serve the meat on mashed potato with some of the gravy (thickened flour) poured over.

## Dry Curry of Beef

1 lb. frying steak	1 tablespoonful chutney
1½ oz. dripping	or other pickle
2 onions	1 teaspoonful red-currant jelly
1 small apple	A squeeze of lemon juice
1 dessertspoonful curry powder	Rice

Cut the beef into even-sized pieces. Melt the fat and fry the chopped onions, apple, and curry powder. Add the meat, chutney, jelly, and lemon juice. Mix thoroughly and cook very slowly with the lid on until the meat is tender, stirring frequently. Serve with a border of rice.

## Steamed Meat Roll

Suet-crust pastry	1 carrot
1 lb. beefsteak	Salt and pepper
1 onion or leek	Stock

Make the suet-crust pastry and roll it out. Mince the meat, onion or leek, and the carrot, season with salt and pepper, and moisten with a little stock. Spread this mixture on the pastry, moisten the edges with a little cold water, and roll up. Tie in a floured pudding-cloth, allowing room for the roll to swell, and steam for 3 hours. Serve with a good brown gravy sauce.

Cooked meat and vegetables may be used in the same way, and instead of steaming the roll it may be baked in a moderately hot oven for about 45 minutes and served with gravy sauce.

## Sausage-meat Galantine

1 lb. sausages	2 teaspoonfuls chopped
1 or 2 rashers of bacon	onion or leek
Any pieces of cooked meat, etc. (if available)	½ teaspoonful mixed herbs
1 tablespoonful chopped parsley	Pepper and salt
	Stock or water

Skin the sausages and mince the bacon, and meat if used. Mix with the herbs and seasonings and moisten with a little stock or water. Form into a roll and tie in a floured cloth. Boil for 1 hour. Serve hot, with a good brown sauce and green vegetables. Serve cold, rolled in browned crumbs, with a green salad.

## Braised Ham

½ a ham, either bottom or knuckle end	A bouquet garni
½ a carrot	1 quart stock
1 turnip	3 sliced tomatoes
1 onion	Mushrooms, if liked
	½ pint rich brown sauce

Soak the ham for 12 hours at least, longer if possible. Place in a large pan with the carrot, turnip, onion, and herbs. Add just sufficient water to cover and simmer for 2½–3 hours, according to the size of the joint, then remove from the saucepan and peel off the brown skin. Place the meat in a braising-pan or strong deep saucepan, add the stock, tomatoes, and a few mushrooms, if available. Place in the oven, put on the lid, which should be tight-fitting, and cook for 1–1½ hours, the time depending on the size of the ham. Dish up, strain the stock, and reduce it to half-glaze by boiling. Then brush over the top. Add the brown sauce to the remainder, boil for a few minutes and serve as gravy.

## Meat-and-bacon Roll

4 oz. minced raw meat	1 teaspoonful chopped
2 oz. minced bacon	parsley
2 oz. minced onion or leek	Salt and pepper
½ teaspoonful mixed herbs	A little stock or gravy
	8 oz. suet-crust pastry

Mix together the minced raw meat, bacon, and onion. Add the herbs and season well with salt and pepper, then moisten with a few tablespoonfuls of stock or gravy.

Make the pastry in the usual way. Roll into an oblong about ½ in. in thickness and spread to within ½ in. of the edge with the prepared filling. Moisten the edges and roll up as for jam roly-poly. Roll in greased paper. Tie in a cloth and steam for 2–3 hours. Serve with gravy or a good sauce.

Soak the pickled tongue in cold water for several hours. (If a smoked tongue is used, it will need 12 hours soaking.) Wash the tongue, skewer into shape, put into lukewarm water, bring slowly to the boil, and skim. Add flavouring vegetables and peppercorns, and simmer the tongue very gently until tender: a 6-lb. tongue will need to simmer for 3-4 hours. When tender, take out the tongue, plunge into cold water so that the skin will come off easily, and skin it very carefully. Slip out any bones in the root and cut off remaining gristle. Roll the tongue while still hot into a round cake-tin, fitting it in tightly. Add a little jellied stock, put a weighted cover on top and leave to set for several hours.



### Fried Sweetbreads

1 sweetbread  
Stock or water  
Salt and pepper  
Egg and breadcrumbs

Fat for frying  
Lemon and parsley to garnish

First wash the sweetbread and soak in cold water for 1-2 hours, changing the water occasionally. Put into a pan and blanch, then cover with cold water and remove with the fingers any veins, fat, or skin that will come away without damaging the sweetbread. Put into a pan with a little stock or water and simmer gently for 25-30 minutes. Drain and press between two plates until cold. Slice the sweetbread neatly, season it, and egg-and-crumbs the slices. Fry until golden-brown, then drain and serve garnished with cut lemon and parsley.

### Tripe and Onions

2 Spanish onions  
1½ lb. prepared tripe  
1 oz. butter  
1 oz. flour  
½ pint tripe liquor

½ pint milk  
Seasoning  
A pinch of nutmeg  
Toast

Peel the onions and cook them together with the tripe until both are tender. Then drain, reserving the liquor. Cut the tripe in pieces and chop the onions. Melt the butter in a fireproof casserole, mix in the flour, and then add the tripe liquor, a little at a time. Stir until boiling, add milk, seasoning, onions and tripe, and simmer all together for about 15 minutes, stirring occasionally. Serve in the casserole, garnished with toast cut in pieces.

### POULTRY

The selection of poultry is of prime importance. When buying look for a plump bird with a smooth skin. For roasting the bird must have a flexible breast bone and smooth legs with short spurs. Most poultry is sold ready for the table; if, however, it has not been prepared it should be hung by the feet, somewhere cool, so that air can circulate round it. It should not be hung more than two to three days, according to weather conditions. The plucking is best carried out directly after killing, whilst the bird is still warm, then singe with a lighted taper. Remove the sinews from the legs, cut off the head, and draw after hanging and when required. The liver, gizzard, heart, and neck are used for making stock. Prepare the liver by removing the gall bladder, and the gizzard by cutting through to remove the "bag of grit". Fowls and turkeys are usually stuffed at the neck end, and geese and ducks at the tail end. After stuffing, truss the bird to keep it a good shape. The appropriate stuffings and accompaniments are as follows:

**Turkey.**—Sausage, celery, chestnut, or other forcemeat. Serve with gravy, bread sauce; sausages, bacon rolls, or cranberry sauce.

**Chicken.**—Forcemeat stuffing. Serve with gravy, bread sauce, sausages, fried crumbs, bacon rolls.

**Duck.**—Sage-and-onion stuffing. Serve with gravy, apple sauce, and orange salad.

**Goose.**—Sage-and-onion stuffing. Serve with gravy, and apple sauce.

**Guinea Fowl.**—Serve with watercress, gravy, and orange salad. For roasting times see previous chapter.

### Chicken Casserole

1 chicken  
1 oz. seasoned flour  
1 onion  
Dripping  
1 pint stock or water

Salt and pepper  
A bouquet garni  
½ lb. mushrooms or  
½ lb. tomatoes

Joint the chicken, cut into convenient-sized pieces, and dip in seasoned flour. Cut up the onion finely and fry until golden in the hot dripping. Brown the chicken and put into a casserole with the onions. Stir the rest of the seasoned flour into the dripping and fry until brown, then add the stock or water and stir until boiling. Season well. Pour into the casserole over the chicken and add a bouquet garni and the roughly chopped mushrooms or tomatoes. Put on the lid and cook in a moderate oven (375° F.)

for about 1½ hours, or until the legs of the chicken are tender when pierced with a fork or skewer. Remove the bouquet garni and serve.

### Chicken Maryland

1 prepared chicken  
Seasoning  
Flour  
1 egg

White breadcrumbs  
Dripping  
Milk and stock mixed  
½ lb. sliced mushrooms

Simmer the giblets and neck for stock. Season the jointed bird, dip in flour, then in beaten egg. Roll it in the crumbs and put in a greased tin. Roast in a moderately hot oven (375° F.), basting occasionally, until tender. Make a sauce by stirring a tablespoonful of flour into some of the fat left in the tin, and adding milk and stock. Simmer the mushrooms in the sauce. Serve the chicken with the sauce poured around.

### Chicken Fricassée

1 chicken  
1 onion  
1 stalk of celery  
A bouquet garni  
1½ pints stock or water  
Salt and pepper  
2 oz. margarine

1½ oz. flour  
A squeeze of lemon juice  
A little "top of milk" if available  
Parsley  
Bacon rolls

Joint the bird, cut into convenient-sized pieces, and put into a pan with the sliced onion, chopped celery, bouquet garni, liquid, and seasoning. Cover the pan and simmer gently for about 1½ hours, or until the chicken is tender. Melt the margarine in another saucepan and stir in the flour. Gradually add about 1 pint of the chicken liquor and a squeeze of lemon juice. When boiling stir in a little "top of the milk," if available and season. The sauce should be of a coating consistency. Arrange the cooked chicken in a hot dish, pour the sauce over, and garnish with parsley and small rolls of bacon.

### Chicken Galantine

Allow 12 oz. sausage-meat, some slices of ham (or tongue or bacon), and two hard-boiled eggs to each chicken. Spread some of the sausage-meat on the boned bird, and arrange slices of the ham and the sliced eggs on top. Season, and cover with the rest of the sausage-meat. Fold in both ends of the boned chicken and roll it up tightly. Tie in a clean cloth and simmer in stock for 2 hours. Place the galantine on a dish and press it down by putting a weighted dish on top. When it is cold brush the surface with glaze and decorate with piped butter and aspic jelly.

### Devilled Turkey Legs

Chop off any unsightly length of bone and score the flesh of the legs deeply with a sharp knife, both round and across. Brush with melted butter.

Mix on a plate 1 teaspoonful each of French and English mustard, 2 of finely chopped chutney, a pinch of ground ginger, pepper, salt, Cayenne pepper, and browned breadcrumbs. Spread this mixture over and into the cuts, put the turkey legs aside for an hour, then cook under a very hot grill until crisp and brown. Serve quickly, garnished with water-cress. Pats of butter and some piquant sauce may be served separately.

### Braised Duck

1 duck  
Dripping  
2 rashers of bacon  
1 carrot  
1 onion  
2 sticks celery  
A piece of turnip

A bouquet garni  
Salt and pepper  
½ pint stock  
1 orange  
1 oz. flour  
Watercress

Joint the duck, cut into convenient-sized portions, and fry in a little dripping until brown. Dice the bacon, carrot, onion, celery, and turnip and put at the bottom of a stewpan or casserole. Add the bouquet garni and the fried pieces of duck. Season and add the stock, which should just cover the duck. Cover and cook on top of the stove or in a moderately hot oven (400° F.) until tender—this will take about 1½-2 hours. Put the pieces of duck on to a hot-plate. Strain the liquor and add the grated orange rind and juice of half the orange. Thicken the sauce with blended flour and pour over the duck. Garnish with watercress and pieces of orange.

## Casserole of Pigeons

2 pigeons  
1 tablespoonful flour  
Pepper and salt  
A piece of ham or  
bacon  
1 oz. dripping

Piece of turnip, sliced  
1 stalk of celery, sliced  
1 onion, sliced  
½ pint stock or water  
Bunch of herbs, tied in  
muslin

Prepare the pigeons, cut in halves, and toss in seasoned flour. Dice the ham or bacon and fry until lightly browned, then remove it from the pan. Add the dripping to the pan and fry the pigeons in this until lightly browned, and then remove from the pan. Add the vegetables and sauté for several minutes. Then add the flour, stir in the stock and bring to the boil, stirring. Return the pigeons and the bacon, and add the bunch of herbs (tied in muslin). Cover and simmer gently until the pigeons are tender (about 2 hours), or put into a casserole and cook in a slow oven. Remove the herbs and add more seasoning if necessary. Place a border of mashed potatoes round a hot dish, arrange the pigeons and vegetables in the centre, and pour the sauce over, or, if cooked in a casserole, it may be served without dishing.

## GAME

All wild birds and animals protected by law during certain seasons of the year are known as game. The most common of these are pheasants, partridges, grouse, wild duck, hares and deer. Less commonly eaten in this country are snipe, plover, woodcock, quail, and ptarmigan. The game seasons are roughly from August, September, or October until December, February, or March, although it is now possible to buy frozen or imported game out of season.

Game birds should be hung for a week at least before being plucked and drawn. If cooked too soon game is tough and lacks flavour. The actual length of time for hanging can be judged only by individual taste, but as a guide the bird should be ready when the tail feathers come away easily. Small birds such as snipe and woodcock require less hanging time, and should be roasted undrawn on a piece of toast which is served with the bird.

Directions for roasting are given in the previous chapters, but game can be served with the following accompaniments.

Pheasant	} Gravy, bread sauce, fried bread-crumbs, and game chips
Partridge	
Grouse	
Ptarmigan	
Snipe	} Gravy, fried breadcrumbs, game chips
Plover	
Woodcock	
Quail	
Wild Duck	Gravy, orange salad, game chips

## Pheasant Casserole

1 pheasant	2 rashers of chopped
Seasoned flour	bacon
Fat for frying	Stock
4-6 oz. mushrooms	A little port (optional)
Salt and pepper	Chopped parsley

Joint the bird and dip the pieces in the seasoned flour. Heat the fat in a frying-pan and fry the pieces of pheasant until they are golden-brown, then put them in the casserole, with the sliced mushrooms, the chopped bacon, salt and pepper, and sufficient stock to half-cover the pheasant. A little port wine may be added with the stock, if desired; cook gently in a moderate oven (350° F.) for about 1½ hours. Just before serving, sprinkle the surface with chopped parsley. Serve with creamed or chipped potatoes and orange salad.

## A Salmi of Partridge

Partridges	Little white wine
1 little butter	Stock
Carrot	1 tomato
Onion	A few mushrooms
2 shallots	Croûtons of fried bread
1 tablespoonful flour	

This can be made with either cooked or uncooked birds. If the latter, they should be roasted and left rather underdone, as they will finish cooking in the sauce. Cut each partridge into two or three pieces, according to its size. Remove the skin and the larger bones of the carcass, arrange the pieces in a casserole, and cover whilst

making the sauce. Chop up the scraps, put them into a frying-pan with a little butter, a few small pieces of carrot and onion, and one or two shallots. Fry until brown, then sprinkle with about 1 tablespoonful of flour and brown that also. Moisten with a little white wine and stock, and add a tomato cut in pieces. Cover and cook slowly for 1 hour. Meanwhile cook a few fresh mushrooms, putting the trimmings in the sauce. When the sauce is ready, strain it over the pieces of partridge and let them heat thoroughly, but without boiling. In a salmi the sauce should be thick and velvety and the joints of game should seem to have been cooked with it, and must not appear to be swimming in gravy. Garnish with the mushrooms and some croûtons of fried bread.

## Game Croquettes

½ lb. cold cooked game	Fat for frying
½ lb. creamed potatoes	½ lb. mushrooms
Seasoning	Game chips
Beaten egg	Parsley or watercress
Breadcrumbs	

Remove any bones or pieces of skin from the cold cooked game and mince the flesh finely. Place in a bowl with the creamed potatoes and seasoning, and mix well. Form the mixture into croquettes, coat them with beaten egg and roll them in breadcrumbs. Heat the fat in a pan until smoking hot, then fry the croquettes until they are golden-brown. Drain them carefully, and serve them at once in a hot dish, with grilled or fried mushrooms and game chips. Garnish with parsley or watercress.

## Stewed Venison

(Use the shoulder, breast, and neck for stewing.)

1 lb. venison	Stock
1½ oz. flour	Bunch of herbs, tied in
Salt, pepper, nutmeg	muslin
1 onion	1 dessertspoonful vine-
1½ oz. dripping	gar

Cut the venison in joints and toss in the seasoned flour. Slice the onion. Fry the meat and onion in the hot fat until lightly browned, then stir in any remaining flour, and brown, before adding the stock, bunch of herbs, and vinegar. Cover, and stew gently in the oven or on the top of the stove until tender (2-3 hours). Serve with stewed celery or a green vegetable.

## Jugged Hare

1 hare	Small bay leaf tied in
1-2 oz. dripping	muslin
1 rasher of bacon	4 peppercorns tied in
1½ pints stock or water	muslin
1½ oz. flour, blended	Small blade mace tied
with a little stock	in muslin
1 onion stuck with 2	1 teaspoonful red-cur-
cloves	rant or other sharp
Seasonings	jelly
Bunch of herbs tied in	1 glass port or other red
muslin	wine
	Force meat balls

Skin and paunch the hare, reserving the blood and saving the liver, heart, and kidneys. Wipe the hare and cut into joints. Heat the dripping in a casserole and fry the joints in it with the bacon. When the meat is lightly browned add stock to cover and stir in the blended flour, the onion, seasonings, and herbs.

Cover and cook very gently in a moderate oven, or on top of the stove, until tender (about 3 hours). A few minutes before serving remove the onion and herbs. Stir in the strained blood, the red-currant jelly, and the wine. Reheat without boiling, and serve garnished with forcemeat balls.

## Roast Stuffed Rabbit

1 rabbit	½ oz. flour
Fat bacon	½ pint stock or water
Dripping	Bread sauce

## For the Stuffing

4 oz. breadcrumbs	A squeeze of lemon juice
2 oz. chopped suet	A few drops of piquant
½ teaspoonful thyme	sauce
A little grated lemon rind	Beaten egg or milk to
Salt and pepper	mix

Prepare the rabbit. Wash the heart, liver, and kidneys, put in cold water and bring to the boil.



Strain, chop finely, and mix in a large basin with the other stuffing ingredients. Stuff the rabbit with forcemeat and sew up, leaving the ends of the string loose so that it can be removed after cooking. Cut the sinews in the hind legs at the thigh, bring legs forward and press closely against body; bend forelegs in the same way, and keep all in position with two fine metal skewers or with string. Tie a piece of fat bacon on the back and cover with greased paper.

Roast for about 1-1½ hours, basting every 15 minutes. A quarter of an hour before it is ready remove the paper and bacon, baste well, and remove skewers and string. Drain the surplus fat from the tin, add the flour, brown it, and add the stock or water to make a thick gravy; boil this for 5 minutes and strain it round the rabbit. Serve with bread sauce.

#### Rabbit Pie

1 small rabbit	2 tablespoonfuls chop-
2-3 potatoes	ped parsley
1 onion	½ teaspoonful mixed
1 piece of fat bacon	herbs
Salt	1 bay leaf
4 peppercorns (crushed)	Stock or water
	8 oz. short-crust pastry

Wash the rabbit thoroughly and cut into neat joints, putting aside the head and the ribs for stock. Prepare and slice the potatoes and onion. Fill a pie-dish with alternate layers of rabbit, bacon, and vegetables, sprinkling each with seasonings and herbs. Put in the kidney and heart of the rabbit, the bay leaf, and sufficient liquid to come half-way up the dish. Cover with pastry, making a hole to let out the steam, and decorate with pastry leaves. Bake in a hot oven (450° F.) until the pastry is set and lightly browned, then reduce the heat and cook until meat and vegetables are tender—about 1½ hours in all. Fill up with stock and serve hot.

#### EGG AND CHEESE COOKERY

Both egg and cheese are rich in protein and can be cooked in many different ways to provide a satisfying main course. Cheese should be carefully cooked, otherwise it may become tough and indigestible, grate it finely and avoid boiling cheese sauces. The addition of dry mustard to a cheese dish helps to bring out the flavour.

#### Plain Omelet

½ oz. butter or mar-	3 eggs
garine	Pepper and salt

Melt the fat over a brisk heat and tilt the pan so as to allow the sides to become greased. Whisk up the eggs just sufficiently to mix the yolks and whites thoroughly together, and add seasoning. When the fat is beginning to brown, turn the eggs into the pan. Tilt the pan backwards and forwards and gather the mixture in from the sides as it cooks. When it is thick and creamy pour out the egg mixture evenly over the surface of the pan. Allow it to set for a second or two, then tilt the pan away from you and fold the omelet in three, forming a roll in the pan. Brown it slightly on the underside if preferred. Turn the omelet out on to a heated oval dish. Garnish and serve at once.

#### Ham Omelet

1 oz. butter	4 eggs
2 tablespoonfuls cooked ham	Pepper and salt

Melt the fat in the omelet pan, add the diced ham, and fry until lightly browned. Beat the eggs, season, pour them into the pan over the ham. Allow it to set for a second or two, then tilt the pan away from you and fold the omelet in three, forming a roll in the pan. Brown it slightly on the underside if preferred. Turn the omelet out on to a heated oval dish. Garnish and serve at once.

#### Soufflé Omelet

3 eggs	3 tablespoonfuls water
Seasoning	or milk
	½ oz. butter

Separate the egg yolks and whites. Beat the yolks with a wooden spoon until pale and creamy, add seasoning and liquid and beat again. Whisk the whites very stiffly. Now gently melt the

butter in the omelet pan, without browning. Carefully fold the egg whites into the yolk mixture, avoiding over-mixing. Grease the sides of the pan with the melted fat and pour in the egg mixture. Cook over a moderate heat until golden-brown on the underside, then place the pan in a moderate oven (350° F.) or under the grill and lightly brown the top of the omelet. Run a spatula gently round the edge and underneath the omelet to loosen it, then mark it in halves and double it over. Turn it gently on to a hot plate, garnish, and serve at once.

#### Baked Eggs

Use individual oven-proof dishes of glass or china (ramekin cases) for this dish. Place them on a baking-sheet with a knob of butter in each dish and put in moderately hot oven (400° F.) for 1-2 minutes. When the butter is melted, break a fresh egg into each dish, season with salt and pepper, and return to the oven until just set—5-8 minutes. Serve at once.

#### Scrambled Eggs

2 tablespoonfuls milk	Salt and pepper
½ oz. butter	Buttered toast
2 eggs	

Heat the milk and the butter in a strong saucepan, but do not boil. Beat the eggs, add salt and pepper, and pour into the saucepan. Stir over a gentle heat until the mixture begins to thicken, then remove from the heat and stir until creamy. Pile on to hot buttered toast and serve immediately.

#### Stuffed Eggs

4 hard-boiled eggs	1 teaspoonful may-
½ oz. butter or margarine	onnaise
	A little chopped parsley
	Salt and pepper

Cut the eggs in half crossways and remove a small piece of white from the bottom of each, so that they stand firmly. Mix the yolks with the fat, mayonnaise, parsley, and seasoning, and pipe into the cases. Serve with salad and a good mayonnaise.

#### Scotch Eggs

½ lb. sausages or sausage-meat	Breadcrumbs
3-4 hard-boiled eggs	Fat for frying
2 tablespoonfuls seasoned flour	Parsley
A little piquant sauce	Tomato sauce
Beaten egg	Croûtons of fried bread (optional)

Remove the skins from the sausages and shell the eggs. Pass the eggs through the seasoned flour. Add a few drops of piquant sauce to the sausage-meat and divide equally into 3-4 pieces, according to the number of eggs. Cover each egg with the sausage-meat, doing this as evenly as possible to keep the egg a good shape. Brush over with beaten egg, toss in breadcrumbs, and fry in deep fat from which a very faint blue smoke is rising. As the sausage-meat is raw, it is essential that the frying should not be hurried unduly, and for this reason the fat must not be too hot. When the eggs are golden-brown in colour, remove from the fat and drain. Cut in half width-ways, garnish with a small piece of parsley, and serve with tomato sauce.

The eggs may be placed on croûtons of fried bread.

#### Welsh Rarebit

4 oz. cheese	A pinch of Cayenne
½ teaspoonful dry mustard	pepper
	A little milk
	Hot toast

Grate the cheese and add the mustard, pepper, and enough milk to moisten. Melt this in a double boiler or over gentle heat until it is creamy, and pour on to hot toast.

#### Macaroni Cheese

2 oz. macaroni	Salt and pepper
1 oz. fat	2-3 oz. grated cheese
1 oz. flour	Brown breadcrumbs
½ pint milk	

Boil the macaroni in the usual way and drain. Melt the fat, add the flour, and cook for a minute.

Gradually add the milk and stir until it boils. Add the salt and pepper and the grated cheese, reserving a little. Add the cooked macaroni and pour into a greased au gratin dish. Sprinkle with brown crumbs and the rest of the cheese, and brown under a hot grill.

### Cheese Pudding

6-8 slices bread and 2 teaspoonfuls piquant butter  
2 eggs 4 oz. grated cheese  
A little made mustard 1 pint milk  
Salt and pepper 1 oz. breadcrumbs  
1 chopped onion

Cut the slices of bread into neat pieces and arrange in a pie-dish. Break the eggs in a basin and add the seasonings, finely chopped onion, and the sauce. Beat well and add the cheese, reserving about a quarter of it for the top. Stir in the milk, pour the mixture over the bread and butter in the pie-dish, and allow to soak for about 15 minutes before baking. Mix the remaining cheese and the breadcrumbs together, sprinkle over the top of the pudding and bake in a moderate oven (350° F.) until the mixture sets.

### Cream-cheese Tartlets

3-4 oz. short-crust pastry 1 egg  
1 oz. cream cheese Pepper and salt  
½ pint thick white sauce 1 oz. Parmesan cheese  
½ teaspoonful piquant Paprika pepper  
sauce

Line a number of small tartlet tins with the short-crust pastry. Using a fork, beat together the cream cheese, white sauce, piquant sauce, yolk of egg, and a little pepper and salt to make a creamy consistency. Beat the white of egg until stiff, and fold gently into the mixture. Three-parts fill the lined tartlet tins with the mixture and bake in a moderately hot oven (400° F.) for about 15-20 minutes. Before serving, sprinkle a little grated Parmesan cheese on top and dust with paprika pepper.

### Hot Cheese Soufflé

3 eggs ½ pint milk  
1 oz. butter 3 oz. grated cheese  
1 oz. flour Salt and pepper

Separate the eggs. Melt the butter and stir in the flour, gradually add milk and bring to boil, stirring. Cool slightly; add cheese, seasoning, and egg-yolks one by one, beating well. Fold in the very stiffly beaten egg-whites, and put mixture into a prepared case. Bake in moderately hot oven (400° F.) about 30 minutes, till well risen and brown. Serve at once.

## VEGETABLES

Vegetables, especially greens, should be used as soon as possible in order to retain the maximum food value. When storage is inevitable keep them in a cool, airy place. Prepare the vegetables according to type, and cook by boiling, steaming, braising, baking, or frying (see previous chapter).

### Potatoes

**Boiled.**—Allow these about 20 minutes to cook. For new potatoes a sprig of mint is usually added to the water. Serve glazed with a little margarine.

**Steamed.**—Allow about 30-40 minutes, according to size; then either serve the potatoes mashed or glaze with margarine and sprinkle with parsley.

**Creamed.**—Boil or steam some potatoes until tender, and sieve them or beat well with a fork, adding margarine, milk, and pepper. Serve hot, sprinkled with parsley.

**Roast.**—Cook these in dripping round the meat, or in a separate tin; baste occasionally, and allow about ½-1 hour. The potatoes are sometimes par-boiled first.

**Fried.**—Cut the peeled potatoes into chips or rings and dry them in a tea-towel; then fry in smoking-hot fat to cover them completely a few at a time until golden brown. To make game chips slice the potatoes wafer-thin.

### Duchesse Potatoes

1 lb. hot cooked potatoes "Top" of milk  
1 oz. margarine Salt and pepper  
1 egg Beaten egg to glaze

Sieve the potatoes. Melt the fat in a pan, add the potatoes, and when warm add the beaten egg, about a tablespoonful of creamy milk, and seasoning to taste. Turn on to a floured board and divide into small squares. Place these on a greased baking-tin, brush over with beaten egg, and brown in a hot oven (450° F.). If preferred, force the mixture in the form of rosettes, using a large star pipe. Glaze with egg and bake as above.

### Potato Salad

Lettuce 1 tablespoonful chopped  
½ lb. diced cooked celery  
potatoes 1 tablespoonful chopped  
1 chopped onion raisins  
1 tablespoonful chopped parsley Mayonnaise

Arrange the lettuce-leaves in a dish. Mix all the other ingredients together and arrange on the lettuce.

### Asparagus

Cut off the woody end of the stalks and scrape the white part lightly, removing any coarse spines. Tie in bundles, and place upright in a saucepan of boiling salted water. Boil for 10 minutes, then lay flat and continue cooking until tender—a further 10-15 minutes. Drain very well and untie the bundles before dishing. Serve with melted butter (or margarine) or with Hollandaise sauce.

Asparagus may also be served cold, with a vinaigrette dressing or with mayonnaise.

### Aubergine or Egg Plant

Egg plants should be of uniform purple colour, firm, smooth, and free from blemishes. To prepare them, cut off the stem and calyx, and wipe over. For some dishes the Egg Plants are required to be peeled; for others the skin is left on. They are usually stuffed and baked, sautéed, or fried.

### Beans (Broad)

Shell, and cook in boiling, salted water until tender—20-30 minutes. If liked, serve with parsley sauce.

Towards the end of the season the skins of the beans may be very thick and tough—if this is the case it is well worth removing them before cooking.

When very young and tender, that is, when the pods are only a few inches long and the beans inside very small, the whole pods may be cooked and served, and these make a very delicious dish.

### Beans (French and Runner)

Head, tail, and string the beans, and slice them diagonally. Cook in boiling salted water until tender—15-20 minutes, skimming if necessary. Drain well, then toss with salt and pepper and a knob of butter before dishing.

Young beans may be cooked whole if preferred. Cold cooked French or runner beans are a useful ingredient in salads and hors d'œuvre.

### Creamed Beetroot

1 large or 2 small Salt and pepper  
beetroot 2 teaspoonfuls vinegar  
1 oz. butter Grated horseradish, if  
1 oz. flour liked  
½ pint milk

Cook the beetroot very carefully, preserving its red colour. Skin, and cut into dice. Melt the butter in a pan, and mix in the flour. Add the milk by degrees, and bring to the boil, stirring continuously. Boil for 2-3 minutes, and then add the seasoning and vinegar. Add the cubes of beetroot to the sauce, and heat until the beet is hot through and the sauce coloured pink. Dish and serve at once, sprinkle, if liked, with a little grated horseradish.

### Brussels Sprouts and Chestnuts

Brussels sprouts are frequently cooked with chestnuts. The sprouts should be prepared in the usual way and the shell removed from the chestnuts. Put both in boiling water and boil hard for 10 minutes, then strain both free from moisture, and remove the thin brown skin from the chestnuts. Melt 2 oz. butter to about 1 lb. chestnuts and Brussels sprouts, and stew them in the butter until both are thoroughly tender—about 15 minutes. Serve very hot.



## Scalloped Cabbage

- |  |                                |
|--|--------------------------------|
| 1 quart shredded cabbage                     | 4 oz. diced or shredded cheese |
| $\frac{1}{2}$ pint well-seasoned white sauce | 1 tablespoonful grated cheese  |

Shred fine white cabbage into ribbons, making 1 quart. Cook until tender in boiling salted water, drain well, and put in a greased baking-dish. To white sauce, made with  $\frac{1}{2}$  milk and  $\frac{1}{2}$  liquor from the cabbage, add the diced or shredded cheese. Cook gently until the cheese is melted and whip together until smooth. Pour the sauce over the cabbage, stir together lightly, sprinkle with the tablespoonful grated cheese, and brown in a very hot oven (425° F.) or under the grill.

## Braised Carrots

- |                                |                  |
|--------------------------------|------------------|
| 1 lb. carrots                  | A pinch of sugar |
| $\frac{1}{2}$ oz. butter       | Salt and pepper  |
| $\frac{1}{2}$ pint brown stock | Chopped parsley  |

Prepare the carrots and cut lengthways into neat, even slices, or leave whole if young. Put into a pan of cold water, bring to the boil and strain. Heat the butter and fry the carrots golden-brown. Add half the stock, sugar, and seasoning, and cook gently for  $\frac{1}{2}$  hour, until tender, basting occasionally and adding the rest of the stock if required. Serve on a hot dish with a little of the liquor poured round and sprinkle with chopped parsley. Braised carrots are excellent with meat stews.

## Cauliflower with Cheese Sauce

- |                                 |                   |
|---------------------------------|-------------------|
| 1 large or 2 small cauliflowers | Seasoning         |
| 2-3 oz. grated cheese           | Slices of gherkin |
| $\frac{1}{2}$ pint white sauce  | A few capers      |
|                                 | A few mint leaves |

Cook and drain the cauliflower and put it into an *au gratin* dish, reserving some of the best flower pieces for garnish. Add the cheese to the white sauce, keeping some cheese to sprinkle over the finished dish, if desired. Season the sauce, pour it over the vegetable, and garnish the dish with the reserved pieces; arrange the gherkin slices and capers to resemble flowers, adding the mint leaves.

To make cauliflower *au gratin*, mix pieces of cauliflower with sauce and pour into the dish. Sprinkle with cheese and brown crumbs, and brown in a hot oven (425° F.) or under the grill.

## Braised Celery

Prepare the celery as usual and fry in a little dripping until lightly browned. Add salt and pepper and sufficient stock to half-cover. Cover closely with a lid, and cook gently until tender. Lift the celery on to a hot dish and boil the liquor until of a glazing consistency. Pour over the vegetables and sprinkle with chopped parsley.

## Corn on the Cob

Pick the cobs when they are plump and well formed. Homegrown cobs may ripen to a pale golden yellow, but they are very good to eat when still green. Cook as soon after picking as possible.

Remove the outside leaves, leaving on the inner sheath. Put into boiling salted water and cook until tender; this will take about 12 minutes for fresh young cobs, or up to 30 minutes for older cobs. Drain, remove the sheath, and serve very hot, with butter (or margarine), pepper, and salt.

## Stuffed Cucumber

- |   |                                    |
|---|------------------------------------|
| 1 large straight cucumber                     | $\frac{1}{2}$ pint Espagnole sauce |
| $\frac{1}{2}$ lb. chopped ham or sausage-meat | Croutons of fried bread            |
| Seasoning                                     | Rounds of ham and truffle          |

Skin the cucumber, cut in 2-in. pieces, and take out the seeds with a round cutter or small vegetable knife. Season the meat, add one tablespoonful of the sauce, and pile into the prepared rounds. Braise slowly for about 20 minutes. Dish on croutons of fried bread, put on rounds of ham and truffle as a lid, and pour Espagnole sauce (see p. 354) round.

## Baked Stuffed Marrow

- |  |                                   |
|--|-----------------------------------|
| 1 small marrow   | 1 tomato or a little tomato sauce |
| $\frac{1}{2}$ lb. onions   | $\frac{1}{2}$ teaspoonful sage    |
| $\frac{1}{2}$ lb. scraps of meat (or liver, sausage, bacon, ham, etc.) | Salt and pepper                   |
| 4 oz. dry bread (soaked and squeezed)                                  | A little dripping                 |
|  | Gravy or tomato sauce             |

Cut a wedge-shaped piece off the top of the marrow and scoop out all the seeds: there is no need to peel the marrow. Prepare and chop the onions, put into a basin with the minced meat (or bacon, ham, etc.), the soaked bread, sliced tomato or sauce, and the sage; season well with salt and pepper. Mix well together and fill into the marrow, then replace the lid. Grease a fireproof dish with dripping, put in the marrow, cover, and bake in a moderate oven (350° F.) until tender—approximately 1 hour. Serve with gravy or tomato sauce.

## Stewed Mushrooms

- |                         |                 |
|-------------------------|-----------------|
| 1 lb. mushrooms         | 1 oz. flour     |
| $\frac{1}{2}$ pint milk | Salt and pepper |
| 1 oz. margarine         | Toast           |

Peel the mushrooms and cut into quarters. Add to the milk and bring to the boil. Melt the fat and add the flour. Gradually add the milk from the mushrooms, stirring until the mixture thickens. Season and pour over the mushrooms. Cover and simmer gently for 15-20 minutes. Serve with toast.

## Stuffed Onions

- |                         |                 |
|-------------------------|-----------------|
| Even-sized onions       | Chopped parsley |
| Savoury cheese stuffing | Sauce or gravy  |
| A little margarine      |                 |

After removing the papery outside skins, boil the onions for 30-40 minutes, according to size—do not allow them to become soft. Scoop out the centre portion with a small spoon or pointed knife. Fill the cavity with grated cheese mixed with some sieved dry mustard, breadcrumbs, and a little white sauce; minced bacon, breadcrumbs, and finely chopped sage or any other suitable filling may also be used. Place in a greased fireproof dish, dot the tops with shavings of margarine and bake in a hot oven (425° F.) for about  $\frac{1}{2}$  hour, until tender. Sprinkle the top of each stuffed onion with parsley and serve with a good white sauce, a tomato sauce, or gravy.

## Seakale

Wash well, cut off the ends, and tie into neat bundles. Cook in boiling salted water to which a squeeze of lemon juice has been added (this is to preserve the white colour) until tender—20-30 minutes. Drain well, remove the string, and serve on toast, coated with a good white or Béchamel sauce. Seakale may also be braised or served *au gratin*. Cold, it may be served with vinaigrette dressing or added to a mixed salad.

## Spinach

Wash well in several waters to remove all grit, and strip off any coarse stalks. Pack into a saucepan with only the water that clings to it. Heat gently, turning it occasionally, then bring to the boil and cook gently until tender—about 15 minutes. Drain thoroughly, and reheat with a knob of butter and a sprinkling of salt and pepper. If liked, the spinach may be sieved and one or two tablespoonfuls of white sauce, "top of the milk," or sour cream added to it. Reheat before serving.

## Creamed Spinach and Mushrooms

- |                                |                                  |
|--------------------------------|----------------------------------|
| 2 lb. spinach                  | Nutmeg                           |
| Salt and pepper                | Toast snippets                   |
| $\frac{1}{2}$ lb. mushrooms    | 1 hard-boiled egg (if available) |
| 1 oz. margarine                |                                  |
| $\frac{1}{2}$ pint white sauce |                                  |

Wash the spinach carefully, strip off any coarse stalks, and put the spinach in a pan with only the water that adheres to the leaves. Heat gently, turning occasionally, then bring to the boil. Boil for about 15 minutes, then drain thoroughly, mash finely, and season. Skin and chop the mushrooms and sauté them in the fat. When cooked add them to the white sauce, with a little grated nutmeg and salt and pepper. Make a border of the cooked spinach and pour the mushroom sauce in the middle. Garnish with toast snippets, and if possible with sieved hard-boiled egg.

## Stuffed Tomatoes

- |                                    |                         |
|------------------------------------|-------------------------|
| 4 even-sized tomatoes              | ‡ teaspoonful chopped   |
| 1 oz. chopped ham                  | parsley                 |
| 1 teaspoonful chopped onion        | 1 pinch pepper          |
| ‡ oz. butter                       | ‡ cucumber              |
| 2 tablespoonfuls fresh breadcrumbs | Croutons of fried bread |
|                                    | Sprigs of parsley       |

Wash and dry the tomatoes. Cut a small round from each tomato at the end opposite the stalk, leaving it attached at one side. Scoop out the centre with a teaspoon handle. Sauté the ham and onion in the butter for about 3 minutes. Add the crumbs, parsley, seasonings, and pulp removed from the tomatoes. Fill the tomatoes with this mixture and pile neatly on top. Place the lids over and bake in a moderately hot oven (400° F.) for about 15 minutes. The cucumber garnish can be cooked in the same dish. Wipe the piece of cucumber and cut down in four strips. Wrap these in a buttered paper and bake for 15 minutes. Place the tomatoes on the croutons of fried bread and garnish with parsley and the cucumber.

## Green Salad

- |                               |                       |
|-------------------------------|-----------------------|
| ‡ lb. raw peas                | 1 teaspoonful chopped |
| 1 teaspoonful chopped chives  | mint                  |
| 1 teaspoonful chopped parsley | Mayonnaise            |
|                               | 1 lettuce             |
|                               | 1 bunch watercress    |

Mix the peas, chives, mint, and parsley with the mayonnaise. Arrange in a dish with lettuce leaves round the edge and garnish with sprigs of watercress.

## Summer Salad Bowl

- |                          |   |
|--------------------------|---|
| 2 lettuces               | A few spring onions                       |
| 1 cupful green peas      | 1 teaspoonful chopped                     |
| 1 cupful cooked potatoes | garden herbs (chervil, parsley, tarragon) |
| 2-3 tomatoes             | French dressing                           |

Wash the lettuces carefully, reserving the best leaves for garnishing. Break up the remainder and combine with the peas, diced potatoes, sliced tomatoes, and thinly sliced spring onions. Add the chopped herbs to the French dressing and toss the salad ingredients lightly in it. Line the salad bowl with lettuce-leaves and pile the salad in the centre.

## Russian Salad

- |   |                               |
|---|-------------------------------|
| Cooked mixed vegetables, such as carrots, peas, beans, potatoes, asparagus, turnips, etc. | 2-3 tablespoonfuls mayonnaise |
| A few capers, nasturtium seeds, or pickled cucumber                                       | Freshly chopped parsley       |
|   | Watercress                    |
|   | Aspic jelly, if available     |

Cut the vegetables into small dice or rounds and chop the capers, nasturtium seeds, or cucumber. Mix all the ingredients with mayonnaise and serve in small individual dishes or in a large bowl, garnished with freshly chopped parsley and sprigs of watercress. If some aspic jelly is available, cut it into fancy shapes, or chop and use for garnishing.

## Stuffed Tomato Salad

- |                       |                 |
|-----------------------|-----------------|
| 6 even-sized tomatoes | Spring onions   |
| Cooked peas           | Salad cream     |
| Diced cooked carrot   | Chopped parsley |
| Diced cooked potato   | Lettuce         |

Cut the top off each tomato and scoop out the inside. Mix the cooked peas, carrot, potato, and finely chopped spring onion, and add sufficient salad cream to make the mixture bind together well. Fill the tomato cases with this vegetable salad, and sprinkle a little chopped parsley over the top of each. Place the tomatoes on a glass dish with some small pieces of lettuce. This salad makes a colourful accompaniment to cold meat or sliced meat loaf. If preferred, a potato-salad mixture instead of the mixed vegetables may be used to fill the tomatoes.

## Orange and Watercress Salad

- |                           |                     |
|---------------------------|---------------------|
| 2-3 oranges               | 1 teaspoonful lemon |
| 1 tablespoonful salad oil | juice               |
| 1 dessertspoonful vinegar | Watercress          |
|                           | Small cress         |

Peel the oranges and remove all the white pith; cut them crossways into slices and remove any pips. Mix the salad oil, vinegar, and lemon juice, pour over the oranges, and allow them to stand for a short time before serving. Garnish with watercress and small cress. This salad makes a good accompaniment for hot or cold game dishes; grapefruit may be substituted for the orange, if preferred.

## SAUCES AND STUFFING

Sauces are used to flavour, coat, or accompany various dishes, and are in some cases mixed in with the ingredients to bind them together. The foundation of most sauces in which flour is the thickening agent is the "roux" formed by cooking butter and flour together. The butter is melted and the flour added, and the two stirred together. The liquid is added slowly with constant stirring. The sauce must be stirred and boiled for at least five minutes to ensure thorough cooking of the starch grains. For a brown sauce dripping can be cooked until it is a golden brown. Milk, milk and water, or white stock are used for white sauces; vegetable or bone stock for brown sauces, and fish stock for fish sauces. Careful cooking and constant stirring are essential for a good sauce, and if an exceptionally glossy finish is required, the sauce should be strained through a tammy cloth, which is made from a special woolen material of fine texture. Flavouring or colouring should be added just before serving.

## SAVOURY SAUCES

## Basic White Sauce

- |                           |                                |
|---------------------------|--------------------------------|
| 1 oz. butter or margarine | ‡ pint milk, or milk and stock |
| 1 oz. flour               | Salt and pepper                |

Melt the butter, stir in the flour, then add the liquid gradually, stirring well during the process. Continue to stir until the liquid comes to the boil, then boil slowly for 3-5 minutes. Add seasonings.

*Note:* For a coating sauce, use only ‡ pint milk or stock.

## Sauces Made from the Basic Recipe

**Parsley Sauce.**—Add 2 tablespoonfuls freshly chopped parsley and a dash of vinegar just before serving.

**Anchovy Sauce.**—Add anchovy essence to taste (1-2 teaspoonfuls), omitting salt when seasoning. Add also a drop of pink colouring.

**Cheese Sauce.**—Add 2 oz. finely grated cheese, and season with mustard and a few drops of vinegar or piquant sauce.

**Caper Sauce.**—Add 1 dessertspoonful of chopped capers or pickled nasturtium seeds and 1 teaspoonful vinegar.

**Mushroom Sauce.**—Add 1 oz. of chopped mushrooms to the sauce and cook for 2-3 minutes before serving. If preferred, the sliced mushrooms can be sautéed in the fat when the sauce is being made.

**Egg Sauce.**—To ‡ pint white sauce add 1-2 hard-boiled eggs, finely chopped.

**Onion Sauce.**—To ‡ pint white sauce (made if possible partly from the vegetable liquor) add 1-2 chopped cooked onions.

## Bechamel Sauce

- |                   |                        |
|-------------------|------------------------|
| 1 pint milk       | 8 peppercorns          |
| 1 shallot         | 2 oz. flour            |
| Piece of carrot   | 2 oz. butter           |
| 1 stalk of celery | ‡ pint cream, if liked |
| 1 clove of garlic | Salt and pepper        |
| 1 bay leaf        |                        |

Put the milk, vegetables, garlic, bay leaf, and peppercorns into a pan and bring slowly to the boil. Cover and stand near the fire for a few minutes to infuse. Strain and make a sauce, using the flour and butter in the usual way. When cooked allow to cool slightly, then add the cream and seasoning, reheat, but do not boil.

## Brown Sauce

- |                             |                          |
|-----------------------------|--------------------------|
| 1 small onion               | 1 oz. flour              |
| 1 small carrot              | Seasoning                |
| 1 oz. butter or dripping    | Gravy browning, meat     |
| ‡ pint brown stock or water | cube, or glaze, if liked |

Chop the onion and carrot into small pieces, melt the butter, and fry the vegetables until deep brown



in colour, but do not allow them to burn. Stir in the flour, blend with the vegetables, and continue to cook until the flour is also golden brown. Gradually add the stock, bring to the boil, stirring meanwhile, and simmer gently for 15-20 minutes, and then strain. Season to taste. If the sauce is not deep enough in colour a few drops of gravy browning may be added, or a meat cube or glaze may be used to improve the flavour.

### Espagnole Sauce

2 oz. butter or dripping	1 pint brown stock
2 oz. bacon	1 dessertspoonful mushroom ketchup
1 shallot	A bouquet garni
1 large tomato	Pepper and salt
1 small carrot	
2 oz. flour	

Melt the butter and fry the chopped bacon in it, then fry the sliced vegetables until lightly browned. Add the flour and fry all to a rich golden brown. Add the rest of the ingredients and simmer for 40 minutes, then skim and strain. Reheat the sauce and season it.

Note: A tablespoonful or so of sherry may be added to the sauce just before serving.

### Curry Sauce

½ oz. cooking-fat	½ pint stock
1 tablespoonful chopped onion	Salt
1 tablespoonful chopped apple	Lemon juice
1 teaspoonful curry powder	1 dessertspoonful chutney
½ oz. flour	1 teaspoonful table sauce
	1 tablespoonful sultanas

Melt the fat and fry the onion lightly, then the apple, and finally the curry powder and flour. Add the stock gradually and season with salt, boil and skim, then add the lemon juice, chutney, table sauce, and sultanas. Put on the lid and simmer for about 1 hour, stirring frequently. Strain if required.

### Mustard Sauce

1 oz. margarine	½ pint water
½ oz. flour	2 tablespoonfuls vinegar
½ teaspoonful dry mustard	Pepper and salt

Melt the fat and fry the flour and mustard lightly. Add the water gradually, and then the vinegar and seasoning. Stir and boil gently for 3-5 minutes.

### Hollandaise Sauce

2 tablespoonfuls water or stock	2 oz. margarine
1 dessertspoonful tarragon vinegar	Salt and pepper
2 egg yolks	1 dessertspoonful lemon juice

Put the water or stock, vinegar, and yolks of eggs into a basin and stand the basin in a saucepan of hot water. Whisk over heat until the sauce thickens, then draw the saucepan to one side and add the fat in small pieces, stirring well. Season to taste, and add the lemon juice. The sauce must not boil, or it will curdle.

### Mock Tartare Sauce

Small pieces of carrot, turnip, onion, and celery	1 oz. margarine
A blade of mace	1 oz. flour
2 cloves	1 egg
1 bay leaf	½ a lemon
6 peppercorns	1 teaspoonful chopped parsley
½ pint milk or milk and water	½ tablespoonful chopped pickles
	Salt and pepper

Allow the vegetables and herbs to infuse slowly in the liquid for 20-30 minutes, then strain. Melt the margarine, stir in the flour, and fry for a minute or two without browning. Beat in the flavoured milk, adding it a little at a time to prevent lumps forming, then bring to the boil, stirring well. Allow to cool slightly, then beat in the egg and cook for a further few minutes. Add the lemon juice, the chopped parsley, chopped pickles, and seasoning to taste.

### Robert Sauce

2 oz. butter	A few peppercorns
2 onions	Salt and pepper
1 tablespoonful flour	Mustard
½ pint brown stock	Vinegar
Bunch of herbs	Lemon juice
Bay leaf	

Melt the butter and fry the sliced onions in it over gentle heat until golden brown—about 10 minutes. Stir in the flour, to form a roux, then gradually add the stock and bring to the boil, stirring. Add the herbs, bay leaf, and peppercorns tied in muslin and season with salt. Cover and simmer for about ½ hour, then remove the bag of herbs and stir in the mustard, vinegar, and lemon juice to taste, with more salt and pepper if necessary. Serve with goose, pork, veal, or steaks.

### Tomato Sauce

1 small onion	½ pint stock
A piece of carrot	1 oz. flour
½ lb. tomatoes	Seasoning
1 bay leaf	½ oz. dripping or margarine
A little milk	
A bunch of herbs	

Prepare the vegetables, and cut into small pieces. Place with the tomatoes and the fat in a strong pan and heat gently, stirring, until the fat is absorbed. Add the herbs and the stock and simmer for about ½ hour, then rub through a fine sieve. Add the flour blended to a smooth cream with a little milk, season and cook the sauce for a further 2-3 minutes, stirring.

### Apple Sauce

2 lb. apples
1-2 oz. butter or margarine
Sugar, if required
Lemon juice, if required.

Choose good cooking apples, peel and slice with a stainless-steel knife, then cook gently to a pulp in a covered pan. Beat with a wooden spoon until smooth, and add the butter. Sugar may be added if liked, but a tart apple sauce is just the right accompaniment to a goose or duck. On the other hand, if the apples are sweet, a little lemon juice may be added.

### Bread Sauce

½ pint milk or milk and vegetable stock mixed	A small blade of mace
1 teaspoonful chopped onion	2 oz. breadcrumbs (or stale bread soaked and squeezed)
1 clove	Salt and pepper
	A knob of margarine

Put the liquid into a pan with the onion, clove, and mace, and allow to infuse for about ½ hour. Strain and add the breadcrumbs, seasoning, and the knob of margarine. Leave in a very warm place at the side of the stove for 15 minutes, and make very hot before serving.

### Horseradish Cream

1-2 tablespoonfuls grated horseradish	Cream or evaporated milk
1 tablespoon vinegar	Salt, pepper, and sugar

Soak the grated horseradish in the vinegar for 10-15 minutes. Stir in enough cream or evaporated milk to give the desired consistency, and season with salt, pepper, and sugar.

### Maitre D'Hôtel Butter

1 oz. butter	1 teaspoonful lemon juice
1 teaspoonful finely chopped parsley	Salt and pepper

Mix all the ingredients thoroughly into a creamy paste, using a fork or wooden spoon. Shape into pats and make very cold. Serve with grills, etc.

### Mint Sauce

2 tablespoonfuls chopped mint	1 tablespoonful boiling water
1 teaspoonful sugar	1½ tablespoonfuls vinegar

Strip the mint from the stalks and chop it finely. Put the sugar and boiling water in a sauce-boat and stir until dissolved. Add the mint and stir in vinegar to taste.

## Cranberry Sauce

Pick and wash 1 lb. cranberries and put them into a stewpan with 1 teacupful of water. Stew until reduced to a pulp, bruising them well with the back of a wooden spoon. Then add  $\frac{1}{2}$  lb. sugar, and a little port wine, if desired.

## SWEET SAUCES

## Basic White Sweet Sauce

- |                                |                          |
|--------------------------------|--------------------------|
| $\frac{1}{2}$ -1 oz. margarine | 1 teaspoonful sugar      |
| $\frac{1}{2}$ -1 oz. flour     | Vanilla essence or other |
| $\frac{1}{2}$ pint milk        | flavouring               |

Melt the margarine, stir in the flour to form a roux, and cook for 1-2 minutes without browning. Add the milk a little at a time, stirring well to keep the mixture smooth. Bring to the boil, stirring all the time, and cook for 2-3 minutes, beating the sauce to make it smooth and glossy. Sweeten and flavour to taste and use as required.

## Sweet Sauces Made from the Basic Recipe

**Chocolate Sauce.**—Add 1 tablespoonful of cocoa and a few drops of vanilla essence. Sweetened chocolate powder may be used in place of cocoa, in which case sugar will not be needed.

**Lemon Sauce.**—To the cooked sauce add lemon juice or substitute and a drop or so of lemon essence. A little extra sugar may be needed in this sauce.

**Orange Sauce.**—Use finely grated orange rind to flavour the sauce.

## Butterscotch Sauce

- |                                  |                             |
|----------------------------------|-----------------------------|
| 3-4 oz. granulated sugar         | $\frac{1}{2}$ oz. margarine |
| $\frac{1}{2}$ pint boiling water | 2 teaspoonfuls flour        |
|                                  | $\frac{1}{2}$ pint milk     |

Put the sugar into a thick saucepan and heat gently until it caramelises; shake the pan during cooking to prevent uneven browning, but do not stir. When quite liquid and of a good brown colour, remove from the heat, cool slightly, and add the boiling water by degrees. Return to the heat and simmer until caramel is dissolved. Make a white sauce with the other ingredients and stir in the dissolved caramel. Boil for a further 2 minutes and serve hot or cold.

## Custard Sauce

- |                         |                     |
|-------------------------|---------------------|
| 2 teaspoonfuls flour    | 1 teaspoonful sugar |
| $\frac{1}{2}$ pint milk | Vanilla essence     |
| 1 egg                   |                     |

Blend the flour to a smooth cream with a little milk. Heat the remainder, and when hot add to the blended flour, stirring. Cool slightly, then add the egg and heat gently to cook the egg without curdling. Add sugar and vanilla essence to taste. If the sauce is to be served cold, cover while cooling to prevent skin from forming, and heat occasionally.

## Chocolate Sauce

- |   |                          |
|---|--------------------------|
| $\frac{1}{2}$ oz. unsweetened chocolate | Pinch of salt            |
| $\frac{1}{2}$ pint water                | $\frac{1}{2}$ oz. butter |
| 1 teaspoonful cornflour                 | 2 oz. sugar              |
|   | Vanilla essence          |

Break up the chocolate, add half of the water, and dissolve over gentle heat. Mix the cornflour and salt to a smooth cream with a little of the remaining cold water, heat the rest and, when it is boiling, pour it on to the blended cornflour, stirring. Return it to the pan and bring to the boil, stirring. Add the dissolved chocolate, butter, and sugar, and cook for 4-5 minutes, stirring well. Lastly, add a few drops of vanilla essence.

## Jam Sauce

- |  |                         |
|--|-------------------------|
| $\frac{1}{2}$ teaspoonful cornflour or arrowroot | 2 tablespoonfuls jam    |
| $\frac{1}{2}$ pint water                         | A little lemon juice    |
|  | Colouring, if necessary |

Blend the cornflour or arrowroot with a little water. Add the rest of the water, bring to the boil, and allow to cook for about 2 minutes. Stir in the jam, and add the lemon juice, and tint, if necessary, with a little colouring. Strain before serving.

## Syrup Sauce

- |                        |                               |
|------------------------|-------------------------------|
| 4 tablespoonfuls water | 2 tablespoonfuls golden syrup |
| Juice of half lemon    |                               |

Mix all the ingredients together and boil rapidly for a few minutes.

## Marshmallow Sauce

- |                        |                              |
|------------------------|------------------------------|
| 4 oz. granulated sugar | Few drops of vanilla essence |
| 3 tablespoonfuls water | Colouring                    |
| 8 marshmallows         |                              |
| 1 egg white            |                              |

Dissolve the sugar in the water, then boil together for about 15 minutes. Add the marshmallows, cut into small pieces with scissors. Beat the egg white very stiffly, then gradually fold in the marshmallow mixture. Add vanilla and enough carmine or cochineal to tint pale pink. Serve with ice-cream.

*Note:* Peppermint may be used instead of vanilla to flavour; in this case colour the sauce pale green.

## Melba Sauce

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| 4 tablespoonfuls red-currant jelly | 2 teaspoonfuls arrowroot or cornflour |
| 3 oz. sugar                        | 1 tablespoonful cold water            |
| $\frac{1}{2}$ pint raspberry purée |                                       |

Mix together the jelly and sugar and the raspberry purée, and heat until boiling. Blend the arrowroot or cornflour with the cold water and add to the raspberry mixture. Continue cooking until the mixture becomes thick and clear, stirring all the time with a wooden spoon. Strain and cool.

*Note:* This is excellent to serve with peach melba and other sundae.

## Brandy Butter or Hard Sauce

- |                    |                          |
|--------------------|--------------------------|
| 2 oz. butter       | 1 dessertspoonful brandy |
| 2 oz. castor sugar |                          |

Beat the butter and sugar to a white cream, then gradually beat in the brandy. Leave in a cool place until required; serve piled up in a fancy dish.

## STUFFINGS

## Sage-and-onion Stuffing

- |                             |  |
|-----------------------------|--|
| 2 large onions              | 4-5 sage leaves or 2 teaspoonfuls dried sage |
| Boiling water               | $\frac{1}{2}$ teaspoonful salt               |
| $\frac{1}{2}$ -1 oz. butter | $\frac{1}{2}$ teaspoonful pepper             |
| 4 oz. breadcrumbs           |  |

Put the prepared onions into cold water, bring to the boil and cook for 5 minutes, then strain off the water, cover with fresh boiling water, and cook until tender. Drain well and chop finely, then add the butter, crumbs, chopped sage, and seasoning, and mix well together. Use for stuffing goose and duck, or to serve with pork.

## Sausage Stuffing

- |                               |                                       |
|-------------------------------|---------------------------------------|
| 1 large onion                 | $\frac{1}{2}$ teaspoonful mixed herbs |
| 1 lb. pork sausage meat       | 4 tablespoonfuls fresh breadcrumbs    |
| 1 oz. dripping                | Seasoning                             |
| 1 teaspoonful chopped parsley |                                       |

Mix the chopped onion and the sausage meat, and sauté them in the dripping for a few minutes. Mix in the other ingredients and use as required.

## Chestnut Stuffing

- |                                  |                               |
|----------------------------------|-------------------------------|
| 1 lb. chestnuts                  | A little grated lemon rind    |
| $\frac{1}{2}$ pint stock or milk | Salt and pepper               |
| 2 oz. ham or bacon               | 1 teaspoonful chopped parsley |
| 1 teaspoonful sugar              | 1 egg                         |
| 1 oz. margarine                  |                               |

Make a slit in both ends of the nuts and boil in water for 10 minutes, then skin them. Put them into a pan with stock or milk to cover, and simmer gently until tender and mash or sieve them. Pound with the finely chopped ham or bacon, add the crumbs, parsley, melted fat, lemon rind, season with salt and pepper, add sugar, and bind with the beaten egg. Use to stuff turkey, chicken, etc.



## Veal Force meat

2 oz. suet	‡ teaspoonful mixed
1-2 oz. ham or bacon	herbs
4 oz. breadcrumbs	Rind of ‡ lemon
2 teaspoonfuls parsley	Salt and pepper
	Beaten egg

Chop the suet and the ham or bacon finely and mix with the crumbs; and chopped parsley, herbs, and grated lemon rind. Season, and add enough beaten egg to bind. Use for stuffing veal, chicken, rabbit, hearts, etc., or as forcemeat balls.

## Oyster Stuffing

18 sauce oysters	A pinch of mace
6 oz. breadcrumbs	Salt and Cayenne
1 dessertspoonful parsley	2 oz. suet or 1‡ oz. butter
Grated ‡ lemon rind	1 egg

Beard and cut up the oysters, simmer the beards in the oyster liquor to extract the flavour, then strain. Mix dry ingredients and fat, add the oysters, the lightly beaten egg, and oyster liquor to moisten. Use for stuffing the breast of a boiled turkey. Small tinned oysters may be used for this stuffing.

## Fish Force meat

3 oz. breadcrumbs	2 teaspoonfuls chopped
1 oz. chopped suet or melted margarine	parsley
Grated rind of ‡ lemon	Salt and pepper
‡ teaspoonful dried herbs	Egg or milk

Mix all the ingredients together, adding sufficient beaten egg or milk to bind.

## PASTRIES

A few basic rules should be followed for successful pastry making. Working conditions must be cool, and a hot oven is essential. Handle the pastry as little as possible, and measure the ingredients accurately. Avoid stretching the pastry during the rolling. The richer puff and flaky pastries are improved if left in a cool place between rollings, and again before baking. The richer the pastry, the hotter the oven must be.

## Suet Crust

8 oz. flour
1 teaspoonful baking-powder
‡ teaspoonful salt
3-4 oz. chopped or prepared suet
Cold water to mix

Mix flour, baking-powder, salt, and suet together, add cold water to give a light elastic consistency, and handle as little as possible. Turn on to a floured board, knead very lightly, and use as required.

## Dumplings

Roll the dough of suet-crust pastry into balls and add to boiling soups, stews, etc., allowing 20-25 minutes, according to size.

## Syrup Layer Pudding

8 oz. suet crust	1 oz. breadcrumbs
1 lemon	4-6 oz. golden syrup

Make the pastry, adding the grated lemon rind to the flour. Mix the breadcrumbs and lemon juice with the syrup. Divide the pastry into six pieces, graduating in size. Put 1 tablespoonful of the syrup mixture into the bottom of a greased basin. Roll the smallest piece of pastry into a round and place on top of the syrup. Cover with a tablespoonful of syrup and then the next largest piece of pastry, rolled to a round, repeating till the pastry is used up and the basin two-thirds full. Cover with greased paper and steam 2½-3 hours. Turn out on to a hot dish and serve at once. Black treacle may be used in place of syrup, or a mixture of both.

## Short-crust Pastry

8 oz. flour	4 oz. fat
A pinch of salt	Cold water

Sieve the flour and salt into a basin. Add the fat, cover it with flour, and then rub the two together with the tops of the fingers until the mixture resembles breadcrumbs. Lift up the flour and fat in the hands while doing this and

let the cold air mix with them. Then make a hollow in the centre, and add cold water very gradually with the left hand while continuing to mix with the right. Add just sufficient water to make a stiff dough; if the pastry is made too moist, it will not be short. Turn the pastry on to a floured board and knead it lightly with the hand until it is free from cracks; then roll it out to the thickness required.

## Cornish Pasties

6 oz. raw potato	Salt and pepper
‡ lb. lean raw steak or mutton	2-3 tablespoonfuls cold water
1 tablespoonful chopped onion	1 lb. short-crust pastry
	Yolk of egg or milk

Wash and peel the potatoes and cut into dice. Mix with the meat (cut up very small or minced), the finely chopped or minced onion, seasoning, and water. Roll out the pastry thinly and cut into rounds about the size of a saucer. Wet the edges of the pastry and put a tablespoonful of the meat mixture on each round. Fold over, press the edges of the pastry well together, and flute with the fingers. Stand the pasties upright on a baking-sheet, brush over with a little beaten egg or milk and bake in a hot oven (425° F.) till the pastry begins to brown, then reduce to a moderate heat (350° F.) and continue cooking until the meat is tender—about 1 hour in all.

## Apple Pie

1‡ lb. apples	‡ lb. short-crust pastry
2 oz. sugar	Milk or egg white to glaze
Cold water	

Peel, core, and slice the apples. Half-fill a dish with fruit, then add sugar, the rest of the fruit, and water to cover the bottom of the dish. Roll out the pastry 3 in. wider and longer than the pie-dish. Cut off strips 1 in. wide, moisten the edge of the dish with water, and lay the pastry strips on the edge of the dish; press in place. Moisten the pastry strip with water. Lift the piece of pastry on the rolling-pin and lay it over the pie-dish, taking care not to stretch it. Press the edges in place and trim them with a sharp knife. Decorate the edges of the pie and brush over with milk or white of egg. Bake near the top of a hot oven (425-450° F.) for 20 minutes, then remove to a lower part of the oven and continue cooking until the fruit is cooked.

## Bakewell Tart

4 oz. short-crust pastry	1 egg
Raspberry jam	2 oz. ground almonds
2 oz. butter or margarine	1-2 drops almond essence
2 oz. sugar	Icing sugar

Line a flan ring or sandwich tin with the pastry and spread with a layer of raspberry jam. Beat the fat and sugar together until soft and creamy. Add the beaten egg by degrees, beating very thoroughly. Stir in the ground almonds and a drop or two of almond essence and spread over the jam in the pastry case. Bake in a moderately hot oven (400° F.) for 30-40 minutes, until the tart is well risen and brown and the filling is set. Dredge with icing sugar.

## Custard Tart

4 oz. short-crust pastry	‡ pint milk (short measure)
1 egg	
‡ oz. sugar	Nutmeg

Line a fireproof baking-plate with the pastry. Beat the egg and sugar together and pour on the hot milk, stirring meanwhile. Strain into the prepared pastry case and grate a little nutmeg over the mixture. Bake in a hot oven (425° F.) for about 10 minutes, until the pastry is set, and then reduce the heat and continue to bake in a moderate oven (375° F.) until the custard is set.

## Lemon Meringue Pie

4 oz. short-crust pastry	1‡ oz. sugar
1 level tablespoonful cornflour	1 lemon or 2 tablespoonfuls
4 tablespoonfuls cold water	squash
	1 egg

Line a flan-ring or pie-plate with the pastry and decorate. Prick the bottom and bake "blind."

Meanwhile, blend the cornflour with the water, add the sugar, lemon juice or squash, and grated lemon rind. Bring to the boil in a small saucepan, stirring well, and boil for 2 minutes. Allow to cool slightly, then stir in the egg-yolk and pour into the pastry case. Whip the white of egg very stiffly, fold in a little sugar, and pile on top. Bake in a moderate oven (375° F.) for a few minutes, until a light golden-brown.

## Syrup Tart

6 oz. short-crust pastry    2 oz. breadcrumbs  
3-4 tablespoonfuls    Juice of  $\frac{1}{2}$  a lemon  
golden syrup

Line a sandwich tin or a fireproof plate with the pastry, prick the bottom and place breadcrusts on it to prevent the pastry rising. Bake in a hot oven (450° F.) for about 15 minutes. Remove from the oven, pour in half the syrup, sprinkle on the breadcrumbs, add the lemon juice and the rest of the syrup. Decorate with strips of pastry and bake in a moderately hot oven (400° F.) for 20 minutes.

## Flaky Pastry

8 oz. flour    A good squeeze of  
 $\frac{1}{2}$  teaspoonful salt    lemon juice  
3 oz. lard    Cold water to mix  
3 oz. butter or mar-  
garine

Sieve the flour and salt into a basin. Divide the fat into four portions, using half-lard and half-butter in each portion. Rub one portion of fat into the flour until it is as fine as breadcrumbs and mix to a soft dough, using lemon juice and water. Knead lightly and roll out into a long strip. Put one-third of the remaining fat in small flakes over two-thirds of the pastry, taking care not to put it too close to the edges. Fold the pastry in three, the plain part being folded over the fat. Seal the edges of the pastry with a rolling-pin and half-turn it to bring the folded edges to the sides. Press firmly and again roll out into a long strip. Repeat this process twice, using up the remaining two-thirds of fat. Roll out and fold once more, and allow the pastry to stand in a cool place until required.

## Sausage Rolls

Roll some flaky (or rough puff) pastry rather thinly and cut this into strips about  $3\frac{1}{2}$  by 5 in. Divide a raw sausage into four or six pieces and roll the pieces to the required shape. Place a piece of sausage across one end of each strip of pastry, damp the edges, fold the rest of the pastry over, seal the edges neatly, and glaze if required. Bake in a hot oven (450° F.) for 20-30 minutes.

If larger rolls are needed, the sausages may be semi-cooked (prick and bake), left till cold, and then placed whole on the pastry. Brush the tops with beaten egg and bake as above.

## Prawn Patties

8 oz. flaky pastry     $\frac{1}{2}$ - $\frac{1}{2}$  pint white sauce  
Egg to glaze    Parsley  
 $\frac{1}{2}$  pint picked prawns    Watercress

Roll out the pastry to  $\frac{1}{4}$  in. in thickness and cut it out with a fluted pastry cutter. Using a smaller cutter, mark the centre of each round, cutting about half-way through the pastry. Glaze the top with a little beaten egg and bake in a hot oven (450-475° F.) for 15-20 minutes, until well risen and golden-brown. Carefully take out the round "lids." Mix the prawns with enough well-flavoured white sauce to bind them together, and fill the patties with this mixture. Replace the "lids" if desired. Garnish the patties with parsley and watercress, and serve them either hot or cold, with a few large prawns arranged to decorate the dish.

## Eccles Cakes

3 oz. flaky (or rough    1 oz. chopped candied  
puff) pastry    peel  
4 oz. cleaned currants    1 oz. sugar  
Nutmeg and spice to    1 oz. butter  
taste    White of egg to glaze  
Sugar to dredge

Roll the paste to  $\frac{1}{4}$  in. thick and cut into rounds about 4" in diameter. Mix the other ingredients and place a spoonful in the centre of each round.

Damp the edges and draw them together, forming a ball-like shape. Turn the smooth side uppermost, flatten into a round, and cut lightly, marking the top into squares, so that the currants show. Brush with white of egg, sprinkle with sugar, and bake in a hot oven (450° F.) for about 20 minutes.

## Mince Pies

12 oz. flaky pastry    Beaten egg  
Mince-meat    Icing sugar

Divide the pastry in half and roll it out thinly. Cut rounds of pastry large enough to fit some patty tins and put about 2 teaspoonfuls of mince-meat in each. Roll out the rest of the pastry and cut out slightly smaller rounds for the lids. Damp the edges of the pastry lining the patty tins and press on the tops. Flake up the edges with a knife, and snip the top of each, using scissors. Brush the top of each mince pie with beaten egg, and bake in a hot oven (450-475° F.) for 25-30 minutes. Dredge the tops with icing sugar, and serve the pies hot or cold, as preferred. Short-crust, rough puff, or puff pastry may also be used, and fruits, such as sliced apples or raspberries, make a variation in filling.

## Rough Puff Pastry

8 oz. flour    2-3 oz. lard  
 $\frac{1}{2}$  teaspoonful salt     $\frac{1}{2}$  teaspoonful lemon  
2-3 oz. butter or    juice  
margarine    Cold water

Sieve the dry ingredients into a basin, and add the fats, cut into pieces the size of a small nut. Add the lemon juice, mix into a dough with cold water, and turn on to a floured board. Roll out into a long, narrow strip, always rolling with a forward movement and not too heavily. Fold in three, turn the pastry half-round, bring the join to the right-hand side, seal the edges, and roll again. Repeat this until the pastry has had four turns. (A roll and a fold is called "a turn.") Cool the pastry thoroughly before using; if wrapped in a floured cloth or greased paper it can be kept overnight.

This pastry is useful for meat pies and savoury pastries of all kinds.

## Puff Pastry

8 oz. butter    A squeeze of lemon  
8 oz. flour    juice  
Salt    Cold water

This pastry, when well made, consists of innumerable thin layers which melt in the mouth, and in both appearance and taste it is superior to any other type. Its characteristic lightness depends on the amount of cold air enclosed by the special method of making, and the expansion of that air during the baking.

Butter gives the best results, but a mixture of two-thirds margarine and one-third lard may be used. If butter is used, it should first be washed, to remove all salt and butter-milk. Put it into a basin under a tap of cold running water, heat the hands in hot water and chill them in cold, then squeeze the butter in the water until of a waxy consistency and easy to handle. Then dry it in a lightly floured cloth and pat it until every drop of water has been expelled.

Sieve the flour into a basin, add a pinch of salt, then take a piece of the butter about the size of a walnut and rub it into the flour with the fingertips. Make a well in the centre, put in a squeeze of lemon juice, which helps to lighten the pastry, and add sufficient cold water to form a dough. The aim should be to get both the dough and the butter of the same consistency.

Form the dough into one lump and turn it out on a lightly floured board. Knead vigorously for about 10 minutes, until it is smooth and velvety and no longer sticks to the fingers. When it is smooth and elastic, take the rolling-pin and roll it out into a thin square or round. Shape the remainder of the butter into a flat cake and place it in the centre. Fold over the sides of the dough so as to enclose the butter completely, at the same time leaving room for the spread of the butter when rolling. Pat down with the rolling-pin and roll out into a long narrow strip. Now fold the pastry in three, folding the first flap from you and the second towards you. Then turn the



pastry half-way round, bringing the folds to the right-hand side.

Press the edges firmly with the rolling-pin, to enclose all the air possible; this finishes what is called one "turn" in pastry-making. Puff pastry requires seven "turns" or rollings in all, but as too much rolling at one time would make it too soft, it has now to be put aside in a cool place for at least  $\frac{1}{2}$  hour, covered with greaseproof paper or with muslin wrung out in cold water. Bring it out again on to the board and give it two turns in exactly the same way as the first one. Again lay it aside, and repeat this twice more, until the pastry has had its seven turns in all.

The baking of puff pastry requires as much care and judgment as the making. The secret of success lies in having the pastry cold and the oven hot. The temperature should be from 450° to 500° F. to begin with, and when the pastry has risen its full height, the heat may be reduced slightly to allow it to finish cooking.

Puff pastry is used for any dish requiring a very light pastry, such as *vol-au-vent* patties, small French pastries, mince pies, etc.

#### Chicken Vol-au-vent

8 oz. puff pastry	$\frac{1}{2}$ pint white coating
Beaten egg	sauce
6 oz. diced cooked chicken	2 oz. mushrooms
	Cress and parsley

Roll out the pastry to about 1 in. in thickness and cut into a round, using a large cutter or a saucer. Using a smaller cutter or a knife, mark another circle inside, to form a lid. Make some decorative cuts around the top edge of the pastry and brush it with a little egg. Bake in a hot oven (475° F.) for 30–35 minutes, covering the top of the pastry if it tends to become too brown. When it is cooked, remove the lid and take out any soft dough inside. Heat the diced chicken in the white sauce and fill the *vol-au-vent* case. Serve garnished with grilled mushrooms, and with cress and parsley.

#### Jam Puffs

Puff pastry	Egg white
Jam	Castor sugar

Roll the pastry thinly and cut it into squares. Put a little jam on one side, fold the pastry over to form a triangle and seal the edges firmly. Brush over with egg white and sprinkle with sugar. Bake in a hot oven (475° F.) for 10–15 minutes.

#### Vanilla Slices

6 oz. puff (or flaky) pastry	Vanilla essence
Mock cream, cream, or thick custard	Raspberry or strawberry jam
	White glacé icing

Roll the pastry  $\frac{1}{2}$  in. thick and form into a strip 4 in. wide. Cut into oblong pieces about 1 $\frac{1}{2}$  in. wide and bake in a hot oven (475° F.) for 10 minutes. Allow the slices to become quite cold, then sandwich two or three of them together with jam and the mock cream, cream, or thick custard, which has been flavoured with vanilla essence. Top the slices with a little white glacé icing, made according to directions. Serve these pastries as a cold dessert, or for tea.

#### Choux Pastry

$\frac{1}{2}$ pint water	2 $\frac{1}{2}$ oz. flour
1 oz. butter or margarine	A pinch of salt
	2 eggs

Place the water and fat in a saucepan and bring to the boil. Add the flour and salt to the mixture and beat well over a low heat until it forms a ball. Cool slightly and add the eggs a little at a time, beating well. Using a forcing-bag, force into éclair shapes on to a greased tin. Bake in a moderately hot oven (400° F.) for about 30–40 minutes. Allow to cool slightly, slit down one side, and remove any soft part from the inside. Fill with sweet or savoury filling.

#### Chocolate Eclairs

Synthetic or fresh cream or thick custard	Choux pastry
	Chocolate glacé icing

Make the choux paste, and put into a large forcing bag fitted with a plain  $\frac{1}{2}$ - or  $\frac{1}{4}$ -in. nozzle. Pipe fingers of paste about 3 $\frac{1}{2}$ –4 in. long on to a

greased baking sheet, keeping the éclairs very even in size. Bake in a moderately hot oven (400° F.) for about 30–40 minutes, according to size, until the éclairs are well risen, golden-brown, and very light in texture. Remove them from the tin, slit each down the side to allow the steam to escape, and put on a rack to cool. Fill them with whipped cream, mock cream, or a thick sweet custard, and coat the top of each with a little chocolate glacé icing.

#### Cream Buns

Sweetened cream, or thick custard	Choux pastry
	Icing sugar or chocolate sauce

Make the choux paste and put it into a forcing-bag fitted with a plain  $\frac{1}{2}$ - or  $\frac{1}{4}$ -in. nozzle. Pipe the mixture in rounds on to a greased baking-tin, which should be covered with an inverted meat tin, or into a tin which has a tightly fitting lid. Cover, and bake in a moderately hot oven (400° F.) for 45–50 minutes without opening the tin, as this would cause the steam to escape and the buns to collapse. When they are cooked, remove them carefully, slit to allow the steam to escape and leave them on a rack to cool. Fill them with cream or custard and dredge with icing sugar, or serve with a chocolate sauce.

#### Profiteroles

To make these miniature cream buns, force small balls of choux pastry through a  $\frac{1}{4}$ -in. plain pipe on to a baking-sheet, and bake in a moderately hot oven (400° F.) till well risen, crisp, and golden-brown (20–25 minutes). Split and cool on a rack. Fill with cream, and ice with glacé icing.

#### Flan Pastry

Flan or biscuit crust is a richer, sweetened type of short-crust pastry, suitable for flans and cold lunch or dinner sweets and for tea-time pastries.

#### Basic Recipe

4 oz. flour	1 teaspoonful sugar
A pinch of salt	1 egg yolk
2 oz. fat	Cold water to mix

Sieve the flour and salt into a bowl and rub in the fat (margarine or a mixture of margarine and white fat) using the finger-tips. Add the sugar and mix with the egg-yolk and sufficient cold water to make a stiff dough. Knead slightly till it is quite smooth, then use as required. To line a flan ring: Place a flan ring on greaseproof paper on a baking-tin. Line the flan ring with pastry, without stretching it. Lightly roll across top of flan to trim edge cleanly. Put greaseproof paper in the flan and fill it with baking-beans. (A sandwich tin may be used instead of a flan ring.)

Flans are frequently baked "blind," but the filling is sometimes added first and cooked with the pastry. Flan pastry should be cooked in a hot oven (425° F.); after about 10–15 minutes remove the beans and lower the temperature to finish cooking the pastry a further 5–10 minutes.

#### Mixed Fruit Flans

Bake some pastry flan cases and fill with fresh, tinned, or lightly stewed fruit, drained free of juice. Make a jelly glaze by dissolving 1 teaspoonful of gelatine (or more, according to type) in  $\frac{1}{2}$  pint of the sweetened fruit juice. When just beginning to set, pour it over the fruit.

#### Balmoral Tartlets

6 oz. flan pastry	$\frac{1}{2}$ oz. cake-crumbs
1 oz. margarine	1 oz. glacé cherries and candied peel, mixed
1 oz. castor sugar	
1 egg	$\frac{1}{2}$ oz. cornflour

Line ten to twelve patty tins with the pastry. Cream fat and sugar until light and white, and beat in egg-yolk. Add the crumbs, shredded cherries, and peel and cornflour. Fold in the stiffly beaten egg-white. Put thin strips of pastry over the top, and bake in a moderate oven (375° F.) for 20 minutes.

#### Hot-water Crust Pastry

8 oz. flour	$\frac{1}{2}$ gill hot water or milk
$\frac{1}{2}$ teaspoonful salt	and water
2 oz. lard	

Sieve the flour and salt into a warm basin. Melt the lard in a small saucepan, add the liquid,

and bring just to boiling point. Pour this mixture into the centre of the flour and mix quickly into a paste. Turn out on to a floured board and knead with the hands until smooth and free from cracks. Form into the shape required as quickly as possible, as this pastry hardens on cooling.

### Raised Veal-and-ham Pie

#### For the Filling

12 oz. veal	Pepper and salt
$\frac{1}{2}$ lb. ham	Cold water
Parsley	2 eggs
1 lemon	Some jelly stock

#### For the Pastry

1 lb. flour	$1\frac{1}{2}$ gills water or milk
1 teaspoonful salt	and water
4 oz. lard	Yolk of egg to glaze

*To Prepare the Filling.*—Remove any skin and bones from the meat, wipe with a damp cloth, and cut it in small pieces. Add to it the ham, cut in small pieces, and season with chopped parsley, a little grated lemon rind and juice, pepper, and salt. Mix well together and moisten with a little cold water. Hard-boil the eggs and cut them into six to eight pieces.

*To Make the Pie-crust.*—Make the pastry as directed above. Cut off about a quarter of the quantity and keep it warm for making the lid and decoration later on. Mould the larger piece with the hands into an oval or round pie-case, making it the desired height and with walls and bottom of an equal thickness. At first the pastry may be inclined to collapse, but as it hardens it will stand up and retain its form. Sometimes a jar or tin is put in the centre to help with the moulding.

*To Finish the Pie.*—Fill the case with the meat mixture and eggs, and shape it up again if necessary. Roll out the remaining piece of pastry, wet the inside edge of the pie-crust and lay on the cover. Press the two edges together, and trim round neatly with a pair of scissors, leaving a ridge about  $\frac{1}{2}$  in. in height standing straight up round the pie. Snip this ridge with the scissors at a distance of  $\frac{1}{2}$  in. apart. Then, with the fingers bend the fringe-like pieces outwards and inwards alternately, to make a pretty edge. Make a good hole in the centre of the pie and brush all over with yolk of egg beaten with a little water. Roll out any remaining scraps of pastry and cut out leaves and narrow strips for decoration. Fix these on to the sides and top of the pie and give them also a coating of egg. Pin or clip a double piece of stiff kitchen paper (greased on the inside) round the outside of the pie, to keep it in position. Lift the pie with a fish-slice or broad knife and place it on a greased baking-tin.

Bake in a hot oven (425° F.) for 15–20 minutes, and then in a cooler one for  $1\frac{1}{2}$  hours or longer, until the meat feels quite tender when tested with a skewer and the pastry is golden-brown. Have ready some well-seasoned stock that will jelly when cold: this may be made from the bones and trimmings of the veal, with a little gelatine added if necessary. Fill up the pie with this by means of a filler, and set it aside until cold. Serve with salad.

### Pork Pie

1 lb. lean pork pieces	Pepper and salt
1 apple	$1\frac{1}{2}$ lb. hot-water crust
A pinch of powdered cloves	Egg yolk
	Stock

Wipe the meat and cut into small pieces. Peel, core, and slice the apple and mix it with the meat, together with the cloves and seasoning. Sprinkle with 1 tablespoonful of water. Wash any bones, place them in a pan, cover with cold water, and allow to simmer gently to make stock for the pie.

Make the pastry: cut off one-quarter of the paste and leave it in a warm place. With the remainder line the raised pie mould, or shape it by hand into an oval or round case, then fill up with the prepared meat mixture. Roll the reserved piece of pastry to form a lid. Make a hole to allow the steam to escape, trim the edges, and decorate as desired. Brush the top with egg yolk, and if a mould is not being used, pin a band of greased paper round the pie. Bake in a moderately hot oven (400° F.) for about 1 hour,

then reduce to a moderate heat (350° F.) and cook until the meat feels tender when tested with a skewer. When the pie is cooked fill it up with well-seasoned stock and serve hot or cold.

An economical raised pie can have sausage meat as its main filling. Add some hard-boiled egg, herbs, and a par-boiled onion, all finely chopped. Season well, and fill the pastry case. Bake in a hot oven (425° F.) for about  $\frac{1}{2}$  hour to cook the pastry, then reduce temperature and cook for a further hour.

### Game Pie

$\frac{1}{2}$ lb. veal and	1 blackcock, or other
$\frac{1}{2}$ lb. pork or	game bird
1 lb. sausage-meat	1 lb. hot-water crust
Seasonings	Beaten egg to glaze
1 rasher bacon	Stock

Cut up the meat and mince it finely, mixing it with the seasonings. Cut the bacon into small pieces and the game into small joints, removing the bones. Line a tin or pie mould with pastry and put a layer of minced meat (or sausage-meat) at the bottom and round the sides. Put the game and bacon in the pie and then a layer of meat or sausage-meat. Cover with pastry and decorate. Glaze the top and bake for about 2 hours in a moderately hot oven (400° F.). Add stock.

### PUDDINGS HOT AND COLD

#### Baked Custard (Basic Recipe)

1 pint milk	1 oz. sugar
2 eggs	Nutmeg

Heat the milk, but do not boil it. Beat the eggs and the sugar, then add the hot milk, stirring. Strain into a greased pie-dish and grate a little nutmeg on the top. Bake in a slow oven (350° F.) for about 40 minutes, until the custard is set.

On no account allow the mixture to boil, or the eggs will curdle.

#### Bread-and-butter Pudding

2–3 slices thin bread	$\frac{1}{2}$ oz. sugar
and butter	$\frac{1}{2}$ pint milk
1–2 oz. currants or	1 egg
sultanas	Nutmeg

Cut the bread and butter into neat strips, and lay in a buttered pie-dish, buttered side up, sprinkling each layer with fruit and sugar (but omitting fruit in the top layer). Heat the milk and pour on to the beaten egg. Strain into the pie-dish, grate nutmeg on top, and stand aside for  $\frac{1}{2}$  hour to let the bread swell. Bake in a moderate oven (375° F.) for about  $\frac{1}{2}$  hour, until set and lightly browned.

#### Queen of Puddings

$\frac{1}{2}$ pint milk	$\frac{1}{2}$ oz. sugar
$\frac{1}{2}$ pint breadcrumbs	2 egg yolks
Grated rind of 1 lemon	2 tablespoonfuls rasp-
$\frac{1}{2}$ oz. butter	berry or other jam

#### For the Meringue

2 egg-whites	2 oz. sugar
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Heat the milk and pour it on to the breadcrumbs; add the lemon rind, butter, and sugar, and leave aside for about  $\frac{1}{2}$  hour for the bread to swell. Beat in the egg-yolk and pour the mixture into a greased pie-dish. Bake in a moderately hot oven (375° F.) for about  $\frac{1}{2}$  hour, until set.

Spread a thick layer of jam on the top, heating the jam if necessary, so that it will spread easily. Whisk the egg-whites very stiffly, then fold in  $1\frac{1}{2}$  oz. ( $1\frac{1}{2}$  tablespoonfuls) of the sugar. Pile on top of the pudding and dredge with the remaining sugar. Return to a moderate oven (350° F.) and leave for 20–30 minutes, until the meringue is lightly coloured and crisp to the touch.

#### Canary Pudding

4 oz. margarine	$\frac{1}{2}$ teaspoonful baking-
4 oz. sugar	powder
2 eggs	A pinch of salt
4 oz. flour	Milk, if necessary

Cream the fat and sugar until light and fluffy. Add the eggs one at a time, beating well after each addition. Sieve the flour, baking-powder, and salt, and fold all into the creamed mixture. Add



milk, if required, to give a dropping consistency. Put the mixture into a greased basin, cover with greaseproof paper, and steam for 1½ hours. Serve with sauce.

#### Variations on Canary Pudding

**Syrup Pudding.**—Put 2 tablespoonfuls golden syrup into the greased basin before adding the pudding mixture.

**Lemon or Orange.**—Add the finely grated rind of 1 lemon or orange after beating in the eggs.

**Chocolate.**—Sieve 1 oz. cocoa into the dry ingredients, and add a little extra liquid to mix.

**Ginger.**—Add 2 oz. chopped preserved ginger to the dry ingredients.

#### Spotted Dick

8 oz. flour	4 oz. finely chopped suet
½ teaspoonful salt	3 oz. sugar
1 teaspoonful baking-powder	4 oz. currants
	Milk to mix

Sieve the flour, salt, and baking-powder. Add the suet, sugar, and cleaned currants. Mix with sufficient milk to make a soft dough. Grease and flour a pudding-cloth, place the dough on the cloth, and tie both ends with a piece of string, leaving enough room for the pudding to swell. Cook in fast-boiling water for 2 hours.

#### Christmas Pudding

6 oz. flour	2-3 fresh eggs
½ teaspoonful mixed spice	A few drops of almond essence
½ teaspoonful grated nutmeg	A few drops of vanilla essence
2 oz. breadcrumbs	1 teaspoonful lemon juice or substitute
4 oz. chopped suet	1 small teaspoonful gravy browning or caramel
1-1½ lbs. mixed dried fruit	Milk or milk and water to mix, with a little brandy if available.
Grated rind of 1 orange	
1 grated carrot or 1 finely chopped apple	
3 oz. sugar	

Sieve the flour and spices into a bowl, and add the breadcrumbs, suet, cleaned and prepared dried fruit, grated orange rind, carrot or apple, and the sugar. Mix with the beaten eggs, essences, lemon juice and gravy browning, adding a little liquid to give a stiff dropping consistency.

If suet is not available, substitute 2 oz. margarine and 2 oz. cooking-fat. This should be rubbed into the flour before the rest of the ingredients are added.

Three-quarters fill one large well-greased basin (or two small ones), cover closely with greased paper or a floured cloth, and steam for 5-6 hours.

When the pudding is cooked, allow the basin and covering to dry thoroughly, then place a clean cloth or greaseproof paper over the original coverings (which will have been sterilised by being boiled with the pudding). If protected in this way the pudding will be ready for further cooking on Christmas Day. Store in a cool, dry place.

#### Basic Batter Recipe

4 oz. flour	1 egg
½ teaspoonful salt	½ pint milk

Sieve the flour and salt into a basin and make a well in the centre. Drop in the egg and half of the milk, and mix in a little of the flour at a time, using a wooden spoon and keeping the mixture smooth, until a thick creamy mixture is obtained. Beat for 5-10 minutes until the mixture is full of bubbles. Stir in the rest of the milk and cover and stand, or use at once.

#### Coating Batter

4 oz. flour	1 egg
½ teaspoonful salt	½ pint milk

Sieve the flour and salt into a basin and make a well in the centre. Drop in the egg and half of the milk, and mix in a little of the flour at a time, using a wooden spoon and keeping the mixture smooth, until a thick, creamy mixture is obtained. Beat for 5-10 minutes until the mixture is full of bubbles. Stir in the rest of the milk and cover and stand, or use at once.

#### Pancakes

Make the batter according to the basic recipe opposite. Warm a small frying-pan, rub with a little salt and kitchen paper and wipe clean. This "tempering" ensures that the pancakes will not stick, and it need be done only at the beginning of the frying.

Melt the cooking-fat in a small pan, pour a little into the prepared frying-pan, and when smoking hot pour it back into the saucepan; a film of fat will be left, which will be sufficient for frying the pancakes.

Pour in slowly just enough batter to cover the bottom of the pan. When set and lightly browned on one side, turn or toss and cook the other side. Turn out on to a sugared paper, dust with castor sugar, sprinkle with lemon juice, and roll up.

#### Apple Fritters

Coating batter	Fat for frying
Cooking-apples	Sugar

Make some coating batter according to the directions. Peel and slice the apples in rings. Dip the apple rings into the coating batter, using a skewer to lift them out. Put them into smoking hot fat. Fry until golden-brown on one side, then turn them over to cook the other side. Drain thoroughly before serving. Quartered bananas and sections of orange, or halved peaches, also make good fruit fritters.

Serve fritters as soon as possible after making, as they soon lose their crispness. They may be rolled in sugar, or accompanied by a sweet sauce.

#### Apple Charlotte

1 lb. apples	1 lemon
3 oz. breadcrumbs	4 oz. sugar
2 oz. grated suet	2 oz. butter

Peel and slice the apples. Mix together the breadcrumbs, suet, grated lemon rind, and sugar. Put a layer of apples in a pie-dish, then a layer of the breadcrumb mixture, add a squeeze of lemon juice and a few pieces of butter. Repeat until the dish is full, finishing with a layer of breadcrumbs and a little butter. Bake in a moderate oven (350° F.) about 1½ hours or until the apples are tender. Serve with custard or cream.

An alternative method is to line the dish with the breadcrumb mixture (reserving a little for the top), fill with the sliced apples and cover with the remaining breadcrumbs, etc. Bake as above.

#### Fruit Jelly

½ pint fruit-squash juice	½-1 oz. gelatine
½ pint hot water	Sugar to taste

Mix the fruit squash with the water. Dissolve the gelatine in ½ pint of the mixture over a gentle heat, add to the remaining liquid and sweeten to taste. Pour into a wetted 1-pint mould and put in a cool place to set. Turn out and decorate with slices of oranges and other fresh fruit, sprinkled with sugar.

#### Milk Jelly

1 pint milk	2 oz. castor sugar
Thinly peeled lemon rind	½-1 oz. gelatine
	A little water

Put the milk, lemon rind, and sugar into a pan, and allow them to infuse over gentle heat for about 10 minutes. Dissolve the gelatine in the water and add the cooled milk. Strain the mixture into a wetted mould and leave to set. Turn out the jelly, dip mould into fairly hot water (allow longer for a china one), free edge of jelly, invert on to the dish, and shake well.

#### Apple Snow

2 sponge cakes	Juice of ½ lemon
½ pint cup custard	1 white of egg
3 oz. sieved stewed apple	Colouring, if liked
3 oz. castor sugar	Cherries, angelica, to decorate

Cut the sponge cakes into thin slices, lay in a glass dish and pour the custard over; allow to soak. Put the apple pulp in a basin and add the sugar and lemon juice. Whisk the white of egg until stiff, add to the apple mixture, add colouring if liked and continue whisking until stiff and very fluffy. Pile on to the custard in the dish and serve at once, decorated with cherries, angelica, etc.

**Honeycomb Mould**

- |                         |  |
|-------------------------|--|
| 2 large eggs            | 1- $\frac{1}{2}$ oz. powdered gelatine |
| 1 pint milk             |  |
| $\frac{1}{4}$ oz. sugar | 2 tablespoonfuls water                 |
| Vanilla essence         |  |

Separate the yolks and whites of the eggs. Make a custard with the yolks, milk, and sugar, and flavour with vanilla. Dissolve the gelatine in the water, and add it to the custard. Whisk the egg-whites very stiffly and fold lightly into the cool custard mixture. Pour into a glass dish or mould and turn out when set.

**Charlotte Russe**

- |  |   |
|--|---|
| $\frac{1}{2}$ pint lemon jelly           | 2 tablespoonfuls milk                           |
| Cherries and pistachio nuts, or angelica | $\frac{1}{2}$ pint cream                        |
| 8-10 Savoy fingers                       | 1 tablespoonful brandy                          |
| $\frac{1}{2}$ oz. gelatine               | or 1- $\frac{1}{2}$ teaspoonful vanilla essence |
| 2 tablespoonfuls water                   | 1 $\frac{1}{2}$ oz. castor sugar                |

Pour a thin layer of jelly into the bottom of a plain 1-pint soufflé tin and allow to set. Decorate with cherries and pistachio nuts, pour over a thin layer of jelly and allow to set. Line the sides of the mould with Savoy finger biscuits, trimming them at the sides and ends and dipping the ends in the jelly, before putting them into position. Allow to set. Pour in a thin layer of jelly. Dissolve the gelatine in the water over gentle heat and add the milk. Whip the cream until fairly stiff, stir in the gelatine, flavouring, and sugar. Put into the prepared mould and allow to set. When quite set turn out carefully on to a glass or silver dish.

**Summer Pudding**

- |                                    |                                |
|------------------------------------|--------------------------------|
| 2 tablespoonfuls water             | 4 oz. bread                    |
| 4 oz. sugar                        | Whipped cream or custard sauce |
| 1 lb. raspberries and red-currants |                                |

Put the water and sugar together and bring to the boil, add the fruit and stew carefully, until tender. Line a pudding-basin with thin slices of bread, pour in the stewed fruit, and cover with thin slices of bread; the basin should be full. Place a saucer with a weight on it on top of the pudding. Leave for several hours. Turn out and serve with whipped cream or cold custard sauce.

**Chocolate Soufflé**

- |                            |   |
|----------------------------|---|
| 1 oz. almonds              | 2 tablespoonfuls water                      |
| 2 oz. chocolate            | Vanilla essence                             |
| $\frac{1}{2}$ pint milk    | $\frac{1}{2}$ pint cream or evaporated milk |
| 3 eggs                     | Pistachio nuts                              |
| 2 oz. castor sugar         | Whipped cream                               |
| $\frac{1}{2}$ oz. gelatine |   |

Prepare a soufflé case. Blanch the almonds, shred them, and brown lightly in the oven. Dissolve the chocolate in the milk, whisk the egg-yolks, sugar and dissolved chocolate over a pan of very hot water until thick and creamy, then remove from the heat. Dissolve the gelatine in water then stir into the whisked mixture, together with the chopped almonds and vanilla essence. Fold in the whipped cream lightly. Whip up the whites of egg very stiffly and fold them into the mixture. Pour into the prepared soufflé case and leave to set. Before serving, decorate with pistachio nuts and whipped, sweetened, and flavoured cream.

**Note:** To prepare soufflé case cut a strip of firm paper long enough to go round the soufflé case, overlapping slightly and deep enough to come about 2 in. above the rim of the case. Tie firmly round the case with string.

**Lemon Mousse**

- |                        |                            |
|------------------------|----------------------------|
| 2 tablespoonfuls sugar | $\frac{1}{2}$ oz. gelatine |
| 1 large lemon          | 2 tablespoonfuls water     |
| 3 eggs                 | Cream                      |

Prepare a soufflé case. Add the sugar and the grated rind of  $\frac{1}{2}$  lemon to the egg-yolks and beat until light and creamy. Add the strained lemon juice. Dissolve the gelatine in the water over gentle heat and add it to the egg mixture. Beat until the mixture is well incorporated. Fold in the stiffly beaten whites of egg. Pour the mixture into the prepared case and leave to set. Decorate with whipped, sweetened, and flavoured cream.

**Vanilla Ice**

(Using gelatine)

- |   |   |
|---|---|
| 1 teaspoonful custard powder or cornflour | A few drops of vanilla essence                                |
| $\frac{1}{2}$ pint milk                   | 1 teaspoonful gelatine dissolved in 2 tablespoonfuls of water |
| 1 egg                                     |   |
| 1 tablespoonful sugar (approx.)           |   |

Blend the custard powder or cornflour with a little of the milk. Bring the rest of the milk to the boil and pour on to the blended mixture, stirring well. Return to the saucepan, bring to the boil, and boil for a minute or two, stirring. Remove from the heat, add the beaten egg, and cook gently for a further minute or so, still stirring. Remove from the heat and add the sugar and vanilla essence to taste.

Dissolve the gelatine in the water over gentle heat, and when it is quite dissolved stir it into the custard mixture. Allow to cool, beating or whisking at intervals to prevent a skin forming and to aerate the mixture. Freeze in the usual way.

**BREAD AND ROLLS**

The processes in bread-making should be followed carefully, bearing in mind that yeast requires a warm temperature in which to live. Only sufficient yeast should be bought for immediate use, as it will only keep a day or two. Dried yeast can, however, be kept in a tin for about six months. The following processes are the basis of all yeast cookery:

**Warming.**—Warm the bowl of flour and liquid (water, or milk and water). The temperature of the liquid should be lukewarm or blood heat (98° F.).

**Creaming the Yeast.**—Add  $\frac{1}{2}$  teaspoonful of sugar to the yeast for creaming.

**Adding the Fat.**—Incorporate the fat into the flour, either by rubbing it in or by adding it in melted form.

**Setting the Sponge.**—Pour the mixture of yeast and water into a well in the flour, and leave to set the sponge for 10-15 minutes.

**Mixing the Dough.**—Mix the dough to obtain a soft elastic and almost sticky mixture, allowing about  $\frac{1}{2}$  pint liquid to 1 lb. flour.

**Kneading.**—Unless kneading is thorough, the bread will be full of holes. Turn the dough on to a floured board and knead by lifting the edge of the dough, and bringing it to the centre.

**Rising.**—Leave the dough in a bowl covered with a damp cloth in a warm place to rise. It should be left until it has doubled its size.

**Shaping.**—Knead the dough for another 8 minutes and cut into required shapes, allowing the tins to be three-parts filled.

**Proving.**—Put the prepared loaves or rolls in the tins and leave in a warm place for 10-20 minutes to prove.

**Baking.**—Put the loaves in a hot oven for about 15 minutes, to kill the yeast, and then lower the heat to finish cooking. Allow  $\frac{1}{2}$  hour for a 2-lb. loaf. To test tap the underside of the loaf, and if a hollow sound results the bread is cooked. Leave to cool on a wire tray.

**Basic Bread Recipe**

- |                           |                                   |
|---------------------------|-----------------------------------|
| 3 $\frac{1}{2}$ lb. flour | 1 teaspoonful sugar               |
| $\frac{1}{2}$ oz. salt    | 1 $\frac{1}{2}$ pints tepid water |
| 1 oz. yeast               | (approx.)                         |

Follow the method shown above.

**Brown Bread**

- |                                   |                                |
|-----------------------------------|--------------------------------|
| 10 oz. white flour                | $\frac{1}{2}$ oz. yeast        |
| 1 $\frac{1}{2}$ teaspoonfuls salt | $\frac{1}{2}$ pint tepid water |
| 10 oz. wholemeal                  |                                |

Sieve the flour and salt into a warm bowl and add the wholemeal. Cream the yeast and add the tepid water. Strain into the flour, mix, and knead thoroughly till smooth. Set to rise for 1 hour, then knead slightly. Form into two loaves, put into warm floured tins, and set to prove for 15 minutes. Bake in a hot oven (450° F.) for about 45 minutes, until the bread feels light and is crisp outside.



## Milk Rolls

1 lb. flour	About $\frac{1}{2}$ pint milk and
Salt	water
2 oz. lard	A little beaten egg to
$\frac{1}{2}$ oz. yeast	glaze

Warm the flour, add about  $\frac{1}{2}$  teaspoonful of salt, and rub in the lard. Cream the yeast and add most of the liquid, then add this to the flour and mix to an elastic dough. Knead well. Put to rise for 1 hour, or until double the size. Turn on to a floured board and knead well. Shape into rolls, dinner buns, or twists. Put on to a warmed, greased tin and prove for 10-20 minutes, until they have risen well, but avoid overproving. Bake in a hot oven (450° F.) for 15-30 minutes, according to size. Glaze with beaten egg.

## Chelsea Buns

8 oz. flour	$\frac{1}{2}$ gill warm milk and
A pinch of salt	water
3-4 oz. currants and	1 oz. margarine or lard
sultanas	1 egg
2 oz. sugar	A little melted fat
$\frac{1}{2}$ oz. yeast	2 teaspoonfuls sugar to
	glaze

Sieve together the flour and salt and put to warm. Clean the currants and sultanas and mix with 2 teaspoonfuls of the sugar. Cream the yeast with  $\frac{1}{2}$  teaspoonful of sugar and add it to the liquid. Add this to one-third of the flour and set it to sponge. Rub the fat into the remaining flour, add the rest of the sugar, and gradually beat in the egg. Next mix in the sponged mixture. Beat all thoroughly with the hand and put in a warm place to rise. When it has doubled its size knead lightly on a floured board and then roll into an oblong strip. Brush over with melted fat and sprinkle evenly over it the mixed fruit and sugar. Roll up and cut into twelve even-sized slices. Pack lightly, cut side down, into a greased tin, which should have straight sides, (e.g., A Yorkshire pudding-tin). Allow to prove for 15 minutes, then bake in a hot oven (450° F.) for 15-20 minutes. Glaze with sugar and water.

## Doughnuts

8 oz. flour	Castor sugar
A pinch of salt	1 egg
2 oz. margarine	Jam
$\frac{1}{2}$ oz. yeast	Fat for frying
3-4 tablespoonfuls	Ground cinnamon (op-
warm milk	tional)

Warm the sieved flour and salt in a basin and rub in the margarine. Cream the yeast with 1 teaspoonful castor sugar and add to it the milk and beaten egg. Pour into the centre of the flour and mix to a soft dough. Beat well with a wooden spoon or the hand, and leave to rise until the dough becomes twice the original size; then knead lightly. Divide into ten to twelve pieces. Shape each into a ball, flatten a little, and place about  $\frac{1}{2}$  teaspoonful of jam in the centre of each piece. Gather the edges together over the jam, forming balls. Place on a greased and floured tin and leave in a warm place for a few minutes to prove. Heat some deep fat until smoking faintly but not too hot, and fry the doughnuts in it until golden-brown and cooked through (about 5 minutes). Drain, then turn out on to a paper and dredge with castor sugar. If preferred, sprinkle with a little ground cinnamon mixed with sugar. Serve very fresh.

## Crumpets

$\frac{1}{2}$ oz. yeast	A pinch of bicarbonate
1 pint milk and water	of soda
1 lb. flour	1 teaspoonful salt

Cream the yeast with a little of the tepid liquid, add the rest and pour it into the flour. Beat very thoroughly with the hand for 5 minutes. Cover the bowl and stand it in a warm place for 1 hour. Dissolve the bicarbonate of soda and salt in a little warm water and add it to the sponge mixture. Beat it up, and put it to rise again for  $\frac{1}{2}$  hour. Have ready a greased girdle, moderately hot; grease some crumpet rings and let them heat on the girdle. Pour in enough batter to cover the bottom completely and allow it to cook gently until the top is set. Remove the rings, turn the crumpets over, and allow them to dry for a few minutes on the underside.

## Sally Lunn Tea-cakes

12 oz. flour	1 egg
$\frac{1}{2}$ teaspoonful salt	1 oz. lard or margarine
$\frac{1}{2}$ oz. yeast	Egg or milk and sugar
1 teaspoonful sugar	to glaze
$\frac{1}{2}$ pint milk and water	

Sieve the flour and salt into a basin. Cream the yeast with the sugar, stir in the tepid liquid, and pour the mixture into the centre of the flour. Add the beaten egg and melted fat, mix to a light, soft dough, and knead well. Divide into two or three pieces, shape into rounds, and put into small greased and floured cake-tins, half-filling them. Set in a warm place until the dough rises to the top of the tins, then bake in a hot oven (450° F.) for 15-20 minutes. A few minutes before they are ready to be taken out of the oven, brush the tea-cakes over with a little beaten egg, or with milk and sugar.

## Rum Baba

8 oz. flour	4 oz. margarine
$\frac{1}{2}$ teaspoonful salt	4 oz. currants, candied
$\frac{1}{2}$ oz. yeast	peel and chopped nuts
$\frac{1}{2}$ teaspoonful sugar	Hot rum syrup
$\frac{1}{2}$ pint warm milk	Mock cream and glacé
4 eggs	fruits (optional)

Sieve the flour and salt into a bowl. Cream the yeast and sugar and add the warm milk. Pour the mixture into the centre of the dry ingredients and sprinkle flour on top. Put in a warm place to work for about  $\frac{1}{2}$  hour. Beat the eggs and add them with the melted fat to the mixture, beating well with the hand. Brush a large border mould or some small ones with melted fat, and put in the currants and chopped peel and nuts. Half-fill the moulds with the yeast mixture, cover, and put in a warm place until the mixture rises to the top of the tins. Bake in a moderate oven (375° F.) for about  $\frac{1}{2}$  hour, then turn out and prick the surface. Pour over some rum syrup (made by heating 4 oz. sugar with  $\frac{1}{2}$  pint water, a squeeze of lemon juice, and rum to taste) and serve hot; or decorate with mock cream and glacé fruits and serve cold.

## Croissants

1 $\frac{1}{2}$ lb. flour	$\frac{1}{2}$ pint milk and water
$\frac{1}{2}$ oz. salt	1 oz. yeast
6 oz. margarine	$\frac{1}{2}$ oz. sugar

Warm the flour and add the salt. Melt  $\frac{1}{2}$  oz. of the fat, add it to the liquid, and warm. Cream the yeast and sugar. Make a well in the centre of the flour and mix to a light dough with the yeast and liquid. Knead lightly and set to rise for about  $\frac{1}{2}$  hour. Knead lightly on a floured board and roll out to an oblong. Place one-third of the remaining fat in small heaps on the top two-thirds of the dough, then fold in three, turning the bottom third up and bringing the top third over it. Seal the ends with the rolling-pin and give one half-turn. Roll again into an oblong, and repeat with the two remaining portions of margarine. Roll out dough very thinly and cut into squares and then triangles, finishing with the point, and curling the ends round to form a crescent. Prove for about 10 minutes on a greased tin. Then brush over gently with beaten egg and milk, and bake in a hot oven (450° F.) for 10-15 minutes.

**Scones.**—A plain scone mixture can have different additions which add to the variety of this simply made dish. Scones may be cooked in the oven or on a girdle.

## Oven Scones

8 oz. flour	$\frac{1}{2}$ teaspoonful bicar-
$\frac{1}{2}$ teaspoonful salt	bonate of soda
1 teaspoonful cream of	1-2 oz. fat
tartar ( $\frac{1}{2}$ teaspoonful,	$\frac{1}{2}$ pint (approx.) fresh or
if sour milk is used)	sour milk

Sieve the flour, salt, cream of tartar, and bicarbonate of soda into a basin and rub in the fat. Make a well in the centre and stir in enough milk to give a light, spongy dough just firm enough to handle. Turn it on to a floured board, knead very lightly if necessary, to remove any cracks; then roll out lightly to 1 in. thick, or pat it out with the hand. Cut rounds with a sharp cutter,

dipped in flour, or cut it into triangles with a sharp knife. Place on a floured baking-sheet, glaze if desired with beaten egg or milk, and bake near the top of a hot oven (450° F.) for 7-10 minutes till brown and well risen. Cool on a rack.

*Fruit Scones.*—Add 2 oz. currants, sultanas, raisins, or chopped dates to dry ingredients.

*Oatmeal Scones.*—Follow the same recipe, substituting 2 oz. oatmeal for 2 oz. of the flour.

*Rich Afternoon Tea Scones.*—Follow the same recipe, adding 1-2 tablespoonfuls castor sugar to the dry ingredients, and using 1 beaten egg with 1-2 tablespoonfuls water or milk to mix. If desired, 2 oz. dried fruit may be included, rather less sugar being used.

#### Plain Girdle Scones

8 oz. flour 1½ oz. butter or margarine  
½ teaspoonful bicarbonate of soda ½-1 oz. sugar  
1 teaspoonful cream of tartar ½ pint milk or milk and water  
A pinch of salt

Sieve the dry ingredients, rub in the fat, and add the sugar. Mix to a fairly soft dough with the liquid, then turn it on to a floured board and knead it very lightly. If necessary, to remove any cracks. Roll out ½ in. thick, cut in triangles or rounds, and place on a hot, floured girdle. Cook steadily until well risen and pale brown underneath, turn over gently and cook until the other side is browned and the centre is dry. (If desired, 2 oz. sultanas may be included: add them with the sugar.)

#### Drop Scones

8 oz. flour 1-3 oz. sugar  
½ teaspoonful bicarbonate of soda 2 eggs  
½ teaspoonful cream of tartar ½ pint sour milk or buttermilk

Sieve the flour and raising agents, add sugar, mix with eggs and milk to a fairly thick batter. Place spoonfuls of mixture on the hot, greased girdle; keep at a steady heat, and turn scones when the bubbles burst. Cook the scones till golden on both sides, and keep them in a cloth to prevent their becoming dry and crisp. Serve them with butter and jam.

#### Potato Cakes

1 lb. potatoes 1 oz. margarine  
1 teaspoonful salt 3-4 oz. flour

Boil, drain, and sieve the potatoes. Add salt and margarine, and work in flour. Knead the dough lightly on a floured board, roll to about ½ in. thick, and cut into triangles. Cook on a hot, greased girdle till brown on both sides. Serve hot with butter.

### BISCUITS

Biscuits are made from a pastry-like dough, and during the mixing it is therefore essential to add the liquid slowly to avoid a sticky dough which may be difficult to manage. Roll the biscuit dough out on a floured board and prick the surface of the dough to prevent rising. Bake on the top shelf of a moderately hot oven (350-400° F.). Biscuits require watching during baking, as they cook quickly. Remove from the tray as soon as they are done, and cool on a wire tray. Biscuits should be stored in an airtight tin.

#### Digestive Biscuits

6 oz. flour 1 teaspoonful baking-powder  
1 teaspoonful salt 3 oz. lard or cooking-fat  
1½ oz. coarse oatmeal 3 oz. lard or cooking-fat  
½-1 oz. sugar Milk to mix

Mix the dry ingredients together and rub in the fat very thoroughly with the finger-tips. Mix in enough milk to give a firm dough. Turn it on to a floured board, knead it lightly, and roll out rather thinly, then cut it in rounds. Place the biscuits on a greased baking-sheet, prick them well, and bake in a moderately hot oven (400° F.) until they are lightly coloured—about 15 minutes.

FF (65th Ed.)

### Easter Biscuits

12 oz. flour 1 oz. peel  
Pinch of salt Pinch of saffron steeped overnight in a table-spoonful of milk or brandy  
6 oz. butter or margarine  
5 oz. castor sugar White of egg  
1 egg Little castor sugar  
3 oz. currants

Sieve the flour and salt. Cream the butter and sugar. Add the beaten egg to the creamed mixture with a little of the sieved flour. Stir in remaining flour, currants, and finely chopped peel, and mix in the saffron-flavoured milk or brandy. The dough should be softer than pastry but stiff enough to roll out.

Roll out ½ in. thick and cut into large rounds. Place on a greased baking-sheet and bake in a moderately hot oven (400° F.) for about 20 minutes, until lightly coloured.

After 10 minutes' baking brush with beaten white of egg and dredge with castor sugar.

#### Shrewsbury Biscuits

3 oz. margarine 8 oz. self-raising flour  
3 oz. sugar 1 tablespoonful water  
½ an egg (approx.)  
Vanilla essence

Put the fat and sugar in a bowl and cream together until soft and white, then gradually add the egg and a few drops of vanilla essence (or a little grated lemon rind), and work in the flour, together with enough water to form a soft, pliable dough. Roll out to about ½ in. in thickness and cut into fancy shapes with biscuit cutters. Bake in a moderate oven (375° F.) for 15-20 minutes. Cool on a wire tray.

#### Shortbread

6 oz. flour 4 oz. butter (or margarine)  
A pinch of salt 2 oz. castor sugar

Sieve the flour and salt, and rub in the fat. Add sugar, and then knead the mixture until it will bind together. Roll it out on a lightly floured board and form it into a round cake. Crimp edges, prick, and mark into wedges. Put on a tin lined with greased paper, and bake in a moderate oven (325° F.) for 1 hour, or until lightly brown. Cool and dust with sugar.

#### Ginger Biscuits

2 oz. margarine 1 teaspoonful ground ginger  
2 oz. castor sugar 2½ oz. self-raising flour  
1 egg-yolk Wheat flakes

Cream together the fat and sugar and beat in the egg-yolk. Stir in the sieved ginger and flour a little at a time, and knead lightly to form a dough. Form into balls, toss these in wheat flakes, and put on a greased baking-tin. Bake in a moderate oven (375° F.) for about 20 minutes.

#### Chocolate Biscuits

6 oz. self-raising flour 4 oz. castor sugar  
2 tablespoonfuls cocoa A little water  
4 oz. butter or margarine Vanilla essence

Sieve together the flour and cocoa and rub in the fat very thoroughly until the mixture resembles fine breadcrumbs. Add the castor sugar and mix well. Mix to a very firm dough with a tablespoonful or so of cold water to which 1 or 2 drops of vanilla essence have been added. Turn on to a floured board, roll out ½ in. thick, and stamp into rounds or fancy shapes. Put on a greased baking-sheet and cook in a moderately hot oven (400° F.) for about 10-15 minutes.

To finish, dust with castor sugar. As an alternative, make the biscuits thinner, then sandwich together with chocolate butter icing, and ice with chocolate (or white) glacé icing.

#### Brandy Snaps

3 oz. syrup ½ teaspoonful ground ginger or grated lemon rind  
2 oz. sugar 1 teaspoonful brandy (optional)  
3 oz. butter  
2 oz. flour

Melt the syrup, sugar, and butter and allow to cool slightly, then add the flour and ground



ginger or grated lemon rind, mixing well. Stir in the brandy and put in small teaspoonfuls, 3-4 in. apart on a well-greased tin. Bake in a moderate oven (350° F.) until well spread and just golden-brown. Allow to cool for a moment, then lift off with a palette knife and quickly roll over the greased handle of a wooden spoon. Slip off carefully. If the biscuits cool too much, and are too brittle to roll, return them to the oven for a moment to soften.

### Macaroons

2 whites of eggs	1 oz. ground rice (good measure)
4 oz. ground almonds	1 teaspoonful orange flower water
8 oz. castor sugar	

### To Decorate

Split almonds      Little white of egg

Whisk the whites of eggs fairly stiffly. Stir in the almonds, sugar, ground rice, and flavouring, and mix thoroughly. Cover a greased baking-sheet with rice paper and place the mixture in small heaps on the rice paper; or pipe, using a calico forcing-bag and large plain pipe, leaving room for spreading. Place a split almond on each biscuit, brush with white of egg and bake in a moderate oven (350° F.) for about 20-25 minutes until pale golden-brown. It is important to cook macaroons rather slowly, to allow them to colour evenly and to get a good texture.

### Coconut Pyramids or Cones

2 egg-whites	5 oz. desiccated coconut
5 oz. sugar	

Whisk egg-whites stiffly and fold in sugar and coconut. Pile on a greased tin (covered with rice paper if available), press into shape, and bake in a cool oven (275-325° F.) until pale fawn—about ½-1 hour. If desired, tint mixture pink or green before shaping.

### CAKES

Basically there are four different types of cake. Those made by the "rubbing-in" method, by which the fat is rubbed into the dry ingredients and the liquid is added afterwards. These are usually of the plainer variety. Richer cakes are made by creaming the fat and sugar together, adding the eggs to this mixture, and finally the flour. The third method is used for fatless sponges, where the eggs and sugar are whisked together over hot water and the flour is folded into the whisked mixture. For gingerbreads the melted fat and sugar are added to the dry ingredients.

The following rules of cake-making should be observed:

Prepare the tin by greasing with lard or clarified fat. For richer cakes and some whisked sponges line the tin with greased greaseproof paper. Collect and weigh the ingredients carefully, cream the fat and sugar very thoroughly until the mixture has a white fluffy appearance.

Avoid opening the oven door during the cooking. To test the cake to see if it is cooked, press the centre top lightly. It should be spongy and give only lightly to the pressure.

Allow the cake to cool slightly before turning it out of the tin.

Store in a tightly covered tin.

### PLAIN CAKES

#### Rock Cakes

12 oz. self-raising flour	6 oz. margarine
A pinch of salt	6 oz. sugar
½ teaspoonful grated nutmeg	3 oz. currants
½ teaspoonful mixed spice	1½ oz. chopped peel
	1 egg
	Milk to mix

Sieve the flour, salt, and spices. Rub in the fat, and add the sugar, fruit, and peel. Mix with beaten egg and just enough milk to bind. Using a teaspoon and a fork, place mixture in rocky heaps on a greased baking-sheet and bake in a hot oven (450° F.) for 15-20 minutes.

### Plain Fruit Cake

8 oz. self-raising flour	2 oz. sultanas
A pinch of salt	1 oz. desiccated coconut (optional)
3 oz. margarine	
3 oz. sugar	2 eggs
2 oz. currants	Milk to mix

Sieve the flour and salt into a bowl, rub in the fat, and add the sugar. Add cleaned fruit and coconut (if used). Beat the eggs lightly and add them, with a little cold milk. The mixture should now be of a dropping consistency. Put it into a greased tin and bake in a moderate oven (350° F.) for about 1 hour. Leave for a minute or two, then turn out carefully. Place on a wire cake rack to cool.

### Soda Cake

8 oz. flour	Grated nutmeg
A pinch of salt	5 oz. margarine
½ teaspoonful bicarbonate of soda	5 oz. sugar
½ teaspoonful cream of tartar	6 oz. currants
	1 egg
	Sour milk to mix

Sieve the dry ingredients, rub in fat, and add sugar and fruit. Mix with beaten egg and sour milk to a dropping consistency. Put into a 6-in. cake-tin and bake in a moderate oven (375° F.) for about 1 hour.

Note: If no sour milk is available, add 1 teaspoonful lemon juice or a few drops of vinegar to ½ pint fresh milk.

### Dripping Cake

8 oz. self-raising flour	3 oz. dripping
½ teaspoonful mixed spice	5 oz. brown sugar
A little grated nutmeg	8 oz. mixed dried fruits
A pinch of salt	1 egg
	Milk to mix

Sieve the dry ingredients and rub in fat. Add sugar and fruit, mix with egg and milk to give soft dropping consistency. Put in prepared 6-in. tin and bake in moderate oven (375° F.) for 1-1½ hours.

### Plain Chocolate Cake

5 oz. self-raising flour	3 oz. sugar
A pinch of salt	Milk to mix
1 oz. cocoa	Vanilla essence
3 oz. margarine	

Sieve the flour, salt, and cocoa together, and rub in the margarine. Add the sugar and mix with milk and a few drops of vanilla essence to a soft consistency. Put into a prepared 5- or 6-in. cake-tin and bake in a moderate oven (375° F.) for about 40 minutes.

### RICH CAKES

#### Queen Cakes

4 oz. butter or margarine	½ teaspoonful baking powder
4 oz. sugar	A little milk if necessary
2 eggs	2 oz. sultanas
4 oz. flour	

Thoroughly cream the fat and sugar and add the eggs a little at a time, beating well. Fold the sieved flour and baking-powder into the mixture, together with a little milk if necessary, to give a soft dropping consistency. Add the prepared fruit, and place in spoonfuls in greased patty tins. Bake them in a moderately hot oven (400° F.) for 15-20 minutes, until firm to the touch and golden-brown in colour.

### Walnut Layer Cake

6 oz. butter or margarine	2 teaspoonfuls coffee essence
6 oz. sugar	A little milk
3 eggs	Coffee walnut butter cream
6 oz. flour	American frosting
½ teaspoonful baking-powder	Walnuts to decorate

Cream fat and sugar and beat in eggs one at a time. Fold in sieved flour and baking-powder and add essence, with a little milk if necessary to give a soft consistency. Put into three prepared sandwich-tins, and bake in a moderate oven (375° F.) for 35-40 minutes, then cool. Sandwich the cakes together with coffee walnut butter cream, coat with white American frosting, and decorate with halved walnuts before the frosting sets firmly.

## Rich Chocolate Cake

- |                      |                         |
|----------------------|-------------------------|
| 4 oz. butter or mar- | 1½ oz. cocoa            |
| garine               | 1½ teaspoonfuls baking- |
| 6 oz. castor sugar   | powder                  |
| 2 eggs               | A pinch of salt         |
| Vanilla essence      | About ½ pint milk       |
| 8 oz. flour          |                         |

Cream together the fat and sugar, and beat in the eggs and a few drops of vanilla essence. Sieve the flour, cocoa, baking-powder, and salt, and add to the mixture, together with enough milk to give a soft dropping consistency. Put into a prepared 7-in. tin and bake for 1-1½ hours in a moderate oven (375° F.). When the cake is cool, it may either be dredged with icing-sugar or coated with white glacé icing and decorated with chocolate butter cream, piped in an attractive design.

## Madeira Cake

- |                        |                      |
|------------------------|----------------------|
| 8 oz. flour            | 5 oz. butter or mar- |
| A pinch of salt        | garine               |
| 1 teaspoonful baking-  | 3 eggs               |
| powder                 | Milk to mix          |
| A little finely grated | A few drops of lemon |
| lemon rind             | essence              |
| 5 oz. sugar            | Citron peel          |

Sieve dry ingredients, add rind, cream sugar and fat together until light and fluffy, then beat in the eggs a little at a time. Add the sieved dry ingredients to the creamed mixture, alternately with a little milk and the essence. Put in prepared tin and lightly add slices of peel (or put on top as soon as cake sets). Bake 1-1½ hours in moderate oven (350° F.).

## Cherry Cake

- |                       |                      |
|-----------------------|----------------------|
| 8 oz. flour           | 6 oz. butter or mar- |
| ½ teaspoonful salt    | garine               |
| ½ teaspoonful baking- | 6 oz. sugar          |
| powder                | 2 eggs               |
| 3 oz. glacé cherries  | Vanilla essence      |
|                       | Milk to mix          |

Sieve the flour, salt, and baking-powder, and add the glacé cherries, cut into quarters. Cream together the fat and sugar, and beat in the eggs one at a time; add a few drops of vanilla essence. Add the dry ingredients, and mix lightly with a little milk. Put into a prepared tin and bake in a moderate oven (350° F.) for about 1 hour.

If desired, before baking the cake put a few halved cherries on top of it, and sprinkle with castor sugar, to give a crisp, sugary surface.

## Dundee Cake

- |                        |                           |
|------------------------|---------------------------|
| 6 oz. sultanas         | ½ teaspoonful baking-     |
| 3 oz. currants         | powder                    |
| 3 oz. candied peel     | 6 oz. butter or margarine |
| 3 oz. blanched almonds | 6 oz. sugar               |
| 9 oz. flour            | 3 eggs                    |
| ½ teaspoonful salt     | Milk to mix               |

Prepare the fruit and slice the peel finely. Chop the almonds, reserving about ½ oz. for the top of the cake.

Sieve together the flour, salt, and baking-powder. Cream together the fat and sugar, and beat in the eggs one at a time. Add the dry ingredients, and mix with a little milk, if required, to give a stiff dropping consistency. Put the mixture into a prepared 8-in. tin and place the halved, blanched almonds on top. Bake in a moderate oven (350° F.) for 1½-2 hours, until firm to the touch.

## Rich Fruit Cake

- |                       |                        |
|-----------------------|------------------------|
| 1 lb. currants        | 6-8 eggs               |
| 8 oz. raisins         | 12 oz. flour           |
| 1 lb. sultanas        | A pinch of salt        |
| 6 oz. mixed peel      | 2 teaspoonfuls mixed   |
| 4 oz. glacé cherries  | spice                  |
| 4 oz. shelled almonds | Grated rind of 1 lemon |
| 10 oz. margarine      | Lemon juice            |
| 10 oz. castor sugar   | A little milk          |

Clean fruit and chop peel and cherries. Blanch and chop almonds. Have all other ingredients ready. Warm margarine slightly, if hard, but do not over-heat. Cream with sugar until soft and light. Break the eggs separately into a basin, beat lightly, and add one by one to creamed mixture. Beat each egg in very thoroughly

before adding next. The mixture should be light and fluffy. Sieve dry ingredients into a bowl, add fruit and rind. Fold gradually into creamed mixture. Continue to mix in dry ingredients lightly, adding a squeeze of lemon juice and a little milk. Put the mixture, which should be of a stiff dropping consistency, into a lined 9-in. tin. Bake the cake for 4½-5 hours in all, first at 350° F. for about 2 hours, and then at 300° F. Decorate if required.

## SPONGE CAKES

## Sponge Cake

- |                    |             |
|--------------------|-------------|
| 4 eggs             | 4 oz. flour |
| 6 oz. castor sugar |             |

Put the eggs and sugar in a large basin, stand this over a pan of hot water, and whisk the contents very briskly, until light and fluffy—the mixture should be stiff enough to retain the impression of the whisk for a few seconds. Remove from the heat. Sieve one-third of the flour over the mixture and fold in very lightly, using a metal spoon. Add remaining flour in the same way. Pour mixture into a 7-in. cake-tin, greased and dusted with sugar and flour. Bake in a moderate oven (350° F.) for about 1 hour.

## Jam Swiss Roll

- |             |                     |
|-------------|---------------------|
| 3 eggs      | 1 tablespoonful hot |
| 4 oz. sugar | water               |
| 4 oz. flour | Castor sugar        |
|             | Warmed jam          |

Put eggs and sugar in a large basin and stand this over hot water. Whisk the mixture as in recipe above. Sieve one-third of flour over surface of mixture and fold in very lightly, using a metal spoon. Add rest of flour in same way, and stir in hot water. Pour mixture into prepared Swiss roll tin, tipping to allow it to spread over surface; bake in a hot oven (425° F.) for 7-9 minutes, until golden-brown and well risen. When the sponge cake is cooked, turn it out on to paper which has been liberally sprinkled with castor sugar. Remove the paper from the cake. Using a sharp knife, quickly trim off the crisp outer edges of the cake. Spread with warmed jam, make a cut almost through the sponge 1 in. from near edge, and begin to roll. Now roll the sponge as tightly as possible, using the paper to help manipulate it. Put the roll on a wire cake-rack and leave it until cold.

## Genoise Sponge

- |                      |                 |
|----------------------|-----------------|
| 3 oz. butter or mar- | ½ oz. cornflour |
| garine               | 3 large eggs    |
| 2½ oz. flour         | 4 oz. sugar     |

Clarify the butter and sieve the flour and cornflour. Put the eggs and sugar into a large basin, stand it over a saucepan of hot water and whisk briskly until the mixture is light and thick, and stiff enough to retain the impression of the whisk for a few seconds. Remove the basin from the heat. Sift about half of the flour over the surface of the mixture, and fold in very lightly. Add the remaining flour in the same way, alternately with the cooled clarified butter. Pour into a shallow greased and lined tin. Bake in a moderate oven (375° F.) until golden-brown and firm to the touch, the time depending on the depth of the cake—about ½ hour.

Note: Genoise sponge must be very lightly mixed, or the fat will sink and cause a heavy cake.

This mixture may be used as a foundation for layer cakes and iced cakes and also for a variety of iced and decorated petits fours, etc.

## GINGERBREADS

## Gingerbread

- |                        |                        |
|------------------------|------------------------|
| 1 lb. flour            | ½ teaspoonful salt     |
| 1½ teaspoonfuls ground | 8 oz. brown sugar      |
| ginger                 | 6 oz. butter           |
| 2 teaspoonfuls baking- | ½ lb. treacle or syrup |
| powder                 | ½ pint milk            |
| ½ teaspoonful bicarb-  | 1 egg                  |
| onate of soda          |                        |

Sieve dry ingredients. Warm sugar, butter, and treacle, without over-heating. Warm milk and beat egg. Combine all ingredients, mixing very thoroughly. Pour into a greased and lined tin and bake in a moderate oven (350° F.) for about 1½ hours, or until the centre is firm to the touch.



## Parkin

8 oz. flour	A pinch of salt
8 oz. medium oatmeal	$\frac{1}{2}$ teaspoonful bicarb.
2 teaspoonfuls ground ginger	onate of soda
$\frac{1}{2}$ teaspoonful mixed spice	4 oz. dripping
	8 oz. treacle
	4 oz. brown sugar

Sieve the dry ingredients into a bowl and mix well. Melt the dripping, treacle, and sugar in a saucepan and stir into the dry ingredients. Pour into a well-greased and lined square tin, and bake in a moderate oven (325° F.) for about 1 hour.

## CAKE ICINGS

## Royal Icing

1 lb. icing sugar	A few drops acetic acid
About 2 egg-whites	

Sieve the icing sugar several times if at all lumpy. Make a well in the centre and stir in the lightly beaten whites of eggs. Add the small quantity of acetic acid and continue to beat vigorously until the icing is opaque and smooth.

## Glacé Icing

$\frac{1}{2}$ lb. sieved icing sugar	3 tablespoonfuls warm water
A few drops of flavouring essence	Colouring, if required

Put the sieved icing sugar and flavouring in an enamelled saucepan and add the water very gradually over a gentle heat. Stir till warm. Do not let the icing get too hot, or it will become crystallised. It should be thick enough to coat the back of a spoon. If too thin, more sugar should be added, or more water if too thick. Add colouring and use at once.

## Butter Icing

3 oz. butter or margarine	Vanilla essence
6 oz. sieved icing sugar	Colouring, if required

Cream the fat, add the sugar by degrees, beat until smooth and creamy, then add the flavouring and, if required, the colouring.

Coffee essence may be used in place of vanilla.

## Almond Icing

1 lb. ground almonds	1 teaspoonful vanilla essence
1 lb. icing sugar	
2 eggs	Juice of 1 lemon

Mix ground almonds and sugar together. Beat the eggs lightly and add them, with the flavouring essence and lemon juice, to the dry ingredients. Mix to a paste and knead well.

## PRESERVES

Jam must be made from fresh sound fruit, and when possible 1 lb. of sugar should be allowed to each pound of fruit. For fruit that is not rich in pectin it is necessary to add either a proportion of fruit rich in this essential or a little acid—usually citric or tartaric acid or lemon juice.

The fruit is first simmered to extract the pectin, and the sugar is then added. The jam is boiled and stirred until setting point is reached. The jam can be tested for setting by any of the following methods:

Pour a little jam on to a cold saucer. If a skin forms and wrinkles to the touch the jam is set.

When the jam falls in flakes and not drops from a wooden spoon it is set.

A thermometer can be used to find out the setting point, the average temperature being 220° F. Stir the jam evenly before the temperature is taken.

When the jam is ready to set pour it into clean, hot jars and cover at once with a waxed disc.

## Black-currant Jam

4 lb. black-currants	4 lb. sugar
2 pints water	

Remove the stalks, wash the fruit, and put it into a preserving-pan with the water. Simmer gently until it is tender and the contents of the pan are somewhat reduced. The skins of black-

currants are usually very tough, so it is important to cook the fruit thoroughly, until tender. Then add the sugar and stir until dissolved. Bring to the boil and boil briskly until the jam sets when tested on a cold plate. Pot and cover immediately.

## Strawberry Jam

(Using red-currant juice to increase bulk and aid setting)

1 $\frac{1}{2}$ lb. red-currants	2 lb. sugar
2 lb. strawberries	

Wash the currants, put them in a pan with a little water, simmer gently until tender, then pass them through a hair sieve to obtain the juice. Pick over the strawberries and put them in a pan with the currant juice and boil gently until tender. Add the sugar, stir until dissolved, and bring to the boil. Boil for about 10–15 minutes and test for jelling. Cool for 15 minutes before potting, to prevent the fruit from rising in the jars. Cover as usual.

## Apricot Jam

1 lb. dried apricots	The juice of 1 lemon
3 pints water	(or $\frac{1}{2}$ teaspoonful citric or tartaric acid)
2 $\frac{1}{2}$ –3 lb. sugar	

Wash the apricots thoroughly, put them into a basin with the water, cover, and leave to soak for at least 24 hours. Then put them into a preserving-pan with the water in which they were soaked and the lemon juice or acid. Bring to the boil, and boil gently for  $\frac{1}{2}$  hour, stirring occasionally. Add the sugar, stir until dissolved, and boil until the jam sets when tested on a cold plate: stir almost constantly after the sugar is added. Pot and cover immediately.

## Cherry Jam

(Using citric or tartaric acid)

4 lb. Mayduke	or $\frac{1}{2}$ oz. citric or tartaric acid
Morello cherries	
	3 lb. sugar

Stone at least two dozen cherries and remove the kernels. Put the kernels in a saucepan with the cherries and acid, and cook over a low heat to begin with; then bring to simmering point and simmer for  $\frac{1}{2}$  hour, or until the cherries are tender. Add the sugar, stirring while the contents of the pan come to the boil; boil fairly briskly for 10 minutes, then remove the stones. Test on a cold plate for jelling. As soon as it sets, pot in hot sterilised jars and cover immediately.

Note: As cherries are lacking in pectin the jam is only of light set.

## Gooseberry Jam

6 lb. slightly under-ripe gooseberries	2 pints water
	6 lb. sugar

Put the fruit and water into a pan. Heat slowly at first, and as the fruit gets soft break it with a spoon. Continue cooking until the contents of the pan have reduced by approximately one-third. Add the sugar, previously warmed in the oven, and stir until it dissolves, skimming if necessary. Boil gently for 15 minutes, then test on a cold plate for jelling. As soon as the jam sets pot and cover immediately.

## Plum Jam

3 lb. plums	3 lb. sugar
$\frac{1}{2}$ pint water	

Wash the fruit and cut in halves, removing the stones. Crack the latter to obtain the kernels. Put the water, kernels, and plums in a pan and bring very slowly to boiling point: simmer gently until the fruit is cooked. Add the sugar, stir until dissolved, and bring to the boil. Boil hard for about 10–15 minutes and test for jelling. Pot and cover as usual.

Note: If the plums are ripe, less water is required.

**Raspberry Jam**

3 lb. raspberries      3 lb. sugar

Place the fruit in a pan, heat gently at first (adding a very little water, if necessary), then simmer until the fruit is tender. Add the sugar, stir until dissolved, and bring to the boil. Continue to boil for about 15 minutes, or until the preserve jells on testing. Pot and cover as usual.

The principles of jam-making apply also to jelly-making, in particular, pectin, acid, and sugar must be present in the correct proportions. The fruit is boiled until it is soft and pulpy before being strained through a jelly bag, and allowed to drip overnight. The sugar is added to the juice, which is then boiled until a set is obtained.

**Apple Jelly**

4 lb. sharp apples      Water  
Juice of 1 lemon      Sugar

Windfalls can be used successfully, but sweet dessert apples do not contain sufficient pectin to produce a good set. Wash and remove any bruised or damaged portions, and cut into thick slices without peeling or coring. Put them in a pan with the lemon juice, and sufficient cold water to cover—2 quarts is approximately the amount required. Put over a low heat, bring to the boil, and simmer slowly until the apples are reduced to a pulp; then strain through a jelly cloth, leaving for several hours to drip. Measure the juice and put into a preserving-pan, with  $\frac{1}{2}$ -1 lb. of sugar to each pint. Bring to the boil, stirring meanwhile until the sugar has dissolved, and continue to boil briskly for 10 minutes. Test on a cold plate for jelling. Skim, pot, and cover immediately.

**Blackberry or Bramble Jelly**

4 lb. blackberries       $\frac{1}{2}$  pint water  
 $\frac{1}{2}$  oz. tartaric acid      Sugar

Wash the berries, which should not be over-ripe, and pick them over. Put them with the acid and water into a preserving-pan and bring to the boil. Cook slowly for 1 hour, or until the fruit is quite tender, mashing it occasionally. Strain through a jelly cloth. Measure the extract into a preserving-pan, add 1 lb. sugar to each 1 pint, stir until dissolved, and bring to the boil. Allow to boil briskly without stirring about 10 minutes, then test for jelling. Pot and cover at once.

**Quince Jelly**

3 lb. quinces       $\frac{1}{2}$  teaspoonful tartaric acid  
2 $\frac{1}{2}$  pints water      Sugar

Wash the fruit, remove and discard the core and pips, and cut into small pieces or mince. Put into a strong pan, with the water and tartaric acid, and stew slowly (this is most important) with the lid on the pan, mashing from time to time, until the fruit becomes tender. If necessary, more water must be added. When the pulp is tender and fairly thick, strain through a scalded jelly bag. Weigh the extract, put into a preserving-pan, and bring to the boil. Add an equal weight of sugar, and stir while it is coming to the boil again. Boil briskly for 10 minutes, then test on a cold plate for jelling. As soon as it sets remove from the heat, skim, pot, and cover immediately.

**Red-currant Jelly**

3 lb. red-currants      Sugar  
 $\frac{1}{2}$  pint water

Wash the fruit, but do not remove the stalks, and put into a preserving-pan with the water. Place over a very low heat and simmer gently until the fruit is thoroughly cooked and all the berries pulped. Strain through a jelly bag and allow to drip for several hours. Measure the extract, put it into a pan and bring to the boil. Add 1 lb. sugar to each pint of extract. Then cease stirring, allow it to boil briskly for about 7-10 minutes, and test for jelling. When the preserve jells pot and cover as usual.

Marmalades are made from citrus fruits, and as the skins are tough, prolonged boiling is required to soften the shredded skins, for this reason more water is added.

**Seville Orange Marmalade**

5 large or 6 small Seville oranges (about 2 lb.)      1 lemon or  $\frac{1}{2}$  teaspoonful citric or tartaric acid  
4 pints water      4 lb. sugar

Wash the fruit and cut it into shreds. Leave in a basin with the water overnight. Put the contents of the bowl into a deep saucepan or preserving-pan, bring slowly to boiling point, add the acid, if used, and simmer gently until the peel is soft and the contents of the pan reduced almost by half; this will take about 1 $\frac{1}{2}$  hours. Add the sugar, stir until dissolved, and then boil rapidly until a good set is obtained when a little marmalade is tested on a cold saucer. Allow to cool a little, and pour into hot, sterilised jars. Cover at once with waxed circles and then tie down.

**Sweet Orange Marmalade**

2 lb. sweet oranges      4 pints water  
 $\frac{1}{2}$  teaspoonful citric or tartaric acid      4 lb. sugar

Shred the oranges and put with the acid and water into a pan. Simmer gently until the rind is tender and the contents of the pan considerably reduced. Add the sugar, stirring until dissolved, and boil rapidly until a jelly is obtained when a little of the marmalade is tested on a cold plate. Pot and cover as usual.

**Grapefruit Marmalade (Thick)**

3 grapefruits (each weighing 10-12 oz.)       $\frac{1}{2}$  oz. tartaric acid  
4 medium-sized lemons      9 pints water  
5 lb. sugar

Wash the fruit thoroughly, cut it in half and squeeze out the juice. Shred the pith and rind thinly, but discard the cores and pips. Put the prepared rind and pith, the juice, tartaric acid, and water into a large pan or bowl. The next day boil in a preserving-pan slowly until the contents are reduced by half; this will take about 3 hours. Add the sugar and stir while bringing to the boil. Boil for 10 minutes, or until it jells when tested. Pot and cover as usual.

**PICKLES AND CHUTNEYS****Spiced Vinegar for Pickles**

To 1 quart of vinegar allow :

$\frac{1}{2}$  oz. blade of mace      6 peppercorns  
 $\frac{1}{2}$  oz. allspice       $\frac{1}{2}$  oz. root ginger (if a hot pickle is liked)  
 $\frac{1}{2}$  oz. cloves  
 $\frac{1}{2}$  oz. stick cinnamon

Tie the spices in muslin, place in a covered pan with the vinegar, and heat slowly to boiling point. Remove from the heat, leave to stand for 2 hours, and remove the spices before using.

**Pickled Cabbage**

Use red cabbage. Remove the outer leaves and shred finely. Place in a deep bowl, sprinkling the layers with dry salt, and leave for 24 hours. Drain, cover with cold spiced vinegar, and leave for a further 24 hours, mixing occasionally. Pack and cover as usual.

**Pickled Onions**

Use small pickling onions. Remove the skins carefully, without cutting the onions, wash, cover with brine, and leave for 24 hours. Drain, wash and dry, put into jars, and cover with cold spiced vinegar. Seal as usual.

**Piccaililli**

3 lb. green tomatoes      1 oz. mustard  
1 cauliflower      1 teaspoonful mustard seed  
2 cucumbers      1 quart vinegar  
1 lb. onions      1 teaspoonful pepper-corns  
Salt  
8 oz. sugar  
 $\frac{1}{2}$  oz. turmeric

Cut up the vegetables into small pieces and place in layers in a basin alternately with layers of salt. Let stand overnight and then drain. Boil together the vinegar, sugar, turmeric, and mustard, together with the mustard seed and peppercorns



tled in a muslin bag. Add the vegetables and heat through without boiling. Remove the muslin bag, pack the pickle into sterilised jars, and seal. Store for about a month before using.

#### Green Tomato Chutney

3 lb. green tomatoes      ½ oz. mustard seed  
 ½ oz. salt                    ½ teaspoonful pepper  
 4 oz. prunes or sultanas   ½ teaspoonful mixed  
 6 oz. chopped onion       pickling spice  
 6 oz. chopped apple       4 pints vinegar  
 6 oz. sugar

Wipe or wash the tomatoes and remove the stalks and stalk ends. Chop them small or pass them through a mincing-machine, then put them into a basin in layers with the salt, cover, and leave to stand overnight. Soak the prunes also, if used. The next day drain off the liquid and turn the tomatoes into a preserving-pan. Stone and chop the prunes and add to the tomatoes, with all the other ingredients. Cook slowly, stirring occasionally, until reduced to a soft pulp; the time required will be about 2 hours. Then pot and cover.

#### Marrow Chutney

3 lb. marrow                2 tablespoonfuls salt  
 ½ lb. shallots               12 peppercorns  
 ½ lb. green apples         ½ oz. bruised root ginger  
 ½ lb. sultanas, if avail-   4 oz. sugar  
   able                        1½ pints vinegar

Cut up the marrow, place in a basin, sprinkle with the salt, and leave for 12 hours; drain and rinse thoroughly. Peel and chop the shallots and apples finely and add the sultanas. Tie the spices in muslin. Put all the ingredients in a saucepan, bring slowly to the boil, and simmer gently until the chutney is cooked and of the correct consistency. Pot and cover.

Note: Cinnamon and allspice may be added to this chutney, if liked.

#### FRUIT BOTTLING

Fruit for bottling must be in perfect condition. It should be washed and packed tightly into clean preserving-jars. The patent lids and rubber rings must be examined carefully before sterilising takes place. Water or syrup made from water and sugar is used for bottling. The average proportion for syrup is 6-8 oz. sugar to 1 pint of water. To prepare this, boil the sugar and water in a covered pan for 1 or 2 minutes and then strain through muslin.

Sterilisation by one of the following methods is carried out to destroy any moulds or bacteria.

#### Sterilising under Water

After the fruit has been packed in the bottling-jar, cover it with cold water or syrup. Put the tops and rubber bands in position and adjust metal clips or screw bands. Screw bands should be given one half-turn back after they have been screwed on to allow for expansion of glass during the sterilisation. Place the bottles in a deep vessel, standing them on wooden slats or a similar "false bottom," taking care that they do not touch each other. Fill the pan with cold water to come at least to the neck of the bottles. Heat

gently to required temperature, taking approximately 1½ hours to reach this point. Maintain temperature as shown in the following table. Remove the bottles from the water and tighten the screw bands. The next day remove bands or clips and test for a seal.

#### TIME AND TEMPERATURE CHART FOR STERILISING FRUIT

(For use when bottling fruit by sterilising under water.)

Fruit.	Temperature to which water should be raised in 1½ hours (in degrees Fahrenheit).	No. of minutes this temperature should be maintained.
Apples . . . . .	165°	10
Apricots . . . . .	165°	10
Blackberries . . . . .	165°	10
Cherries . . . . .	190°	10
Currants (black, red or white) . . . . .	180°	15
Damsons . . . . .	165°	10
Gooseberries . . . . .	165°	10
Greengages . . . . .	165°	10
Loganberries . . . . .	165°	10
Mulberries . . . . .	165°	10
Peaches . . . . .	165°	10
Pears . . . . .	190°	20
Plums (ripe, whole) . . . . .	165°	10
Plums (under-ripe or halved) . . . . .	165°	20
Quinces . . . . .	190°	20
Raspberries . . . . .	165°	10
Rhubarb . . . . .	165°	10
Strawberries . . . . .	165°	10
Tomatoes . . . . .	190°	30

#### Sterilising by the Oven Method

Pack the fruit in the jars, cover each with patty tin, and stand on a baking-tin in a cool oven (240° F.). Leave for about ½ hour, or until the fruit has shrunk, changed colour, and appears cooked. If the shrinkage is considerable fill one jar up from another and replace in the oven for 5-10 minutes. Remove the jars one by one from the oven and fill to the brim with boiling syrup or water. Put on rubber bands, tops, and clips or screw bands. Leave before testing as before.

#### Vegetable Bottling

Vegetables may be preserved by bottling, provided a pressure cooker is used to sterilise them. They should be prepared according to type, and blanched before being packed into jars. Blanching is done by tying the vegetables in muslin and plunging them into boiling water for a few minutes, and then plunging into cold water. For sterilising follow the directions given in a reliable pressure-cooker instruction book. The following table shows the times required for blanching and sterilisation:

TABLE FOR BLANCHING AND STERILISING VEGETABLES

Vegetable.	Blanching time.	Sterilising time (1 pt. bottles, 10 lb. pressure).
Asparagus . . . . .	2-3 minutes in boiling water	30 minutes at 240° F.
Broad beans . . . . .	2-3 minutes in boiling water	35 minutes at 240° F.
Beetroot . . . . .	10-30 minutes in boiling water	35 minutes at 240° F.
Carrots . . . . .	10-15 minutes in boiling water	35 minutes at 240° F.
Celery . . . . .	5 minutes in boiling water containing ¼ level teaspoonful citric acid per quart	30 minutes at 240° F.
French beans or runner beans	3 minutes in water at 180° F.	35 minutes at 240° F.
Mushrooms . . . . .	Stew in a casserole	30 minutes at 240° F.
New potatoes . . . . .	5 minutes in boiling water (remove skin first)	40 minutes at 240° F.
Peas (fresh) . . . . .	1-2 minutes in boiling water	40 minutes at 240° F.
Vegetable macedoine . . . . .	According to the individual types	40 minutes at 240° F.

## V. REFERENCE TABLES

## Basic Proportions

**Pastry**  
*Suet Crust.* 1 lb. flour, 2 teaspoonfuls baking-powder, 6-8 oz. suet, cold water to mix.  
*Short Crust.* 1 lb. flour, 8 oz. fat, cold water to mix, pinch of salt.  
*Flan.* 1 lb. flour, 10 oz. fat, 1 teaspoonful sugar, 1 yolk of egg, cold water to mix.  
*Flaky.* 1 lb. flour, 10-12 oz. fat, pinch salt, lemon juice, approx.  $\frac{1}{2}$  pint cold water.  
*Rough Puff.* 1 lb. flour, 8-12 oz. fat, pinch salt, lemon juice, approx.  $\frac{1}{2}$  pint cold water.  
*Puff.* 1 lb. flour, 1 lb. butter, lemon juice, salt, cold water to mix.  
*Hot-water Crust.* 1 lb. flour,  $\frac{1}{2}$  lb. fat, salt,  $\frac{1}{2}$  pint milk or milk and water.

## Steamed Puddings

*Suet.* 4 oz. flour, 4 oz. fresh breadcrumbs, 1 teaspoonful salt, 4 oz. suet, 2 oz. sugar, approx.  $\frac{1}{2}$  pint milk to mix.  
*Plain Sponge.* 8 oz. flour, 2 teaspoonfuls baking-powder, 2-3 oz. fat, 1 oz. sugar, milk or milk and water to mix.  
*Sponge.* 3 oz. fat, 3 oz. sugar, 1 egg, 5 oz. flour, 1 teaspoonful baking-powder.

## Batter Puddings

*Yorkshire Pudding and Pancakes.* 4 oz. flour, 1 egg, salt,  $\frac{1}{2}$  pint milk.  
*Coating Batter.* 4 oz. flour, 1 egg, salt,  $\frac{1}{2}$  pint milk.

## Milk Puddings

*Powdered Grain.* 1 pint milk,  $1\frac{1}{2}$  oz. grain.  
*Ground Grain.* 1 pint milk,  $1\frac{1}{2}$  oz. grain.  
*Whole Grain.* 1 pint milk,  $1\frac{1}{2}$  oz. grain.

## Custard

*Baked.* 1 egg,  $\frac{1}{2}$  pint milk.  
*Steamed.* 1 egg,  $\frac{1}{2}$  pint milk.  
*Cup.* 1 egg,  $\frac{1}{2}$  pint milk.

## Cakes

*Plain.* 1 lb. flour, 4-8 oz. fat, 4-8 oz. sugar, 4-8 oz. fruit, 2-4 eggs, 2-3 teaspoonfuls baking-powder,  $\frac{1}{2}$  teaspoonful salt, milk to mix.  
*Rich.* 1 lb. flour,  $\frac{1}{2}$ -1 lb. fat,  $\frac{1}{2}$ -1 lb. sugar, 4-8 eggs, 1 teaspoonful baking-powder,  $\frac{1}{2}$ -3 lb. fruit, milk to mix.  
*Sponge.* 1 egg, 1- $1\frac{1}{2}$  oz. sugar, 1 oz. flour.  
*Gingerbreads.* 1 lb. flour,  $\frac{1}{2}$  teaspoonful salt,  $1\frac{1}{2}$  teaspoonfuls ground ginger, 2 teaspoonfuls baking-powder,  $\frac{1}{2}$  teaspoonful bicarbonate of soda, 8 oz. brown sugar, 6 oz. margarine,  $\frac{1}{2}$  lb. treacle,  $\frac{1}{2}$  pint milk, 1 egg.

## Sauces

*Pouring.*  $\frac{1}{2}$  oz. fat,  $\frac{1}{2}$  oz. flour,  $\frac{1}{2}$  pint liquid.  
*Coating.* 1 oz. fat, 1 oz. flour,  $\frac{1}{2}$  pint liquid.  
*Panada.* 2 oz. fat, 2 oz. flour,  $\frac{1}{2}$  pint liquid.

## Homely Measures

Flour, Cornflour. 2 level teaspoonfuls.  $\frac{1}{2}$  oz.  
 Cocoa, Custard 1 level tablespoonful  $\frac{1}{2}$  oz.  
 Powder 2 level tablespoonfuls 1 oz.  
 1 teacupful 3  $\frac{1}{2}$  oz.  
 1 breakfast cupful 5 oz.

Sugar, Rice, 1 tablespoonful 1 oz.  
 Lentils, etc. 1 teacupful 8 oz.  
 1 breakfast cupful 8 oz.  
 Breadcrumbs, etc. 2 level tablespoonfuls  $\frac{1}{2}$  oz.  
 Liquids 1 teacupful  $\frac{1}{2}$  pint  
 1 tumblerful or breakfast cupful  $\frac{1}{2}$  pint

## British Standard Measures

## Cup Measures

A British Standard Cup contains 10 fluid ounces, i.e., one half-pint, a Standard Tablespoon  $\frac{1}{4}$  of a fluid ounce. Standard Measures should be filled level.

Flour 1 cup 5 oz.  
 Semolina 1 cup 6  $\frac{1}{2}$  oz.  
 Sugar (granulated) 1 cup 8 oz.  
 Fat 1 cup 8 oz.  
 Breadcrumbs (fresh) 1 cup 2  $\frac{1}{2}$  oz.  
 Liquid 1 cup  $\frac{1}{2}$  pint  
 Golden Syrup 1 cup 1 lb.  
 Sultanas 1 cup 6 oz.

## American Standard Measures

These are based on the American pint of 16 fluid ounces. For a recipe given entirely in cup measurements use either British or American Standard Cups, provided the same measuring system is used throughout.

## Avoirdupois and Liquid Measures

## Avoirdupois

16 drs. 1 oz.  
 16 oz. 1 lb.  
 28 lb. 1 qr.  
 4 qrs. 1 cwt.  
 20 cwt. 1 ton  
 14 lb. 1 stone  
 8 stone 1 cwt.  
 112 lb. 1 cwt.

## Liquid Measures

4 gills 1 pint  
 2 pints 1 quart  
 4 quarts 1 gallon

Note: 1 pint of water weighs  $1\frac{1}{2}$  lb.

## Liquids

Boiling 212° F.  
 Simmering 200-210 F.  
 Slow simmering 180-190° F.  
 Blood Temp. (also called tepid and lukewarm) 98.4° F.

## Cooking Temperatures

## Ovens

Slow oven 275-325° F.  
 Moderate oven 325-375° F.  
 Moderately hot oven 375-425° F.  
 Hot oven 425-475° F.  
 Very hot oven 475-500° F.

## Electric Cookers

With thermostatically controlled electric ovens it is usually found that the thermostat scale is marked either in degrees Fahrenheit or in Numbers 1, 2, 3, etc., corresponding with 100° F., 200° F., 300° F., etc.

## Gas Ovens

## THERMOSTATIC SETTINGS FOR WELL-KNOWN MAKES OF GAS COOKERS

Name of stove.	250° F.	300° F.	350° F.	400° F.	450° F.	500° F.
Radiation New World "Regulo"	$\frac{1}{2}$ -1	1-2	3-4	5-6	7-8	9-10
Main Cooker "Mainstat"	$\frac{1}{2}$ -1 or AB	1-2 or C	4 or D	6 or F	8 or G	10-11 or J
Parkinson Stove "Ajusto"	1	3	4-5	6	7-8	8-9
Flavel Kabinat "Thermo tat"	B	C-D	E-F	G	H-I	J
New Herald "Thermostat"	$\frac{1}{2}$	1-2	4	6	8	10-11
Newhome "Autokook"	$\frac{1}{2}$ -1	1-2	4	6	8-9	10
Cannon Champion "Autimo"	$\frac{1}{2}$ -1	1-2	3-4	6	8-9	11

Note: Most new gas cookers will have thermostats showing standard markings as follows:

Setting	$\frac{1}{2}$	$\frac{1}{2}$ -1	1	2	3	4	5
° F.	241	266	291	313	336	358	379
Setting	6	7	8	9	10	11	12
° F.	403	424	446	469	491	513	536



## VI. HOUSEHOLD HINTS

### Cleaning—Choice of Equipment

Reliable and well-designed cleaning equipment is of prime importance to the housewife. When buying take time going over each point carefully and handle the appliance when possible. It should be of sound construction, simple to operate, and easy to clean. The following points should help towards a wise choice:

**Vacuum Cleaners.**—There are two main types of vacuum cleaner, the one with a long handle which is pushed over the floor like a broom, and the other generally a cylinder-shaped machine with an enclosed dust-bag. For houses with large carpeted areas the long-handled type is usually most satisfactory, and in smaller houses where there is a good deal of furniture and rugs the cylindrical type is a good choice. General points to watch for are a simple design with no dust-traps, a comfortable handle, a machine that is not too heavy or noisy, attachments that are easy to assemble, and a dust-bag that can be easily removed.

In all cases, vacuum cleaners should be used according to the manufacturers' instructions to obtain the maximum efficiency. Unless the cleaner is of the self-adjusting type, nozzles of long-handled cleaners must be adjusted to suit the kind of carpet being cleaned. Dust-bags must be emptied regularly and brushes kept clean and free from hair. Check up on the cord and connection regularly.

**Carpet Sweepers.**—These are valuable for everyday cleaning. They should be soundly constructed and streamlined for easy cleaning. The sweeper should be simple to empty, and should not have too shallow a dust-collecting pan. The brush should be adjustable so that as it becomes slightly worn it still maintains good contact with the carpet.

**Dusting-mop.**—This should have a detachable head made of lightly twisted yarn which will not shed fluff. Mops with a flexible handle save a good deal of stooping. Mops should be washed regularly in hot, soapy water.

**Wet Mop.**—Self-wringing mops are available, and these are a great convenience. Alternatively, if choosing a mop and bucket make sure that the special wringing plate is so placed that the bucket is well balanced.

**Brooms and Brushes.**—It is well worth buying good brushes with a full head of hair or fibre. Handles should be placed at a convenient angle and be long enough for easy use. Brooms and brushes should be stored in such a way as to avoid the weight resting on the head.

**Scrubbing-brushes.**—Choose those with a good grip and sufficient clearance for the knuckles.

**Floor Polishers.**—Electric floor polishers are extremely useful if fairly large areas of polished floors are involved. The three-brush type is a good choice for big floors, whereas the two-brush or cylinder-brush type is usually lighter and easier to handle when polishing surrounds. Hand-operated polishers are also available with a special device for spreading the wax.

### PLANNING HOUSEWORK

A planned routine is the basis of all good housework, and much labour can be saved if the daily and weekly jobs are carried out systematically. Simple alterations or re-arrangements can save both time and work, particularly in the kitchen.

The general order of daily work is much the same in all rooms.

1. Collect tools and a tray or basket for waste paper, cigarette ends, etc.
2. Open windows to air room; tidy up.
3. Run carpet sweeper over rugs and carpet.
4. Dust and mop surrounds, ledges, and furniture.
5. Replace everything.

**Bathroom.**—Wipe out bath and basin with a non-scratchy cleanser. Give lavatory a good brush and flush.

**Bedroom.**—Air beds before making.

**Living-room.**—Attend to grate and re-lay fire. Polish heavily used furniture.

**Stairs and Landing.**—Close all doors, start upstairs and work downwards.

Each room should be thoroughly "turned out" once a fortnight, and the following routine can be adapted for most rooms, with reference to the special cleaning needs below:

1. Open windows.
2. Remove flowers, empty ashtrays, waste-paper basket, etc.
3. Attend to the fireplace.
4. Vacuum-clean curtains, upholstery, and carpets.

If a vacuum cleaner is not available:

- (i) cover upholstered or covered furniture;
  - (ii) shake curtains gently;
  - (iii) clean the carpet with a carpet brush.
5. Mop and polish surrounds if any.
  6. Clean the windows. Wash finger-marks, etc., from paintwork where necessary.
  7. Dust window-ledges, wainscoting, etc.
  8. Dust all polished furniture (polish when necessary).
  9. Shake rugs, etc., in open air, and replace everything.

**Bedroom.**—Strip and air bed. Dust, brush, or vacuum the bedstead and mattress. Remake bed.

**Bathroom.**—Clean the bath and hand-basin by running a little hot water into the bath, and then with a cloth and paste cleanser rub off the dirty marks; rinse well, and dry with a basin cloth. Rub over the taps with a damp cloth and dry with a duster.

**Lavatory.**—Once a week pour hot strong soda water (1 tablespoonful soda to 1 quart boiling water) down the lavatory pan, brush vigorously. Flush.

**Kitchen.**—Keep the sink cleaned regularly with hot soapy water and a stiff brush. Once a week clean thoroughly with very hot strong soda water. If the sink becomes badly discoloured use a proprietary chlorine bleach according to manufacturers' directions, rinsing carefully afterwards.

Gas and electric cookers should be washed each week with a soapless detergent. Steel wool can be used to remove obstinate marks. Badly neglected cookers may require treatment with a caustic-soda preparation, in which case manufacturers' directions must be followed.

Clean the flues of solid-fuel cookers regularly.

The larder should have easily cleaned surfaces; wooden shelves can be lined with linoleum, oil-cloth, or laminated plastic. The window should be adequately screened with perforated zinc or muslin to exclude flies. Special cleaning is necessary once a week. Remove all food and wash the shelves and floor; clean window, containers, and woodwork. Replace the food when the larder is dry. Perishable food stored in the larder should be examined every day.

Refrigerator must be de-frosted once a week, according to manufacturers' instruction. Remove all food, and wash the interior out with luke-warm water to which a little bicarbonate of soda has been added. It is important to place food correctly in a cabinet, the strong-smelling foods should normally be on the higher shelves, and moist foods should be covered to prevent drying.

### SPECIAL CLEANING HINTS

**Stains on Bath.**—Blue marks from a geyser can be removed by rubbing with a cloth dipped in vinegar, followed by rinsing. To remove rust marks treat with oxalic acid (1 teaspoonful to 1

pint hot water). Apply directly over the mark with an old mop or brush, and rinse quickly and thoroughly. Oxalic acid is very poisonous, and must be used with great care.

**Paintwork.**—Wash with warm water and soapless detergent. Work from the highest point downwards. Remove stains with a paste cleanser, rinse, dry, and apply furniture cream sparingly.

**Windows.**—Wash with a leather wrung out of luke-warm water and polish with a fluff-free cloth. Alternatively, use a proprietary window-cleaning preparation.

**Linoleum.**—Avoid scrubbing, which will tend to make the linoleum brittle. Treat with wax polish or a water-wax emulsion. Obstinate marks can be removed by rubbing with medium-grade steel wool dipped in turpentine.

**Rubber Floors.**—Use a special rubber-floor polish or water-wax emulsion. Clean with a paste cleanser, and avoid wax polishes, as they contain rubber solvents.

**Composition Floors.**—Treat with water-wax emulsion or special polish supplied or recommended by manufacturers. Avoid washing and scrubbing.

**Upholstered Furniture.**—Brush or clean with vacuum cleaner and if generally soiled shampoo the furniture. Whisk up a good lather using soap or a soapless cleanser; work on a small area, apply the lather with a brush, working well in. Scrape off any excess lather with the back of a knife and rinse with a cloth wrung out of clear water. Avoid saturating the material, and leave the windows open to ensure quick drying.

**Hide Suites.**—Polish with furniture or shoe cream, rubbing up well. Occasionally sponge with a mixture of 1 teaspoonful strong ammonia and 4 teaspoonfuls vinegar, added to 1 quart of water. Afterwards apply a little castor oil, rubbing well in, when dry polish as before.

**Leathercloth or Rexine.**—Sponge over with a damp cloth when soiled, and rub up with a clean duster. Avoid using polish.

**Brass and Copper.**—Clean regularly with a reliable metal polish. Slightly neglected metal should be washed in hot, soapy water, before polishing. Use a brush to clean the crevices. Badly neglected brass or copper articles can be treated with a solution of spirits of salts diluted five to six times with water. Apply with an old brush, and do not allow the solution to come in contact with anything but the metal. Rinse very thoroughly and polish when dry. Use and store spirits of salts with great care, as the solution is very poisonous.

**Bronze.**—Dust well, and if necessary apply a little oil, rubbing it in well. Polish up with a soft duster, taking care to remove all traces of oil.

**Gilt.**—Clean with a cloth dipped in a little turpentine.

**Lacquered Articles.**—Rub occasionally with a little furniture cream. Never use metal polish, which will remove the lacquered finish.

**Silver and Silver Plate.**—Polish regularly with prepared non-scratchy polish or impregnated cloth. Wash table silver in warm, soapy water after cleaning. Badly neglected articles which will not be harmed by immersion in boiling water can be cleaned in the following way. Half-fill an old aluminium saucepan with water and bring to the boil, then add 2 oz. soda to each gallon of water. Immerse articles in the boiling water. Remove after a few minutes, wash in warm, soapy water, rinse, and dry.

**Stainless Steel.**—Rub up with a soft, dry duster, and wash if necessary with warm, soapy water.

Stainless-steel sinks can be polished with a paste cleanser or finely powdered whitening.

## HOME LAUNDRYWORK

**Choice of Equipment.**—The labour of washing at home is greatly reduced by the choice of good equipment. The first essentials are a good deep sink, a strong wringer, a reliable iron, and steady ironing-board. A plentiful supply of hot water should be available, and some provision made for boiling white cotton and linen goods. Drying out of doors is ideal, and a good strong clothes line is required for this. Where out-door drying is not possible, choose a ceiling or wall alriner which will not be in the way indoors.

Washing-machines are becoming increasingly popular, and the choice is now wide. A good machine saves a tremendous amount of back-breaking work, and the type and size should be chosen to suit individual needs. Generally speaking, machines can be classed in the following categories:

(a) *Automatic and Semi-automatic.*—These machines have a spin-dryer incorporated, which extracts the moisture from the clothes, leaving them ready to hang out. Washing, rinsing, and spin-drying are carried out in the machine, obviating handling of wet clothes between the processes. Fully automatic machines must be bolted to the floor and fixed with special taps. They will take a load of 8-10 lb. dry washing.

(b) *Electrically Operated Machines with Electric Wringer.*—These machines are mobile, and are filled by hand or by means of a hose. Some are fitted with an emptying pump. The electric wringer is reversible and placed on a swivel so it can be swung over the sink. Two or more loads of 7-10 lb. dry washing can be done in the same lot of suds.

(c) *Electrically Operated Machines with Hand Wringers.*—These are similar to the above type without a power wringer. They are fitted with a well-sprung hand-wringer, making them less expensive to buy. In this category are small machines designed to fit under a draining-board. The load of dry washing varies from 3 to 10 lb., according to the size of the machine.

(d) *Gas or Electrically Heated Machines with a Hand-operated Wringer and Agitator.*—These, though less labour saving than the above types, are useful where the hot-water supply is limited. The water is heated in the machine, and the agitator is worked by hand. A hand-wringer can be fitted on these machines. Load about 6 lb. dry washing.

(e) *Hand-operated Machines.*—These are the simplest form of washing-machine, being hand-filled and fitted with hand-operated agitator. No water-heating device is incorporated.

Ironing equipment requires careful selection, and individual preference for the size and shape of an iron is important. An electric iron should be well balanced and comfortable to hold. It should be sufficiently pointed to iron gathers, etc., easily, and the heat-control dial must be clearly marked.

The normal weight for an iron is 4½-5 lb., though for ironing table linen some people prefer a heavier iron, of say, 6 lb. Gas, petrol, and flat irons serve as an alternative where electricity is not available. Modern gas irons are adapted for a certain amount of heat control. The average height of an ironing-board is 32 in., and this is comfortable for most people. It should be simple to fold away, and really firm when standing.

The choice of soap is important for laundry-work. For the general family wash pure laundry soap is a good choice. It should be shredded with a grater and dissolved in hot water beforehand to make a soap jelly. Soap powders are particularly useful for washing white articles that are slightly discoloured. Soap flakes have the advantage of being readily dissolved in warm water, and are free from excess alkali, so that they can be safely used for delicate fabrics. Soapless detergents available in liquid or powder form are now widely used. Not all varieties are suitable for the white wash, and this fact is usually clearly stated by the manufacturers. These detergents are especially useful in hard-water districts, as they do not react



with the hard water in the way soap does, and no scum is formed. It is not, therefore, necessary to soften the water, and rinsing is easier.

In hard-water districts water should be softened for laundrywork when soap is used. Soda is a suitable and cheap water softener, provided it is used in the correct proportions. The solution must allow for no free soda, and must be added to hot water five minutes before the addition of soap. The following proportions are correct for a stock solution.

Heat 1 quart of water and dissolve in it 2 oz. of washing soda. Leave to cool before bottling. One tablespoonful of this solution will be required for each gallon of water of 10 degrees hardness.

**The Family Wash.**—Collect up all the articles. Empty all pockets and attend to stains, major tears, etc. Then sort articles into groups, according to the nature of the fabric or degree of soiling. The order of washing should be as follows:

Table linen and other lightly soiled articles.

Fine articles of personal wear.

More heavily soiled items, such as shirts, bath towels, etc.

Overalls, oven cloths, dusters, etc.

Woollens should be done separately.

Heavily soiled articles can be soaked overnight in order to loosen the dirt.

Sufficient soap should be added to the water to give a good lather. The lather should remain during the whole washing process if results are to be satisfactory. If necessary, prepare fresh water during the wash. For best results linens and cottons require washing in water approximately 105–110° F. Lower temperatures are preferable for coloured articles, silks, and woollens.

Each garment should be opened out before dropping it into the washing water, and the sink should not be overfilled with clothes. When using a washing-machine, manufacturers' instructions must be carefully followed. Do not overload a washing-machine. The washing time varies according to the fabric and degree of soiling, but cleansing is as a rule complete after 5–7 minutes. Woollies and silks require less time, and must on no account be left too long in a machine. Collars, cuffs, and soiled areas should be moistened and rubbed with soap before placing the garment in the machine.

When washing by hand, linens and cottons can be rubbed, kneaded, and squeezed. A soft nail brush is a help towards removing any specially dirty mark. For silks and woollens see later instructions.

If possible wring the articles before rinsing, and then again between each rinse. For satisfactory results continue rinsing until the last water is clear and free from all traces of soap.

In order to keep white cotton and linen articles a good colour they should be boiled at least every third wash. The washed articles are put into the boiler with warm, softened, soapy water, and brought to the boil, and boiled for 15–20 minutes. For badly discoloured articles add borax (1 ounce to 1 gallon) to the water and stew the articles for as much as an hour. Rinse as above and line white articles.

Some soap powders contain new opalescent ingredients, and when these are used bluing is unnecessary.

Ultramarine blues are on the whole most convenient for laundrywork. Add the blue to the water, stir well, and test by immersing a piece of white rag and squeezing it out. Alternatively, scoop some of the blue water out by hand and judge the strength by the colour, which should be a deep but not dark blue. Over-bluing with ultramarine blues can be rectified by soaking the article in vinegar and water. Soluble blues are as a rule coal-tar dyes, and although they give even results, excess blue can be removed only by bleaching.

Dip the articles once or twice into the blue bath, but do not allow them to remain lying in it. Stir the water occasionally to prevent particles settling on the base of the bath.

Starching is required to re-stiffen cotton and linen articles. Starched articles will also resist dirt and keep clean longer. The thickness of starch required depends largely on the quality and age of the material. For ordinary purposes a cooked or boiling-water starch is used in the following way:

Mix 1 tablespoonful of starch into a smooth paste with 3 tablespoonfuls of cold water. Pour on boiling water until the starch clears, stirring all the time. This full-strength starch is diluted, according to the degree of stiffness required, as follows—

1 part full-strength starch to 4 or 5 of water for table linen, soft collars, thin or medium-weight linen or cotton curtains.

1 part full-strength starch to 8 of water for bed-linen, shirts, or frocks.

Immerse the rinsed and wrung article in the starch solution, allowing it to become thoroughly saturated. For extra stiffness dry the article before starching.

For stiff glazed collars, cuffs, and shirt fronts use unboiled or cold-water starch in the following way:

Mix 2 tablespoonfuls of powdered starch with 3–4 tablespoonfuls of water taken from a measured pint. Add the remaining water and strain through muslin. Allow the starch to stand to soften the starch grains. Immerse the article in the solution and rub the starch well into the material. Iron when still very damp on a board with no blanket. A hot iron is required to burst the starch grains. To get a good finish, a glossing iron with curved heel and toe is necessary.

Plastic starches give a stiffness which lasts through several washes. They give a matt finish, and are not suitable for articles requiring gloss. Follow manufacturers' instructions.

Dry clothes in the open air whenever possible. It is important to avoid direct sunlight, for coloured articles, and white silks and woollens. Hang to avoid unnecessary strain on the fabric; generally speaking, garments should be hung from the shoulders.

**Ironing.**—The chart below shows the degree of dampness and temperature of iron required for different fabrics.

IRONING CHART

Fabric.	Degree of dampness.	Side on which to iron and temperature of iron.
Cotton	Slightly damp	Right side (unless dark-coloured) with hot iron
Voile	Damp	Wrong side with fairly hot iron
Organdie	Damp	Right side with hot iron
Linen	Damp	Right side with hot iron
Crease-resisting linen	Slightly damp	Right side with coolish iron
Silk	Slightly damp	Wrong side with warm iron
Tussore silk, shantung	Dry	Wrong side with fairly hot iron
Rayon (duff and suede finish)	Dry	Wrong side with coolish iron, if necessary over a slightly damp cloth
Satin rayon	Damp	Wrong side with coolish iron
Linen-type rayon	Damp	Wrong side with coolish iron
Rayon marocains and georgettes	Damp	Wrong side with coolish iron, stretching fabrics gently
Knitted rayon	Slightly damp	Either side with cool iron, across fabric to prevent dropping
Nylon	Nearly dry	Either side with cool iron

The following fundamental points should be watched :

1. The articles must be at the right degree of dampness. Ideally they should be taken off the line and rolled up before they are too dry. If damping down is necessary, roll the articles up again and leave for about an hour. Rayons should never be damped down, it is better to re-immense the garment.

2. Iron the articles until quite dry.

3. Place the article on the ironing-board to avoid as much turning as possible.

4. Iron all double parts first, and then small parts such as belts, collars, etc.

5. Iron the article lengthways along the selvage. The exceptions to this rule are net curtains and some rayons, which should be ironed diagonally.

6. Look over the article when finished and touch up creased parts.

7. Fold carefully and air before putting away.

### Treatment of Special Items

**Woolens.**—Tack round hand-knitted garments before washing. Use warm water, keeping the same temperature for rinsing and washing. Do not rub, and rinse in several changes of water. Fold in a towel before passing through the wringer. Dry flat away from direct heat.

**Blankets.**—Choose a fine breezy day to ensure quick drying. Use a large sink or bath so that the blanket can move freely in the washing water. Maintain a live lather throughout washing; it may be necessary to use two washing waters. Wring before rinsing in at least two clear waters. Shake well and hang out to dry. Striped blankets must be hung so that the stripes run up and down. Shake during the drying to bring up the nap.

**Stiffening Silks.**—Use a solution of gum arabic made in the following way. Dissolve 4 oz. gum arabic in 1 pint water. Strain and use 1-4 teaspoonfuls of the solution to each  $\frac{1}{2}$  pint of rinsing water. Iron while the material is still very damp.

**Handkerchiefs.**—Soak in cold salt water for  $\frac{1}{2}$  hour. Rinse before washing. To improve the colour, stew in soapy water and borax (1 table-spoonful to  $\frac{1}{2}$  gallon) for  $\frac{1}{2}$  hour. Rinse well and starch lightly.

**Socks.**—Soak for 15 minutes in warm water and borax. Wash in soapy water, rinse well and pull into shape.

### Removing Stains

The following general rules and the ready reference chart below may help to solve this difficult problem :

1. Stains should be tackled soon after they occur, for if left they are apt to set and become more difficult.

2. Check up on the nature of the staining matter and the type and colour of the material. It is wisest to try the simplest method of removal first.

3. When dealing with delicate or coloured material, first try out the treatment on a hidden corner.

4. Short, repeated treatments are less likely to cause damage to the fabric, so be patient and very persistent.

5. Be sure to remove thoroughly the chemical used for treating the stain, or the fabric may be damaged. (Grease solvents, of course, evaporate without further treatment.)

6. Handle the chemicals carefully, especially those such as oxalic acid and salts of lemon, which are poisonous.

### COMMON STAINS AND THEIR TREATMENT

Stain.	Treatment.
Acid . . . . .	Sponge with warm water to which a little ammonia has been added.
Blacklead . . . . .	Sponge with turpentine, then wash in the usual way.
Blood . . . . .	Soak in cold salt water (1 tea-spoonful to 1 pint) for about an hour. Wash in cool soapy water. Any resistant or old stains will require to be treated with oxalic acid or salts of lemon solution (see "Iron Mould").
Candle grease . . . . .	Scrape off "crust" and then sponge with cleaning benzine.
Cocoa . . . . .	Treat as for tea stain.
Cod liver oil . . . . .	Treat as for grease marks, and wash if possible. Any remaining stain will need to be bleached with hydrogen peroxide (20 vol. diluted 1 part in 5 of water). Soak 10-15 minutes and wash in the usual way.
Coffee . . . . .	Treat as for tea stain. If non-washing material rub in a little glycerine, removing any excess with methylated spirits. (Test rayons before treating.)
Creosote . . . . .	Sponge with benzol or eucalyptus oil.
Fruit . . . . .	Treat as for tea stain.
Grass . . . . .	Sponge with methylated spirits.
Gravy . . . . .	Sponge with a grease solvent and wash in warm, soapy water. Rinse well.
Grease . . . . .	Lay the stained area over a pad of absorbent material and dab sparingly with grease solvent such as carbon tetrachloride. Start well outside the mark and work towards the centre, in order to prevent "ringing." Shake to hasten evaporation. Avoid inhaling the fumes of carbon tetrachloride, and keep the bottle tightly corked.
Ink :	
Writing ink	Washable Fabrics should be rinsed immediately in cold water. Any remaining traces of stain will require a bleach as follows :
	White Linens and Cottons : Apply a solution of chlorine bleach immediately over the mark. After a few minutes rinse thoroughly and boil.



Stain.	Treatment.	Stain.	Treatment.
Ink (contd.):		Nail Polish	Sponge with acetone. (Test rayons before applying, and on no account use on acetate rayons.) Wash to remove traces of dye.
	<i>White Silk and Wool:</i> Use a warm solution of oxalic acid or salts of lemon ( $\frac{1}{2}$ teaspoonful to $\frac{1}{2}$ pint) in place of chlorine bleach. Remember that these chemicals are poisonous.	Nicotine	Sponge with methylated spirits. (Test rayons.)
	<i>Coloured and Delicate Fabrics:</i> Treat first with a solution of potassium permanganate ( $\frac{1}{2}$ teaspoonful to $\frac{1}{2}$ pint water), applied immediately over the mark. After a few minutes rinse away with cold water.	Paint:	
	The remaining brown stain should be removed by treating with a solution of hydrogen peroxide (20 vol. diluted 1 part to 5 parts water), acidified with $\frac{1}{2}$ teaspoonful of vinegar. Rinse well.	Enamel	Treat with turpentine or white spirit.
Red ink	<i>Washable Materials</i> should be soaked in warm water to which a liberal amount of borax has been added. Wash and rinse, then bleach any remaining stain with solution of hydrogen peroxide.	Cellulose	Treat with acetone or amyl acetate. (Test rayons first.)
	<i>Unwashable Materials</i> should be sponged with methylated spirits. (Test Rayons.)	Oil paint	Treat with turpentine or benzene.
Green ink	<i>Washable Materials</i> should be washed in warm soapy water and treated with a strong solution of household ammonia. Rinse well. This treatment is not suitable for woollen or delicate fabrics.	Paraffin	Treat with cleaning benzene.
Marking ink	Most types contain aniline dye and are very resistant; repeated treatment with permanganate solution followed by oxalic acid solution ( $\frac{1}{2}$ teaspoonful to $\frac{1}{2}$ pint water) is generally effective (see "Writing Ink").	Rust	Treat as for iron mould.
Indian ink	Very resistant stain; a solution of citric acid is sometimes effective.	Scorch	Wash with soapy water containing borax, then gently rub in a little glycerine and wash again. A mild oxidising agent such as hydrogen peroxide is helpful, but there is no remedy for bad scorch marks.
Copying ink	Rub oleic acid into stain and leave for 15 minutes, then dip in ammonia solution, rub well and rinse.	Sealing wax	Sponge with methylated spirits.
Ball-point-pen ink	Sponge with methylated spirit. (Test rayons before treatment.)	Shoe polish	Sponge with methylated spirits or wash in warm water to which a little ammonia has been added.
Iodine	Treat with solution of washing soda or a solution of photographic "hypo." (1 tablespoonful to $\frac{1}{2}$ pint water.)	Soot	Treat with carbon tetrachloride.
Iron mould	Treat with a warm solution of oxalic acid or salts of lemon ( $\frac{1}{2}$ teaspoonful to $\frac{1}{2}$ pint). After a few minutes, rinse thoroughly. Handle acids carefully.	Tar	Scrape off tar and treat immediately with benzol or eucalyptus oil.
Mildew	Treat alternately with potassium permanganate solution and oxalic acid (see Writing Ink). These marks are very resistant, and short repeated treatments are necessary.	Tea	<i>White Materials:</i> Stretch the stained area over a basin, damp, and sprinkle with borax. Pour through hot water from a kettle. Push the stained area into the solution and leave to cool. Rinse, wash, and finish in usual way.  <i>Coloured Materials:</i> Sponge with a warm solution of borax ( $\frac{1}{2}$ oz. to $\frac{1}{2}$ pint). Rinse well.
		Transfers	Sponge with methylated spirits. (Test rayons first.)
		Varnish	Sponge with methylated spirits. If this fails, try turpentine or white spirit.
		Whitewash	Sponge with vinegar and water.
		Wine	Treat as for fruit stains.

# Gardening



## LIST OF CONTENTS

Flower Cultivation	878-89	Soil Preparation	894
Concrete Paths and Structures	889	Vegetables	893-903
Rock- and Water-gardens	889	Gardening Calendar	904-08
Fruit	889-93	Fertilisers, Insecticides	908-10



# Gardening

By RICHARD SUDELL, F.I.L.A. (Garden Editor: "Ideal Home and Gardening")

## I. FLOWER CULTIVATION

**General Hints.**—Soil for flowers should be well tilled, not sour or pest-ridden, and should contain plenty of phosphates, since these make for early flowering. Bone-meal is a safe fertiliser to use in all parts of the flower garden, particularly where flowers are wanted in partial shade.

For seasonal bedding, ground should be dug in autumn and planted with bulbs and spring-flowering biennials. It should be dug over again, with a bone-meal dressing worked into the top spit, in late spring after the bulbs have flowered, and replanted with tender summer flowers at the end of May, or with hardier annuals, etc., if replanting is done earlier.

Perennial flowers in mixed or herbaceous borders should mostly be lifted once in three years, divided if over-grown, and replanted after the soil has been well dug and manured. Certain flowers such as peonies, madonna lilies, and oriental poppies have fleshy roots which resent disturbance. These are better not lifted, or only lifted once in six years if they become overcrowded, but they can be increased by division. Peonies, for instance, can have pieces taken off in September, with roots attached to each portion, the main plant being left undisturbed.

*Bulbs*, whether autumn or spring planted, are best set with the base of each on sandy soil. If planting in stiff clay, put a handful of sand in each hole that is prepared for the bulb. Or cover the whole bed with a layer of sand before planting, when some sand will fall into each hole automatically as it is made by the trowel. Depth rule is to cover each bulb with twice its own depth of soil. Bulbs that will grow rather tall, such as tall tulips, lilies, gladioli, and narcissi may advantageously be set even more deeply, so as to avoid wind damage.

*Annuals* are flowers which bloom profusely the first season and are then discarded. They may be sown in spring or autumn. Hardy annuals are better sown in late August or September. More tender annuals must be sown under glass in the early months of the year, or, if sown in autumn, they must be wintered in frames. These are planted out only when danger of frost damage is past.

*Biennials* are like annuals in that they flower once profusely and are then discarded, but biennials always take two seasons to reach flowering stage. They are mostly sown in April or May for the following year, in the open unless they are tender. Seedlings are thinned out, and in autumn transplanted to flowering quarters.

**Acacia (Mimosa).**—Tender shrubs, generally only suitable for greenhouse culture. All with yellow flowers, in the early months of the year. Sow seeds as soon as ripe, or take cuttings of half-matured wood in July or August. Feed well with weekly doses of liquid manure when growth is active.

**Acer (Maple).**—Hardy deciduous trees with ornamental foliage. The Norway maple, *A. platanoides*, is the best for difficult gardens. Japanese maples are smaller and very decorative, but rather more particular over soil, which should be light and rich. Slight shade prevents leaf scorch. *A. palmatum atropurpureum* is the red-leaved Japanese maple. Seed, layering, and budding are common methods of propagation.

**Achillea (Yarrow).**—Hardy perennials, mostly 2-4 ft., but some suitable for the rock garden. *A. ptarmica*, "The Pearl," is useful for cutting, and carries masses of small white double flowers. Other herbaceous-border types have flat heads of yellow or crimson. *A. tomentosa* is a rockery species 6-9 in. with yellow flowers. Increase by division of roots.

**Aconitum (Monkshood).**—Hardy perennial. Poisonous. Fleshy rooted (handle carefully as it contains poison), mostly blue flowered, July to September. 5 ft. Suitable for the back of the border or for a wild garden, in full sun or partial shade. Increase from seed sown in summer, or from root division in autumn.

**Adiantum (Maidenhair Fern).**—There is a hardy Maidenhair—*A. pedatum*—but most of the Maidenhairs need a winter temperature of about 60° F., with some shade and plenty of moisture, but no waterlogging of the soil. The hardy species likes similar conditions but needs less heat, and will grow in favoured gardens in the open. Increase usually by division.

**Agapanthus (African Lily).**—Blue or white flowering, particularly suited to tub culture. Loam with leaf-mould and well-rotted manure, and enough sand to allow free drainage are needed



**STAKING IS AN ART.**—The spikes of delphiniums, for example, should be tied up separately, not bunched together, as shown above. Left, wrong; right, correct.

for the compost. Pot in March, water and use liquid manure in summer, but keep dry and well protected from frost in winter. Increase by seed in March or by root division.

**Ageratum (Floss Flower).**—Sold in quantity in spring for border edgings. Half-hardy annual, of which there are several varieties with mauve, pink, bluish, or white flowers. Raise annually from seeds sown in heat early in the year. 6 in.

**Allanthus (Tree of Heaven).**—A large tree when mature, but can be grown in a mixed shrubbery with good effect if cut down each winter almost to ground level. Propagate by root cuttings in a frame.

**Asuga (Bugle).**—Dwarf plants, some of which have variegated leaves and blue flowers, in spring and summer. Suitable for rockeries. Propagate by division in March. 6 in.

**Allium (Onions).**—Several species are cultivated for their floral charm. They are treated like other bulbs, and may be grown in pots if desired. Pot in October. Colours: yellow, blue, white, lilac rose. Height from 12 to 18 in.

**Alstroemeria (Peruvian Lily).**—Tuberous-rooted perennials suitable for sunny borders and preferably grown in sandy, leafy soil. *A. aurantiaca* has orange-red flowers, and modern varieties have a wider range of colours. All suitable for cutting. Sow seeds in heat in January and plant out in May or June. Do not disturb the tubers, but mulch to protect from winter frosts.

**Althaea.**—See Hollyhock.

**Alyssum.**—Dwarf annuals and perennials for sunny beds and rock gardens. *Alyssum saxatile* is the golden alyssum of spring, and is increased by seed, or by cuttings taken after the flowers fade. *A. maritimum* is the white-flowered scented annual; there are also mauve varieties of this. Seeds may be sown under glass for early blooming, or in the open if glass cannot be used.

**Amaranthus (Love-Lies-Bleeding).**—Half-hardy annuals, best raised from seed sown under glass in early spring. Suitable for beds, borders, tubs, or vases, or for pots in the greenhouse. Flowers are graceful and drooping, and usually red. Height 10-40 in.

**Amaryllis (Belladonna Lily).**—These bulbs succeed best in a warm border under the greenhouse wall, outside, but they can also be grown in pots if the bulb is covered right up to the neck at the time of planting, in summer. The flowers are produced in August and September, and the foliage later. Height up to 3 ft. White to reddish purple. Bulbs must be protected from frost during winter, and fibre is useful material for this purpose. Give plenty of water while the flowers are opening.

**Anagallis (Pimpernel).**—Hardy annuals useful for front of border or for rockery pockets. Various colours. 3 in.

**Anchusa (Alkanet).**—*Anchusa italica* is a deep tap-rooted perennial, which sends up 5 ft. spikes that carry masses of blue flowers on their branches. June to August. "Dropmore" is the gentian blue variety, "Opal" has sky-blue flowers. Propagate by root cuttings in early spring. Plant in groups, allowing 18 in. from plant to plant. Well-drained and well-manured soil is best.

**Anemone (Wind-flowers).**—Hardy fibrous-rooted perennials such as *Anemone japonica* and its varieties, all with pink or white flowers from August to October, 3 ft.; or tuberous-rooted perennials that mostly flower in May if they are planted in October. These include the well-known Caen anemones and their double-flowered counterparts the St. Brigid anemones, which have such a wonderful blue, scarlet, maroon, pink, white colour range. Also many species that are suitable for the rock-garden, and some that flower in winter, such as *Anemone apennina* and *A. blanda*. Colours very varied, height mostly under 12 in.

**Antennaria (Chamomile).**—Hardy perennials, for a border in full sun. "Perry's Variety" of *A. tinctoria*, and the variety "Loddon" are specially fine in the late-summer border. A position in the foreground can be allotted to these plants as the foliage is silvery and attractive before the flowers come. Sandy loam is best, but they will thrive almost anywhere in sunshine. Height 2-3 ft. Yellow. Increase by division.

**Anthericum liliago (St. Bernard's Lily).**—Hardy tuberous-rooted perennials, suitable for the front of a border in light soil and full sunshine. Plant 9 in. apart in groups. Water during dry spells, and dress annually with humus. Pro-

pagate by division in October. White flowers in July and August. 18 in. Leave undisturbed as long as possible.

**Antirrhinum (Snapdragon).**—Summer bedding plants, perennial but usually grown as annuals, and probably best so treated, as older plants are more susceptible to the rust disease which has proved very troublesome of late years. They prefer dry, well-drained loam in full sun. Sow seeds in gentle heat in February, or sow in summer for the following season. Frame protection is not needed in normal winters. A very large number of good varieties are listed in catalogues, and these come true to colour and type, so that excellent colour schemes can be worked out using antirrhinums alone or with other subjects. Dwarf types 6-15 in., others up to 30 in., in all colours except blue. Antirrhinums should be "stopped" to encourage bushy growth; they will flower continuously from the first blooms until cut down by frost.

**Aponogeton distachyon (Cape Water Hawthorn).**—Continuous-flowering plant for pools of any size. It floats its leaves on the water surface, and sends up stems with fragrant white flowers with purple anthers, just above the water. The root is bulbous and is planted in the loam at the bottom of the pool, usually in a weighted basket. Slowly moving water suits it admirably. Propagate by means of offsets in March.

**Aquilegia (Columbine).**—The wild form, known as "Granny-caps," has very frilly petals and short spurs. Modern varieties such as "Crimson Star" have long spurs and much larger, showier flowers of different colours. Sow in spring for the following year, when the plants will flower from May to July. Plant out in flowering quarters in autumn, in groups, with 9 in. from plant to plant. The foliage is decorative, but apt to become a little untidy in late summer, when other plants should be grown near to disguise it. Height 1-2 ft.

**Arabis (Rock Cress).**—White- or pink-flowered dwarf plants that make a smother growth over rocks and banks. Single- and double-flowered kinds are obtainable, and all make a brave show in May and June. Increase by division or cuttings. 6 in.

**Araucaria.**—The well-known Monkey Puzzle tree is of this genus, and though large for most gardens, it is fine as a lawn specimen in larger parks. *Araucaria excelsa* is usually grown as a pot plant, and is distinguished by its candelabra-like growth of green stems with tiny spiny-looking leaves. Plenty of water is needed through the summer, and the plant should be kept well away from draughts at all seasons. This *araucaria* is called the "Norfolk Island Pine" and is one of the best of all pot plants for ordinary room culture.

**Arbutus (Strawberry Tree).**—A flowering and fruiting shrub or tree, with clustered cup-shaped blossoms, followed by orange-red strawberry fruits. It succeeds in peaty loam, and can be raised from seed or propagated by layering.

**Arctotis grandis.**—Half-hardy annuals, suitable for sheltered beds and borders in sun. Pearl-grey daisy-flowers in summer. 2 ft.

**Armeria (Thrift).**—Hardy perennials of cushion growth, smothered in spring with pink or red flowers. Suitable for border edges and for rock gardens. Dry loam suits them and sunshine is essential. 4-18 in.

**Artemisia (Wormwood or Old Man).**—Hardy shrubs or herbaceous perennials. *A. abrotanum* is the well-known Lad's Love. *A. lactiflora* is the best of the herbaceous species for the border and has creamy white flowers in summer. 5 ft. *A. stellariana* is the "Dusty Miller" with ornamental grey foliage. 2 ft. All do quite well in partial shade and ordinary well-drained soil. Tall varieties may be staked with pea-sticks. Propagate herbaceous types by division in spring, shrubs by cuttings in summer.

**Arum Lily.**—See *Richardia*.

**Asperula (Woodruff).**—Useful hardy annuals because they will grow in partial shade. *A. azurea* has blue flowers and is sweetly scented.

**Asphodelus luteus.**—Hardy perennials with grass-like foliage and tapering spikes of yellow flowers. June and July. 3 ft. Increase by division.

**Aspidistra.**—The well-known Parlour Palm. Useful because it is not affected by gas fumes, and will grow in the shade. Water sparingly, sponge the leaves occasionally to get rid of dust. If



necessary, repot, in March, when suckers may be removed to form fresh plants. *Aspidistras* flower near the soil level, and the inconspicuous blooms are frequently overlooked by cultivators.

**Aster (Michaelmas Daisies).**—Hardy perennials that will flourish in almost every soil and situation, though the best flowers are produced in full sunshine. Good soil makes a great difference to the size and quality of the flowers, especially of the taller types, and overcrowding must be avoided. Lift the plants every other year, at any convenient time between flowering and spring, when there is no frost in the ground. Replant only plump outer portions of root, and when these send up stems in the second season, reduce the number, so that every stem has ample space for growth. The types of aster vary. The *Amellus* group is early flowering, and the flowers are very large—like single China Asters. This group is best not planted until March. *Novæ-angliæ* and *Novæ-belgiæ* asters are available in great variety in catalogues and include flowers of bright pink, purple, wine, white, and mauve. A hybrid between ordinary Michaelmas daisies and *Solidago* (Golden rod) is available as *Aster luteus*, and this has masses of starry yellow flowers. Used to contrast with a collection of asters of the mauve-pink colour range this yellow-flowered hybrid is particularly effective. There are also dwarfs, *cordifolius*, *ericoides*, and *cordibeglii* sections of the genus (*Luteus* belongs to the last named).

**Aster, China.**—See *Callistephus*.

**Astilbe (Goat's Beard).**—Closely related to the *Spiræas*, with large panicles of flowers that are greatly valued in the mixed border. Moist soil enriched with cow manure or other organic matter is preferred, and a position by the waterside is very appropriate. May to September. White, pink, and crimson, 2-6 ft. Propagate by division of the roots in spring or autumn, and leave the plants undisturbed for three or four years.

**Aubretia (Rock Cress).**—Evergreen, trailing or carpeting plants about 4 in. high, smothered in spring with flowers of mauve, purple, violet, or rose, according to variety. Rich sandy loam and leaf-mould give the best results. *Aubretia* can be grown in pockets of walls, on rock gardens and as border edgings. Plant in spring or autumn, and increase by division or from seed.

**Aucuba japonica.**—Hardy evergreen shrub with spotted green leaves (Spotted Laurel) and, on female plants, scarlet berries. Useful to grow in full shade, but less satisfactory in full sunshine. Plant in March or October. Cut back weak stems in May. Propagate by cuttings which can be rooted in the open in autumn, or sow seeds from ripe berries. To produce berries at least one male-flowered bush must be planted near the others. Small plants in pots are useful for window-ledges in towns, and tub plants are ideal for sunless, paved, back yards.

**Auricula (Primula auricula).**—Show auriculas are grown in pots, and classed according to the colour of the petal edges, white-edged, green-edged, grey-edged, and selfs. Alpine auriculas are harder and will succeed in beds and borders and on rock-gardens. There are both single and double types of these. Raise show types from seed sown in the early months of the year, in pans of good seed compost, or take offshoots from older plants in spring or August. Sow alpine in spring: lift, divide, and replant every third season after flowering. All grow about 6-9 in. high; colours vary enormously and may be very striking.

**Azalea.**—See *Rhododendron*.

**Balsam.**—See *Impatiens*.

**Bartonia aurea.**—Hardy annuals with bright butter-yellow flowers appearing from June to October. 15 in. Allow 18 in. from plant to plant after thinning, to get the best results.

**Begonia.**—Perennials with fibrous or tuberous roots, somewhat tender and suitable for summer bedding, for baskets and window boxes or for greenhouse cultivation. Some have colourful flowers: others are grown chiefly for the beauty of their variegated foliage. Seeds of all kinds can be sown in January or February under glass, in very fine compost, slightly moistened, in a temperature of 65° F. Plants can also be raised by leaf cuttings—well-matured leaves laid on sand or fibre in a propagating frame. The undersides of the veins should be scored across with a sharp knife, and roots or bulbets will form at these

incisions. Small pieces of broken flower-pot laid on the leaf, or some other method, must be used to keep the leaf in close contact with the rooting medium. Warmth, moisture, shade, and plenty of leaf-mould and sand in the soil are the chief needs of all the begonias. Careful staking of the taller kinds is also needed, as the growths are exceptionally brittle.

**Bellis perennis** is the common field daisy, of which there are many garden varieties obtainable, some with fully double flowers of red, white, or pink. "Dresden China" is a particularly neat, small, but fully double pink-flowered type excellent in the crevices of crazy paving, or for cultivation on a rock-garden. 6-12 in. Propagate by seed sown in the open garden in June, or by root division after the plants have flowered.

**Bellium minus.**—A 3-in. daisy-like perennial flowering from July to September. Flowers purplish on the outside and white within. Suitable for the paved, rock, or sink garden. Plant in loam and leaf-mould in a sunny position. Sow in autumn or in March, under glass or divide roots in April.

**Berberis.**—Hardy shrubs, some deciduous and some evergreen. All with decorative berries, and many very suitable for hedges. *B. stenophylla*, smothered with flowers in April, is a spiny evergreen which stands up well to clipping (with secateurs in May and August) and makes an impenetrable hedge that will keep out dogs and children. It is one of the best of all hedge plants, but its roots spread widely through the soil, and so it is not suitable for tiny gardens. *Berberis Mahonia* and its varieties have striking evergreen foliage, scented yellow flowers, and purple berries, and do well under trees and on banks where it is difficult to grow many plants. *B. Wilsonæ* which has masses of coral berries is also excellent on banks, but needs sunshine to colour the berries. *B. Thunbergii* is a fine hedge subject, with purple foliage all summer. Many other varieties are listed in catalogues, and all can be planted in spring or autumn in ordinary well-drained soil. Propagate by sowing seeds when ripe, or by cuttings or layers in late summer.

**Bocconia (Plume Poppy).**—Hardy perennial for light, rich soil and sunny borders. Flowers are creamy coloured. Height 6-8 ft. June to October.

**Boronia.**—Evergreen shrubs with scented flowers. Suitable for pot culture in the greenhouse. Pot up in 6-in. pots for flowering. Feed with liquid manure as the flowers develop. Cut back after blooming, stand pots outside from June to September. Propagate by cuttings of young shoots in May, rooted in sand, peat, and charcoal. February to April. Red, yellow, or brownish purple. 1-2 ft.

**Bougainvillea.**—Tender shrubby climbers for greenhouse culture. Grow in pots of sandy soil. Cut back in February to near the base of the previous season's growth. Red, etc. June and July. Increase by cuttings of new growth, 3 in. long in April or May.

**Buddleia.**—Hardy shrubs, deciduous, useful where bold planting is needed. *B. variabilis*, the purple buddleia is best cut hard back in February. *Buddleia alternifolia* has a weeping habit and makes a fine lawn specimen: this should be pruned, if needed, after flowering. Increase by cuttings. Season of flowering and colour varies according to variety.

**Bupthalmum (Ox-eye).**—Hardy perennial. *B. salicifolium* is the species cultivated for its mass of golden yellow, daisy-like flowers produced continuously from June until September. 18 in. Propagate by division in spring or autumn. Ordinary soil is suitable.

**Buxus sempervirens (the Common Box).**—Light, well-drained soil is best. Clip in May and August. Propagate by cuttings in August or September, by division in March or September and by layering in autumn. Varieties with golden or silvery foliage are obtainable. *B. suffruticosa* is the dwarf type used for border edgings.

**Cactus.**—Cacti are none of them really hardy in this country, though some are grown in rock-gardens and covered with glass and other protection in winter. All are suitable for moderately heated greenhouses, or they can be grown as room plants. Most will stand up to culture in modern central-heated rooms, where ferns and other

flowering plants do not thrive. Water during the summer, when flowers are developing, and dryness through the winter, when flowers are absent, is the general rule, but winter blooming epiphyllums must, naturally, not be allowed to become too dry at any season. Plenty of sun, and a soil composed chiefly of crushed brick or flower-pot, mortar rubble, and burnt earth from beneath the bonfire are secrets of success with the cereus, mammillaria, and echinocactus group. Epiphyllums, phyllocacti, and rhipsalis may have a little peat added to the compost. Where small cactus gardens are made, some charcoal in the bottom layer of compost will help to keep the soil sweet for a long period. Many inexperienced cactus growers are unaware that these plants should, mostly, flower regularly each year. If they do not, they have probably been overwatered, had too little sunshine, or been too well fed with nitrogenous food. Cactus cuttings root very readily: leave pieces that break off, or have been cut off, to dry for a couple of days before inserting them in sandy moist soil or pure sand, under a glass, or uncovered if the moisture supply can be kept up without being given too freely. Summer is the best time to root cuttings. Choice cacti are also grafted on to other strong-growing plants in March, and in some cases offsets are freely available to form new plants.

**Calceolaria** (Slipper flower).—Tender and hardy herbaceous perennials and slightly tender shrubs. Large-flowered tender herbaceous types are sown under glass in June, potted into 4-in. pots in September, and later into 7-in. pots for flowering in the greenhouse. Hardy herbaceous calceolarias are grown in the rock-garden. Seed is sown under glass in March, roots divided in spring, or cuttings taken in autumn. Shrubby calceolarias are the kind used for summer bedding. Cuttings of these may be inserted in a frame in September, or they may be inserted in a shallow depression in the garden, in sandy soil, and covered with a sheet of glass at ground level for the winter. These outdoor cuttings usually produce good strong plants for the following summer display. Many varieties are listed in catalogues. Shrubby kinds will grow to 4 ft., but normally plants do not exceed 1 ft. when grown for bedding.

**Calliopsis**.—Annual plants of the coreopsis family. Mostly with yellow and chocolate-maroon flowers. Very useful for edgings, though some grow to as much as 18 in. Sow outdoors in spring, where the plants are to bloom.

**Calendula** (Pot Marigold).—Sow outdoors in August, for the best results. Or sow in spring for late-summer displays. Modern varieties include full doubles such as Orange King, lemon-coloured varieties, and some with quilled petals. Seedlings can be transplanted or grown on where sown, but 1 ft. should be allowed between the plants, which will usually grow to a height of 18 in. if soil is congenial.

**Callistephus** (China Asters).—Half-hardy annuals flowering in late summer and autumn. Single varieties are especially useful as cut flowers in the home. Many different types—peony-flowered, branching double or single, quilled, and so on, in numerous colours, are obtainable from seedmen. Sow under glass in February, or sow in the open in May and pot up the plants for flowering late under glass. Do not bring into the greenhouse until the buds begin to show colour.

**Calluna vulgaris** (Ling or Heather).—Hardy evergreen, suitable only for full sun and sandy peaty soil. Plant in spring or autumn. Trim off dead flowers in April. Propagate by cuttings inserted in "heather" soil (sandy peat) in a frame, or increase by layering, in summer. Many white and pink varieties are available, some with double flowers. 18 in.

**Caltha** (Marsh Marigold).—Hardy perennials for the waterside. Plant in full sun or partial shade, but in moist soil. Propagate by division in March or July. *C. palustris* is most common, and is the Kingcup of the streamside. A double form is available that lasts a long time in the water-garden.

**Camellia**.—Half-hardy, evergreen shrubs for greenhouse culture or very sheltered positions in warm districts. Pot up in May in loam, leaf-mould, and sand. Harden off, stand outside in summer, and return to the greenhouse in

September. Propagate by grafting on *C. japonica* in spring or take cuttings in late summer. There are many varieties in a range of red-to-white colours, flowering from February to May.

**Campanula** (Bellflowers).—Hardy annuals, biennials, and perennials. Some are slightly tender and do best in the cold greenhouse. They include tall subjects and dwarfs for the border edgings or rock-garden. Some of the most useful are *C. pyramidalis* (4-6 ft.) the Chimney Bellflower, for greenhouse pots; *C. isophylla* and *C. Mayi* for hanging baskets; *C. medium* the well-known Canterbury Bell (biennial), *C. carpatica* for bedding, *C. persica* (2 ft.) for the mixed border. Culture: the ordinary procedure for the type. Soil preferably sandy loam with some leaf-mould, but border campanulas and Canterbury Bells will grow almost anywhere. Canterbury Bells should be sown as early as possible in the year, as only well-grown plants will flower the following season. Small plants sometimes wait until the third year before flowering. All campanulas belong to the white-blue-purple colour range.

**Canary Creeper**.—See *Tropaeolum*.

**Candytuft**.—Hardy annual and perennial plants with white, crimson, lilac, or purple flowers. Perennial white-flowered candytuft—*Iberis sempervirens*—is a favourite for rock-gardens and walls. Propagate all kinds from seed; perennials also from division or cuttings. 1 ft.

**Canna**.—Tropical plant with ornamental leaves and scarlet or yellow flowers. Raise from seed in February. Soak the seed in warm water for a day, then sow in good compost and keep in a temperature of 75° F. until it has germinated. Pot up in March or April, and for outdoor displays plant out in June. Repot plants and winter them under glass from September onwards. Keep them moderately dry, until the stems die back: water and restart into growth like dahlias in the New Year.

**Canterbury Bells**.—See *Campanula*.

**Carnation**.—See *Dianthus*.

**Carpentaria californica** (Californian Mock Orange).—Shrub for a sheltered position, such as against a south wall. Plant in autumn in well-drained soil. Propagate by cuttings taken under glass in April, or by layering in September. White. 5-6 ft.

**Catananche**.—Hardy perennial. *C. coerulea* with blue flowers, and its variety with white flowers, are popular border plants. Raise from seed sown outdoors in summer, and transplanted in spring to flowering quarters. 20-30 in.

**Celosia** (Cockscomb).—Half-hardy annuals, very useful as pot plants for window or indoor decoration in summer. Sow in pans in March in rich seed compost, temperature 70° F. and cover with only a fine dust of soil. Transplant and pot up singly as soon as possible. Keep near the glass, repot as needed, and gradually harden off ready to plant out or stand on window ledges in June. Pots may also be grown throughout in the greenhouse. Warm, rather close, atmosphere is needed by the young plants, and when buds show, liquid manure can be given twice a week until the colour appears. *C. pyramidalis* has flowers of scarlet, crimson, or gold. 30 in.

**Centaurea**.—Hardy annuals, biennials, and perennials. *Centaurea cyanus* and *C. suaveolens* are the blue cornflower, and mauve or yellow sweet sultan, respectively. The cornflower is available also in rose, white, and purple. Both are best sown in August for the following summer, but sweet sultan is more likely than the cornflower to suffer frost damage, and in cold gardens it should be sown in spring, under glass, and transplanted to the open in May. *C. macrocephala* is a deep yellow, 4-5 ft. perennial cornflower which makes a good show in the border during July and August. *C. gymnocarpa* (The Dusty Miller) and *C. ragusina* are useful in greenhouse and summer borders for their ornamental foliage. These can be increased by cuttings in September, or raised from seed.

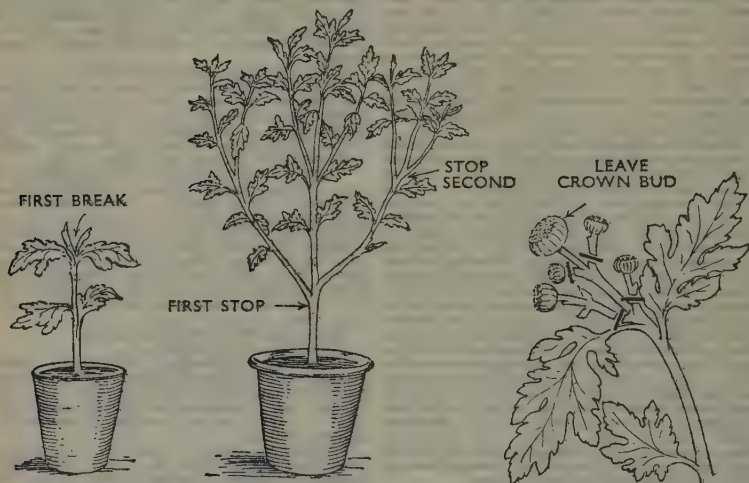
**Cheiranthus** (Wallflowers).—Hardy biennials and perennials. Some are suitable for the rock-garden. The most common in gardens are *C. Allioni*, bright orange, or lemon yellow, often used for formal bedding in conjunction with blue forget-me-nots and late-spring flowering bulbs; and *C. Cheiri* which is the well-known scented



wallflower and is available in numerous named varieties. Seeds should be sown in May to flower in the following year. It is best to sow them thinly in straight lines across the vegetable garden, where the hoe can be used between the rows to destroy weeds. Sown thinly they may need no transplanting until autumn, but overcrowding must be avoided, and it is common to transplant the seedling while still small, to allow 3 or 4 in. from plant to plant. In autumn when bulbs are being set out, these wallflowers may be used for interplanting, they will provide a mass of colour at less cost than if bulbs alone were used. Wallflowers will grow on for another season, but the first year's flowers are the best, and seed should be sown every year.

**Chimonanthus fragrans.**—Hardy winter-flowering shrub, with parchment and brown flowers that are heavily scented. A newer variety

are usually grown under glass from then onwards. After flowering these chrysanthemums are encouraged to make strong basal shoots, the top being cut down almost to ground level. Under glass these shoots appear in January and may be taken off when four or five good leaves have developed. They are inserted as cuttings in sandy soil in a propagating pit, and when roots have formed each is potted up into a separate pot, about April. In May they need larger pots, and the central growth is stopped, to encourage bushiness. The final potting is done in June or July, then stand in the open until September, when they will be brought on to the sunny shelves of the cool greenhouse. Removal of some of the flower buds, leaving only the most promising on each stem, results in fine specimen flowers, but a spray of flowers is preferable in many cases, particularly on those varieties that flower early



THE METHOD OF STOPPING AND DISBUDDING CHRYSANTHEMUMS is shown in three stages: (1) the top is pinched out; (2) side shoots are pinched out; (3) side buds are removed.

with brighter coloured flowers of golden yellow is more showy but much less fragrant than this species. Plant in October or March and train against a warm wall. Cut back side shoots to within five or six eyes from the main stem, after the flowers fade. Increase by seeds, suckers, or by layering in August.

**Chionodoxa.**—Hardy spring-flowering bulbs. Plant in full sun or in shade, in October, 2-3 in. deep and 4 in. apart. Do not disturb after planting until the growths become overcrowded. Excellent for rocky pockets and for edgings. Blue, mauve, or white. 9 in.

**Choisya ternata (Mexican Orange).**—Evergreen, near-hardy, shrub with clusters of star-like, scented, white flowers. Can be grown in the open in sheltered positions, such as against a house wall, May, 8-10 ft. Increase by layering. Prune straggly shoots only after flowering.

**Christmas Rosa.**—See *Helleborus*.

**Chrysanthemum.**—Hardy annuals and perennials. Annuals are sown outdoors in spring to flower during summer. They include the well-known yellow "Morning Star" and also the tricolour chrysanthemums. Among perennials are the large white daisies—*C. leucanthemum* (3 ft., June to October), *C. maximum* and its varieties with double and fringed flowers (July to September 14-3 ft.), and *C. uliginosum* (5 ft., September to October). Plant spring or autumn, lift and divide in spring in alternate years. Japanese chrysanthemums, sold by florists in autumn, are hardy enough to stand our summers, but top growth will die back in winter; even the roots do not always stand up to frosts. As many of these do not flower until after September, they

and are grown for border decoration. These early-flowering varieties may be lifted and wintered in cold frames after the tops are cut down, or they may be left in the open, with ash piled over the crowns to protect them. Division, and cuttings in spring are the most common methods of increasing the garden plants, but it is quite easy also to raise good plants from seed, sown in boxes in February, and treated just as half-hardy annuals are treated. Colours, heights, etc., vary greatly, and catalogues should be consulted.

**Cistus.**—Shrubs suitable for poor sandy soil in sunny gardens. The flowers last only from early morning until early afternoon, in many cases, but they are opened in great profusion and are very brightly coloured, rose, white, purple, mauve, etc. No regular pruning is needed. Increase by layering in August, seed in April, or cuttings in August.

**Clarkia.**—Hardy annuals with flowers of pink, purple, or white set close to the stem on tall spikes. 24 in. Sow in spring for border decoration, or sow in August in pots for the greenhouse shelves.

**Clematis.**—Hardy shrubs, mostly climbers, suitable for walls, screens, and pergolas. Light, well-drained, well-manured soil suits them, and care should be taken over pruning, as different varieties need different treatment. The late-flowering group, including the common purple clematis, should be cut back hard in February, as flowers come on the young wood only. Some types flower on both old and young wood. Some flower quite early in the season on wood of the previous year's growth. Nurserymen will always give advice on this at the time of purchase, and it is best to seek this, as many different hybrids are

now on the market, and differences in habit of growth occur even within the groups.

**Colchicum.**—See **Crocus**.

**Coleus.**—Ornamental-foliaged plants for greenhouse culture. They can also be used for summer bedding. Sow in heat in March or propagate from cuttings at any time when these are available. Syringe frequently in warm weather, and use liquid manure. Keep temperature above 50° F.

**Columbine.**—See **Aquilegia**.

**Convallaria (Lily of the Valley).**—Hardy perennials that will grow in partial shade, in good rich soil. Plant in October, covering the crowns with a 2-in. layer of leafy soil. Lift about once in four or five years, when the clumps begin to get crowded. Increase by division.

**Coreopsis.**—Hardy perennials. (Annual *Coreopsis* is known as *Calliopis* in catalogues). Any ordinary garden soil is suitable, and plants can easily be raised from seed sown outdoors in April. It pays to raise fresh stock fairly frequently. Transplant seedlings 9 in. apart. Single and double varieties are obtainable, all bright yellow, and excellent for cutting. 2-3 ft.

**Cornflower.**—See **Centaurea**.

**Cosmos.**—Half-hardy annuals with pink, white, yellow, and crimson flowers superficially like single dahlias, and with feathery foliage. Sow under glass in February, and do not move the seedlings from the box in which they are pricked out until the first sign of the flower is seen. They will flower continuously through summer, but if planted out too soon, they often make too much growth and too few flowers. 2 ft. upwards.

**Cotoneaster.**—Hardy shrubs with bright berries, very good on poor chalky soil. No regular pruning is needed: Plant in autumn or spring. Height varies according to species. *C. horizontalis* is the flattened-growth form suitable for planting against walls.

**Crocus.**—Hardy perennial of which the root is a corm, though commonly referred to as a bulb. Plant in autumn, 3 in. deep and 4 in. apart. Lift and divide every fourth or fifth year, when the foliage is absent. Crocuses can be grown in pots or in bowls of fibre, but must be kept quite cool until the petals show colour, when they may be brought into the sunny window of a living-room. Some species of crocus suitable for rock-garden culture flower in autumn. The so-called autumn crocus is actually *Colchicum autumnale* (Naked Ladies). This can be planted in August, and will flower almost at once, sending up foliage only after the flowers have died away.

**Cuttings.** The principles of this method of plant propagation may be summed up in a few words, though the varying requirements of different plants make the subject almost inexhaustible. Cuttings are pieces of a plant that are cut off, and then induced to develop roots, etc., and so become new whole plants. They are, when mature, the exact counterpart of the old plant, in colour, size, habit of growth, and so on. In this they are superior to seedlings which may have inherited characteristics from the plant which produced the seed, and also from some other plant, which may or may not be known to the gardener. Seedlings are therefore very likely to vary considerably from one another as well as from the plant that gave the seed. Cuttings are of many kinds. They may be soft-growth cuttings, i.e., pieces of new soft growth that is still immature; or half-ripe cuttings, i.e., pieces of new growth from the current year's stems, but becoming ripe or woody; or well-matured ripe wood. Soft cuttings are the most difficult to root, for the tendency is for the cutting to become limp and decay before roots form. Such cuttings must be kept in a close moist atmosphere, and are usually placed under a bell glass or in a special propagating frame. Harder cuttings will root in the open in late summer when the soil and air are warm and mists are frequent. Hard-wood cuttings taken in November will stand through the winter in the garden, and in spring when growth commences they will form a good root system. These cuttings are not ready for permanent quarters until the following autumn. All such cuttings need open soil in which there is some coarse sand: otherwise there is not sufficient air in the soil, and the cutting may decay. It is also essential that the moisture supply should be kept up. Other cuttings that can be rooted include leaf

cuttings (see *Begonia*) and root cuttings (see *Papaver*). The use of special chemicals for rooting cuttings is a development of modern horticulture. See Section V.

**Cyclamen.**—*C. persicum* is the well-known butterfly flower sold in pots at Christmas time. Dormant corms are potted in August, or seeds are sown in early spring or in the previous autumn in gentle heat. The secrets of success are moist steady heat when starting the corms into active growth, no draughts, careful watering and allowing the corms to become almost dry between Easter and August. A plant in a pot may be kept for many years with care, but it is never quite so floriferous after the second season. Colours various, 10 in.

**Cytisus (Broom).**—Hardy shrubs that like warm, dry soil and sunshine. Plant in October. Cut back all the young wood by one-third or one-half after flowering, but do not cut into old wood. New plants can be raised from seed sown out of doors in September or under glass in March. It is also possible to take cuttings in March or August.

**Daffodils.**—See **Narcissus**.

**Dahlia.**—Half-hardy perennials with tuberous roots. They can be raised from seed, treated in the normal way for half-hardy annuals. At the end of the season, tubers will have formed on the roots (if culture has been good), and these can be lifted and stored away from frost. In early spring, (January to March) tubers should be placed in boxes of moist soil on a greenhouse shelf, and when young growths appear, these must be taken off as cuttings, and potted singly in small pots to form roots. Pot on as required, and plant out at the end of May, when danger of frost is past. Colours and types vary enormously, and catalogues should be consulted.

**Delphinium.**—Hardy annuals and perennials. Annuals are generally known as Larkspur, and include pink, purple, and blue-flowered varieties, 18 in. to 2 ft. Perennial delphiniums are subjects which have received much attention from hybridists and cultivators, and giant stems of spectacular flowers in all shades of blue, purple, white, and pink are now offered by nurserymen. Plenty of lime and plenty of humus in the soil are needed for good cultivation. Plant in early September or in late February or March: the roots are fleshy and inclined to suffer from disturbance in mid-winter. A pile of ash over newly planted crowns is useful in the first winter, and may be repeated each year. Thin out growths to allow for good development—well-grown plants need to be spaced 4 ft. apart, but the usual distance in 18 in. apart in groups of three, in the mixed border. *Belladonna* delphiniums are dwarf, and may be set 1 ft. apart. Increase by taking cuttings of the best of the spring growth, when they are 3 in. high, or raise new varieties from seed. When the flowers fade, cut back stems to within a foot of the ground: a second crop of bloom will result.

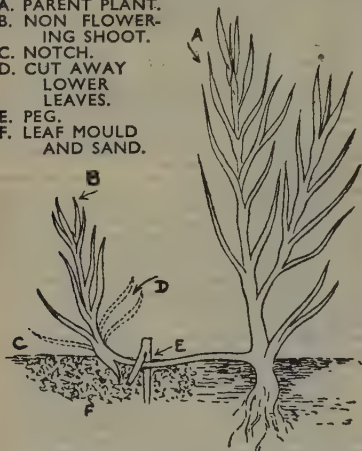
**Dianthus.**—The plant family that includes pinks, carnations, and sweet williams. All grow best in full sunshine, and prefer a well-drained soil with some mortar rubble worked into it during digging. Lime is essential for pinks and carnations.

**Carnations** are of several kinds. There is the old hardy border carnation, which flowers in July. This is the flower of the cottage gardens, and needs only to be grown in sun and suitable soil, and propagated every other season by layering, or by cuttings if preferred. Layering is so easy that it is generally better to adopt this method. A ring of prepared soil is placed round the old plant, to receive the "layers." Each side growth with no flowers is treated in turn. Two pairs of leaves are removed, at a distance about three inches from the tip of the growth. A slanting, upward cut is made through this part of the stem, in such a way that the stem can be bent down into the prepared soil, and pegged there, with the "tongue" open under the soil. Soil should be pressed firmly round each layer before it is left. In about four weeks the roots will have formed, and after about six weeks it will be possible to sever the plant from its parent. It is usual to layer about the end of July, and to move the rooted plant to its new quarters in October. If the garden is extremely cold, the new plants can be wintered in frames, but this should not be necessary with the hardy border carnation. In addition to this type there



are perpetual-flowering carnations, which are hybrids that continue to flower from spring until late autumn. These are a little less hardy than the border carnation, and in difficult gardens they should always be wintered in frames. Cuttings may be taken, or if the growth is suitable, layering may be practised. As some of these plants become rather tall, cuttings are often necessary, and the best type of cutting is a side growth from the middle portion of a tall flowering stem. Cuttings can be pulled out at a joint, and inserted in

- A. PARENT PLANT.
- B. NON FLOWERING SHOOT.
- C. NOTCH.
- D. CUT AWAY LOWER LEAVES.
- E. PEG.
- F. LEAF MOULD AND SAND.



**LAYERING CARNATIONS.**—A young non-flowering side shoot is pegged down into a low mound of fresh sandy soil. A few lower leaves are cut away, a notch is made below a joint before the shoot is pegged down. In six to eight weeks the layer can be severed from the parent, but it is left for a few weeks before transplanting.

sandy soil in a propagating frame. Malmaison carnations are suitable only for cultivation under glass, though very little heat is needed. Young layers or rooted cuttings are potted up singly in September—or at any suitable time, if all-the-year-round cultivation is practised. Steady growth, plenty of ventilation, and not too much heat are needed for success, and all the sunlight possible must be allowed.

**Pinks** are of many different types too. Some are dwarfs suitable for the rock-garden, some are particularly suitable as border edgings—the well-known double white “Mrs. Sinkins” pinks are an example—and some are tall enough to demand a place in mixed borders. Dianthus gardens include pincotees and many hybrid pinks, most of which are listed in catalogues. All need much the same cultural conditions as carnations, and all are readily increased by cuttings.

**Sweet williams** are grown as biennials, and many carnations and pinks, and the hybrid sweet wivelsfield, are also grown in this way, seed being sown outdoors in early summer for the following season. The Dianthus family has a very wide colour range, and catalogues should be consulted.

**Diervilla (Weigela).**—Hardy deciduous shrubs, useful in all soils, but flourishing specially in moist leafy loam. “Abel Carriere” variety has trumpet flowers of carmine with an orange-yellow throat. 7–9 ft. May and June.

**Digitalis (Foxglove).**—Biennials and perennials. *D. purpurea*, white and pinkish purple, is the common type. Sow seed in spring or early summer. Flowering from June to September. 1–4 ft.

**Dimorphotheca (Star of the Veldt).**—Half-hardy annual, best sown in April in light soil and a sunny position to flower in summer. Orange. 1 ft.

**Doronicum.**—Useful early-flowering perennials

with yellow daisy-flowers. Ordinary soil and a position in the sun suits them. Increase by division after the flowers have faded. 1 ft. to 18 in.

**Echeveria.**—Rosette-shaped succulent, much used for edging summer borders. Increase by offsets in summer. Pot these, and bring them under glass for the winter.

**Eranthis (Winter Aconite).**—Hardy, tuberous-rooted perennial. Plant in the autumn beneath shrubs and in sheltered corners. The bright-yellow flowers appear in January.

**Echinops (Globe Thistle).**—Hardy perennials for sunny borders in light loam. Plant in spring or autumn. Leave undisturbed as long as possible. *E. ritro* has attractive steely-blue globe flowers. 4 ft.

**Erica (Heathers).**—Various heaths will do well in gardens, but most species will not tolerate lime. Some that will succeed in ordinary limed soil are *E. carnea* and its varieties, *E. mediterranea*, and *E. terminalis*. Complete “Erica gardens,” comprising low dwarfs and carpet types and tall bushes and hedges, are a comparatively modern feature of gardens. Plant in October and where bushier growth is wanted trim back young growths in April.

**Erigeron.**—Hardy perennials with daisy-like flowers, mostly of mauve colouring. Plant in sunny borders in autumn. Increase by division.

**Eschscholtzia (Californian Poppy).**—Hardy annuals that prefer light soil in full sun. Sow preferably in August, or in March, and thin to allow 9 in. from plant to plant. Mostly bright yellow, 18 in.

**Forget-me-not.**—See *Myosotis*.

**Forsythia (Golden Bell Tree).**—Hardy deciduous shrubs, with masses of golden flowers on bare stems in early spring. Some are useful as hedge plants, others are more suitable to cascade over porches or over old trees. Plant in autumn. 6–10 ft. March and April. Increase by cuttings of current year’s wood taken in June or July, or layer stems in summer. Many forsythias layer themselves when the stems bend over to touch the ground.

**Freesia.**—Slightly tender bulbs, best for the cool greenhouse. Plant in August in pots of rich, sandy loam, 2 in. apart, 1 in. deep. Grow on without too much heat, to flower from January to April. Increase from seed or offsets. Various colours, but the old cream Freesia has the finest scent.

**Fritillaria.**—Hardy bulbs, suitable for any ordinary garden soil. *F. meleagris*, 6–10 in., is the small Snakeshead, which thrives in moist sandy loam, and *F. imperialis*, 30 in., the Crown Imperial. April to May.

**Fuchsia.**—Tender or half-hardy shrubs, deciduous, flowering normally in late summer. Many fuchsias are only suitable for indoor cultivation except in summer, when they are set out for summer bedding. *F. Riccartonii* is the near-hardy hedge plant (4 ft.). Cut back fuchsias in February, to encourage bushy young growth. Keep the water supply constant through the growing period. Pot fuchsias may be rested from the time the leaves drop until February. Take cuttings of fresh young growth (1 in.) and root them in pots of sandy soil in February or March, or take 3–4-in. cuttings of half-matured wood in August. Fuchsias may be trained as standards in the greenhouse, or grown in hanging baskets.

**Gaillardia (Blanket Flower).**—Annuals and perennials with red and yellow flowers from June to October. Sow annuals in spring and thin out to 1 ft. apart. Sow perennials in the open in May, and preferably treat them as biennials, sowing afresh each season. 1–2½ ft.

**Galanthus (Snowdrop).**—Hardy bulbs excellent for the shady parts of the garden. Plant in August, 3 in. deep and 3–4 in. apart. Lift only when the groups become crowded. There are single and double, short and tall varieties available.

**Gazania.**—Showy yellow and brown flowers suitable for summer bedding or to flower in pots indoors. Increase from basal cuttings in summer, inserted in sandy soil in a propagating frame. Protect from frost in winter and allow to rest after the flowers fade.

**Gentiana.**—Rock-plants that are mostly a rich blue, and greatly valued by the alpine gardener. Also some border perennials. Moist well-drained gritty loam is good for the alpine. Ordinary

border soil does for the willow gentian, *G. asclepiadea*, which has blue flowers in June to August and grows 18 in. high. Lime-free peat or leaf-mould is needed by *G. sino-ornata*, a late-summer bloomer useful for formal beds.

**Geranium.**—Hardy perennials with blue, pink, or white flowers, suitable for rock-gardens and borders, according to variety. Increase by seeds or division. (The popular bedding geranium is actually a *Pelargonium* (which see).)

**Geum.**—Hardy perennials useful in mixed borders. Varieties with scarlet and orange flowers are available. Raise from seed sown in the open in April or plant in spring or autumn and increase by division. April to October, 6 in. to 2 ft.

**Gladiolus.**—Plants that have recently received the attention of hybridists. Corms are now sold by the million for spring planting. Some are early flowering, and some flower only in late summer or autumn. Plant 4 in. deep with sand under each corm, and allow 6 in. between the corms. In most gardens stakes are needed, but deeper planting in light sandy loam may avoid the necessity for this. Propagate by seed or offsets. Lift the corms at the end of the season and clean them before storing: the offsets can be planted out in a sheltered part of the garden in March, to grow on and make flowering corms.

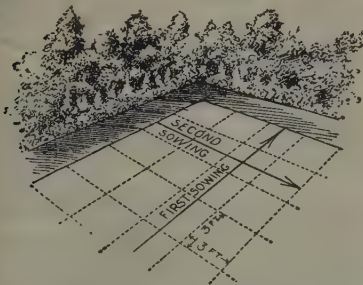
**Gloxinia.**—Useful subjects for pot culture in greenhouse or living-room. Start tubers in spring, in a box of moist rich soil. Pot up and grow on without a check, and dry off again after flowering. Increase by seed sown under glass in January. Various colours, June to October.

**Godetia.**—Hardy annuals which prefer moist soil, but need sunshine. Sow in spring and thin out to 9 in. apart. Pink, mauve, etc. 1 ft.

**Grass Surfaces.**—For large lawn areas or for garden paths, grass is best sown on a well-dug, rolled, and raked site. Turf can be laid, but the best turf is costly, and inferior turf not worth buying.

Soil can be prepared for September sowing, which is ideal, or for spring sowing, which is a good second best. Actually seed may be sown later than September if the weather remains good, but sown too late it is apt to decay instead of germinating.

Allow 2 oz. of good seed per sq. yd. if possible.



**How to Sow a Lawn.**—Divide the seed into two portions; half is sown in one direction, 1 oz. per sq. yd., and half in the other direction, 1 oz. per sq. yd. Seed is lightly raked in and covered with a thin dusting of fine soil.

A smaller quantity will take longer to produce a good lawn. Divide the seed into half, then divide it into portions to correspond with the length of the lawn, allowing 1 oz. to each yard of lawn length. Sow a yard strip at a time, with a separate portion of the seed (i.e., 1 oz. to the yard). Then divide the other half of the seed into portions according to the width of the lawn, and again sow yard strips of the lawn, widthways. Sowing in two directions in this manner ensures even distribution of the seed.

Roll lightly after sowing, and cover with a little extra fine soil if necessary. Protect from birds by stretching black cotton between sticks a few inches above the ground level. This will discourage the birds by catching in their wings.

Roll when the grass is an inch or two high.

Then, on a dry day, use the mower with the blades set high. Roll and mow alternately after this until a good thick growth is obtained. Sulphate of ammonia mixed with sand or fine soil is the best stimulant if one is needed, but only very small quantities (not more than  $\frac{1}{4}$  oz. of sulphate at a time to each sq. yd.) should be used, and this only once in three weeks during early summer.

**Gypsophila.**—Hardy annuals and perennials for dry soil and full sun. Raise from seed in March. Increase perennials by division in spring or autumn. Pink or white, single or double. 4-10 in. according to species.

**Helenium.**—Hardy perennials that succeed in almost every garden in sunny borders. Plant in spring or autumn and increase by division. Yellow or bronze, 1-4 ft.



**GERANIUM CUTTINGS** are shown in four stages: A. Cutting with "heel" of old stem attached. B. Cutting, lower leaves removed, cut below a leaf joint. C. Roots begin forming but not ready for potting. D. Roots formed ready for potting into 3-in. pots.

**Helianthemum** (Sun Roses, or Rock Roses).—Dwarf evergreen perennials suitable for the rock-garden or water edges. Colours various. 1 ft. Plant in March or October. Increase from seed, or from cuttings under glass in August.

**Helianthus** (Sunflowers).—Hardy annuals and perennials. The large-flowered sunflower is a little tender and must either be sown under glass, or sown late enough to escape frosts. Perennial sunflowers are planted in spring or autumn and increased by division.

**Helichrysum** (Everlasting flowers).—Half-hardy annuals or perennials, for sunny positions in moist, rich loam, with good drainage. Sow annuals in spring under glass. Increase perennials by division in spring, or by cuttings in April. When the various coloured daisy flowers are almost (but not quite) fully open, cut them and hang them upside down, in small bunches, to dry for the winter.

**Heliotropium peruvianum** (Cherry Pie).—Summer bedding plants which can be raised from seed in spring, or from cuttings in autumn treated as advised for calceolarias. Purple, fragrant, May to September. 1-3 ft.

**Helleborus** (Christmas Rose).—Hardy perennial, suitable for partial shade, or for a greenhouse border or pots. Increase by division in February



or March, after the flowers fade, but do not divide into very small portions. Plants can be potted up in autumn for December flowering under glass, or they can be set out to make a late-winter display in a formal bed. *H. niger* is the white "Christmas Rose" which will flower in December and January in a frame, but is often not in flower in the garden until February. *H. orientalis* is the Lenten Rose, flowering from January to April, various colours. 1 ft.

**Hemerocallis (Day Lily).**—Perennials with rush-like foliage and yellow or reddish flowers that last for a day only. Increase by root division in spring. Ordinary soil and a position by the waterside or near the front of the mixed border suits them. 1-2 ft.

**Heuchera.**—Compact bushy plants with dainty flowers in sprays. Perennial. Divide plants in spring, or raise from seed. Plant 9 in. apart, in groups. 14-24 ft. Pink or red. June and July.

**Hippeastrum.**—Half-hardy bulbs for greenhouse, or for the warm border on the south of a greenhouse wall. Good rich loam, on the heavy side, with some charcoal and bone-meal is suitable. Repot, and propagate by offsets, or plant out in February. Colours various, winter or spring. 1 ft. to 18 in.

**Holly.**—See *Ilex*.

**Hollyhock (Althaea rosea).**—Perennial plants that are often, and better, treated as biennials as young plants are less subject to rust disease. Sow seed in early May in the open, and move to flowering quarters in autumn. Plants may also be raised from cuttings in summer. Colours various. 6-10 ft.

**Honesty.**—See *Lunaria*.

**Hyacinth.**—Bulbs excellent for pot culture and for gardens. Pot up from August to November, in soil or fibre. Plant out in the open garden in October. Small bulbs are sold for bedding and are quite satisfactory. Various colours, flower in the spring.

**Hyacinthus candicans (Cape Hyacinth).**—Good plants for well-manured sandy loam, and sunny borders, but they will also do reasonably well in partial shade. August. 2 ft. Plant in March or in October.

**Hypericum.**—Hardy shrubs, evergreen and deciduous, also annuals and perennials. *H. Moserianum* is one of the most useful, and is a perennial 1 ft. to 18 in. high, with bright golden-yellow flowers. This is useful in complete shade, under trees, etc. July to August.

**Ilex (Holly).**—Green and variegated varieties of this popular evergreen are obtainable. Most hollies are of one sex only—at least one male and one female plant are needed for berries to ripen. Holly makes a fine hedge, and plants can be raised from seed for this purpose. Pack the berries into moist sand and let them stay thus until the next autumn, when berries and sand may be sown together in the open.

**Hydrangea.**—The common hydrangea of the shops is *H. Hortensia* (blue- or pink-flowered). This needs well-drained, richly manured, sandy soil, and adequate supplies of moisture. It is not quite hardy, and outdoors must have a sheltered position. Prune in summer, cutting out all weak wood; thin out stems and remove dead flower-heads. Then cut back the remaining strong stems to within six or seven buds of the old wood. *H. paniculata* is a hardy species with white flowers. This should be pruned in March, stems thinned and others cut back to leave only a couple of good buds at the base of the new wood. *H. petiolaris* (or *scandens*), a climber with creamy flowers, can be left to ramble at will over old tree stumps. Plant all species outdoors in March. Pot up *Hortensia* for indoor culture in February or March.

**Impatiens (Balsam, or Touch-me-not).**—The hardy annual, *I. balsamina*, is useful to sow in spring in partial shade for summer flowering. Pink. 18 in.

**Iris.**—Hardy perennials divided into two main groups, one with rhizomatous roots, and the other bulbous rooted. Plant bulbs in September, 3-4 in. deep, if preferred grow them in pots. Plant other types, including the May- and June-flowering *Irises*, dwarf bearded *Irises* (on rock-gardens), etc., in November. *Iris stylosa*, which flowers from November to March, should be planted in gravelly soil in early autumn. For colours, heights, etc., consult catalogues. All

*Irises* can be raised from seed, but some take several seasons to arrive at flowering stage.

**Ixia.**—South African bulbs, suitable for warm, dry borders or rockeries in full sun. Rich, sandy loam should be provided, and the bulbs set 4 in. deep and 3 in. apart in September. These bulbs can also be grown in pots—six bulbs in a 6-in. pot.

**Jasminum.**—Climbers very useful for porches and house walls. Increased by cuttings or layers in summer. *J. nudiflorum* is the winter-flowering jasmine that carries masses of yellow flowers on bare stems. Cut this hard back after flowering. In a mixed shrubbery it does well tied to pillars in front of tall evergreens, or it can be cut almost to ground level after flowering and allowed to form a bushy mass of stems. *J. officinale* is the white, summer-flowering jasmine. Thin out the stems of this, to prevent crowding. *J. revolutum* is the May-flowering, golden jasmine, best grown as a bush.

**Kalmia.**—American shrubs, evergreen and bearing dainty pink flowers. Best in warm, sandy, leafy soil. Increase by seeds in spring, cuttings or layering in October.

**Kerria.**—Hardy deciduous shrubs with orange flowers, single or double, in March. Useful for almost any soil. Cut out the old wood in June or July, after the flowers have faded. Increase most easily by division of roots in autumn.

**Kniphofia (Red-hot Poker).**—Hardy perennials that prefer well-drained, deep sandy and leafy soil in partial shade. Increase by seed, in March, under glass, or by root division at the same time. Protect plants from frost in winter. Various colours are to be found among "red-hot pokers," mostly flowering in late summer.

**Larkspur.**—See *Delphinium*.

**Lathyrus.**—See *Sweet Pea*.

**Lavandula (Lavender).**—Light, well-drained soil suits these well-known shrubs. Plant in March or September. Clip over each season after the flowers fade, but do not cut hard back into old wood. Increase by cuttings in October.

**Lavatera.**—One of the most showy of garden annuals. Sow in autumn or spring. Avoid transplanting if possible but thin out to allow 1 ft. between the plants. 2-5 ft. Mostly pink, rose, or white.

**Leucojum (Snowflake).**—Hardy bulbs with flowers of white and green, in spring or autumn, according to species, 10-15 in. Plant in September, 4 in. deep in light soil and 5 or 6 in. apart. Lift only when necessary.

**Lilac.**—See *Syringa*.

**Lilium.**—Mostly hardy bulbs, which thrive in a position where the young growth is shaded, but the flowers lift their heads to the sun. Some lilies succeed in limed soil, e.g., *Madonna* and *regal lilies*; others must have sandy peat. Catalogues give information on this point. Lilies can be grown in pots—*L. auratum* is one of the best for this method and can be potted up in autumn. Increase regal lilies by seed (to flower in second year) or offsets, other lilies by offsets, bulblets, or seed.

**Lily of the Valley.**—See *Convallaria*.

**Linum (Flax).**—Hardy annuals and perennials for mixed borders. Sow annuals in spring; thin out to 4 in. apart. Sow perennials in April, or raise from cuttings in July. Colours various, 8 in. to 2 ft.

**Lobelia.**—Useful half-hardy plant for summer bedding. Blue lobelia is raised annually from seed under glass in February. There are also taller perennials with red or purple flowers which are useful for borders: these must be lifted and stored away from frosts in winter, or covered with ash in a warm garden.

**Love-in-a-Mist (Nigella).**—Annuals with blue, purple, or white flowers and delicate foliage: useful as a foil to other flowers in vases. Sow in autumn or in March or April in the open garden. 1-2 ft.

**Lunaria biennis (Honesty).**—Hardy biennial with decorative seed pods after the purple or white flowers fade. Sow broadcast in the wilder parts of the garden, and allow to seed itself.

**Lupinus (Lupins).**—Hardy perennials which can easily be raised from seed. Numerous named varieties are obtainable from nurserymen and seedsmen. There are also annuals which can be sown in spring for summer blooming. The well-known "Russell" lupins are a particularly fine strain of the perennials, with a very wide colour range. 1-5 ft.

**Magnolia.**—Hardy and half-hardy shrubs, deciduous or evergreen. The easiest to grow is possibly *M. stellata*. Plant in April or October.

**Malcolmia.**—See *Virginian Stock*.

**Michaelmas Daisy.**—See *Aster*.

**Mignonette** (*Reseda odorata*).—Scented perennial plants that are normally grown as annuals. Sow in spring, and thin out to 6 in. apart.

**Mimulus** (*Monkey Flowers*).—Hardy and half-hardy annuals and hardy perennials. *M. tigrinus* is a showy annual raised from seed sown under glass, June. 9 in. *M. moschatus* is the species which was once scented, but has now lost its fragrance.

**Monkshood.**—See *Aconitum*.

**Montbretia.**—Hardy bulbous plants, best in rich, sandy loam. Several named varieties, with flowers varying from rose to golden orange, are now obtainable. 2-4 ft. Plant in April, 4 in. deep and 4-6 in. apart.

**Muscari** (*Grape Hyacinths*).—Hardy bulbs useful for rock-garden and border edgings, or for pot culture. Plant in October. Increase by offsets at this time. Blue or white, 8 in.

**Myosotis** (*Forget-me-not*).—Annuals and perennials, but most are grown as biennials; the ordinary *Forget-me-not* used in spring bedding is sown in April or May for the following season, and planted out in autumn when bulbs are planted. Some species are suitable for waterside gardens.

**Narcissus.**—Hardy bulbs of which there are a great many different species and hybrids. The various groups into which horticulturists have divided them include trumpet daffodils, short- and medium-cupped types, bunch-flowered types, and so on. All may be used for spring bedding, or grown under glass or in the home. Plant in August for show blooms, in October for main plantings. Plant rather deeply (daffodils about 6 in. deep) with a little sand under each bulb if the soil is very sticky clay. Lift only when crowding occurs.

**Nasturtium.**—See *Tropaeolum*.

**Nemesia.**—Half-hardy annuals for spring sowing under glass. Seed may also be sown in frames in August and wintered in the frames. Colours very varied. 1 ft. June to September.

**Nemophila** (*Californian Bluebell*).—*N. insignis* is the small blue-flowered annual suitable for border edgings. Sow in spring where it will mature. 3 in.

**Nepeta** (*Catmint*).—Dwarf, compact, gray-leaved perennial with many spikes of lavender-purple flowers. *Nepeta Mussini* is the variety mostly grown. 1 ft. July. Increase from cuttings in September, or divide in spring or autumn.

**Nicotiana** (*Tobacco*).—*N. glauca* is the white-flowered fragrant plant grown for summer bedding from seed sown in February under glass. *N. Sandera* has more colourful, red flowers but lack fragrance.

**Nigella.**—See *Love-in-a-Mist*.

**Oenothera** (*Evening Primrose*).—Annuals, biennials, and perennials. The border Evening Primrose (*O. fruticosa Fraseri*) grows to 2 ft. and carries bright yellow flowers in the evenings, from June to August. Increase by seed sown in spring in a cold frame, or by division in spring or autumn.

**Orchids.**—Tropical plants which need not only a glasshouse, but special soil and moisture conditions. Their culture is therefore only for experts, except for a few of the more easily grown varieties. *Odontoglossum* and *cypripedium* varieties are sometimes satisfactory in the cool greenhouse. There are also some hardy orchids, natives of Britain, which are grown on rock-gardens.

**Pæonia** (*Peony*).—Herbaceous and shrubby plants. The old red peony of cottage gardens has mostly given place to a race of hybrids of great variety of form and colour. Leafy, well-mannered, moist soil is needed, as peonies are gross feeders. A mulch of manure each February over established plants will help. In September increase by removal from the old plants of crowns with roots attached.

**Pansy.**—See *Viola*.

**Papaver** (*Poppy*).—Hardy annuals, biennials, and perennials. Annuals may be sown in spring or autumn. These include *P. Rheas*, the Shirley poppy. Biennials include the Iceland poppy, *P. medicinale*, which is slightly tender and only suitable for warm soil, as it dies off in cold soil if

the winter is severe. *P. orientale* is a useful perennial for any garden, and produces the huge blooms that are a feature of early summer gardens. Plant this in spring or autumn, but do not lift unless the plants are very overcrowded. Increase preferably by root cuttings, i.e., pieces of root of finger-length and thickness, planted with 2 in. of soil over the top of each.

**Passion Flower** (*Passiflora*).—Climbing shrubs, suitable for warm situations or for the greenhouse. Cut back new wood half length in February. Plant in spring or autumn. Increase from cuttings in summer.

**Pelargonium.**—Bedding geraniums and show pelargoniums both belong to this genus. Sunshine in plenty is the main need. Bedding geraniums should be wintered under glass. The best method is to make a practice of taking cuttings each August or September, inserting these round the edges of large pots of sandy soil, in the greenhouse. These can be potted up separately in spring, and used for summer bedding. In early spring it may also be convenient to take some cuttings from old plants wintered under glass. These, if not allowed to flower during summer, will make good pot plants for winter flowering in a sunny window.

**Pentstemon.**—Slightly tender perennials, useful for summer bedding, in a variety of colours, 20-30 in. They can be raised from seed sown under glass in March, or from cuttings taken in August and wintered in a frame.

**Petunia.**—Half-hardy perennials, grown as annuals for summer bedding. Excellent for window-boxes. Sow under glass in early spring. Various colours, June to October. 1 ft.

**Philadelphus** (*Syringa*, *Mock Orange*).—Hardy, deciduous, flowering shrubs which grow up to 12 ft. in height. The flowers are white and often scented—*Virginale*. *P. microphyllus* flowers in June and is a dwarf species, 3-4 ft. high.

**Phlox.**—Hardy annuals and perennials. *P. Drummondii* is the annual of many brilliant colours that is usually sown under glass for summer bedding. 6-12 in. June to October. *P. decussata* is the tall border phlox of which many varieties are sold. 2-4 ft. Plant this with 1½ in. of soil over the crowns in autumn or spring. Increase by division in February, March, or October; by cuttings of young growths in autumn (under glass); or by seed sown in the open in April. This succeeds in partial shade.

**Physalis** (*Winter Cherry* or *Cape Gooseberry*).—Light, rich soil and a sunny position should be provided in order to obtain the best results. The plants are grown for their "lantern" fruits, and stems should be cut when the lanterns are coloured, and hung in small bunches upside down until the stems have become dry and rigid.

**Pinks.**—See *Dianthus*.

**Polemonium** (*Jacob's Ladder*).—Hardy perennials, with blue or white flowers in June. Plant in spring or autumn, 6 in. apart in groups. Divide roots at the same seasons. 2 ft.

**Polyanthus.**—See *Primula*.

**Polygonatum** (*Solomon's Seal*).—One of the best flowering plants for shady positions. Rich, moist soil is best. Plant in autumn or spring.

**Polygonum** (*Knotwort*).—*P. Balduianum* is a rapid-growing climber which is useful to hide outhouses, or to smother old tree stumps. It flowers profusely in early and in late summer, but should generally be kept well away from the house on account of its untidy habit—the flowers and leaves fall in large numbers. Plant in autumn or spring.

**Primula** (*The Primrose Family*).—Primroses and *P. Polyantha*, and the various greenhouse primulas, such as *P. sinensis*, all belong to this large family. So also do certain primulas that love the waterside or bog garden. *Polyantha primrosea* (*polyanthus*) are probably the most useful in the ordinary garden. These can be raised from seed, sown outdoors in April, or under glass if preferred; or old plants can be divided after the flowers fade.

**Pyrethrum.**—Hardy perennials, but only suitable for well-drained, light, rich soil. Lift and divide every other year at planting time in spring. Many named varieties are available in different colours and all grow from 2 to 3 ft.

**Ranunculus.**—Herbaceous perennials useful in groups in a border where the soil is moist and rich. Plant 9 in. apart in groups, in autumn and mulch



with decayed manure each year at this season. Increase by division.

**Reseda.**—See *Mignonette*.

**Rhododendron.**—Evergreen shrubs with huge trusses of flower. Azaleas are deciduous shrubs of the same family. Both need soil that is free of lime, and preferably light and rich; the azaleas should have full sun. Plant in September or April.

**Ribes sanguineum** (the Red Flowering Currant).—One of the best of deciduous flowering shrubs for a town garden. Plant in spring or autumn. Increase by cuttings in autumn.

**Richardia** (Arum Lily).—Plant the bulbs in large pots in October. Light loam with some farm manure and sand is a good compost. Water freely until June—the pot can stand in a saucer of water. Plant out for the rest of the summer, or stand the pot in the open in the shade. Increase by offsets. Yellow-flowered arums are only suitable for greenhouse culture.

**Roses.**—The rose family includes many different species, and innumerable hybrids. All are best planted in November, but planting may continue until the buds begin to break in spring. The main groups are bush and standard roses, ramblers, climbing roses, and hedge roses. Bushes are pruned in late March, the weak wood being cut away first, and then the stronger shoots cut back to induce strong new growths that will carry the season's flowers. Hard pruning is the rule for roses that are weak growers; less drastic pruning for strong growers, otherwise they will make too much new wood and not enough flowers. Standard roses are pruned as bush roses, except that all growths from the base are cut away and only the head allowed to develop. Climbers are climbing types of the same kinds of roses as the bushes and standards, and these are also pruned in March, but care is taken to allow a skeleton of old wood to remain to cover supports. Ramblers are the kind of roses that send up long stems from the base each season. The flowers appear on the wood that is a year old, and after the flowers fade, these old stems are cut right away, and only the young unflowered wood tied into the supports. These are also grown as standards. For fuller details specialist books should be consulted, as there are a great many slight differences in pruning according to the variety of rose grown. Cultivation should include an annual mulch of manure if possible, and the use of bone meal and lime. The usual planting distances for rose bushes in a rose garden are 2 ft. apart for bushes in beds not more than 5 ft. wide.

**Salpiglossis.**—Half-hardy annual with petunia-like flowers, richly pencilled. It flowers in August, on stems 18 in. high, and makes a brave show in a border. Sow under glass in February.

**Salvia.**—Annuals, biennials, and perennials. Annuals are sown under glass in February. Hardy perennials planted in autumn or spring. Half-hardy perennials used for summer bedding are raised from cuttings taken in spring from old plants that have wintered under glass. *S. patens* (deep blue) and *S. splendens* (scarlet) are favourites for summer flower-beds.

**Saxifraga.**—A large family of plants mostly suitable for the rock garden, and of various colours. The Mossy Saxifrages include Peter Pan (crimson) and Elf (pink). Encrusted varieties are smaller like *S. Jenkinsae* (pink) and *S. apiculata* (yellow). Some varieties are only suitable for the Alpine house. *S. Megasea* has large fleshy leaves, and pink flowers in spring; this grows well by the waterside, and in the shade.

**Scabiosa.**—Annuals, biennials, and perennials. Sweet scabious is best raised from seed sown each August to flower in the following summer. *S. caucasica* is a fine blue perennial suitable for cut flowers, best in deep, moist, rich loam in full sun. Increase from seed or by division. Flowers mostly in shades of blue and purple, up to 3 ft. A yellow species, *S. lutea*, grows to 5 ft. and is useful at the back of a mixed border.

**Schizanthus.**—Half-hardy annuals that like rich loam with some mortar rubble. Sow the seed under glass in August, or in the open in April. Colours various, up to 4 ft. according to variety. Good as a pot plant for the cold greenhouse.

**Scilla.**—Hardy bulbs, including the native bluebell. There are also garden types, with blue, white, and rose flowers. Plant in October 2½ in. deep and 4 in. apart. Scillas also make good pot

plants. *Scilla sibirica* and its new variety "Spring Beauty" are good grown in shallow bowls of fibre.

**Sedum.**—A family of plants with fleshy leaves, varying in size from the creeping stonecrops to *S. spectabile*, which carries heads of rose flowers 1 ft. high from July to September. Plant in autumn or spring.

**Sidalcea.**—Hardy perennials with pink, bluish or white flowers, July. 3 ft. Plant in spring or autumn, and increase by division.

**Snowdrop.**—See *Galanthus*.

**Solanum capsicastrum** (Winter Cherry).—Pot plants that carry in winter bright orange fruits like cherries. When the berries shrivel, the plants should be cut back hard and restarted into fresh growth—in February or March. Until that time water should be given, and the plants kept away from draughts, and away from gas fires.

**Solidago** (Golden Rod).—Hardy perennials very easy to cultivate in any soil. Increase by division in spring or autumn. 4–5 ft.

**Spiraea.**—Hardy shrubs and perennials that like moisture and thrive in marshes. *S. japonica* is the moisture-loving perennial that is grown as a pot plant for the market.

**Stocks.**—Mostly half-hardy biennials, but the annual Ten-week Stock is best known of all. All are easily raised from seed in a frame or cold greenhouse, and named varieties of many colours and heights are listed in catalogues.

**Sunflower.**—See *Helianthus*.

**Sweet Pea.**—Hardy annual which has been much improved of late years by hybridisation. Sow in autumn or spring, under glass or in the open. Remove side growths and keep one or two main stems on each plant to produce the best flowers. Support on bamboo canes or pea sticks, and pick flowers as they open. Sweet peas pay for deep cultivation of the soil and constant attention during the summer.

**Sweet William.**—See *Dianthus*.

**Syringa** (Lilac).—(The name syringa is sometimes wrongly applied to philadelphus or mock orange.) Hardy shrubs of various colours. Plant in October or March. Prune as little as possible, and when pruning, cut stems right to the base, or to the point where two stems join: shortening stems after flowering will prevent flowers appearing in the next season.

**Thrift.**—See *Armeria*.

**Tobacco Plant.**—See *Nicotiana*.

**Tropeaeolum.**—The common nasturtium and also canary creeper which has fringed leaves and golden flowers, both belong to this family. Seeds are sown under glass in February or March, or in the open when danger of frost damage is past. A sunny position, and not too rich a soil is best.

**Tulips.**—Hardy bulbs, obtainable in great variety from bulb growers. Plant in November—over-early planting may cause the plants to go blind. Plant 4–6 in. deep with sand under each bulb. Lift tulips (except tulip species and a few cottage tulips) every season when the foliage has died down. Clean, sort over and keep large bulbs to replant in borders. Plant smaller ones in a nursery plot to grow on to larger size.

**Verbena.**—Hardy bedding plants which can be raised from cuttings rooted in autumn and left undisturbed in the pots until February. More cuttings can be taken in February from old plants that have wintered under glass. Stop back the growing points of young plants, to make them bushy. Seeds can be raised under glass in the early spring, in a temperature of 60° F.

**Veronica.**—Hardy evergreens, annuals, and herbaceous perennials, all easily grown and propagated according to the type.

**Viola.**—Hardy plants that include the pansies, tufted pansies, and rock violas or violettas. All can be raised from seed sown in pans of light soil in June, or seed may be sown in the open in July. To obtain a stock of good plants of uniform colour, increase by cuttings at any convenient time between April and October. Named varieties are numerous, and catalogues should be consulted.

**Violet.**—This also is a form of viola. Ordinary violets are hardy and can be grown outdoors all the year round. After flowers fade, the plants can be taken up, the best new outside crowns replanted, and unwanted runners and dying foliage removed. This treatment will ensure better flowers in the following season. Violets can

of course be grown under glass for the market, and many named varieties are on sale for this purpose.

**Virginian Stock.**—Well-known hardy annual that can be sown at any time during spring or summer, to make border edgings. Sow thinly, where it is to grow, and do not transplant or thin out.

**Wallflower.**—See *Cheiranthus*.

**Winter Cherry.**—See *Physalis* and *Solanum*.

**Wistaria.**—Hardy ornamental climber for house walls. Plant in spring or autumn. Increase by

layering in summer. Mauve or white, May and June. Prune January or February as a vine.

**Zinnia.**—Half-hardy annuals for light, rich soil. Sow under glass in early spring. Be careful to avoid damping off. Pot up seedlings singly in small pots, for greenhouse cultivation, or plant out from boxes in June. Red, orange, etc., according to variety. July to September. 20-30 in.

Concrete is suitable for making water-gardens, for the creation of rock-gardens, for stepping-stones, and all kinds of informal footpaths.

Concrete slabs may be built into pergolas and pillars. They can also be fashioned into seats, steps, bird-baths, sundials, and other garden ornaments.

Useful data concerning the mixtures needed are:—

**Paths.**—1 bag of Portland cement, 2½ cu. ft. of sand, and 3½ cu. ft. of shingle will make a path 2 ft. by 15 ft. Is laid 2 in. thick.

**Small flat stones.**—6½ bags cement to 1 yard sand. These can be used for paving, to build into pillars, and to make retaining walls.

It is best, if making pillars and pergolas and walls, to prepare quantities of slabs first, and build them later into the structures required. The effect is better than if large unbroken surfaces of concrete are left on view in the garden. Such surfaces are only artistic if they are absolutely perfect in detail, and where very large pools, bridges, and similar features are to be made of concrete, the construction is best put in the hands of contractors.

**Water in the Garden.**—Rock- and water-gardening of an informal type, where water falls from pool to pool down a rocky slope, or trickles over a bed of shingle on its way to a bottom pool, and water-gardening of more formal character, where a water-lily is surrounded by flat stones laid flush with the lawn—both these extremes, and many variations of them, can be undertaken by an owner-gardener. Small pumps, run by electricity, can be obtained to circulate the water in the hill-side water-garden. In a flat, open pool where water-plants are grown, no circulation of water is required, as the oxygenating plants in the water will keep it fresh and clean.

To construct a formal pool, first excavate the soil to a depth and area sufficient to allow for a 6-in. wall all round. Roughly nail together old boards to make a framework that will fit inside and come above the rim, and will allow for the wall thickness. Begin by mixing concrete as advised above for paths, i.e., with sand, shingle, and Portland cement. Put a 6-in. thick layer all over the bottom of the hole. Then set the wooden framework in position, and fill in a similar mixture between the wood and the surrounding soil. Do this as soon as possible after laying the base, so that wall and bottom of the pond are bound well together.

It is essential that the framework should be easily removable, and this will be so if few nails are used in assembling and the wood is rubbed over with some kind of oil before the concrete is laid.

Above the rough wall, any kind of finish can be made, when the concrete has hardened and the framework has been removed. For instance, rough slabs may be built to lessen the formality of the pool, or flat pre-cast concrete slabs may be laid flush with a lawn, or built into a low wall, as desired.

A depth of 2 ft. of water will allow the cultivation of many lovely water-lilies, but a depth of 10 in. is enough for the cultivation of pigmy types, and of many other water-loving plants.

## II. FRUIT

Preparation for fruit culture includes three things. First, the selection of the best available site. Fruits are often ruined by spring frosts, particularly in low-lying districts. The effect of a late frost is worse when the rising sun shines directly on to the trees, so that a slope facing east is undesirable. However, the choice of sites is for most of us very limited. The second important point is to choose fruits and varieties that are most likely to succeed, and to be of use to us, taking into consideration the aspect of the site. Family needs and personal tastes will, of course, enter into the question here. Finally, the soil must be suitably prepared for the fruits that are to be grown.

Some fruits will grow on walls. Some can be trained to wires strained between two posts, so that they can, if desired, edge a walk through the kitchen garden. Some fruits grow reasonably in partial shade: others need full sunshine. Before any detailed order is sent to a nursery, all these things should be considered, and the following information concerning popular garden fruits will be a useful guide to the novice in garden matters.

**Apple.**—A good, deep loam is best for apples, preferably with a sub-soil of clay or chalk. For gardens it is best to buy trees on dwarfing stock (Malling IX), as these come into bearing quickly and never grow to very large trees. Plant in October, or before March, stake immediately, and from time to time renew the ties, to make sure that the tree is secure, but that the tying material allows for sufficient stem growth. In districts where rabbits may be troublesome, protect the base of the tree by a surround of wire netting; otherwise the rabbits will gnaw the bark, and if the bark is removed all round the tree, it will die. Remember fertility rules: at least two apples should be grown unless there are many other apples in the neighbourhood. These two should flower at the same season and cross-pollinate each other. Laxton's Superb and Ellison's Orange would make a good dessert pair. Laxton's Superb and Lord Derby if a cooker is wanted. When planting apples allow 12 ft. from bush to bush—more space still if large standards are to be grown. Manure with garden compost or farm manure if the ground is dry and poor. Use potash in winter on all dessert apples, and a complete fertiliser in spring when the fruit is setting. (For information re spraying and feeding of apples and all other fruits, see Section VI.) Prune in winter, cutting back side growths on

most varieties, to encourage spur formation. Shorten leaders to encourage bushy growth and make the bush symmetrical. Certain apples bear fruits at or near the tips of young shoots: these varieties must be pruned differently. Some of the shoots can be taken out each season, and others left full length to carry the fruit. It is important with this type of pruning that stems should not become too crowded, though a somewhat straggly appearance as compared with other apples must be expected. These varieties are described in catalogues as "tip-bearers."

**Apricot.**—Plant in October in well-drained, calcareous loam, dug to a depth of 3 ft. and well dressed with bone-meal. A position against a sunny wall is good. Allow 10 ft. for the spread of the tree. Fruits grow on young wood a year old. Pruning should be finger-and-thumb pruning in summer to encourage sufficient young stems; remove the tips of stems that are fruiting, and to get fine specimens thin out fruits when the size of peas. Hemskirk and Moor Park are useful varieties for gardens.

**Blackberry.**—Heavy dressings of farm manure or garden compost, or a bucket of poultry droppings washed in with plenty of water in July or August, will produce fine fruits and strong growth. Use blackberries over old banks, or to cover tool-houses and other odd buildings. Himalayan

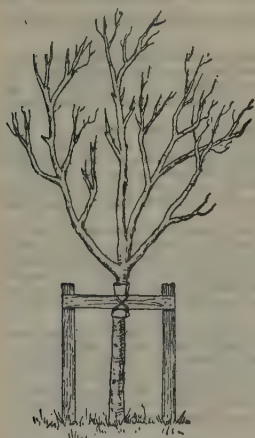


Giant, Merton Thornless, and Parsley-leaved are three useful blackberries. Plant in October, and increase by layering in summer.

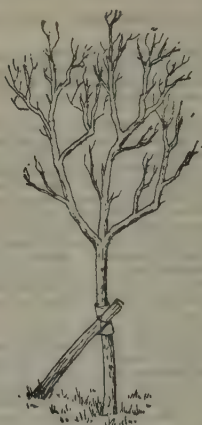
**Cherry.**—Where one cherry only can be grown plant a Morello cherry, which will thrive almost anywhere, even on a north wall in a town garden. Other cherries should be planted in pairs for cross-pollination, and these pairs should be selected very carefully, since cherries do not necessarily cross pollinate each other because they are in bloom at the same time. The advice of an expert should be sought on this matter if much planting is done. Where two sweet cherries only can be planted, a good choice would be Emperor Francis (white heart) and Governor Wood (red and yellow.) When needed, prune in autumn, but as little as possible after the tree has been formed.

nate years, and if half the bushes are so treated each season, the result is good. Pruning of red and white currants is more on the general lines for apples and other spur-fruited subjects. After fruit is gathered broken stems are cut cleanly away, and at the same time the side growths are pinched back a little to prevent too much overcrowding. In winter these side growths are shortened to within a few inches of the old wood, or to allow a couple of good leaf buds as well as the fruit buds on the "spur." At the same time symmetry is encouraged, and the heart of each bush is kept open so that air and sun can reach all stems, and so that fruit gathering is made easier.

**Damsons.**—A variety of plum which is very hardy and often used as windbreak alongside large orchards. It succeeds well in chalky loam



CROSSBAR



SINGLE



TRIPOD

**THREE METHODS OF STAKING FRUIT TREES, cross-bar, single, and tripod.** In each case protective material is used to prevent the tie cutting the tree. Ties must be examined and renewed once a year.

**Currants.**—Two distinct types of currants are grown—black currants and red currants. White and pink currants are varieties of the red, with similar habit of growth. Black currants need rich, moist loam and plenty of sun, though they succeed fairly well in partial shade. Red and white currants like similar soil, but will also do well in light soil. They can be trained against house walls if desired, and they are more tolerant of dryness in the soil. In planting any of the currants as bushes in the open garden, allow at least 4 ft. each way, 5 ft. apart is even better. Plant in October, or during the dormant season, when there is no frost in the soil. Increase all types by cuttings taken only from perfectly healthy plants. These cuttings can be pieces 10-15 in. long, stripped of lower leaves (if still present) and inserted in the open, in rows, about 6 in. apart, in November. At least half the cutting should be buried in the soil. In the case of red and white currants, the lower dormant buds should be picked out at the time the cutting is inserted. This will prevent the appearance of suckers and allow for a short "leg" above the ground before the head develops. In the case of black currants the dormant buds should all remain, as growths from the ground level are to be encouraged, since the black currant fruits best on young wood. Pruning of black currants can be done as soon as possible after the fruit is gathered, and it should consist of the removal of as much old wood as possible, and encouragement of young growths. Where strong basal growths are appearing, these should be retained and the old wood all cut right out. If only young wood from the old stems exists, use discretion and keep some of the best stems, while cutting others hard back. With some varieties it seems best to cut down the whole plant very near the ground level in alter-

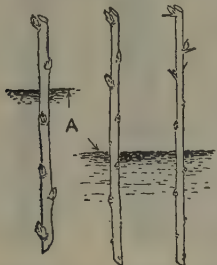
over clay sub-soils, but not in sandy soil unless this is very well treated during preparation. Plant from October onwards, 15 ft. apart for ordinary standards. For hedging and wind-breaks they can be planted closer. Prune in early years to form a shapely tree; later cut out dead wood only, and keep the growths from getting overcrowded. Old damsons can be pruned as hard back as desired without permanent harm.

**Figs.**—Plenty of sun and air are needed for figs, and in order to encourage ripening of the wood (essential to fruit production) a restricted root run should be provided. The hole prepared for the tree, about 4 ft. square, can be bricked in, but usually a position alongside house foundations is sufficiently restricted. A chalky sub-soil is very suitable for this fruit. Pruning in winter should consist of removal of the old fruiting shoots, and tying in of new growths. In early summer the number of new shoots allowed from each of these newly tied-in growths should be strictly limited—one at the tip to extend the branch, and one at the base of each shoot to become a fruiting stem in the following year is the usual number of buds to leave. At the end of summer these are stopped above the sixth leaf. In autumn any fruits that are larger than pea-size should be removed, as these are almost certain to be frost damaged, and the vigour of the plant is best allowed to go into the small fruits which will swell in spring. "Brown Turkey" is one of the best figs to grow outdoors.

**Gooseberries.**—Almost any soil and situation will do reasonably well for gooseberries, but a deep, rich loam, in full sunshine will produce the best fruits. Plant from October onwards and increase by cuttings taken as described above for red currants. If possible, grow each bush on a "leg" of about a foot before any side branching

is allowed. Bushes may need as much room as 5 ft., or even more.

**Grapes.**—Outdoor grape vines should, if possible, be against a south or south-west wall. If cultivation is good, ripe grapes will then be obtained. In any case, an outdoor grape vine is attractive on account of its foliage. Chalk and mortar rubble at the bottom of the hole prepared for planting, calcined bones mixed with the next layer of loam, and fibrous loam mixed with garden compost to complete the site will be found good. Plant in spring, setting the stem 1 or 2 ft. away from the wall, the roots well spread out in a half circle about a foot below the surface. One or more main stems may be allowed to develop, and these will be shortened a little each winter. The side growths will be carefully spaced by removal of unwanted growths, and sub-laterals on these side growths will carry the flower and fruit trusses. To encourage flower formation on these sub-laterals the tips of the new growths will be nipped off—in the first place they will be shortened to about a foot long in summer, and in winter they will again be shortened to leave only one or two dormant buds at the base. This summer and



**BUSH FRUITS** are easily increased from cuttings.

With red and white currants and gooseberries the lower buds are removed as shown on right. Lower buds on blackcurrants are left on. Soil level is at A.

winter pruning of the new wood is continued each season—the summer pruning to leave either a stem about a foot long, or a stem carrying a fruit truss a couple of leaves beyond the truss, and the winter pruning to leave only a few dormant buds near the old wood so that sufficient new growths will develop in spring.

**Loganberry.**—Hybrid berries of similar growth to blackberries, and needing the same kind of cultivation. The loganberry, in particular, responds to generous treatment in the matter of liquid fertilisers and mulchings. Ruthlessly cut out all old stems each autumn, as raspberries are treated. Increase by layering in summer.

**Medlar.**—A broad-topped tree of attractive appearance occasionally found wild in southern counties of England, but probably not indigenous. Plant between October and March, in any reasonably good soil. No pruning when the tree is once formed. Fruit is gathered at the end of October or mid-November, and laid out on trays, eye downwards, until it has bletted, i.e., become partly rotten and soft enough to be palatable. Jelly can be made from the fruits before they are fully ripe.

**Melon.**—Some melons can be grown in frames, and some in glasshouses, in both cases the culture is similar to that required by cucumbers. Under glass seed should be sown in January, one in each small pot of sandy soil, the seed being pressed down  $\frac{1}{2}$  in. into the compost. Temperature 65° F. For frame culture sow seeds a little later, in the same way. Plant in the soil of the frame, or in the greenhouse bed as for cucumbers. Allow five or six pairs of side shoots to show up on the main stem, and then stop the stem at the top. Stop the side shoots after a female bloom has formed, allowing one leaf beyond this bloom. Fertilise the flower artificially by pressing a male flower with dusty pollen centre, over a female flower, and giving it a slight twist. Syringe night and morning, and give plenty of water and liquid manure

at the roots when the fruits are swelling. Should many fruits form on one plant it is wise to restrict the number to three, as they will be of better quality.

**Nectarine.**—A similar fruit to the peach, except that it has a smooth instead of a velvety skin. It is cultivated in exactly the same way as the peach, but the flavour is rather fresher, and preferred by some. For further details see Peach.

**Nuts.**—The most common nuts grown in this country are cob-nuts and their variety filberts, walnuts, chestnuts, and occasionally almonds. The nuts of the forest beech (beech mast), and certain pine kernels are edible, but are not actually grown here for their food value, though they are sometimes collected and eaten.

**Almonds** are usually only grown for the sake of their early pink flowers, which appear on leafless stems in March. The nuts of these flowering almonds vary considerably. Taste may be con-



**GRAPE VINES** are pruned during dormancy.

The young growths are cut back to two eyes as shown. During growth the young shoots are stopped to three leaves beyond the bunch of grapes. Laterals are also pinched out after the first leaf.

sidered as a good guide to their edibility: the most bitter should be avoided, those rather bitter to eat may be mixed with sweet almonds or other nuts in the making of marzipan and cakes, while sweet-tasting almonds are always safe to eat. If trees are planted for their fruits a nurseryman should be consulted before purchasing. Plant October to February in ordinary loam.

**Cob-nuts and Filberts** are closely allied to the wild hazel nut, and also to the Barcelona nut which is sold shelled, or unshelled, in large quantities for Christmas fare. The difference between hazel nuts and cobs or filberts is mainly one of size, due to cultivation. The difference between the cobs and the filberts is that the cob-nuts have husks only part way up the nut, whereas the husk of the filberts completely envelopes the nuts. There are naturally many different varieties of both nuts—varying chiefly in size, in colour, in the hardness or thinness of the shell, and so on. These nuts should be planted in October, in a position sheltered from north and east winds. Poor gravelly or stony soil is quite good, and rough corners of a garden can often be used for nuts. Each tree will need 15 ft. each way. Pruning is generally done in March, after the pollen has fallen from the catkins. Strong side growths are cut back to a catkin near the



base of each. Wood that bore fruit last season is cut back to leave only two or three buds at the base, and suckers are cut right away. The young twiggy growth of the last season is left as much as possible as this carries the flowers and the nuts. If very strong side stems grow again by August, these are usually broken ("brutted") about 6 in. from the base, and left hanging until pruning time. This prevents so much unnecessary crowding. If the nuts are to be stored, gather them when they begin to fall from the husks, and lay them out to dry. Then pack into jars with layers of salt between the layers of nuts, and they will be in good condition at Christmas-time.

**Walnuts.** These are tall decorative trees, but it is usually many years before a young tree bears fruit. There are, however, trees specially grafted to produce early fruiting, and nurseries should be asked about this when walnuts are ordered. Plant October to March, and make sure the tree does not suffer from dryness at the roots in the first season. If it comes after new growth starts in the spring, frost is very damaging to walnuts, and for that reason it is useless to grow walnuts where spring frosts are often troublesome late in the season. Gather walnuts either green for pickling (before July 15th was the old-fashioned instruction, but anyway before the shell begins to harden). Otherwise gather them when they begin to fall, take off the outer green husk at once, and if the nuts are to be stored pack them in jars of salt as described for cob-nuts. (Walnuts are improved if the shells are bleached before storing.) If moistened coconut fibre can be used in alternate layers with the salt, the nuts keep in even better condition than with salt alone.

**Peach.**—As previously stated, peaches and nectarines are nearly related, and both are treated in the same way in the garden. These trees can be grown in the open garden as bushes or standards in very warm, sheltered districts, but they are more often grown as wall-trained trees.

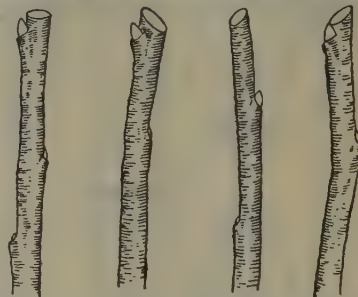
Fan-trained is the usual type, and pruning is done more or less all through the growing season, with the object of keeping the tree to its proper shape, and restricting the growth of unwanted stems. Fruits appear on young wood only, and finger-and-thumb pruning of tiny developing buds is practised to avoid the waste of the plant's strength. In winter there should be, a number of strong stems of the current season's development, and these are the stems that will bear the fruits. They should have fruit buds visible, and also many leaf buds, and as soon as these leaf buds begin to grow in spring, and the growths are about an inch long, the tips are nipped off, except in the case of the few that are chosen to become "replacements." All shoots that are growing out at right angles to the wall will be nipped, so also will some of the others, leaving about 5 in. between each pair of unpruned shoots. When the trees are fruiting well, one strong shoot will be allowed to grow from a point near the base of the shoot that carries the fruit: this will, after the fruit is gathered, be tied or nailed in instead of the present fruiting stem which will be cut right away. This brief summary of the pruning method to be adopted is naturally not complete, and every grower should seek the advice of an expert if any doubt arises over this matter.

Bellegarde peach and Pitmaston Orange nectarine are good varieties for a small garden.

**Pear.**—Pears can be grown in most districts where apples succeed, but pears are a little more susceptible to extremes of climate, and therefore do better in the southern half of the country. Pears may be grown in the more difficult districts as wall trees, and a variety such as Conference is especially good grown in this way. Pears, like apples, fruit best if effective cross-pollination can occur, and Louise Bonne would be a useful variety to plant with Conference to ensure fertility. Double Williams and Fertility Improved are tetraploid varieties which will succeed in isolation. Plant pears from October to March. Prune as advised for apples, but it will usually be found that pears form fruiting spurs without much assistance from the pruner, and older pear trees may often be left unpruned. Wall pears will, of course, be kept under constant observation. Superfluous shoots must be rubbed off during summer, to prevent the formation of unwanted

breast wood. Wall pears can take the form of fan-trained trees, espaliers, or triple cordons—espaliers being the most popular method of training.

**Plums.**—Plum-trees are extremely easy to cultivate, and some varieties, such as the well-known Victoria, are very regular croppers, though occasionally plums do get damaged by spring frosts. The trees should be planted in October or as soon after as convenient. Stake at planting time, and be careful to avoid damage to the stems, as open wounds are a source of trouble. Prune as little as possible; if the tree is young when purchased and must be pruned to form the symmetrical shape desired, prune as much as possible with finger and thumb, and avoid large wounds. Silver-leaf disease spores are very active in mid-winter, and for this reason the trees should be pruned preferably in late spring, or if large branches must be removed, do this in summer. Always paint over large wounds immediately, with creosote or white-lead paint to prevent infection, and never allow wind-damaged



WRONG RIGHT WRONG WRONG

**PRUNING**—right and wrong methods of making cuts. Pruning secateurs should be dipped into creosote occasionally while pruning to prevent the spread of Silver Leaf disease.

branches to remain with open, splintering wounds, but cut them cleanly away at once. If crops are very heavy, thin out the fruits while they are very small, and provide supports for pendulous branches as the wood of plum-trees is extremely brittle. Most plums do not need much potash, but the Pershore varieties (Yellow Pershore and Purple Pershore) are rapidly affected by shortage of this fertiliser and can usefully be given potash dressings each winter.

**Raspberry.**—The best time to begin raspberry cultivation is in autumn, when rooted suckers are being lifted from raspberry plantations to make room for the other canes. Unless these come from obviously very healthy plantations, it is not wise to accept them as gifts from friends' gardens, as the raspberry-virus disease is so often present in old plants. It therefore pays to buy from nurseries where the plants are constantly inspected. Raspberry plantations will last about ten years if they do not become affected by disease. Plant the young canes in November, either in groups of three with 4 ft. between the groups, or in lines of canes set 1-2 ft. apart in rows 6 ft. apart. Cut down the newly planted canes in spring to a foot from the ground. This seems drastic, but it is the only way to obtain good, strong stools.—Every autumn the canes that have fruited are cut away, and the strongest of the others left to carry the next season's crop. These are tied in to the supports in the early months of the year, the tops, if affected by frost, being cut back just a little. It is best not to tie the young canes until they are well ripened. To obtain autumn fruits, cut away the old canes in June or earlier, as soon as young canes begin to grow. At the same time give a mulch of good manure or garden compost, and see that the water supply is well maintained if dry weather occurs. The canes will then bear good crops of fruit in the autumn. Keep down the number of canes when growing for autumn fruit, so that the remainder will have every chance to

develop rapidly. Lloyd George, Norfolk Giant, and Yellow Antwerp are useful varieties for summer fruiting, November Abundance for autumn fruiting. Lloyd George is also useful for autumn fruiting, but if it is to be grown in this way the old canes must be cut right down early in the year.

**Strawberry.**—A fair amount of garden space, and soil deeply dug and enriched with manure is needed for successful strawberry culture. Old woodland that has been cleared has been found particularly good for these fruits. The usual way to keep a plantation going in a garden is to remake a third of it each year, setting out freshly rooted runners in place of the old plants. Thus there are always strawberries of one, two, and three years old in the plantation, and a uniform quantity of fruits may be expected. If strawberries are being grown on a kitchen-garden plot, it is best to work down the plot gradually, growing vegetables before and after the three seasons of strawberry cultivation, so that fresh ground is always used for the one-third new plants. In some gardens it pays better to grow annual strawberries, of the alpine-strawberry varieties, or to raise these from seed every other year, sowing the seed in spring or autumn, and setting out the plants a foot apart in rows 18 in. apart. There are also perpetual-fruited strawberries that fruit in the later half of the year. For normal strawberry beds, however, planting is done in August or September, when rooted runners can be obtained. These are set out in the prepared bed 15 in. apart in the rows and with 2-3 ft. between the rows. When planted, the crown of each plant should be just above the surface of the soil, which should be made quite firm round the plant. Watch for frost action in the first winter particularly: if the plants are lifted in the soil after hard frost, press them back again carefully. Top dress the new plants with good compost or decayed manure in early spring, and a few weeks later, when flowers are beginning to show, lay long straw down be-

tween the rows, to prevent the fruits being mud splashed when rains occur. It is a mistake to put straw down too soon if frosts are likely, but should frost threaten after the straw is laid down, protection can be given to the flower-buds by lightly lifting the straw with a fork, so that it forms a loose cover over the plants. It must, afterwards, be laid back between the leaves and the soil. After the fruit is gathered, *i.e.*, in autumn, the straw still remaining on the bed may be drawn a little away from the old plants and burned over, choosing a day when there is a slight breeze and setting light to one end so that the fire travels right across the strawberry bed. The plants will not be harmed by the burning, but fungus spores of certain diseases will be destroyed, and the new growth will be all the healthier for this treatment. Moreover, the slight amount of potash from the straw ash will be of assistance to the plants. During the summer, runners will develop from old plants, *i.e.*, long, thin stems with tufts of green leaves. If these tufts are left to chance, they will root somewhere in the soil, and so form new young plants. It pays the cultivator, however, to prepare special soil for them. The best method is to fill small thumb pots with good compost such as is used for potting (half loam, quarter rotted manure, quarter sand) and to sink these small pots up to the rim near the parent plants. Each runner is then pegged down, with a hairpin or other peg, into a pot of prepared soil. Roots form very rapidly, and in about four weeks the runners can be cut from the old plant, and moved to the new bed that is ready for them. It is very important, when treating runners for the new plantation, to make sure that each comes from a healthy, fruit-bearing old plant, not from one that is diseased or that has failed to produce fruit for any reason.

Vines.—See Grapes.

Walnut.—See Nuts.

(N.B. For details of feeding, and spraying, of all fruits, see Section V on Garden Chemistry.)

### III. VEGETABLES

The vegetable-garden is, today, perhaps the most important part of any home garden. The need for growing a major part, if not all, of the fresh vegetables that a family will consume is twofold. In the first place it pays: homegrown supplies are much cheaper than those in shops, and they come to the kitchen in much fresher condition, so that the true value of green crops and salads, the vitamin value, is not lost. In the second place there is a real national need for greater food production, and the owner of any plot of land, however small, is performing a national service if he grows in it a part, at least, of the family's food.

In selecting the site for the vegetable crops, an open, sunny position, where air is plentiful, is ideal. If strong winds come from a cold quarter, some kind of shelter screen can be provided. This might be a thick holly or thorn hedge—thorn is an excellent wind-break even though it loses its leaves in winter—or a temporary structure of wattle hurdles. These are useful in a new garden to keep off cold winds until a more permanent wind-break can be grown. When a hedge is formed, the wattle hurdles will still be found useful to make temporary screens round individual plants or crops, or to keep draughts away from the cold frame.

Paths through the vegetable-garden are important, as manure will have to be barrowed on to the plot and other heavy loads will have to be wheeled from there to the kitchen door, or to the storing shed. These paths need not be elaborate: a rolled-soil track may be enough, but on sticky clay soil a cinder-covered track will be cleaner than mere rolled soil. Path edgings of a single or double line of brick, set lengthwise, are very useful. They allow for the use of weed-killer on the path, without this penetrating to plant roots in the beds—a point which must be watched carefully, as considerable damage can be done by the careless use of weed-killers near growing crops. A line of annual flowers alongside the path edge makes a walk through the kitchen-garden pleasant, and these can be double-purpose flowers—herbs for culinary use, or flowers to cut for house vases.

In laying out the vegetable plot, ease of working should be kept in mind. The lines on the plot will run as nearly as possible north and south. This allows for a uniform amount of sunshine to reach all the plants, for sunshine to penetrate between the plants to the lower leaves, and it also prevents plants being drawn sideways in the rows in a garden where only the midday sun is effective. These north and south lines should not be too long. If the plot is very long from north to south, a central path should be made. Otherwise there will be rather too much soil trampling in reaching the crops that are some distance from the path, and there will also be more difficulty in harvesting.

Generally speaking, the home garden is not large enough to warrant the cultivation of all the potatoes that will be needed by the family. This is a crop which can probably be grown more economically by farmers. It is, however, worth noting that farmers judge the quality of a potato by the size and appearance of the crop. They are not so much concerned with the flavour, and discard a good-flavoured variety if it does not crop heavily. If, therefore, the gardener can make room for potatoes, the varieties which are of the best flavour can be grown, and these will be found very superior to the usual market varieties. This is a matter for the garden owner to decide for himself, but it affects the lay-out of the vegetable-garden considerably. If potatoes are cultivated, a four-year cropping plan can be adopted. One-half of the ground is probably not too much for the family man to allocate for potatoes: the other half can be divided into two, with main root crops on one quarter of the whole vegetable-garden, and peas, beans, onions, celery, tomatoes, and leeks on the remaining quarter. Green crops will follow the potatoes on the same half, as these will be planted out in succession as the early and then later potatoes are lifted. Some of these greens will, naturally, still be on the plot in the early part of the second year, but these will be followed by tomatoes, leeks, and celery, none of which need the ground in the early months of the season. The two groups of roots and miscellaneous crops will change over in the second



season to the half occupied by potatoes: in the third year they will return to their original half, but their positions can then be changed over so that the quarter occupied by roots in the first year is occupied by the miscellaneous crops in the third. Thus potatoes will be grown on the ground in alternate seasons, and other crops only once in four years on the same site.

Where potatoes are not wanted in such quantity, a rotation of three plots—potatoes (and greens) in one, peas, beans, etc., in one, and roots in another—of equal size may be more practicable. If large quantities of greens are needed, these could take possession of a third of the ground, potatoes (earlies only) and other roots another third, and peas, beans, and other oddments the remainder.

The idea behind all this change-over of crops, which every gardener must work out to suit his particular needs and his particular site, is that each crop will take from the ground a larger proportion of some plant foods than of others. If, therefore, the crop is changed, it becomes easier, and less costly, to maintain the balance of available soil food: less fertilisers are required over a number of years. This, however, is not the only advantage gained by rotation of crops: if it were, the owner of a small garden need never trouble, since the quantity of added fertiliser needed to bring the soil back into condition would be so small that it could be ignored. Perhaps a much more important point is that plants are easily affected by innumerable diseases of more or less virulent character. Many of these are carried in the soil from season to season. The same thing can be said of plant pests—there are some that attack only certain kinds of crop. If the crop is grown year after year on the same site, these diseases and pests lie in wait in the soil and thrive on their plant hosts. If a change-over is made, and the pests and diseases have no suitable host for a season or two, they tend to die out and so leave the crops free from their undesirable attentions. As long a period as can conveniently be arranged should therefore be left between the use of each site for the same crop, for some diseases and pests may linger for several seasons in the soil.

**Soil Preparation.**—Preparation of any soil for vegetable cultivation may be done in this manner. If grass or weeds cover the surface, the tops should be cut off with a sickle or scythe, but there is no need to take off the turf, as is sometimes done. Indeed, this is wasteful, since the fertile part of any soil is the top layer which has been acted upon by weather, and by the bacteria associated with all plant growth. Tall weeds with seed-heads may be burned if desired, but normally any top growth on old plants that is likely to decay should go into the making of garden compost, and the first step on a rough

and another opened at the same time. This continues all down the plot, until the last trench is filled with the loose soil taken from the first one.

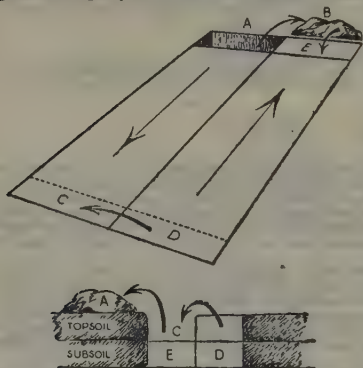
This double-digging process should be practised whenever convenient during the winter, and if time allows, the top layer of soil can be turned again and again with the digging fork or spade, so that it becomes well aerated. Frequent turning is ideal for clay soils, that is for the type of soil that sticks to your boots in wet weather and sets like concrete in dry weather. This soil is fertile, and, if it is constantly worked, and manured with leaves, straw, or garden compost, very good indeed for vegetable crops. Sandy soil, which is cleaner to work, is less fertile, and needs plenty of organic manure (decayed living matter) to assist it to hold moisture, but the same treatment, i.e., deep digging and liberal manuring, will make sandy soil more fertile and clay soil easier to work. Both types of soil should be dressed with lime after digging, to prevent sourness, which is a common cause of trouble among vegetables. Chalk is the best form of lime for sandy soils.

It is not always convenient, nor even desirable, to double-dig a plot that is idle only for a week or so in summer. At this season the better treatment may be light forking, or even just hoeing the surface. For instance, where peas and beans have been grown, the soil is always left rich in nitrates (see Section V), and it is sufficient to clear the surface and then plant out winter greens, or to sow onions for the following season, both of which crops will appreciate the nitrates and will not be averse to well-settled sub-soil.

**Manure and Fertilisers.**—Apart from the regular use of lime, some crops need certain extra plant foods. These will be mentioned in the following detailed instructions for cultivation, but the gardener should also keep in mind the general instructions, given in Section V, regarding the use of different fertilisers on different kinds of soil, at different seasons, and so on.

The vexed question of how to obtain manure is partly answered by the compost heap. This is a heap of decaying organic matter, with soil, and usually a little additional plant food, which, when properly composted, makes manure that is not inferior to farm manure. A compost heap can be made on a part of the vegetable plot itself, or it can often occupy an odd corner in the garden, and if it is screened by an evergreen hedge, wall, hurdle, or fence, it need not be at all unsightly.

A site about 4 ft. by 9 ft. is large enough for the allotment-holder's plot, that is for a garden 10 yd. by 30 yd. Make the heap on one half of the marked site. To build the heap is first to put down a layer of waste matter such as plant tops, vegetable trimmings, lawn mowings, soft clippings from hedges (but not woody material), fallen leaves, and all kinds of kitchen waste that will decay. Make this layer about 6 in. thick when well trodden down. Then put about 2 oz. each of superphosphate of lime and sulphate of ammonia, or about 4 oz. of calcium cyanamide, or a dressing of some commercial "compost-maker" (quantity according to makers' instructions) over this material, and if the weather and material are dry, water well. An inch or two of fine soil should then be used as a covering, and with this may be



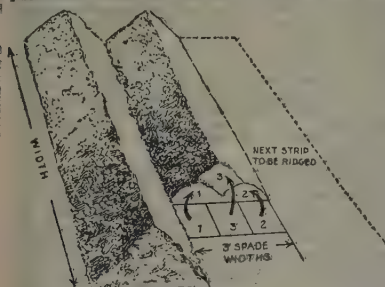
**DOUBLE DIGGING.**—Land is improved by double digging every three years. The trench at A, 12 in. wide, a spade deep, and soil placed at B. Soil from D fills trench at C, and the first soil B fills trench at E, the finish of the plot. In double digging the sub-soil remains where it is, but is broken up as each new trench is made.

patch will be just to cut down and rake off this rough material, stacking it in a pile for future treatment.

The land should then be double dug (two spits), and for this a trench is first opened along one end of the plot. The material excavated during the process is kept carefully on one side, as it will be needed to fill up the last trench when the whole plot is dug. The trench should be at least 15 in. wide and 1 ft. deep. The loose soil should be lifted out with a spade, and it will then be possible to get into the trench and use a large digging-fork to break the sub-soil. At the same time, if convenient, some manure may be mixed with this lower spit of soil, but where grassland is being broken, the turf from the next 15 in. strip of ground should be lifted off, and thrown in, upside down, in the open trench after forking. The next 15-in. width is then turned over to a depth of 12 in., the soil being thrown in, upside down, in the first trench, thus one trench is filled

thrown any available bonfire ash obtained by burning woody refuse, such as tree prunings. If waste material is obviously diseased, this, too, should go on the bonfire rather than the compost heap, but weeds that have gone to seed do not matter much, as properly composted material should ferment sufficiently to destroy the germinating qualities of these seeds.

Beginning again with a layer of organic refuse over the soil, then more fertiliser or compost maker, then soil, continue gradually to build up the heap until it is about 4 ft. high. The compost will sink quite a lot during the time it is being collected, over a number of weeks, so that more and more can be added. As a rule a heap made in this way is fit to turn at the end of a month or six weeks. At this stage the inside should be hot, and the outside should first be stacked on the remaining half of the site allocated and the hotter material from inside should be packed all round and over it. When this has



RIDGING is a form of digging for wet clay soils: it allows air and frost to break down the clay.

been done, the heap should be covered with soil, well packed, until it is wanted for use in digging. If a heap is built up during spring and summer, covered and left by August, it should be fine to dig into the ground during the winter. In August a fresh heap could be started, and this will be covered after the ground has all been cleared for the winter, and should be useful material to make special beds for such greedy crops as celery, etc., during the spring and early summer.

**Nursery Bed.**—In connexion with every kitchen-garden there should be a nursery plot, i.e., a bed of good, fine soil in which seeds can be sown, and seedlings pricked out, to supply plants for the main vegetable plots. A plot open to the sun, and not overhung by trees is best. Where shade is wanted it can be provided artificially, but without sun many small seedlings merely become drawn and weak and never make good plants later.

Seeds in the nursery bed are generally sown in shallow drills, i.e., in parallel lines drawn with a sharp-pointed stick, about eight inches apart. This allows for the use of the hoe between the lines, while the seedlings are very small, so that weeds can be kept down. A dusting of lime and soot over the seed-bed, raked in a day or two before the seeds are sown, will help to keep away pests: the mixture of soot and lime gives off fumes which discourage the pests. If slugs are known to be troublesome, as on certain clay soils, the use of slug-killer on the seed-plots is a sound practice. In all cases, seeds sown for transplanting should be sown thinly, and thinned or transplanted before any crowding takes place.

## ALPHABETICAL LIST OF GARDEN VEGETABLES

**Artichokes.**—These are of two kinds, Jerusalem artichokes and Globe artichokes. *Jerusalem artichokes* are plants resembling sunflowers in growth. They are often reputed to grow in poor soil, but actually they pay for good cultivation. A double, staggered row of tubers set 4 in. deep and 15 in. apart at the coldest end of the plot acts as a good wind-break, and if they are provided with a strip of richly manured soil, they will

produce a crop of good-sized tubers that are second in food value only to the potato. At the year end, when the tops are cut down by frost, the tubers should be lifted, sorted over, and some of the most shapely ones reserved for planting the next season: this selection of shapely tubers will keep the general quality of the crop good. Planting can be done at any time from the end of January onwards, when there is no frost in the soil. *Globe artichokes* need a good deal of room, and must have deep, rich soil. They are often grown in the flower border for the sake of their ornamental appearance. The part eaten is the unopened flower bud, and unless cultivation has been good, these will be hardly worth cooking.

**Asparagus.**—A plantation of asparagus can be obtained by seed sowing in spring, planting out the seedlings in autumn or the following spring. There are modern strains that come early into bearing, but it takes some time to establish a good plantation. Probably the best way is to buy three-year-old plants. These are set out in rows 18 in. apart, three rows being allowed for a bed of 5 ft. wide. Beds should not be wider, as this is the maximum that allows for easy cultivation. Between beds if many such are planted, there should be rolled soil tracks, for walking, and the top soil may conveniently be taken from this part of the ground and used to build up the beds. Good, rich, preferably rather light loam is ideal: cold, badly drained soil is fatal. Cutting should not begin until the plants are growing strongly. If three-year-old plants are set out in spring, cutting might perhaps begin in the spring of the next year. In autumn each season the tops are cut down, the beds cleared of weeds, and a mulch of well-decayed manure, garden compost, or seaweed is given over the whole of the bed. Agri-cultural salt, 2 oz. per sq. yd., is used in spring, and a little weak nitrate of soda may be used also, in liquid form, in the spring. When cutting the stems, as they are about four inches above the soil, push the knife well down, and carefully sever the one stalk only, 2 or 3 in. below the soil surface. Do not leave crowns exposed to late frosts—a protective covering of light litter is useful.

**Beans.**—Three types of bean are commonly grown in gardens. *Broad Beans* are the hardiest kind, and these can, in warm gardens with light, rich soil, be sown in late autumn to stand through the winter and provide an early crop. As a rule, however, little is gained by autumn sowing, and in most gardens the beans are sown in January or February, at the earliest opportunity when the soil is frost free. Beans can also be sown under glass in January to be set out later. Double rows are usually sown or planted, the beans being 6 in. apart in these rows, with 9 in. between the rows. At least 4 ft. should be allowed between two sets of double rows. The aim of the gardener should be to produce early rapid growth, since later sowings are often so badly attacked by the black dolphin fly that they are useless. In any case, the use of insecticide as a preventive measure, before any fly is seen, is advisable. Broad beans should be used either before the beans are formed in the pods, in which case the pods are cooked whole or cut into small pieces like runners, or when the beans have formed well but have not become tough. They should not have developed a black scar or eye, at this stage. Older beans are only suitable for soups and purées. If in spite of sprays, black fly appears on the growing tips of the plants, these should be pinched out at once, and a strong insecticide spray used immediately.

**Runner Beans are well known to everyone. If staked they form useful screens between gardens, or between parts of the same garden. They can also be grown without stakes, the tips being regularly pinched out as soon as the main stems, and later the side stems, begin to "run." This makes a bushy but very prolific growth, and is the method adopted by farmers in open fields. For the usual double row staked with crossed bean-poles, the seeds should be sown in early May, 3 in. deep, 9 in. apart in the rows, 1 ft. to 18 in. between the two rows. It is easiest to put in the two rows of seed, 1 ft. apart, and wait to drive in the bean-poles on the outer sides of the bean rows when the seeds have germinated. Good, rich soil is essential and moisture must be plentiful. Beans fail to set either because the weather is too dry—watering every evening overhead will solve this problem—**



or because the nights are too cold, and the flowers drop. Weather when no bees are flying is the sort of weather that ruins the bean crop.

**Dwarf or Climbing French Beans** form the third group of beans for the garden. These include the type of bean grown and ripened in the pod for use in winter. The dwarfs are sown in an open, sunny position on rich soil, in the first week of May, setting the seeds 3 in. deep, 6 in. apart in the row, and the rows 3 ft. apart. These are extremely tender and must be protected if they appear above the soil before the last frost. As with both broad and runner beans, it is possible to sow under glass and plant out later, but steady unchecked growth is to be preferred. Plants may, in a cool greenhouse, be grown out of season in large pots, but this necessitates the use of some heat to exclude frosts. The beans grown for winter use (Dutch brown, or Comtesse de Chambord) should be harvested in late September before the frosts. If not ripe at this time, the whole plants may be pulled up and hung in bunches in a dry shed until the pods are ripe enough for the beans to fall easily from them when they are held at the ends and twisted. It is worth note that all these beans, if well fed with liquid manure, will go on bearing almost indefinitely, until cut down by frosts. The runners and French beans are actually grown for three years on the same roots in warm climates, and it is only frost action that should put an end to their productivity here.

**Beetroot.**—From mid-April onwards, rows of round-rooted beet—Globe beet—can be sown on soil that has not been recently manured but is in good heart. A dressing of completely balanced fertiliser over the soil before it is raked for seed sowing will be useful if the ground is rather poor. If plenty of manure was worked in for a previous crop, a dressing of superphosphate just before sowing would be useful. Sow in drills 1 in. deep and thin to allow 1 ft. between the plants. If seeds are sown in the drills at 8-in. intervals, it will make the work of thinning easier: transplanting must not be done. Pull the roots as required for use, and make successional sowings at intervals of about a month from April to July. The long-rooted type of beet should only be grown for storage, and only in gardens where the soil is light and stone-free. In heavier soil the oval-rooted type is better for winter supplies. These winter roots should be sown in May or early June, and before being lifted and stored should be allowed to grow full sized but not over-large. Overgrown roots become woody and tough. In lifting and storing beet, take care not to injure the skin, and do not store any that are accidentally injured. Twist off the tops—do not cut them—an inch or two above the root. Pack the roots carefully into boxes, with slightly damp sand between the layers, or build them into clamps over straw, covered with more straw, in a shed, or with straw and a thick soil layer if clamps must be made in the open garden. Frost must not reach them or they will be useless.

**Sugar Beet** is a similar kind of plant to the red-rooted beet, but the skin and flesh are white. This makes an excellent vegetable for those who like it, and adds variety to the diet. Grow as ordinary beet. All beets should be kept free from weeds through the growing season, but great care should be taken over hoeing, as the small roots which feed the swollen rootstock are easily damaged by the use of the hoe too near the roots.

**Borecole.**—See Kale.

**Brassica.**—This is the generic name of a whole group of vegetables, more commonly known to gardeners as "greens." The group includes cabbages, cauliflowers, borecole or kale, Brussels sprouts, turnips, Couve tronchuda, and kohlrabi, each of which is dealt with under a separate heading. It is well to understand that a relationship exists between these crops, partly because they all need somewhat similar soil treatment, and partly because similar pests attack most of them, and can pass from one to the other. To group them together, and to move them all to a fresh site each year, is a good way to avoid much trouble over pests and diseases.

**Broccoli.**—Broccoli (of the large-flowered type) and cauliflower are the same thing to some cooks, but there is actually some considerable difference. Broccoli is thicker, coarser-leaved, greener in colour as compared with the pure creamy white of

a good cauliflower-head, and the plants are hardy enough to stand outdoors through the winter. Cauliflowers, on the other hand, need glass protection through the worst months of winter. A particular type of broccoli known as "Roscoff" is the kind grown in Devon and Cornwall to provide "cauliflowers" for the London market. Seed of broccoli should be sown in the nursery plot in April and May, or if good heads are wanted for autumn cutting, they may profitably be sown under glass in March or April. Harden off as early as possible, and when a few inches high, plant out into the nursery beds, 6 in. apart each way. Plants should be ready to set out in permanent positions in late May, June, or July, as ground becomes vacant. Plant them 2 ft. apart each way. Broccoli can follow an early crop of peas, potatoes, or other vegetables, and is best planted without deep digging after the early crop is cleared, as the plants prefer the soil to be rather consolidated. In addition to the cauliflower-headed type, there are purple and green sprouting broccoli, extremely hardy and very useful in the earliest months of the year. Treat these all in the same manner. Do not overfeed with nitrogenous fertiliser, as this encourages soft sappy growth that does not stand up to winter frosts, but a little general fertiliser can with advantage be used when the plants are growing well. Superphosphate, 1 oz. to each plant, and plenty of bonfire ash can be used before or soon after planting.

**Brussels Sprouts.**—To ensure hard, firm sprouts, sow the seed in the nursery plot in mid-March or as soon after as is practicable according to the weather. Sow very thinly along the rows, to avoid the need for pricking out, if possible; otherwise prick out to 6 in. apart. Transplant to permanent quarters in May or June, or when there is room on the plot; it is wise to leave the plants in the nursery bed until plenty of room can be provided, as they should not be set out closer than 3 ft. apart each way. Plants can sometimes be set out between the rows of late potatoes, after these have been finally earthed up. Draw the soil up towards the stems a month or six weeks after planting—or when the potato crop is lifted. Sprouts need liberal soil treatment for the best results, and nitro-chalk may be used as a soil dressing in summer if growth seems poor. Do not overfeed too late in the season. Cut off the lower leaves from each stem as they turn yellow, and cut the sprouts, as required, from the bottom first, leaving the top green tuft until all the sprouts have been picked. Sprouts should take thirty to forty weeks from sowing to maturity, and where garden space is available, a succession of sowings can be made from March until the middle of June, so as to lengthen the cropping period. Careful watch should be kept for the appearance of aphides, and the regular use of derris insecticide as a preventive is advised, especially for those who are growing for exhibition.

**Cabbage.**—Cabbages are extremely hardy. They are derived, with other brassicas, from the wild cabbage found on sea cliffs around these shores—a point worth remembering, because salt as an insecticide is an old and still useful remedy on the cabbage patch. Cabbages are sown at three times during the year—in March or April for summer use, in May or June for winter, and at the end of July or beginning of August for spring cabbages. Sowing is always done in a nursery plot, not on the main bed where the plants will mature. Preparation of the soil in the nursery seed-bed is important. To burn off the top weeds and rough growth and then sow cabbages is an old practice which is still carried out in some districts. In any case, fine soil, burnt earth, wood ashes, and some lime should be used in preparing the seed-bed, since this will produce strong, sturdy plants. Prick out as soon as possible, and set the plants out in permanent positions as soon as they are reasonably well grown. For spring cabbage, sowings should be made at the end of July in northern gardens, but not until the first week in August in the south. If sown too early, the plants are likely to bolt instead of making hearts. As a rule these plants are set out 9 in. apart in the rows, leaving 18 in. between the rows. They can be set out 9 in. apart each way if space is precious. When greenstuff is short in late winter, every alternate plant can be cut, leaving only one plant

every 18 in. to heart up, the ones removed being serviceable as greens. If the ground in which these cabbages are set out is in good heart, they should need no attention beyond drawing a little soil up against the stems before the worst frosts come along. This may prevent frost loosening them in the ground. In March, cabbage seed will again be sown in the nursery plot, or, if the weather is bad and a frame is available, it can be sown in the frame in boxes. Prick out and transplant by the ordinary way. This sowing of cabbage will grow rapidly as the warm weather approaches, and it can therefore be set out in good rich soil. Nitro-chalk is a fine stimulant if one is required. The distance apart for the seedlings varies quite a lot according to the type. Coleworts need no more than a foot of space; some cabbages will need 2 ft. each way. The owner of a small garden is advised not to grow the largest types unless the family specially likes them, as the smaller ones are often more useful. In late April, May, or June as convenient, a further sowing of Christmas Drumhead, or January King cabbages is useful. These will come in, as their names suggest, in mid-winter. A site for these sowings will generally be found where potatoes have been lifted, or early peas, broad beans, etc., have been cleared. Cultivation is similar to that given to earlier sowings, except that if a stimulant is needed, this should not be given too late in the season, and should be a general, balanced mixture such as the "Growmore" fertiliser of war-time production. Too much sappy growth in the late autumn is to be avoided. Red cabbages are grown in just the same way as other cabbages, but they take longer to mature. They are usually sown in August, and transplanted 6 in. apart in a reserve bed, where they remain through the winter. In early spring they can be set out 18 in. apart each way. They will not mature until late summer. Weak doses of liquid fertiliser given through the hot weather will increase their size. It is worth noting that all cabbages, cut off as near the top of the stem as practicable, will make new growth if left in the ground. A common practice with winter standing cabbages is to cut across the stem top twice, in opposite directions, before leaving it, and this results in bunches of young leaves developing at this point. These young leaves are very useful either as greens for the table, or as food for rabbits, etc.

*Savoy cabbages* are sown in May and transplanted in July or early August to beds that have been dressed with superphosphate and wood ash. This should help to produce hardy plants that will be improved by a touch of frost. Set the seedlings 18 in. to 2 ft. apart each way, and remove yellow leaves in autumn and winter. Savoys are among the hardest of all crops, and should, for this reason, find a small place in every garden, in case the winter should prove exceptionally hard.

*Cardoon*.—Seeds should be sown in April or May, where the plants are to mature. The best method is to open trenches, 18 in. wide and 1 ft. deep, and work in 3 in. of good manure in the bottom soil. Then add a second 3 in. of fine, sifted soil. When the weather is favourable for seed sowing, dibble in three seeds in a group, every 18 in. along the trench bottom and water well. Cover each set of seeds with an inverted flower-pot until the seedlings are visible; then thin out to leave only one strong seedling at each station. Leafy branches laid across the top of the trench will protect from possible late frosts. Draw a little earth up against the plants once or twice during the growing season, and make sure the water supply is maintained. In autumn, about September, on a dry day, gather the inner leaf stalks together and tie them round the stem with raffia; then, especially if plants are being grown for show, wind a strip of brown paper round the stems from base to the top, leaving only the tips visible. Bind hay round the lower part, and set a light stake to each plant. Then earth up in two or three operations as for celery, and leave for at least four weeks, or until wanted. Some loose, dry litter over the tops will protect them should frosts arrive. Only the blanched heart is used by the cook.

*Carrot*.—The wild carrot is well known in many parts of Britain and the Continent. Garden carrots are grown as annuals only, that is, they must be raised from seed and used during the first

season (or in the winter following). Light soil, well drained, enriched with decayed organic material, but not with fresh manure, is right for carrots. If the garden soil is naturally heavy clay some burnt earth, sand or clean grit, wood ash, and air-slaked lime will help to bring it into the condition needed for carrot cultivation. Preferably, however, the type of carrot grown on such unfavourable soil should be the short stump-rooted varieties only. If long-rooted carrots are wanted, and the soil is stony and difficult, the site for each root should be prepared by making deep holes with a dibber, filling in prepared, sifted soil, and sowing one or two seeds only at each station. As soon as the seeds germinate, each group will be reduced to one, and in this way, good exhibition carrots may be grown even on a clay soil. The hole prepared should be at least 3 ft. deep, and a crowbar may be a better tool than a dibber.

For normal culture, a drill should be drawn  $\frac{1}{2}$  in. deep, and rows should be 1 ft. apart. Cover the seed lightly, and on clay soils, particularly, do not water until the seedlings are above the soil. Carrot seed sometimes fails to germinate if a hard crust of consolidated clay forms over the seed. Thin out to 4 in. apart (or 6-8 in. for large roots) as soon as possible, but before thinning, water well and make sure that the soil is pressed back firmly, as looseness in the soil is an encouragement to the carrot fly. For the same reason, remove the thinnings, as the odour of these also encourages the fly. Carrots should be sown for succession, and the first row can be sown in early April, later ones at intervals of four weeks until the end of July. Until late in June every sowing should be dressed with naphthalene, at the rate of 1 oz. per yd. run, to discourage the flies. It is seldom that late sowings are affected by the pests. The late sowings will provide carrots for storing in winter. These should be lifted in October, or earlier if they are well grown, as it is better to store them early than to have them coarsened by being left too long in the ground. Cut off the carrot tops  $\frac{1}{2}$  in. from the root, and store the roots in slightly damp sand in boxes, or in clamps. A convenient method in storing carrots in a shed is to lay down a thick layer of straw over the concrete floor, pile the carrots neatly on this, tops outwards, with sand between every layer, and cover the pile with sacks or more straw. Frame cultivation is often practised for the sake of early and late carrots. For this a mild hot-bed is desirable in January, and such suitable forcing varieties as Amsterdam Forcing, or Early Gem, or Early Nantes should be chosen. These same quick-growing varieties can be sown in July for young carrots in late summer and autumn, either in a frame, or on a warm border.

*Catch Crops*.—This is the term used for crops which are interplanted among other crops, so as to avoid waste space in the vegetable garden. For instance, between rows of broad beans, lines of radish might be sown. The radishes will be pulled before the beans are large enough to need the whole of the allotted space. Similar interplantings and sowings are practised as occasion arises—lettuces set out between rows of celery, or round the edge of a mound prepared for marrows; and so on. Ground must be in good heart to allow for success with close planting of this kind, but in a small garden the correct use of catch crops will double the amount of produce grown on each area.

*Cauliflower*.—As with most of the brassicas, cauliflowers vary considerably in quality, and it pays always to buy good seed from a seedsman who has a reputation. Deep, rich loam is essential for good growth, and land should be well manured if there is any doubt about its fertility. A dressing of garden fertiliser of a balanced kind should be given a week before planting out, or along the rows when the seedlings have become established. Lime in the soil is also important, and when the digging has been done, a top dressing of air-slaked lime should be applied and left to wash down for a week or two, or longer, unless the top soil is naturally chalky. Sow the seeds in a cold frame or glasshouse, in January (if gentle heat can be given) or in February or March as circumstances dictate. Outdoor sowings can be made in March or April on a warm border, to produce heads in late autumn. Prick off as early as possible—those under glass into boxes of soil to stand in the frame, and to be



hardened off as soon as practicable. Aim to produce strong, short-jointed seedlings that have not become drawn and leggy. Plant out the first sowings in April, and others as they are ready. Set the plants from 18 to 30 in. apart each way, according to the variety. Keep the hoe going constantly through the summer and make sure that the plants do not suffer from lack of soil moisture. A small quantity of nitrate of soda or sulphate of ammonia added to the water (allow about 1 oz. to a square yard of soil) used after ordinary watering once or twice after the curds have begun to form will increase the size and quality of the cauliflowers. Gardeners who can use cold frames can make sowings of a variety such as Autumn Giant or All the Year Round in a frame in autumn. These will be pricked out as soon as possible, and wintered in the frame.

Water freely all summer, and remove side shoots if they appear. In November the roots may be lifted and stored as other root crops, or they may be left in the ground and used from there as required. As frost may damage them, it is usually best to lift and store.

**Celery.**—Celery is usually grown in trenches, which allow for copious waterings and also for easy blanching of the stems when they are well grown. There are certain strains<sup>2</sup> of celery, grown for the first early supplies, which are self-blanching, and these can be grown on the flat, with similar treatment to that suggested above for celeriac. For ordinary varieties seed should be sown about the middle of February or not later than March, in a temperature of 60–65° F. Cover the seed with the finest possible dust of soil, as if covered too deeply, the seed fails to germinate.



**TWO METHODS OF BLANCHING CELERY.**—(a) By means of paper collars tied tightly round the stem to exclude light; (b) by means of earthing up the surrounding soil in three stages. In both cases the leaves are tied with raffia before blanching.

These autumn sowings are also useful for planting in beds in a greenhouse, where it is possible for them to be grown to maturity. In most gardens, however, it is better to rely on broccoli for the winter crop. If cauliflowers are ready for use in late autumn, and may be damaged by frosts, they can be protected by having a leaf or two broken over the curd; or they can be lifted with a large digging fork sufficiently to lay them over on one side, and then covered with loose straw until they are wanted for table.

**Celeriac.**—A plant allied to the common celery, and worthy of more attention than it receives at the hands of gardeners generally. In the case of celeriac, the part eaten is the swollen root, not the leaf stalks which are hollow and bitter to the taste. Celeriac can be grown in gardens where celery is difficult, and it can be used in the same way as other root crops, that is boiled (chopped or sliced) or grated into salads. The flavour is similar to that of celery. Celeriac can be grown like celery, but less preparation of the ground is demanded, as celeriac will grow on the flat, or in very shallow depressions such as are prepared for peas, made thus merely to facilitate watering. Sow the seed under glass in March, in temperature 60–65° F. Cover with only a very fine dust of soil, and as soon as the seedlings have made three leaves, prick them out into boxes, 2 in. apart each way. Gradually reduce the temperature after this, and let the plants be hardened off by the end of May. Draw shallow drills, 18 in. apart, and set the plants 1 ft. apart along these drills. Dust the foliage with soot at planting time, and at weekly intervals afterwards, to discourage the celery fly, which otherwise lays eggs in the leaves and produces the same silvery-brown tunnelling that occur on celery and on chrysanthemums.

Keep the seed-pan damp, and the seedlings should appear in three weeks. When three leaves have formed, prick out the seedlings into boxes filled with compost that contains sifted manure or garden compost and enough sand to allow for drainage. Allow 3 in. between the plants at this stage, and use boxes that are at least 4 in. deep, so that the plants can grow on and become sturdy and strong by May or June, when planting out begins. Meanwhile prepare trenches by excavating in early spring to a depth of 1 ft. Clear all the top soil from the trench, and fork the bottom well. Then put in a layer of 6 in. of good farm manure or well-made garden compost. Gardeners near the sea could use rotted seaweed for this purpose. Cover the manure with 4 in. of good top soil, and dust air-slaked lime over the surface. The soil excavated from the trenches should be neatly piled in square-topped ridges between the trenches which should be 3–4 ft. apart. Lettuces sown or planted out on these flat-topped ridges will mature before any earthing up is done, and so prevent a waste of garden space. If the trenches are prepared in early spring, they will have had time to settle before planting is done in May. Make up the trench soil, if it has settled too much, so that the plants are about 3 in. below the surrounding soil level. Water the plants in the boxes a short time before planting them out with a trowel, so that there is the least possible root disturbance. Remove any suckers that are present, and set the plants firmly in the soil, 10 in. apart down the centre of the trench, or, if preferred, set them in a double row, staggered, 1 ft. apart. Water well, and dust with soot at once: the celery fly is attracted by the odour of the plants, which is strong when the plants have recently been handled, and soot helps to disguise

this odour. Soot should be used again every week, to discourage the fly, or derris insecticide may be used if an attack occurs and the plants are suffering severely. The fly lays eggs in the leaves, and the maggots that hatch out tunnel between the leaf surfaces. If brownish marks are seen on the leaves, pinch each between thumb and finger, to destroy the maggot that is inside. Watch also for Leaf Spot, and spray with Bordeaux mixture if necessary. Water frequently if the summer is dry, and when the leaf stalks are almost fully grown, not before, begin to earth up. This is done in stages. At the first earthing, the side growths, if any, are removed, and the leaf stems are carefully drawn together with soft tying material near the top tuft of leaves. About 4 in. of soil is then drawn from the trench sides to cover the lowest part of the stems. If plants are being grown for exhibition, a brown-paper collar should be tied round the whole stalks before earthing. (Collars of this type are useful for the self-blanching types.) Every week after the first earthing a little more soil may be drawn up towards the plants, until a bank of well-packed, but not solid, soil covers all the plant with the exception of a tuft of green leaves. This should happen before the arrival of frosts, and if hard weather comes, light litter should cover the whole row. Should slugs be seen at the time of earthing up, or earlier, a slug-killer should be used along the row, as slugs can take a heavy toll of the celery crop.

**Chards.**—When the crop of globe artichokes has been cut, the plants are cut back. New growths form and these, if bound with straw when they are about 2 ft. high, will become blanched, and six weeks later they can be used as a vegetable. These young, blanched growths are called "chards."

**Chervil (Parsley-leaved, or Fern-leaved).**—These are annual herbs which should be sown in March, on well-manured ground. Sow in drills 10 in. apart, and thin to 6 in. apart in the rows. Further sowings can be made through the summer, and August sowings will stand the winter if in a mild, sunny situation. Some protection may be necessary, and frame culture is good if a frame can be spared. These herbs are used in salads and soups.

**Chicory.**—This crop is grown for the sake of young, blanched growths, called "chicons," which are used in winter salads, and also are cooked to be eaten with white sauce. Seeds are sown in drills 1 ft. apart, in May or late April. Thin out to 8 in. apart when the seedlings are 1 in. high, so that strong plants are obtained for forcing later. If preferred a part of the seedlings can be left unthinned, and the young, green leaves cut for use in the salad bowl. The plants selected for forcing are grown on until October or November. They are then lifted with a large digging fork, the larger leaves cut off, and the roots pruned a little. They are then planted in deep boxes half filled with light soil, and light litter is used as a covering over the soil surface. In this condition they are stood in a warm part of the greenhouse, or other sheltered place, where the chicons will gradually develop. Light must be rigidly excluded from them to obtain the creamy palatable young growth that is desired. About 6 in. of top growth should be present when the chicons are removed. It is possible to force chicory in an ordinary light greenhouse if the boxes are filled to the brim with clean sand after the plates are put into the soil. When the chicons begin to grow through this sand layer (which should be 6 in. deep) they are ready to cut.

**Chives.**—These are like very small onions, and are grown in grass-like clumps, usually as border edgings to a vegetable or herb garden. They are excellent plants for window-boxes and town gardens. They are planted in March, about 6-8 in. apart, and when the clusters become very large, they can be lifted and divided either in autumn or spring. The leaves are the part used, and these should be snipped off with scissors as wanted for salads or soups.

**Colewort.**—Cabbage in the young unhearted stage. The Dorsetshire Kale, now almost extinct, was also called colewort.

**Corn Salad.**—Also called Lamb's Lettuce, is a weed of the cornfields, but is often grown for use as winter and early spring salad. Sow thinly in lines from August to October, or broadcast over a patch of rich soil. Pull the whole plant as leaves are wanted for use. This salad is said to

be best used alone, with vinegar and bread and butter, but it also helps the winter mixed-salad bowl.

**Couve Tronchuda (also called Portugal Cabbage).**—A crop for large kitchen gardens only. Sow in March and plant out on ground that was richly manured in winter as soon as the plants are large enough to handle. Set them 2-3 ft. apart each way. Cook the midrib of the outer leaves, first, and the heart later as cabbage. This vegetable is grown for large exhibition classes, but is rarely thought suitable for the ordinary small garden.

**Cress.**—Garden cress is an annual grown very rapidly from seed and harvested when only the seed leaves have developed. It is a crop that can be grown by everyone, since it is possible to grow it well on damp flannel in an ordinary window. For general purposes it should be sown every two or three weeks, all the year round, in boxes of light, sandy soil. The soil should be moist, and the seed sown thickly, covered with a sheet of brown paper, and kept moist and warm. Do not cover the seed; merely press it well down into the soil. Germination may take place in two or three days, and from that time full light should be allowed. If well watered at sowing time, no further water may be needed, but boxes must never dry out entirely.

**Cucumber.**—The cucumber of the shops is a plant grown under glass. Ridge cucumbers, which are somewhat prickly on the outside, and smaller, may be grown outdoors in summer, and if well grown, are as useful in the salad bowl as the indoor type. For glasshouse culture, sow seeds soon after Christmas, a single seed in a 3-in. pot of sandy loam over good drainage. Cover seed  $\frac{1}{2}$  in. deep. Water with tepid water and plunge the pots into a manure bed, or into damp fibre over hot pipes. Move the pots near the glass when the seedlings appear, unless the weather is very frosty. Keep the temperature up to 75° or 85° F. Pot on regularly, avoiding any check to growth, potting the young seedling right up to the seed leaves in the prepared compost, which should be rather rich and light. Do not pot too firmly. Plant out into beds on the greenhouse floor. Ridge-shaped beds are most common, the bed being 2 $\frac{1}{2}$  ft. across at the base and 18 in. high. Or the plants can be set into mounds of soil on the greenhouse stage, using about half a barrow load of soil to a plant. Support the growth with a light cane, and train the plants later to wires stretched horizontally along the roof, 9 in. apart and 9 in. away from the glass. A single stem, with no side growths is formed up to the first wire, and side stems then trained each way along the horizontal wires. Stop the main stem when it reaches the top wire; stop the side growths just beyond a second leaf from the first female flower on each. Cut away tendrils and tie in laterals and sub-laterals every few days, and remove all male flowers as they appear, otherwise the fruits will be shapeless and seedy. Cucumbers need no ventilation as a rule, but should be syringed with tepid water twice a day, wetting the stages and floors as well as the plants. Shading over the glass is usually necessary to prevent scorching. Just before the withered blossom is ready to drop, the fruits should be gathered: cut them carefully and if they are not wanted at once for the table, set the cut end in water and they will keep for several days in perfect condition. Cucumbers can also be grown in frames. For this make a hot-bed of leaves, manure, and light soil in January or February, and sow the seeds as soon as the beds are hot enough, standing the pots on boards raised above the bed on bricks. By the time the seedlings are ready to plant out in the hot-bed itself, this will have dropped in temperature sufficiently to allow for safe planting. Peg down young growths from time to time, and do not let too many fruits develop at once.

**Ridge Cucumbers** are raised from seed sown under glass in the same way as the other type of cucumber is raised. A cold frame, or cloche, is sufficient protection for these seeds, however, if no heat is available. Plant out towards the end of May, on ridges of good, well-manured soil, or on flat sites in a border of rich soil. The plants need sunshine, but must be kept well supplied with water at the roots. In a sunless season they often fail to develop a sufficient number of fruits.

**Drill.**—A small trench, usually V-shaped, but sometimes flat-bottomed, drawn with hoe or rake



or pointed stick, to take seeds. The usual practice is to stretch a line of string across a plot first, and then, using the most suitable tool according to the depth of drill required, to draw the tool alongside the line, so that a straight drill is obtained. Covering the seed in a shallow drill is easily done either by passing the back of the rake along the row after sowing, or by "jumping" the rake, held vertically, along the row.

**Endive.**—There are two types of this popular salad plant—cut-leaved, which is most common in the shops, and round-leaved or Batavian Endive which is extremely hardy. To cultivate either type, sow seeds in April in lines about 18 in. apart, and thin out to leave each plant 15 in. of space. Sow again in June and July, for succession, and again in August and September for winter supplies. Plenty of moisture and a good, rich soil are needed, but otherwise little special care is needed beyond keeping down the weeds. Plants are blanched before use, otherwise the leaves are too bitter to be palatable. In summer or autumn this can be done either by tying the leaves loosely together so that light is excluded from the heart, or by inverting a large flower-pot over each plant, with a flat stone over the hole to exclude light. In winter the same method can be adopted provided frost can also be kept out, and this may be done by piling light, loose litter over the inverted pot. Alternatively, plants can be carefully lifted in October, with a trowel, and replanted close together in a spare frame, and these plants can be blanched when fully grown by throwing mats over the frames. Or the plants can be lifted and packed into wooden boxes of soil, if they are fully grown, and the boxes stood for a few weeks in a dark cellar or shed. The Batavian or round-leaved endive is an excellent plant for a town window-box: its leaves curl over the front edge in decorative fashion—until they are needed for the salad bowl.

**Fennel.**—A useful culinary herb for sauces, pickling, salads, etc. Blanched stems may also be cooked in the same way as celery. Sow in drills 2 ft. apart, in good, rich soil. Thin out to 18 in. apart, to allow for full development. The plants are perennial and can be increased by root division in spring. Florentine fennel—the kind with the thick stems that are cooked and eaten, is best treated as an annual, sown in May, and thinned to 1 ft. apart.

**Garlic.**—A little of this goes a long way, in the garden as in cooking. But a few "cloves" planted in February, 9 in. apart, will supply sufficient for most families, and may prove very useful for occasional salads and for pickling. Treat the crop as shallots, *i.e.*, keep down weeds, feed with a pinch of nitrate of soda in water, necessary during summer, and when the growth is complete, lift the plants, let them dry in the sun for a day or two, and then sort over and store in a cool, frost-proof shed. Save enough of the best cloves for replanting in the following February. Rich, friable soil suits the plants best, and each clove should be just covered with this at planting time. If many are to be grown, draw a drill 2 in. deep to receive them.

**Greens.**—See Brassica.

**Herbs.**—Culinary and aromatic herbs are plants that can give character to a garden as well as to the housewife's table. If it is possible, a separate herb garden with individual beds each containing one or two different herbs can well be made; or a decorative border under a south fence, separated from the main vegetable plot by a path, could be planted with groups of herbs arranged informally as plants in an ordinary mixed flower border. Many herbs have fine showy flowers as well as fragrant foliage, and are worthy of a prominent position in the garden picture. Some of them are annuals, such as anise (seeds of this are *aniseed*), basil, chervil, coriander, dill, Florence fennel, parsley, purslane, summer savory; others are perennial, and this group includes borage, caraway, chives, fennel, garlic, horse-radish, mint, pennyroyal, marjoram, rosemary, rue, sage, tansy, tarragon and thyme. Among medicinal herbs are those grown simply for their fragrance can be included lavender, chamomile (anthemism), horehound, hyssop, and pot marigold—the last three from seed and others from roots or cuttings. With all these common herbs from which to select, it is

obvious that a complete picture can be made, and the grouping of herbs in a single part of the garden makes both for convenience and interest. Where a formal design is contemplated, the introduction of a central feature such as a bird bath, table, or sundial is particularly appropriate. Paths through the herb garden are also best of some material that assists the old-time character of the whole—brick, tile and brick, cobble and paving, etc., rather than paths of too formal appearance. (For cultivation of the most common of the herbs mentioned, see other references.)

**Horse-radish.**—The ground should be deeply dug in autumn, and good manure or garden compost should be buried well down, to feed the roots as they penetrate into the sub-soil. If the soil is of clay, work in ash (finely sifted, not coarse coal ash), road grit, sand, strawy manure, and so on, to bring it into friable condition. Plant straight roots, each with crown, putting this crown 6 in. below the surface. A long dibber is a good tool for planting, as its use encourages the roots to go down well into the ground. About a foot from root to root is sufficient space, and if weeds are kept down, no further treatment should be needed all the season. Lift the roots in winter, preferably from a half or a third of the plot only. Select pieces for replanting, and use the remainder. Manure the ground before replanting in February, and the next season leave these roots undisturbed, and lift from another part of the plot. Continue this practice so that the roots have a long season of growth before they are wanted for use, always using added manure when the ground is being prepared for the new plantation. It is not wise to change the ground—lifting a part and replanting in the same part is better, as horse-radish roots penetrate very deeply, and parts of the roots become left in the ground. This makes it difficult to keep horse-radish under control if it is grown among other vegetables.

**Kale.**—A biennial of the brassica family, grown as an annual in the garden. It is the hardiest of all the "greens," and should for this reason be grown in every garden because of its capacity for coming through the worst winters. Even when it becomes deadened by weeks of frost and snow, fresh green leaves quickly grow again, and are available for use in a short time. Sow in April or May, and plant out into winter quarters as soon as convenient. There are many types of kale, and in a large garden several varieties should be grown. In small gardens it may be better to sow only a few seeds of the Hungry Gap Kale, which is a variety that must be sown in June where it is to mature. All kales will take about 2 ft. of space each way for development.

**Kohl Rabi.**—A vegetable with a swollen-stem base that in flavour and appearance is something between a turnip and a cabbage. Seeds can be sown in April, where they are to mature, and thinned to 1 ft. apart, or sown in a nursery bed and transplanted 1 ft. apart. The swollen stem or "root" should be harvested and used when not much bigger than a tennis ball, or it becomes coarse. If not used at once, the crop should be stored in the same way as turnips.

**Lamb's Lettuce.**—See Corn Salad.

**Leeks.**—By those who have no frames or glass-houses, leeks should be sown in a sheltered nursery bed in March. Sow in lines about 8 in. apart, and sow as thinly as possible to avoid the need for pricking out. Keep the hoe going between the lines, and prevent weeds from choking the young plants. The soil should be sufficiently rich to encourage strong growth, and by May or June, when the leeks are set out in permanent quarters, they should be 4-5 in. across at the soil level. If the seedlings come up thickly, they can be pricked out to 4 in. apart in the nursery bed, but too many moves are not welcomed by the plants. When the seedlings are large enough to be set out finally, they are planted 1 ft. apart in rows 18 in. apart. The best way is to stretch a garden line across the plot; then, with a dibber, make holes 9 in. deep at intervals of 1 ft. along this line. Take each seedling, trim off a tiny tip of the green leaf, and drop the seedling in the hole. The leaf tip should be an inch or two above the ground. Do not use more soil, or firm the plants in the ground, but water well after all the plants are in, so that they get a root-hold at the bottoms of the holes. Feed occasionally, after rain, with nitrate of soda or

sulphate of ammonia, 1 oz. in a gallon of water. In September draw a little more earth up against the plants, which should be thick and strong by this time. Leeks are hardy, and can remain in the ground in winter, to be used as required.

**Lettuce.**—Lettuces are of two main types—*Cos* lettuces which have long, straight leaves that either curl inward naturally so that the heart of the plant becomes more or less blanched, or are tied in by the gardener to produce the same result; and *Cabbage* lettuces, which are broad and spreading, with round hearts like those of cabbages. *Cos* lettuces are a summer crop, cabbage lettuces are grown to supply salads all the year round, the latest sowings being made in October in a frame, or in September outdoors, and the earliest in January under glass or in



ONIONS keep best in store when made into ropes as shown above. Soft twine is used. The ropes of onions are hung in a dry, frost-proof shed.

March outdoors. Sow the seeds thinly in lines 8 in. apart, and thin out or transplant so that the plants ultimately stand 9-15 in. apart, according to the variety. Quick, unchecked growth is the secret of success. Any sudden change of temperature, dryness at the roots, damage in transplanting, or other check will result in toughness, and very slow growth, such as that taking place in mid-winter, will also cause toughness. Frame lettuces are more tender than others, with the exception of those grown in warm, showery weather, and the aim of the gardener must always be to provide warmth, moisture, and food in abundance. Bone-meal worked into the soil before planting helps lettuces, and nitrate of soda or sulphate of ammonia used in liquid form during growth is also helpful. Small garden owners should make sure of successional supplies by sowing at fortnightly intervals, a little at a time, instead of sowing a whole packet of seeds all at once.

**Maize (Sweet Corn).**—Gardeners should distinguish between the types of maize (*Zea mays*) grown to provide corn for poultry, and those types that are grown to provide sweet corn for the table. Of these latter types, some are specially suited to British gardens, and these are listed in catalogues. The seeds should be sown under glass, in slight heat, in April, hardened off in May and planted out at the end of this month, when frosts are past. Plant 1 ft. apart with 2-3 ft. between the rows. Deep, rich, moist soil is needed for good cultivation. Gather the cobs when the corn is still milky, otherwise it is inferior when cooked. The best cobs are those that are grown very rapidly on good fertile soil in a warm situation.

**Marjoram.**—Hardy perennials which can be raised from seed; or roots can be divided in spring or autumn. They like warm, dry soil and full sunshine. Plant 18 in. apart in the herb garden.

**Marrow.**—Vegetable marrows, pumpkins, and gourds are all cultivated in the same manner. All need plenty of water and plenty of plant food of a balanced nature. They must also have a good deal of sunshine. Sow the seeds, singly, in thumb pots under glass in March or April, or sow outdoors where they are to grow, in April. Frost will damage the young plants, and if they are sown outside, they must be covered over at night should they appear above the ground when frosts are possible. An old hot-bed is an ideal place for marrows to be planted out at the end of May, but they will also grow in an ordinary border, on a flat site. Seed two years old is

generally preferred for sowing: new seeds produce plants that are liable to grow more leaf than flower. Do not plant too firmly in sticky soil: marrows like crumbly decaying manure of porous nature.

**Mint.**—An essential herb for every garden. Plant any piece of root in any soil that can be kept moist, and mint will grow. It is best to plant pieces of root in a special isolated bed, for mint rapidly runs through the soil, and becomes a weed among other plants. For winter use a few pieces of root can be planted in a warm, sheltered bed, or in a frame if one is available, in autumn.

**Mushrooms.**—Mushrooms can be cultivated by anyone who can obtain fresh stable manure. Without this, cultivation is not an all-the-year-round success. A warm, damp cellar, disused air-raid shelter, or dark shed is suitable for mushroom culture. Beds are made up of fresh manure, with leaves, and good loam, and when the temperature has dropped sufficiently, pieces of spawn are inserted. The beds are covered with soil, and in a few weeks the mushrooms appear. Temperature at spawning time should be about 75° F. Modern mushroom culture is made more certain by the production of high-quality clean-culture spawn, and this is sold with detailed instructions for the preparation and spawning of the beds. For ordinary outdoor culture, pieces of spawn are buried under turf, and left to develop when the weather and temperature allow. Spawning of this kind should be done only in late spring or early summer when there is reasonable prospect of the temperature keeping above 50° F. for a few weeks after spawning. Mushrooms only appear on grass in "mushroom weather," that is, when the air is warm and moist and the soil in similar condition.

**Mustard.**—This is grown in exactly the same way as cress (which see,) but the crop is ready two or three days sooner. If the mustard and cress are to be used together, therefore, the mustard seed should be sown two or three days after the cress is sown. In both cases it is the seed leaves which are cut to use in salads. Mustard seed is also sown for green manuring, that is, seeds are sown broadcast over land that can lie idle for a time. When the plants are well grown, but not in flower, they are dug in to help to provide humus in the soil.

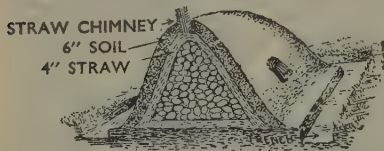
**Onions.**—Onions, more than most vegetables, respond to good cultivation. There are three sowing times for onions. They can be sown in August or September, when the last season's crop is lifted. These onions should produce the giants of the show bench, since they have a full twelve months in which to grow to maturity. There is some danger of bolting, due to the fact that the plants may receive a check in winter, or when and if they are transplanted. The usual practice is to sow thinly in a line across the vegetable garden, and to plant out in March in permanent positions 1 ft. apart in rows 10 in. apart. Some growers merely thin out in spring, to allow sufficient space between the seedlings. Seed can also be sown under glass in January or February if some heat can be provided, or sown outdoors in March. Seedlings raised in deep boxes of good soil must be transplanted with care, so that roots are not damaged, in April. The advantages of autumn-sown onions is that they are less liable to attacks from the onion fly: the disadvantage is a greater tendency to bolt. Dusting the rows with calomel dust when the seedlings are 1 in. high, and again when they are set out permanently will control the onion fly. Frequent dustings of soot are also useful, and regular dressings of sulphate of ammonia or nitrate of soda during the growing season (but not later than July) will assist in producing giant bulbs. In early August the onion tops should be bent over towards the north, to allow sun to ripen the bulbs, and later the bulbs should be lifted with a fork, and allowed to dry in the sun for a few days before being roped. Giant bulbs for exhibition should have rough, damaged outer skins carefully removed, and then should be laid out in the sun to produce the fine, silky even texture that will catch the judge's eye.

**Parsley.**—Sow parsley in March and September each year, to keep up a constant succession of good, young plants producing curled foliage of high quality. Never allow plants to send up flower stems, unless seed is desired. Sow thinly,



in lines 8 in. apart if several rows are wanted. Parsley makes fine border edgings to vegetable or herb plots, and plants for this purpose should be set out (or thinned to) 4-6 in. apart.

**Parsnip.**—A long season of growth is required by parsnips, and ground should be prepared in winter for seed sowing in February or as soon after as weather permits. Parsnips like a deep, friable loam. If they must be grown in sticky clay or stony ground, it will pay to practise this method of cultivation: Prepare the soil in the ordinary way in winter. Then, when sowing time comes, prepare a barrow-load of good potting soil, i.e., a mixture of loam, sand, and decayed manure, all passed through a  $\frac{1}{2}$ -in.-mesh garden sieve. A little balanced fertiliser could be added,



**CLAMPING POTATOES.**—Where too many potatoes are grown for indoor storage they can be clamped outdoors. A straw chimney is important to admit ventilation.

say a  $\frac{1}{2}$  lb. to a barrow-load. Stretch a garden line across the plot, and with a crowbar or long dibber make holes at intervals of 15 in. along this line. If more than one row is to be grown, allow 18 in. between the rows. Fill each deep hole with the sifted mixture from the barrow, and sow three parsnip seeds in each. When the seedlings germinate, thin to leave only the strongest at each station. This procedure will ensure good, long, straight roots. For ordinary culture on congenial soil, sow in drills 1 in. deep, and thin out to 12-15 in. apart. Harvest in late autumn, or leave to be used as wanted, if the ground is not required for other purposes. Light litter over unharvested rows will keep off some frost and allow for ease in lifting.

**Peas.**—Peas can be sown at any time from November onwards when the soil is in good condition and frost free. As a rule nothing is gained by sowing before about the end of February, however. Sowing can continue until June, but the earliest and also the latest sowings should both be of "early" varieties, that is, varieties that mature quickly. These are usually the dwarfs, which are more suitable for most gardens than the tall kinds, as little or no staking is needed. For general purposes, take out a shallow trench in well-dug and richly manured ground. This trench can be of spade width and about 4 in. deep. Scatter seeds thinly along the trench bottom, about 3 or 4 in. apart, or space them carefully by hand in a double or treble row. Cover with 2 or 3 in. of fine soil—the deeper covering for sowings made late, that are more likely to dry out. Seed can be soaked, if desired, for a few hours prior to sowing. Coating with paraffin and red lead is also practised by some gardeners, to keep away birds and mice. Set small twigs for support of the young growth at once, and later, if the variety is a tall one, put in pea-sticks. A dusting of lime along the sides of the pea rows is of assistance. Peas need good soil, but actually leave the ground rich in nitrates after they have gone if the tops are cut off and the roots left undisturbed, since the roots have the power to fix nitrates in the soil. It is a common, and wise practice to cut off the tops, rake them away, and then set out winter greens on the site without any further preparation of the ground, when the pea crop has been gathered. In this way the greens benefit from the nitrogen left in the pea roots.

**Potato.**—Potatoes are richer in food than any other garden vegetable, yet they are not always a wise choice for a garden crop. They take a considerable amount of room and can more economically be grown on farms where machinery can be employed at various stages. At the same time it must be acknowledged that there is nothing in any shop so good as home-grown new potatoes,

and that the varieties commonly chosen for farm cultivation are those that crop heavily, irrespective of their flavour. A few rows of early potatoes are therefore suggested as a useful crop even in a small vegetable garden, and production of the whole family's needs in this direction is recommended where it seems practicable. The potato is grown from so-called "seed"—actually middle-sized tubers, selected from the previous season's crop. Storage of these tubers through the winter is important. The best way, if home-grown tubers are used, is to put the selected ones (weighing about 2½ oz.) in shallow trays, rose end (where the eyes congregate) upwards, immediately they are lifted and dried. Keep them in a light, airy shed, where frost will not penetrate, and where mice and rats will not make meals off them. In the early months of the year these will begin to sprout, and will make short, thick growths that are ideal from the cultural point of view. If potatoes are purchased, they should be set in the sprouting trays in this manner as soon as they are received from the growers. The first earlies will be planted in March or early April, according to the locality and the weather. It is important that the top growth should not be subjected to frosts, and if potatoes are planted early, and come rapidly through the soil, more soil should be drawn up from between the rows to cover the growth at once, so that night frosts will do no harm. Early potatoes are set 1 ft. apart in the rows with 2 ft. from row to row: late-crop potatoes need twice this space for development in good soil. If the ground is poor and hungry, a dressing of good manure along the drills that are opened, 6 in. deep, at planting time, will help the crop: or balanced fertiliser can be used either at planting time or when the first soil is drawn up against the young plants. To ridge or earth up the potato rows is an old-established practice. By doing this the tubers are protected from the potato blight disease, the spores of which are washed into the soil, and also to prevent the potatoes from turning green which is the result of exposure to the light. Earthing up will also control weeds growing between the rows. When the potato tops turn yellow, the crop should be lifted, laid out to dry for a few hours (not for a few days to turn green!) and then stored. Diseased or broken tubers should not be stored, and if any disease is seen, lime should be dusted between the layers of sound tubers in the store. Light must be excluded, or the tubers turn green, and frost will ruin the whole consignment. The usual practice with small quantities is to store them in sacks or boxes in a warm shed. The roots can be piled on the floor, over a layer of straw, and covered with more straw, if convenient. Where large quantities are stored, a clamp must be made. For this a flat site in the open is marked out, and beaten with the spade. Straw is laid over this and the potatoes built into a pyramid or ridge-shaped heap over the straw. More straw must cover the sides, thatchwise, and a layer, or two layers, of straw between the potatoes is also useful. To begin with, pack soil to a depth of 6 in. or more over the outside almost up to the ridge top of the clamp. After a week, more soil is placed over the whole pile, with only a few wisps of twisted straw emerging from the soil bank, to act as chimneys or ventilators and carry off some of the moisture and air. Careful building and packing of a clamp in this way allows for potatoes to be stored safely outdoors through all weathers. Potato Blight is the common cause of trouble among cultivators. To prevent its appearance spray with Bordeaux or Burgundy Mixture in June and again in July. Virus diseases have been troublesome of late years, but the best way for the amateur to combat this is to use only Scotch-grown seed. This is freer from trouble than English seed, because green fly is not so troublesome in the colder Scottish climate, and green flies are carriers of the virus—hence the recommendation to plant only Scotch seed. If home-saved tubers are grown, only use them for one season, and then plant with Scotch seed again. All potato growers should keep a watch for the Colorado Beetle, and if it is seen notify the Ministry of Agriculture at once.

**Pumpkin.**—See Marrow.

**Radish.**—In the open garden the most successful sowings are always those of spring,

when the soil has just warmed up, and showers are still frequent. Warmth and regular moisture supplies are essential, for without these the roots become woody and tough. Sow broadcast over a prepared patch of good soil, or sow in drills drawn  $\frac{1}{2}$  in. deep, and cover with fine soil. Radishes may, with great advantage, be mixed with other seeds, such as onions, before sowing. The radishes germinate very quickly—as rapidly as mustard and cress—and the roots quickly plump up if the soil is good and warmth and moisture sufficient. They are then drawn out for use, before the companion seedlings need all the space in the row. As the green leaves of the radishes emerge first, they mark the position of the seed row, and allow a hoe to be used between the rows even before the onions or other seedlings are visible.

**Rhubarb.**—This plant, used chiefly as a fruit substitute, is usually grown in the vegetable garden. Prepare the ground in autumn by deep digging and generous manuring with farm manure or garden compost. Plant in February or March, 4 ft. apart each way, with the crowns just covered with friable soil. Mulch with good manure after planting, and fork this in between the plants when growth has developed in late spring. Do not pull any stems until the following spring. Remove flower-heads if they appear, and keep the plants well supplied with moisture and liquid manure. Keep up the winter dressing of manure and spring forking every season, and if early supplies are wanted, cover one or two of the crowns with inverted boxes or tubs and a packing of loose litter. This can be done in mid-winter for early-spring supplies. Or plants can be lifted and replanted in boxes to stand under the greenhouse shelves. Lifted in autumn, stood in a warm position outdoors for a week or two, and then brought into the glasshouse, they will produce forced rhubarb for Christmas and the following month.

**Rue.**—See Herbs.

**Sage.**—A hardy shrub, easily raised from cuttings taken off in the autumn, and inserted in sandy soil in the open. Seeds can also be sown, but the quality of seedling plants is variable, and they are more prone to flower than some of the sage plants from which raisers usually take their cuttings. Sage will grow for many years, but in a small garden it is best to raise fresh plants now and then and do away with the old ones. The leaves are harvested and dried in summer, just before the plants would normally flower, and cutting off the tops for harvesting produces bushier growth.

**Salsify.**—A root, somewhat like a small parsnip, which is appreciated by epicures. It grows best in light loam, and can be treated in the same way as carrots.

**Savoy.**—See Cabbage.

**Scorzonera.**—A root rather similar to Salsify, and cultivated in exactly the same manner.

**Sea-Kale.**—A perennial plant which is a native of our shores. It can be grown from seeds sown in March or April. For this method the seeds should be sown at 6 in. intervals along drills drawn 1 in. deep and 1 ft. apart. Leave the seedlings where they stand for two seasons, and then plant out in permanent beds to produce forcing crowns. The more usual method is to buy roots or "thongs" for planting. The roots can be set out in March, 9 in. apart in groups of three, with 3 ft. from group to group. Pile a little sifted coal ash over each to keep off slugs. Clear away the tops when they die down in autumn, and cover the crowns with boxes, as in the case of rhubarb, to force the new growth and blanch it at the same time. Crowns can be covered in succession to keep up the supply. Crowns that are not covered will probably try to produce a flower-spike later, and these must be cut away, as flowers must on no account develop—in fact, treatment can be much the same as for rhubarb. Liquid manure or dressings of nitrogenous fertiliser well washed in during summer are a help to the crop. Sea-kale can also be grown and lifted to force in the greenhouse. One-year-old plants are set out in rows, with 1 ft. from set to set. In November or December these are lifted, trimmed of leaves and side shoots, and stored until they are wanted for forcing. Meanwhile the smaller thongs or

roots are cut off and pieces 6-8 in. long are cut out, with a straight cut across the top and a slanting cut at the bottom, so that they can be set out right end up when planting. Store these in sand, or bury them all together in a sheltered border until planting time in March. The trimmed roots for forcing are planted in batches, five or six at a time in a large flower-pot of fine soil, watered well, covered with a second pot inverted over them, and the hole blocked up to exclude light. These stand in the warm greenhouse under the staging, or in a similar warm position, and in two or three weeks, if they are kept warm and moist, sufficient top growth will have developed for cutting.

**Shallots.**—A popular crop for small gardens. Shallots are purchased as bulbs, like small onions. These are planted in February, or whenever there is a fine opportunity after the New Year. The bulbs are pressed a little more than half-way into soft, recently forked soil, 10 in. apart in the rows with 1 ft. between the rows. Keep the rows weeded, and in early July the crop should be ready to lift. Pull it up, and dry the bulbs off a little on trays before storing them in string bags, or in any dry place where air will circulate round them but frost will be excluded.

**Spinach.**—Two types of spinach are grown in gardens—prickly and round seeded. The round seeded is reputed to be less hardy than the other, but it will grow all the year round if sowings are made in March, May, June, and August. Sow in drills drawn 1 in. deep and 1 ft. apart. Thin out a little if the seedlings are very crowded, leaving 4 in. from plant to plant. Small plants can be drawn out to use in the salad bowl. Others should grow on, about 8 in. apart, to provide leaves for cooking. Gather a few leaves from each plant along the row, not all from one plant, and the supply will continue for a long time.

**Swede.**—See Turnips.

**Tarragon.**—Herb used to flavour vinegar. Easily raised from root division in spring or autumn. Cut down and dry for use in winter.

**Thyme.**—Perennial, but best grown fresh from seed every second season. Sow in April, and plant out the seedlings 4 in. apart in rows 10 in. apart.

**Tomato.**—Popular summer vegetables, very good in the open garden in favourable seasons, but failing to ripen well if the season is wet and sunless. Raise seeds under glass in early spring, or buy plants to set out in the garden at the end of May. Tomatoes can be grown in different ways. The most common, and probably the best for this country is to restrict each to a single vine, removing all side growths, and only allowing leaves and fruit trusses to remain on the vine. Take out the tip when four trusses have set. The vines need a bamboo cane to each, and must be frequently tied and attended to. Feeding with liquid manure through the summer is also needed. Soil should be good, rich loam, of friable texture. The chief trouble with outdoor tomatoes is the Blight disease, similar to that which attacks potatoes. To prevent this, spray the plants thoroughly in the first or second week in August, with Bordeaux Mixture. Fruits that fail to ripen outdoors can be wrapped separately and stored in an even temperature of 50° F., when they will ripen without shrivelling if they are fully grown when gathered. Small immature fruits should be used at once for pickling when the crop is harvested in September. Tomatoes are also grown extensively in glasshouses, but apart from careful regulation of ventilation and water supplies, the cultural methods are similar to those outdoors.

**Turnips.**—Rich, friable loam, not freshly manured, but in good heart, should be used for turnips. Sow short rows at any time from spring onward, but sow the main crop in July, when there is less danger of trouble from the Turnip Fly. Early sowings should be dusted with flea-beetle powder from the sowing day until the rough leaves have formed, every day or two, to control this pest, which makes holes in the seed leaves and sometimes ruins the crop. Sow in drills 1 ft. apart, and thin out to 6 in. apart. Use the turnips when they are of the size of tennis balls. Seeds can also be sown in September, left almost unthinned, and the tops used as "greens" in spring. Swedes are grown in similar manner to turnips.



## IV. GARDENING THROUGH THE YEAR

## JANUARY

**Plan for the year.** Put in hand big alterations in lay-out. Order seeds, fertilisers, insecticides, new tools, and all other requirements.

**Dig vacant ground.** Use garden compost or manure as necessary, chiefly in the vegetable garden. Fork over the top soil between herbaceous plants. Fork between rows of soft fruits.

**Protect tender plants outdoors** with light litter, cloches, or piles of sifted ash over crowns. Set boxes in position over rhubarb and sea-kale.

**Remake paths,** and repair other non-living features in the garden.

**Plant hedge shrubs** during mild spells. Also rhubarb, mint, horse-radish, and all kinds of deciduous shrubs and trees including orchard subjects, when the soil is frost free.

**Prune orchard trees,** outdoor grape vines, and soft fruits. Red, white, and black currants, gooseberries and autumn-fruiting raspberries can be pruned when the weather is not severe. Apples and pears can be pruned, and winter washes may be used after pruning. Avoid mid-winter pruning of stone fruits: silver-leaf-disease spores are active at this season. Paint over large wounds with white-lead paint or creosote. Begin to prune wall shrubs and climbers in open weather.

**Sow sweet peas,** begonias, gloxinias, freesias, aubergines, tomatoes, cucumbers, under glass in heated greenhouse. Alpine strawberries may also be sown in pots.

**Force in the greenhouse:** chicory, rhubarb, sea-kale, and asparagus.

**Start into growth dahlias** and other summer-bedding plants from which freshly rooted cuttings will be needed.

**Clear away snow** from evergreens: heavy falls may ruin their appearance.

**Make new lawns** from turf except during frost. Top dress old lawns with sifted compost, containing organic matter and fertiliser.

**Set potatoes to sprout.** Plant a few in the cold frame for an early supply.

## FEBRUARY

**Prepare a sowing and planting plan** for each border. Make ready seed-boxes, plant labels, and other requirements to put these plans into operation.

**Dig or fork over ground** in preparation for seed sowing. Dust lime over all vacant, dug land in the vegetable garden. Turn over compost heap as needed. Prepare trenches for sweet peas, runner beans, and other crops that need rich, moist soil.

**Protect outdoor crops and flowers.** Press soil back round stems if these have been raised by frost action.

**Repair paths damaged by frost.** Continue to make and repair garden features such as fences, pillars, pergolas, and steps.

**Sow seeds under glass** of leeks, tomatoes, cauliflowers, dwarf French beans, cucumbers, lettuce, and radish. Also sow seeds of half-hardy annuals such as China asters. Sow in cold greenhouse or frame mustard and cress, broccoli, cabbage, and corn salad. Sow outdoors on warm soil, when the ground is frost free: broad beans, early peas, parsnips, spinach, and turnips. Sow marrows, pumpkins, and gourds in frames over hot-beds.

**Plant Jerusalem artichokes,** shallots, chives, horse-radish, sea-kale, and if the weather is fine plant out autumn-sown onions in light, rich soil. Plant anemone tubers, ranunculus, lilies, and other summer-flowering bulbs, also delphiniums and other herbaceous plants if the weather is mild and open. Plant a few early potatoes in a warm border: prepare to protect them when the tops appear above ground. Plant deciduous shrubs and trees, including roses.

**Prick out seedlings** sown in January under glass. Set seed potatoes to sprout.

**Prune back fuchsias** and other shrubs that have rested in their pots during winter. Restart into new growth by giving warmth and moisture, and take cuttings as soon as possible. Finish orchard and fruit-garden pruning.

**Take cuttings** of chrysanthemums, carnations,

and bedding plants of all kinds under glass. Layer hardy shrubs.

**Prune hardy shrubs** of the kind that flower late in the season on shoots of current year's growth, such as *Buddleia variabilis*.

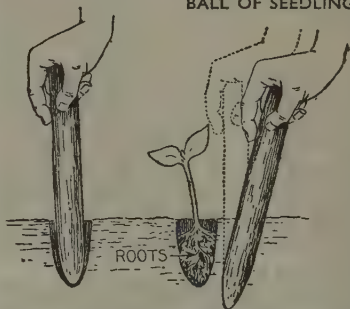
**Dress strawberry beds** with bone-meal, after cleaning and hand weeding. Fork this dressing in lightly.

**Use fertiliser** on lawns that are over heavy clay, and also on orchard fruits: it takes longer for spring and summer fertilisers to penetrate clay and reach plant roots.

## MARCH

**Order immediately** if they are not yet to hand: seeds of hardy annuals for the flower border; hardy plants for the mixed border, shrubs, and

LEVER OVER TO PRESS  
SOIL FIRM AGAINST  
BALL OF SEEDLING



**A METHOD OF PRICKING OUT SEEDLINGS.**—A pointed stick is used to make a hole. Roots should be buried to the first seed leaves and soil pressed lightly against the roots as shown.

trees: lawn seed for repairs and for new lawns. Order also quick-acting fertilisers for use in spring and summer.

**Sow outdoors,** for succession, carrots, peas, broad beans, spinach beet, lettuce, radish. Sow hardy annuals, broadcast in patches, or in lines for formal beds and edgings. Sow main-crop parsnips (if not sown in February), peas, onions, and summer spinach. Sow herbs including parsley. Sow in a nursery bed Brussels sprouts, kales, cabbages, lettuce, savoys, broccoli, and celery (if no glass available). Sow under glass, in heat, cucumbers, melons, tomatoes, and small salads. Also capsicums and aubergines.

**Plant Jerusalem artichokes,** chives, and horse-radish if these were not planted in February. Plant early potatoes, sea-kale, cabbage (including red cabbage), and mint. Plant out autumn-sown sweet peas, autumn-sown onions, strawberries, and any biennials not put out in autumn, such as Canterbury bells, sweet williams, polyanthus, and forget-me-nots. Fill gaps where plants have failed.

**Lift old leeks,** heel them in somewhere, to keep them in condition but prevent further growth.

**Make up mounds** for cucumbers (indoors and outdoors), marrows, and pumpkins.

**Prick out lettuce and tomato seedlings** when they are large enough to handle. Pot up tomatoes and gradually pot them on into larger sized pots.

**Watch for disease and pests.** Use preventive measures. Spray black currants with lime-sulphur when the leaves are the size of a florin. Spray apples with lime-sulphur against Scab. Set traps of Meta for slugs.

**Prune roses** in the last week of the month, pruning the hardy bush type first and leaving the tea roses until the first week of April. Prune climbers, but not ramblers, except where these have been damaged by gales.

**Feed spring cabbages.** An ounce of nitrate of soda per yard run of the row, hoed in, but kept

well away from the foliage, will assist the formation of good hearts.

## APRIL

*Hoe* from now on, regularly, between all developing crops. Also in the flower borders until the plants leaves completely hide the soil from view. Hoeing conserves moisture, destroys weeds, and aerates the soil so that useful micro-organisms can live in it.

*Sow* outdoors, on the main vegetable plot: onions for pickling, beetroot, turnips, dwarf beans for winter use, kohlrabi, and endive. Also for succession lettuces, radishes, peas, spinach, carrots, and broad beans. Sow more parsley. Sow in the nursery seed-bed brassica crops of all kinds, including sprouts, broccoli, and also sea-kale. Sow under glass: celery (late crop), cucumbers, and marrows for outdoor culture, outdoor tomatoes, melons for frame culture, sweet corn. On warm, rich soil, sweet corn can be sown in the open where it is to mature.

*Prick* out seeds sown in boxes, such as sprouts, cauliflowers, and celery. Pot up tomato seedlings separately and pot on as needed. Prick out into boxes, 2 in. apart, half-hardy annuals for the mixed borders and formal beds.

*Start* *salvia patens*, also *dahlias* and *cannas* if these are not already sprouting. Take off cuttings when growth is sufficiently advanced.

*Cut back* winter-flowering *jasmine*, *forsythia*, and similar shrubs that flower early on one-year-old wood, as soon as the flowers have faded.

*Plant* main-crop potatoes, globe artichokes, melons (on hot-beds), onions that were sown under glass in January, cauliflowers, and lettuce seedlings. Plant gladioli, and set out young plants of carnations, antirrhinums, pansies, sweet peas, and other hardy flowers. Plant evergreen hedges.

*Stake* early peas and sweet peas. *Prune* roses; this work should be finished in the first week of the month.

*Watch* and prepare for pests. Spray gooseberries (to prevent mildew) and black currants (to prevent Big Bud) with lime-sulphur. Spray apples and pears with lime-sulphur to prevent Scab. (Pears may need Bordeaux Mixture instead of lime-sulphur.) Make sure that supplies of derris are in hand for routine spraying in all parts of the garden should aphides appear.

## MAY

*Warning!*—Sunshine will raise daytime temperatures, sometimes to great heights. Watch frames and glasshouses, ventilate freely in the day, and shade seedlings if necessary to prevent scorching. Close ventilators an hour before sundown if there is likelihood of night frost.

*Sow* outdoors this month any half-hardy or tender crops or flowers. They will not appear through the soil until danger of night frosts is past. Sow runner beans, French beans, haricots, beetroots, marrows, pumpkins, gourds, sweet corn, in positions where they will mature. Sow tender annual flowers where they will mature; also sow biennials for next year in the open garden. Rows across the vegetable garden may be the best way to make room for these. Sow perennial flowers in a nursery bed in the open. These should be pricked out as soon as possible and left undisturbed until the first flowers have appeared. Sow for succession peas, lettuces, radishes, spinach, and turnips. It is still not too late to sow ridge cucumbers under glass. Sow flowers for greenhouse decoration, including cinerarias and primulas for late winter. Sow broccoli and endive on the nursery seed-bed.

*Plant* Brussels sprouts, broccoli, cabbage, kale, savoy, cauliflowers, leeks (if ready), lettuces, sea-kale (seedlings), and finish planting potatoes. Plant out chrysanthemums, dahlias, snapdragons, petunias, pentstemons, China asters, verbenas, and all summer bedding plants, leaving the more tender kinds until the last week of the month. Plant out beans and sweet corn raised under glass. Plant water lilies.

*Make* celery trenches if these are not yet ready for the plants. Set out lettuce seedlings on the ridges. Plant celery as the plants become available from the boxes.

*Prick* out seedlings of brassicas and other plants under glass and in the nursery beds.

*Pot up* tomatoes into large flower-pots for the cold greenhouse. Harden off plants intended for the open garden, and plant them out at the end of the month.

*Earth up* early potatoes. Straw the strawberry plantation and remove runners.

*Prune* shrubs that have finished flowering, cutting hard back those that flower on new wood. Do not cut back those that will carry ornamental berries.

*Take cuttings* of azaleas, heather, hydrangea, and other shrubs flowered under glass. Take cuttings of culinary sage, thyme, lavender, etc., and insert them in the open in shade, and keep them moist. Take cuttings of double arabis, aubretia, double sweet rockets, and other flowers which it is desired to propagate true to type. Cut back rock plants of spreading habit when the flowers fade. Layer fuchsias.

*Use* calomel dust on onion rows, naphthalene on carrots.

*Feed* green crops with nitrate of soda or sulphate of ammonia. This is also useful for onions and leeks. Attend to summer pruning on peaches, nectarines, grapes, and other trained plants.

*Bedding.* Lift spring bulbs that have flowered, heel them into good soil in a corner of the garden until the leaves turn yellow. Replace them by summer bedding plants, which can be purchased from nurseries if sufficient have not been raised at home.

## JUNE

*Keep the hoe* going among flowers and vegetables and between rows of bush fruits. Watch for pests: spray with derris where pests are attacking edible crops. Use nicotine on roses and other ornamental plants.

*Sow* Broccoli and endive in the seed-bed, and swedes, beet, lettuce, carrots, dwarf peas, radish, spinach, turnips, cardoons, chicory, and mustard and cress for succession. Sow biennials if these were not sown in May. Thin out wallflowers, etc., to 3 in. apart as soon as possible. Sow home-saved seed from early-flowering rock plants. Sow under glass: anemones, primulas, cinerarias, cyclamen, herbaceous calceolarias.

*Plant* out the last of the bedding plants, such as eucalyptus and cannas. Plant tomatoes, celery, ridge cucumbers, vegetable marrows, and pumpkins. Train melons in frames; also cucumbers. Plant hanging baskets and window-boxes for the summer.

*Stake* tall dahlias, chrysanthemums, delphiniums, runner beans, tall peas, and other subjects as needed. Push in twigs among frail annuals to support them.

*Pinch* out side growths from tomatoes, tops of broad beans, side stems and tendrils from sweet peas, etc.

*Mulch* raspberries and other similar berries to encourage strong new canes for next season.

*Trim* hedges regularly. Put small clippings on the compost heap, and woody prunings on the bonfire.

*Lift* early potatoes as wanted for use. Earth up late crop, and spray with Burgundy or Bordeaux Mixture to prevent Blight.

*Peg* down strawberry runners that are wanted for new plantations. Remove all others.

*Shade* the greenhouse if necessary. Cucumber houses must be shaded.

*Feed* crops and flowers (after the first flowers form) with weak liquid manure, applied after rain has fallen or after watering.

*D.D.T.* is useful as a deterrent to caterpillars. Derris is also useful as a summer insecticide. Spray to prevent rather than to cure!

## JULY

*Successional sowing* in the vegetable garden is still practicable, but quick-maturing types should be chosen for these late crops. Sow early dwarf peas in the first week of the month in warm, sheltered gardens. Sow carrots of short-rooted type to mature in autumn and be used as they are pulled. Sow round beet, lettuce, turnips, radish (if this can be supplied with water), mustard, and cress. Sow prickly seeded spinach. Under glass sow carnations, primulas, cyclamen, herbaceous calceolarias, and any kind of annual to flower in late autumn. Dwarf French beans can be sown



in large pots in the greenhouse to mature after the first frosts.

*Plant colchicums.* Plant out seedlings of annuals that are too crowded. Plant broccoli, cabbages, cauliflowers, celery, kale, leeks, and endive.

*Prune* all wall-trained trees, grape vines, etc., as needed. Thin out fruits and attend to supports. Prune bush roses by cutting blooms with very long stems. Remove stems that crowd on small bush fruits. Cut back some of the side growths on red and white currants and gooseberries, to prevent overcrowding and to encourage spur formation. Treat apples in the same way. Continue to prune shrubs after they have flowered, according to their needs.

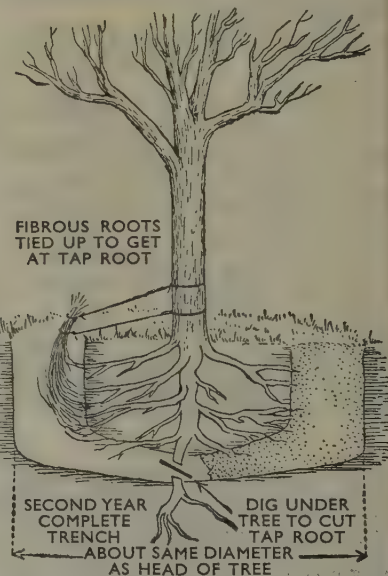
*Thin out* seedlings of beet, parsley, carrots, swedes.

*Earth up* celery. Watch for leaf spot or leaf miners.

particularly daffodils, scillas, and muscari. When ordering bulbs, calculate roughly what other plants are available, such as wallflowers and polyanthus. These help to keep down the bulb bill.

*Sow* in the vegetable garden, turnips for turnip tops, winter spinach, spinach beet, lettuce, radish, and corn salad. Sow mustard and cress for succession. In the first week of the month sow cabbages for spring. Sow winter-flowering and Brompton stocks, and schizanthus to bloom on the greenhouse shelves, with other annuals such as browallia, felicia, mignonette, etc., as desired. Sow rock plants such as Edelweiss in the alpine house. Sow antirrhinums, pansies, violas, Iceland poppies, and intermediate stocks in cold frames, to winter under glass.

*Plant* bulbs that have been stored during summer. Narcissus of all kinds prefer August planting. Other spring bulbs, except tulips, can be planted as the beds become vacant. Plant out



**METHOD OF ROOT PRUNING** too-vigorous fruit trees. The operation is done in two stages. The second may be omitted if the tree becomes fruitful.

*Train* tomatoes, roses, chrysanthemums, blackberries, and loganberries.

*Take cuttings* of roses, carnations, pinks, and any other subjects in the flower garden on which there are suitable pieces for propagation. Layer carnations, strawberries, blackberries, and allied berries.

*Spray* with liver of sulphur or dust with sulphur powder to control mildew under glass and in the open. Spray with Bordeaux Mixture or Burgundy Mixture to control Blight on potatoes. Paint patches of American Blight on fruit trees with methylated spirit or paraffin. Spray roses with colloidal sulphur against Black Spot.

*Feed* chrysanthemums, tomatoes, dahlias, and other actively growing plants with liquid fertiliser. *Bud* fruits, ornamental trees, roses, and similar subjects if stocks are available.

*Cut out* diseased or broken plum branches: burn at once.

*Harvest* shallots. Lay them out to dry well before storing. Gather rose petals for pot pourri. Gather herbs for drying.

*In northern gardens* sow cabbage in the last week of the month.

## AUGUST

*Bulb catalogues* arrive this month. Order and plant at once those bulbs intended for exhibition,

rooted cuttings, biennials, and divided roots of spring-flowering subjects, where they are to flower. Plant cabbages, broccoli, late celery, and leeks if these still remain in the seed-bed. Plant strawberry runners in new plantations.

*Pot up* under glass amaryllis, cyclamen, freesias, Roman hyacinths. *Pot* on seedlings of cinerarias, primulas, and other greenhouse subjects. Plant bulbs in bowls of fibre.

*Prune* shrubby climbers if they are growing too large. Trim lavender hedges after the flowers are harvested. Finish summer pruning of fruits. Cut out old canes from raspberries and loganberries. Remove unwanted stems on vines. Thin out the bunches of fruit with grape scissors.

*Take cuttings* of rock plants, bedding plants, and bush roses.

*Lift* potatoes as required. Bend down tops of onions: lift and ripen a week or two later, and harvest when ripe and dry.

*Burn* old potato haulms. Burn the straw between the rows of strawberries: this will clear the plot and prevent disease.

*Spray* tomatoes outdoors with Bordeaux Mixture in the first or second week of the month, to prevent the appearance of Blight.

*Remove* dead leaves from melons. Allow all the sunshine possible to reach the fruits.

## SEPTEMBER

*Lawns* can be made or renovated this month. Allow 1-2 oz. of seed per sq. yd. for an ordinary pleasure lawn, and sow grass of a strong-growing, medium quality.

Sow in the open garden antirrhinums, sweet peas, and other annuals, sheltered positions must be found for these sowings. Sow radish and lettuce for succession, and corn salad for use in winter. To provide early heads of cauliflower, sow in a frame or greenhouse and grow them on under glass. Sow spinach and turnips (for tops), also onions if these were not sown in August.

Sow French beans to grow in large pots in the warm greenhouse and also tomatoes for early spring, in a heated house.

Plant all spring-flowering bulbs except tulips. Remake herbaceous borders if the contents are mainly early-flowering subjects: lift and divide such roots as delphiniums and plant out fresh varieties. Plant new rock plants, including dwarf bulbs which can be interplanted with mossy saxifrages or other carpeting plants in the same

be attacked by soil pests. Lift gladioli corms: hang them in bunches to dry, clean and sort them over before storing. Remember to store all roots in a frost-proof place, and to use slightly damp sand if there is any danger of shrivelling.

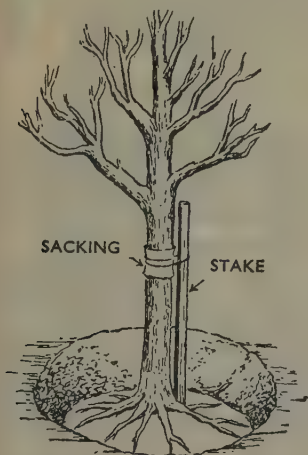
Protect late crops such as lettuces with cloches if these are available.

Thin out autumn sowings, but not too much: winter may do some thinning for you.

Sow in heated glasshouses mustard and cress and radishes for succession. Sow broad beans in the open, if the garden is sheltered and the soil light and warm.

Plant all kinds of hardy herbaceous plants in the flower garden and rock-garden. Plant bulbs and spring bedding plants including the plants raised in the nursery, such as wallflowers. Plant deciduous trees and shrubs of all kinds, including orchard fruits. Cabbages, lettuce, and endive can still be set out if desired.

Pot up arum lilies, lilies of the valley, spring bulbs, summer bedding plants that have not finished flowering, and any available annuals that were sown late and are near to flowering stage.



ROOTS WELL SPREAD OUT

**HOW TO PLANT A FRUIT TREE.**—A hole wider than the extent of the roots' spread is made, then a stake is placed in position and the tree tied temporarily while planting is done. Soil is worked between the roots and well trodden. A piece of sacking is placed round the tree to prevent chocking and cutting by the tie.



TREAD FINE SOIL OVER ROOTS

rockery pocket. Plant evergreens of all kinds, hedges and lawn specimens as well as shrub borders. Plant out rooted cuttings of all kinds that are ready to move from the propagating beds. Make new strawberry plantations. Plant cabbage, endive, kohlrabi, lettuce, savoys, and winter greens if these are still in the nursery bed. Plant violets in frames, near the glass, for winter blooming. Pot up tender bedding subjects and bring them into the greenhouse.

Prune climbers, overgrown rockery plants, and fruits as required. Root pruning may also be done now if needed. Cut out old canes from all the berry-bearing plants—logans, blackberries, raspberries, etc., if this has not been done previously. Do not tie raspberry canes to supports until the end of the winter.

Take cuttings of small bush fruits, gooseberries, etc.; rock plants; roses; hardy deciduous shrubs; bedding plants. Layer sumachs, or remove suckers to form new plants.

Bring under glass late-flowering chrysanthemums and other pot plants that have been standing in the open during summer.

## OCTOBER

Harvest crops, and make preparations for storing. Do not let root crops remain too long in the ground; they may become coarse, or may

Rhubarb, parsley, and mint can be planted into boxes, or into the soil of greenhouse or frame, to provide mid-winter supplies. Chicory can be lifted and forced.

Take cuttings of all hardy deciduous shrubs, including hedging plants, ornamental shrubs, roses, and fruits.

Prune figs, removing all fruits larger than pea-size.

Renovate grass that is worn bare in patches. Repair broken grass edges.

Disbud chrysanthemums under glass. Stake these, and also other winter-flowering subjects such as carnations.

Collect material for winter protection: mats, leaves, bracken, straw, hurdles, and so on.

Keep the garden clear of falling leaves: these encourage pests and should be gathered up and stored dry, or put into the compost heap.

Watch stored fruits and other food crops. Remove any diseased specimens from time to time to prevent infection of the whole store.

## NOVEMBER

Clear runner beans, tomato plants, marrow plants, and all such material from the vegetable garden. Stack cabbage stalks in a heap, to encourage pests to hibernate there, and after three weeks consign the heap to the bonfire.



Clear away dead leaves from rhubarb: cover the crowns with boxes and add light litter or straw manure to exclude light and frost. Crowns not to be forced should be covered very lightly with dry litter only.

Sow in very sheltered gardens, on a warm border, a row of early dwarf peas such as Little Marvel, and a row of broad beans. In exposed gardens this sowing is too risky to be worth while. French beans can be sown in heat. Mustard and cress can be sown in cool houses.

Earth up celery.

Lift sea-kale for forcing: cut thongs from the roots to replant in February. Lift Jerusalem artichokes and parsnips: lifting becomes difficult when the ground is sealed by frost, as it may be after the New Year.

Prune deciduous hedges such as the common thorn hedge. Prune fruits generally, and prepare to spray them after pruning, with some kind of winter wash, according to particular needs.

Plant roses, fruit trees, deciduous shrubs, and hedges. Herbaceous plants can be planted as long as the weather remains open and mild, and seedlings can be moved from the nursery plot. When hard frosts arrive, put an end to planting until the first mild spell of the New Year. Tulips of late-flowering types are best planted in the middle weeks of November.

## DECEMBER

During frost wheel manure to parts of the garden where it will be dug in later. Repair seed-boxes, clean pots and other materials in the potting-shed, sort over labels, stakes, tying material, and so on. Clean tools and rub them with an oily rag. Sharpen cutting tools. Paint wooden structures, tool handles, etc., and generally make ready for a new season's work.

Plant, Prune, and Spray fruit trees when the weather allows.

Earth up the latest celery.

Force rhubarb, chicory, and sea-kale.

Keep an eye on stored crops, particularly those in clamps: see that frost does not enter.

Watch plants in rock-garden and border and also watch newly planted fruits: if frost lifts them or loosens the soil round the stems, put this right at once.

Sweep and roll lawns occasionally. They may need to be cut if there are long mild spells.

Plan for next season. Make a note of this past year's failures and successes. Plan to avoid the need for buying vegetables and fruits. Plan to improve the colours and lines of the flower garden.

Construct new garden features. Order new sundries, including tools, ornaments, insecticides, fertilisers, and any non-living material wanted for improvements.

## V. MODERN GARDEN CHEMISTRY

Garden chemistry has progressed very far from the old rule-of-thumb methods in vogue during last century, and many volumes have been written on soils, insecticides, fungicides, and other matters in which research of a technical nature has been carried out to help the plant grower. It is, however, true to say that the average small-garden owner has neither the time nor the inclination to study these volumes in detail, and in fact, becomes more bewildered than he was before if he tries to "read up" such matters. The following brief notes are therefore designed to help the amateur gardener in the choice and use of some of the more important materials that are commercially offered, rather than to describe in detail the chemical origin of these mixtures.

For convenience the materials dealt with will be grouped according to their use in the garden.

(a) **Fertilisers or Materials that Enrich the Soil.**—These again may be roughly grouped into three classes—first, the important plant foods, potash, phosphates, and nitrates, together with other (important but usually present in sufficient quantities) nutrients such as magnesium and boron. Next lime, which for most plants is essential for healthy growth, though some plants like soil that is slightly acid and for these lime must be avoided. (These plants are commonly known as calcifuges, or lime-haters.) Thirdly *humus*, that is, decaying animal or vegetable matter. This last provides the essential bacteria or micro-organisms without which the soil would be dead, inert matter and would not support any kind of vegetation. Humus is added to the soil in the form of garden compost, farm or stable manure, poultry droppings, leaves, hop manure, and any similar matter.

**Lime** is available in shops in the form of "garden lime" or "hydrated lime." Another form of lime is chalk. Hydrated lime is best to use on clay soils, and chalk is good on light, sandy soils because it helps to bind them. The function of lime in the soil is twofold. Plants need some lime as food. But still more important, acid soils, that is soils without lime, tend to lock up other plant foods. Lime unlocks them by making them soluble and available to the plant roots, for plants can only absorb food in liquid form. A normal dressing of lime for a vegetable garden is  $\frac{1}{2}$  lb. of lime or 1 lb. of chalk to each square yard once in three years. Whether this is applied in three separate dressings or all at once is not very important in the small garden, and the gardener can do whatever is convenient to himself. Quick-lime can be used in place of hydrated lime, with some advantage on ground that is subject to Club Root, a disease that distorts the roots of cabbages and other brassicas. It should be laid on the plot in heaps, and in a few days it will crumble to powder, when it can be distributed over the surface in the same way as hydrated lime. Both these forms of lime should be used some weeks before other fertilisers are applied, and all forms of lime should be applied as surface dressings after digging.

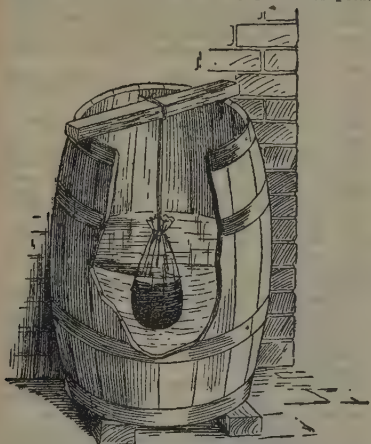
**Nitrates** are soluble foods that encourage leaf and stem formation. They are used to stimulate growth among vegetables, and applied on the

"little and often" principle because of their solubility. If given in large doses, they waste by washing through the top soil before they are absorbed by the plant roots. Too much nitrogenous fertiliser should not be given late in the season to food crops that are to stand outdoors through the winter, as it will encourage sappy growth that is easily damaged by frost. Neither must too much nitrogen be given to flowering plants in the early stages, otherwise they spend too much time making leaf and stem growth, and delay flowering, which may mean that the frosts arrive before the flowers have all opened. The rough rule in the flower garden is to feed well directly the flower-buds can be seen. Fertilisers that supply nitrates are *Nitrate of Soda*, *Sulphate of Ammonia*, *Nitro-chalk* (which also contains lime), *Dried Blood*, and also any complete, balanced fertilisers of the "Growmore" type, which supply all three of the main plant foods. Of these concentrated nitrogenous fertilisers, 1 oz. in a gallon of water, applied to a square yard, is a good dressing for summer use, and can be repeated two or three times if necessary, at intervals of two or three weeks. It should always be applied after rain or after ordinary watering, and the fertiliser should go on the soil, not on the plant foliage.

**Phosphates** are foods that do two things in particular. They assist root formation, and so are very useful in seed-beds. They also encourage flower production and fruit formation, that is, they make for early maturity. Obviously they have special uses in the fruit patch, where the gardener needs to watch his trees and use fertilisers according to their requirements. If too much leaf and stem growth is present, phosphates will be used; if flowers are plentiful, but the tree makes no growth, nitrates are needed. (If the tree is growing well, flowering well, and yet failing to fruit, look into the question of pollination.) Fertilisers that supply phosphates are *superphosphate of lime*, which is quick acting and must be used in spring or summer at 1-2 oz. per sq. yd.; *basic slag*, which can be applied in autumn or winter at twice the rate, as it is slow acting; and *bone-meal* which can be used at any time when digging is done, in small or large quantity, up to  $\frac{1}{2}$  lb. per sq. yd. Basic slag contains some lime, and bone-meal contains some nitrogen. Basic

slag is only suitable for soil which contains a fair proportion of humus.

**Potash**, the third of the important foods, is responsible for the quality of the plant, for colour in flowers, for ripeness in fruits, for good general health. Some plants need much more than others. Apples of the dessert varieties need plenty; cooking kinds are less susceptible to its presence or absence in the soil. Plums generally need very little, but Purple Pershore plums become misshapen and unhealthy generally if potash is not provided. Root crops need potash, and it is best for potash to be supplied in winter, so that it gets down to the sub-soil. Moreover, most of the forms in which potash is sold—*muriate of potash* for instance—have certain impurities present which are best washed out by rains before the period of active growth. Rather less than 1 oz. of *sulphate of potash* or *potash*



**LIQUID MANURE** is made by using an old sack filled with rotted animal manure and soot in equal proportions. This is then suspended in a barrel of rain-water. After a week the liquid manure can be used diluted to the colour of weak tea.

**salts** per sq. yd. make a normal dressing for a vegetable plot. Wood ash from the bonfire contains a quantity of highly soluble potash, and if this is stored dry and used at any convenient time round flowers, vegetables, or fruits, it will reduce the need for purchased supplies. If potash is needed during the growing season and wood ash is not available, use sulphate of potash, which is the purest commercial form of garden potash.

**Other plant foods** such as magnesium and boron are normally present in most soils, and the small gardener need not concern himself with them. Soil deficiencies show up in brown edges, yellow patches, etc., on the foliage, and if troubles of this kind occur in the home orchard, an expert should be consulted. It may be noted, however, that the majority of a plant's needs will be satisfied by the use of good farm or stable manure, and a dressing of this will often put fresh life into an old garden.

**(b) Insecticides and Fungicides.**—Insecticides may act in different ways. Some are *contact sprays*, that is, they destroy insects immediately they come in contact with them. These are obviously used when the pest is at work, and are usually only effective against pests with comparatively soft skins, such as green and black flies, Derris, pyrethrum, and ordinary soap mixtures will control flies of this kind. Also on the market are several dusting powders which act in the same way, and powder distributors are sold to make their use easy and effective.

Some pests are not affected by this type of insecticide, but must be destroyed by poison as they eat. For these, which include most caterpillars, a nicotine spray, one made of D.D.T. or

lead arsenate, is most effective. As these poison sprays cannot be used on crops that are to be eaten, derris and pyrethrum are used instead, and are equally effective if they are renewed after heavy rain. The ordinary general-purpose insecticide sold today is usually a control for both surface caterpillars and green flies, and the only thing for the novice to note is that sprays should always be mixed exactly according to makers' instructions and that they should be applied with force, through a fine nozzle, in the evenings, and not while sun is scorching the plants. Care should be taken to wet thoroughly both sides of every leaf and stem, for the full effect of the spray to be felt, and in some cases a second application a few days later is needed, as some of the pests may hatch out after the first spray is given.

**Winter washes** are sprays designed to kill hibernating pests and the eggs which are laid in crevices in the bark; they also clear lichens and scale insects. To wait to spray when the pest is seen is to ask for trouble, since the first sign is possibly that the young growth, or blossom bud, is eaten through, and irreparable damage has then been done. Winter washes include *tar oil*, which is effective against the ordinary types of aphids, scale insects, apple sucker, and winter moth. *Petroleum oil* washes can be used when the buds are ready to burst in late winter, to control Red Spider and capsid bugs. *Tar-petroleum* sprays are a mixture which will serve the double purpose, but they are only in general use on black currants and other small fruits.

Sprays known as **D.N.C.** washes contain a quantity of Di-nitro-ortho-cresol. These can be used in place of both tar oil and petroleum sprays, but need greater care in application. There are also *Thiocyanate* washes which again are double-purpose sprays, and can be used even later than the D.N.C. spray.

**Soil pests** need rather different treatment. These are usually controlled by fumes—either by fumes designed to discourage the adult pest, often a flying pest, from laying eggs in or on the soil, or by fumes that rise through the soil and destroy the young grubs that are feeding in it. In the first group are *calomel dust*, which is used along onion rows to ward off the onion fly, and *naphthalene* which is used in similar manner to keep the carrot fly from the rows. *Soot and lime mixed* give off strong fumes, and also come into the group. These are used for the same purposes as calomel and naphthalene, and also to dust along celery rows and elsewhere to discourage the fly that lays eggs in the leaves. Celery flies, and other leaf miners that attack various plants, leave their eggs buried in the tissue of the leaf: the resulting maggots tunnel between the leaf surfaces and cause disfiguring marks, and lowered vitality in the plants. As the pests tunnel inside, the use of sprays is almost without result, unless the sprays are strong smelling and used, like the soot, to discourage the flies before the eggs are laid. Fumes that rise through the soil are given off by *Soil Fumigants*, chemicals often with naphthalene in their make-up, which must, of course, be buried under the top spit of soil during digging, to become effective. A mixture of crushed *Meta* tablets with some kind of bait is a good *slug killer*.

The horticultural chemists have experimented with all these various kinds of insecticides, and have produced easy-to-use commercial preparations which are usually a wise purchase. In the small garden it does not often pay to buy large quantities of a single chemical, but is better to buy prepared mixtures which are frequently suitable for the control of several kinds of pests. It is, however, very important that the makers' instructions should be accurately followed, and (although this should not need mentioning) it is important also to see that the makers do recommend the insecticide in question for the purpose for which it is being used.

**Fungicides** are possibly more misunderstood by gardeners than are insecticides. Fungus diseases may be present only inside the tissues of the plant, or may be on the surface only at certain seasons. *Lime-sulphur* is one of the most common fungicides, and it also acts as an insecticide against Red Spider and the Big Bud mite of black currants. Not all plants can be sprayed with sulphur preparations during active growth, and fungicides must always be used with great caution. *Bordeaux*



*Mixture* is one of the most valuable, and generally safe, fungicides, and in a small garden this, with perhaps a little green sulphur powder (for use against mildew) may be all the fungicides that are necessary. *Burgundy Mixture* is somewhat similar in action, easy to mix, and good for potatoes, but not generally suitable in the fruit garden.

*Horticultural D.D.T.* and *Gammexane* are among the newer insecticides, and both promise good results. *D.D.T.* is effective against such widely differing pests as flea beetles, rose chafers, asparagus beetles, raspberry beetles, Colorado beetle, pea aphids, codling moth, cabbage looper, and onion thrips, but no use against green flies. On the other hand, it is also fatal to lady-birds, which as every gardener knows, are his friends, and work with him to keep down green flies. Both *D.D.T.* and *Gammexane* form a part of many commercial insecticides, and until much more can be said with certainty about their action, the gardener must rely on the horticultural chemist to add them when and where they will be effective as insecticides but harmless to plants. Marketed preparations are, almost without exception, safe to use according to instructions, and the owner of a small garden will do well to buy them.

Yet another insecticide is *H.E.T.P.*, a substance which is still in the experimental stage. It is not likely to outshine *D.D.T.* for general purposes, but it has already been found to be the best-known substance for control of aphides, and more may be heard about it in the future.

(c) *Weed-killers*.—Arsenical weed killers are rather out of favour with the modern gardener. They are dangerous to handle and still more dangerous to store. If they are stored, it should be only under lock and key.

*Weed-killers* in modern use are of two types—those that kill all vegetation, such as the ones used on gravel paths, and those that are selective in action, such as the weed-killers used on lawns. *Weed-killers* for gravel paths are sold in prepared form, but none are more useful than *Sodium chlorate*. This, mixed with water at the rate of 2 oz. in a 2-gallon water-can, and sprinkled over the path surface, will destroy all the weeds. The effect is not seen for some days, but the plants ultimately die out. Unless some kind of waterproof surface is laid down, more weeds will, of course, develop after a time, and these will need to be treated with more sodium chlorate.

*Sulphate of ammonia*, which is also a stimulant to growth, acts as a weed-killer on lawns, its action being due to the fact that the chemical stays where it falls on the broad horizontal leaves of daisies and plantains, while it falls off the vertical grass blades, and gets carried down by dew or rain to the roots, to feed them. Thus the leaves of weeds are burned, while the grass is not burned to any appreciable extent but is stimulated to stronger growth. Frequent small doses of sulphate ( $\frac{1}{2}$  oz., mixed with sand, applied to each sq. yd.) are better than a single heavy application.

There are also selective weed-killers that destroy every plantain and have almost no ill effect on grass. These are excellent for use on well-established grass lawns where weeds are very plentiful, and as they have merely to be watered down, and then watered on, application is simple. They destroy through the digestive system of the plant, and are fully effective on several kinds of weeds. On others the treatment may have to be repeated, but a selective weed-killer—of which there are several on the market—is a good investment for an old lawn. If a very young lawn from seed becomes weedy, it would probably be wiser to wait until the end of the first season or beginning of the second season before applying the weed-killer, to avoid any possible damage to very young grass.

(d) *Root-forming or Growth-promoting Substances*.—Of recent years much has been heard about root-forming substances which can be used to accelerate root growth when cuttings are inserted. This is marketed under names such as *Hortomone* and *Seradix*. The chemical which forms the base of this substance is the one that is present in all plants, and which responds to stimulus when plants are stood in a sunny window. Everyone has noticed that such plants become "drawn" towards the sun, or to put it more accurately, the part of the stem that is in the

shade grows more rapidly than the part in full sunshine. The growth-forming substances have been found in the part of the plant that was growing most rapidly. The horticultural chemist has been able to isolate this substance, and to produce it in quantity for the use of the gardener. Properly used, *Hortomone* and *Seradix* preparations will do what is claimed for them by their makers.

### GARDEN CHEMISTRY CALENDAR

**January**.—Spray fruit trees with tar-oil winter wash against aphids and apple sucker.

Use soil fumigants as needed when digging newly broken grassland or ground known to be infested with soil pests. (N.B.—*D.D.T.* is used effectively against wireworms in some modern soil fumigants).

**February**.—Dress lime over freshly dug ground: wait for a few weeks before using any fertilisers. Dress lawns on heavy soil with sulphate of ammonia when the weather is mild and open. Spray peaches with colloidal copper against Leaf Curl.

**March**.—Spray with *D.N.C.* to control Red Spider, Capsid Bug, and caterpillars (instead of previous tar oil, not in addition). Spray pears with *Bordeaux Mixture* against Scab.

Use superphosphate of lime, or sulphate of ammonia as soil dressings according to needs of fruit trees and vegetables. Use bone-meal in renovation of flower borders. Dress lawns with sulphate of ammonia if selective weed-killer is to be used later.

**April**.—Spray pears and apples (except sulphurshy varieties) with lime-sulphur in pink-bud stage, against Scab.

Dress spring cabbages with nitrate of soda. Use sulphate of potash and superphosphate when planting potatoes.

**May**.—Dust onion rows with calomel dust against onion fly.

Dust naphthalene along carrot rows to ward off carrot fly.

Spray with lime-sulphur, at petal-fall, apples, plums, and damsons. If desired, add nicotine to the spray to control sawfly and aphids.

Spray gooseberries with washing soda ( $\frac{1}{2}$  lb to 2½ gallons water), with soap added as spreader. Dust raspberries and other berries with derris dust to control beetle. Spray raspberry canes with colloidal sulphur if necessary against Cane spot.

**June**.—Use nitrate of soda or sulphate of ammonia where quick-acting stimulants to growth are needed.

Dust carrots and onions, as last month. Spray broad beans with derris insecticide. Dust newly planted brassica seedlings with calomel or naphthalene to control cabbage-root fly. Use derris dust or spray on raspberries and loganberries. Spray pears with *Bordeaux Mixture* against Scab.

**July**.—Spray main-crop potatoes with *Bordeaux* or *Burgundy Mixture* to prevent Blight. Spray celery also to prevent Leaf Spot. Feed celery with nitrate of soda or sulphate of ammonia, and chrysanthemums with liquid manure.

**August**.—Spray celery with *Bordeaux Mixture* and dust foliage with soot.

Spray tomatoes in the first or second week, with *Bordeaux Mixture*.

Use *Hortomone* or *Seradix* on cuttings taken this month.

**September**.—Dust and spray celery as last month. Feed with a complete balanced fertiliser crops that are to stand the winter.

Dress strawberry beds with basic slag as they are made ready for new plants.

**October**.—Use basic slag in the fruit garden as needed.

Dress ground with lime after digging. Use a dusting of lime among potatoes going into store.

**November**.—Use lime, sulphate of potash or muriate of potash, and bonfire ash, as needed during digging, and in the orchard.

**December**.—Use tar-oil winter wash from the middle of the month onward, after trees have been pruned.

# Radio, Television and Radar





# Radio, Television and Radar

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## RADIO.

**Historical.**—Though it is not possible to ascribe the "invention" of radio to any one man, it is true to say that its discovery and subsequent development as a means of communication was primarily due to the work of three. Between them—not, of course, together—these three conceived the idea of wave motion through space, of its use as a means of communication, explained and proved the physical processes involved, and brought the idea to practical fruition.

The theory of electromagnetic waves—of which the radio wave is one—was originated by the British physicist James Clerk-Maxwell in 1864. He formulated a set of equations which have become famous as the basis of the behaviour of electromagnetic waves in space. These showed that both electrical and optical phenomena in space are essentially similar in character, and that the waves if short in wavelength are those of light, whilst if of longer wavelength they are radio waves. Clerk-Maxwell was never, in his own lifetime, to see such waves actually produced by electrical means, yet by his purely mathematical investigations he laid the foundation upon which the art of radio communication was to be built.

When Heinrich Hertz—the second member of the trio—succeeded in 1888 in producing such waves by electrical means he found them to conform to Clerk-Maxwell's theories in every particular. Although Hertz's work was purely in the nature of laboratory experiments, he made many useful discoveries about the waves themselves, and about their behaviour under differing conditions, and also about the apparatus necessary for producing them.

It fell to Marconi to develop the use of radio waves as a practical means of communication. He came to England in 1896 after carrying out his early experiments in his native Italy, and a British patent for his apparatus was at once granted. Encouraged by the sympathetic interest of the British Post Office, Marconi soon succeeded in establishing communication between Penarth and Weston-super-Mare. Following this achievement, he rapidly effected improvements in the apparatus, which increased its range. In 1897 the first Wireless Signalling Company was formed, and in 1898 the first two paid wireless messages were sent, in this country. By 1900 Marconi had amply demonstrated that communication by radio was a commercial proposition, and radio stations for regular operation on ship and shore were being built.

In 1901 Marconi went to America, there to attempt the reception of radio signals sent out by his station at Poldhu in Cornwall. And on 12th December, 1901—after innumerable difficulties had been encountered and overcome—the famous "S" signals of the Morse code sent out from Poldhu were received in Newfoundland, thus proving that radio waves could pass from the Old World to the New, and—most important discovery of all—could bend around the spherically shaped earth.

It was not easy to explain this point at first, for it was part of the theory that radio waves—like those of light—must, so long as they travelled constantly in a medium like air, move in straight lines. Some slight "bending" or diffraction over the horizon was understandable, but this was insufficient to account for the waves reaching Newfoundland. Then, almost simultaneously, the British physicist Oliver Heaviside and the American Dr. A. E. Kennelly came forward with an explanation. They suggested that the air in the upper atmosphere had different electrical properties from that lower down. It was not, like the

latter, an electrical insulator, but a conductor, and as such had the property of "refracting" the waves, and so of causing them to curve round in the upper atmosphere so that they returned to earth at a far distant point, thus enabling them to travel round the spherically shaped earth. The Kennelly-Heaviside "layer" theory was soon accepted by the world of science because it explained known facts about the behaviour of radio waves, though it was not until 1925 that the British scientist Sir Edward Appleton first determined the actual position of the layer in the atmosphere.

In the meantime the art of radio communication had progressed by leaps and bounds. Many scientists and inventors, both in this country and abroad, had contributed to this rapid advance, but perhaps the most far-reaching contribution of all was the invention of the radio valve by Sir Ambrose Fleming in 1904. This—one of the most remarkable of all of man's inventions—was destined not only to revolutionise radio telegraphy but also to solve the problems which had so far prevented the successful development of radio-telephony, and eventually to make possible the transmission of high-quality speech, music, and even vision signals, and thus lead to broadcasting and television.

Although one of its most useful applications has always been as a means of communicating with ships at sea, radio has spread to so many other fields that to-day the whole world is closely linked by a vast and complicated network of radio communications. The broadcasting of news and entertainment—which began in this country in 1920—is now an almost essential part of normal civilised life, the transmission of still pictures and of living scenes is rapidly becoming so, whilst radar has brought about startling changes in marine and aerial navigation. In little more than half a lifetime the experimental toy of a young inventor has developed into a practically indispensable amenity of everyday life.

A complete understanding of radio can be acquired only by long study of the electrical and scientific facts and principles involved, but in the notes which follow we shall endeavour to give an insight into some aspects of radio communication and into the general working of some of the apparatus in as simple and non-technical a way as is possible.

**Radio Waves and How They Travel.**—When an electric charge is oscillating along a radio transmitting aerial it produces both an electric strain and a magnetic strain in the surrounding space and these two forces act at right angles to each other. At the conclusion of each oscillation the two strains are "broken off" and lose their contact with the aerial. The resultant disturbance in space constitutes an electromagnetic or radio wave. These waves do not require any material medium to support them—they can exist equally well in a vacuum. Thus we may discard the old conception of an "Aether" in which radio waves were once thought to travel. The waves travel through space with a velocity of 186,000 miles or 300 million metres per second. They travel through ordinary air at the same rate, but if they enter a medium with different electrical properties from those of air their velocity is altered.

We have seen that one complete wave leaves the aerial for each complete oscillation of the electric charge, and thus it is obvious that their rate of emission depends on the "frequency" of the electric oscillations being generated by the radio transmitter. If the charge be oscillating up and down the aerial 300 million times per second the frequency will be 300 million "cycles" per second.

At the end of one second the front of the first wave will be 300 million metres away from the aerial—since the waves travel that distance in that time—whilst the last wave will just be leaving it. Three hundred million waves will, therefore, occupy the distance between the first wave front and the aerial, and thus the distance occupied by each wave, i.e., the “wavelength,” will be 1 metre. If the charge is now made to oscillate 100 times more slowly than before—at a frequency of 3 million cycles per second—then at the end of one second there will only be 3 million waves occupying the 300 million metres of space. The wavelength will therefore be 100 metres. Thus a wave of low frequency has a long wavelength, whilst a high-frequency wave has a short wavelength. To obtain the relation between the two quantities it is only necessary to remember that Wavelength (in metres) equals Velocity (in metres per second) divided by Frequency (in cycles per second). Radio waves range in length from about 30,000 metres at the long-wave end to less than a centimetre in the case of the shortest waves.

and about 300 miles above the earth's surface. In this region the air is not an electrical insulator but a partial conductor—a property imparted to it by the action of the sun.

On entering the ionosphere the velocity of the wave is changed and, instead of continuing in a straight line, it is gradually turned round and eventually directed downwards again towards the earth. Successive reflections of the wave between the ionosphere and the earth enable it to travel great distances in a series of “hops,” as indicated in Fig. 1.

Now the action of the ionosphere upon the waves varies, not only with the time of day and season, but also with wavelength. Medium waves are not reflected—at least not during the day—but are lost within the ionosphere, hence their range depends on that of the ground wave. At night however, some reflection does take place, and that is why—for example—distant medium-wave broadcasting stations may sometimes be heard at night and not during daylight. It is their “sky” wave and not their normal ground wave which

TABLE I

Class.	Wavelength Range, Metres.	Main Characteristics.	Principal Uses.
Long Waves.	Above 1,000	Travel long distances over earth's surface, also to greater distances by reflection from ionosphere.	Navigational aids, medium and long-distance point-to-point communication “National” broadcasting.
Medium Waves.	1,000 to 100	Travel over earth's surface only during the day, some reflection from ionosphere at night. Only medium-distance range during day, somewhat greater at night.	“National” broadcasting marine and aircraft communication, direction finding.
Short Waves.	100 to 10	Travel up to ionosphere then back to earth. Conditions for ionosphere reflection vary with time of day and season. Very great distance range.	Long-distance, “international” broadcasting, point-to-point communication, etc.
Very Short, Ultra Short, Super Short, and Extremely Short Waves.	Below 10	Travel just above and over earth's surface only, and for relatively short distances.	Short-distance communication, television, radar systems.*

\* A recent development, whereby the radio energy which is “scattered” at certain levels in the atmosphere is utilised, has extended the range of Very Short Waves to about 1,400 miles, and Ultra Short Waves to about 200 miles. Transmission in the former range is at present limited to telegraphy and telephony communication, whilst the latter is still in the experimental stage.

Although there is no difference in the nature of radio waves of differing wavelength, their actual behaviour during transmission varies tremendously according to their wavelength. In particular, their distance range varies greatly, and thus waves of different length are suitable for different purposes. Table I above roughly classifies them according to their wavelength, and indicates the purpose for which they are used.

The reasons for the variation in the distances reached by waves of different wavelength are briefly as follows: We will assume that the transmitting aerial will radiate waves in all horizontal and vertical directions. Let us consider first the horizontally radiated energy, which, because it travels close to the earth's surface, is known as the “ground wave.” As the ground wave travels along some of its energy is absorbed by the earth itself, and so the wave is weakened and soon tends to die away. The amount of energy so lost increases as the wavelength decreases. Long waves lose relatively little energy in this way, and so their distance range is great. As the wavelength is decreased through the medium waveband the ground losses increase and the waves die away more rapidly, having only a medium distance range, whilst when the short waves are reached the range is reduced to a few tens of miles.

The waves travelling upwards from the aerial go on until they reach the atmospheric region known as the “ionosphere,” which lies between about 60

reaches the longer distance. In the case of the short waves the ionosphere normally acts as an efficient reflector of the upward-travelling waves—the precise manner depending on ionospheric conditions at the time—so the “sky” waves are returned to earth at all times, and consequently reach to great distances. These short waves are therefore most suitable for really long-distance communication of all kinds. Below a certain wavelength, however, the ionosphere no longer

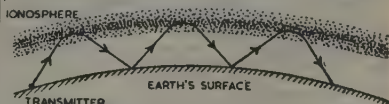


FIG. 1.—WAVE TRAVELLING IN HOPS BETWEEN EARTH AND IONOSPHERE.

acts as a reflector, and these very short waves normally pass right through it. The distance range is therefore that of the ground wave, and so is relatively small. Recently, however, it has been found possible to achieve ranges of about 1,400 miles on the Very Short Waves and 200 miles on the Ultra Short Waves by making use of the “scattering” of radio energy which occurs at certain levels in the atmosphere. This type of



transmission is not as yet much beyond the experimental stage.

**Broadcasting.**—The technical problems involved in broadcast transmission and reception may be summarised as follows: to convert the sound waves of the programme into electric impulses or currents, each characteristic of the sound itself; to convey these impulses without distortion to a radio transmitting station; to superimpose them on the electromagnetic waves being radiated so that they are diffused into space; to pick the waves up again at a distant point and to separate the electrical impulses from them in their original form; to increase them in magnitude in order to compensate for the losses during transmission, and, finally, to reconvert the impulses into sound waves of a similar nature to those originally produced.

Sound waves are set up in the air in the broadcast studio when any "noise"—musical or otherwise—is made, these air disturbances travelling outward from their source at approximately 1,100 feet per second. The character of a sound wave varies in accordance with a number of factors, one of which is its "frequency." If the number of air vibrations per second is large the "pitch" of the note is high, whilst if it is small a low note is produced. The lowest note of a piano, for example, has a frequency of 27·5 cycles per second, and its highest note about 5,600 cycles per second. The range of frequencies which the average person can appreciate is from about 20 to 16,000 cycles per second. A second feature possessed by a sound is its "loudness," which depends upon the *intensity* of the sound waves produced, whilst a third and more subtle characteristic is the "sound quality." It is this which enables us to distinguish between two sounds of the same pitch and loudness, and to recognise, from the distinctive quality, to which instrument of the orchestra each owes its origin. This quality of a sound is due to the fact that it consists, not of a single frequency, but of a mixture of one "fundamental" frequency and several "harmonics." The proportion in which these harmonics are present determines the musical quality or "timbre" of a note or sound.

In broadcasting the aim is to transmit all these features of the sounds without distortion. Although this cannot be done perfectly—because the apparatus is unable to handle the full ranges of frequency or loudness—good-quality transmission can be achieved if frequencies from about 30 to 10,000 cycles per second, and a loudness range covering all but the weakest and most intense sounds, are provided for.

Broadcast studios are rooms designed to suit a particular type and size of programme, the walls—which both reflect and absorb the sound waves—being constructed or treated so as to give that quality to the sounds most desirable and pleasing for the particular type of programme. In addition, there are "General Purpose" studios, whose acoustic characteristics can be varied to suit the programme requirements. Adjacent to the studio there is usually a listening-room, sound insulated from the studio, in which the programme can be heard from a loudspeaker, so that it may be judged as it will sound in a listener's home, as distinct from what it sounds like in the studio. Sometimes it is necessary to add "echo" to the programme, i.e., to give an effect such as would be produced in the interior of a cathedral. This is achieved by taking part of the studio output to a loudspeaker in an "echo room." The sound from this goes echoing round the bare walls of the room, and the result—containing the echo—is picked up by a microphone, and may then be added to the original programme.

Each studio contains one or perhaps several microphones, according to the purpose for which it is used, these being the devices which convert the sound waves into electrical impulses. The type of microphone in most common use to-day is the "ribbon" type, in which a strip of aluminium foil is suspended within a strong magnetic field. Any movement of a conductor in a magnetic field causes an electrical voltage to be set up in the conductor, and when the aluminium "ribbon" vibrates under the impact of the sound waves electrical voltages or impulses are set up in it which are faithfully representative of the sounds which caused them. The outputs from several

microphones may be mixed in any desired proportion by means of a simple electrical arrangement in the listening-room, and the combined output is then taken to the control room of the broadcasting centre.

The control room is the electrical "nerve centre" of the whole system, and through it all the programmes pass. It contains "amplifiers" to which the studio outputs are connected, "mixers" for combining, when necessary, the outputs of several studios or other programme sources, and switching arrangements and "fade units" for maintaining the continuity of the programme. This equipment is followed by the main control amplifier and the control potentiometer, by means of which the intensity of the electrical impulses is kept within the range that can be handled by subsequent apparatus. Finally, there are the amplifiers which transfer the programme to the lines connecting the control room to the radio transmitters.

When the programme originates at an outside point—like a sporting event—apparatus is taken out to the programme site itself, comprising microphones, amplifiers, mixers, and control units, together with means for communicating to the nearest broadcasting centre. The "outside broadcast" is controlled and amplified "on site" and then sent to the control room, where it is fitted into the main programme as if it were from one of the local studios.

No matter where the programme originates, it is eventually sent along the lines connecting the broadcast centre to the radio transmitters, and in this process the impulses soon become weakened by the losses to which they are subject. At intervals of about 40 miles, therefore, a special amplifier, known as a "repeater" is inserted into the lines in order to restore them to a workable level. Arrived at the transmitter, it is found that the high frequencies—corresponding to the high notes of the programme—have become weakened to a greater extent than have the low ones, and in consequence the programme is very much distorted. It is, therefore, passed through an "equaliser" which weakens all the impulses in inverse proportion to their frequency, and thus the distortion introduced by the lines is removed. It is then only necessary to pass them through an amplifier which increases all the frequencies equally and so bring the programme back to a volume suitable for feeding to the transmitter itself.

**Radio Transmitters.**—The first function of a radio transmitter is to generate high-frequency oscillations which, when amplified and fed to an aerial system, will set up electromagnetic waves in space. Its second is to provide some means of "modulating" these waves so that they will carry the intelligence which it is desired to transmit.

The transmitter may operate upon wavelengths varying from several thousand metres to a few centimetres (i.e., the frequency of the oscillations it produces may vary from a few thousand cycles to hundreds of millions of cycles per second) according to the purpose for which it is intended. The form of intelligence transmitted may also vary widely, ranging from telegraphy to broadcast speech and music or television.

In the course of their development radio transmitters have employed many different systems of generating the high-frequency oscillations. Among these may be mentioned the induction coil, the spark transmitter, the Poulsen arc, and the high-frequency alternating voltage generator. All these systems, however, have disadvantages which are not shared by the thermionic valve, and consequently this has gradually superseded them and is now almost exclusively the means used to generate the oscillations in modern radio transmitters.

If a coil of wire is connected in the anode circuit of a valve, and another coil in the grid circuit, the valve can, by means of the electrical interaction between these coils, be made to produce electrical oscillations. By choosing particular values of "inductance" and "capacity" in these circuits the oscillations can be "tuned" to the desired frequency. The "inductance" usually consists of suitably proportioned coils of wire, whilst the "capacity" is provided by means of "conden-

seers," which consist of sheets of metal separated by air or some other insulating material.

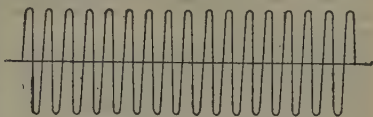
Such a circuit, however, exhibits a tendency to change its operating frequency slightly with small changes in the voltages supplied to the valve, and changes in the temperature of the air surrounding the oscillatory circuit. Such changes would, of course, alter the operating frequency, and thus the wavelength, of the transmitter, and, as this is obviously undesirable, steps are taken to control the circuit in such a way as to prevent these changes occurring. Firstly, the oscillatory circuit is usually supplied through a voltage regulator which keeps the voltage nearly constant, despite variations in the voltage incoming to the regulator itself, and it is placed in a small oven whose temperature is maintained constant within very close limits by means of a thermostat; secondly, "crystal control" is applied to the oscillator. Certain crystals such as natural quartz, Tourmaline, Rochelle salt, etc., possess what are known as "Piezo-electric" properties. Very simply, if subjected to mechanical compression or tension these crystals produce an electrical potential difference across certain axes. Conversely, if an alternating voltage is applied to the crystal it will vibrate, and if the frequency of the alternating voltage is close to the natural frequency of the crystal—which is determined largely by its physical dimensions—something approaching mechanical resonance occurs. This mechanical vibration sets up a correspondingly large oscillatory voltage across the crystal, which is applied to a valve and used to maintain the electrical oscillations in the valve and its associated circuit. Since the frequency of oscillation is almost entirely governed by the dimensions of the crystal, a very high degree of transmitter frequency stability can be achieved by using a crystal in this way. The oscillations which are produced by this "drive" circuit (as it is called) are then passed through as many "amplifying" stages as are necessary to increase the power to a level suitable for applying to the aerial. Such oscillations when radiated by the aerial do not themselves convey any intelligence, and the resultant wave is called the "carrier" wave.

To impart the intelligence to the carrier it is necessary to "modulate" this wave with, for example, a broadcast programme. This, as we have seen, is composed of electrical impulses which vary in accordance with the sounds which produced them. Like the output of the drive circuit, the programme signals received over the lines from the studio are amplified until they are of sufficient power to be applied to the modulator valve or modulation transformer, according to the system in use in the particular transmitter. By one of these means these amplified programme currents are made to alter the "amplitude" of the oscillations of the carrier wave. The result is that while the frequency of the carrier wave is unaffected, its amplitude varies in sympathy with the programme impulses it is carrying. The programme impulses are therefore conveyed through space to the receiver, and at the receiver it is only necessary to cause the variations in the amplitude of the received wave to set up electric currents, and these will be an exact replica of those produced by the microphone. Fig. 2 will help to explain the process of modulation; it shows in diagrammatic form: (a) the unmodulated carrier wave; (b) the programme impulses; and (c) the modulated carrier. The method described above is only one way of modulating a carrier wave; another, known as "frequency modulation" (F.M. for short), although more complex, has certain advantages.

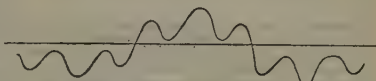
In this system the amplitude of the carrier wave remains unchanged, and its frequency is varied at a rate corresponding with that of the programme. Until fairly recently frequency modulation had not been used to any great extent, chiefly on account of the more complicated apparatus necessary. Under suitable conditions, however, a transmitter using this system can offer improved fidelity, greater freedom from interference, and a larger broadcast service area than a comparable amplitude-modulated transmitter. On May 2, 1955, the B.B.C. started the first regular frequency-modulated, very high frequency (v.h.f.) broadcasting service in this country from its new

transmitting station at Wrotham, Kent. This service has brought relief from foreign interference to many listeners living in London and South-east England. The Wrotham transmissions were followed during 1955 by similar services from medium-power transmitters at Pontop Pike, near Newcastle-on-Tyne, and Wenvoe, near Cardiff, together with a temporary station at Penmon in Anglesey. Two further medium-power v.h.f. f.m. stations are expected to be in service early in 1956, one at Divis, near Belfast, and the other at Meldrum, in Aberdeenshire. Further stations are being built, and should be completed in 1956; at the end of the year it is expected that some 84 per cent. of the population of Great Britain will be able to avail themselves of a v.h.f. f.m. broadcasting service.

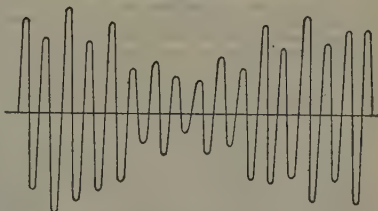
The modern high-power transmitting station is an elaborate and complicated plant occupying—with its associated masts and aerial systems—many acres of ground. Nowadays most stations draw their power from the public electricity-supply mains, although frequently stand-by generating plant is installed (and in some instances very large-capacity storage batteries from which power can be drawn for limited periods) for use in the event of a breakdown.



(a) UNMODULATED CARRIER WAVE.



(b) MODULATING IMPULSES.



(c) MODULATED WAVE.

FIG. 2.

Power from the mains (or the station's own generating plant) is fed either to motor-generator sets or to transformers and rectifiers, which produce the necessary voltages for operating the transmitters. The "high-tension" supply for a medium-power transmitter is often of the order of 15,000–20,000 volts, nearly one hundred times that of the ordinary domestic lighting mains! Most up-to-date stations have a control desk from which the filament, grid bias, high-tension, and other supplies are controlled, and on which are duplicated all the voltmeters, ammeters, and other instruments necessary to inform the control engineer of the operating conditions of the transmitter itself.

In the early (low-power) stages the valves are cooled by normal heat radiation in the same way as a receiving valve, but as the power handled by the valves increases it is necessary to provide a blast of air or to use water-cooling to carry away the waste heat. The cooling air is drawn from outside, filtered and blown round the valves through ducts specially designed to direct the air where it is most needed (in some instances the air after being heated by its passage over the valves can be used to



warm the station building in cold weather). When water-cooled valves are used the water is circulated through water-jackets round the valve anodes. All the coils, condensers, resistances, and other components associated with the valves are enclosed with them in glass-fronted steel cubicles, the doors of which are interlocked in such a way as to prevent the high voltages being switched on when the doors are open or, alternatively, to switch them off if the doors are accidentally opened while the transmitter is working. This arrangement and other more complicated interlock schemes protect both the engineers operating the station and the equipment itself from accident.

Adjacent to the transmitter and its control desk there is usually a small control room which houses the amplifiers and equalisers associated with the lines bringing the programme from the studios. It is here that the necessary adjustments, described earlier, are carried out before the programme is passed to the transmitter proper.

Individual transmitters may vary very much in detail from the above description, since there are so many different varieties, long-, medium-, short-, or very-short-wave transmitters; some used solely for radio-telegraphy, others for long-distance radio-telephony, for communication with ships at sea, for broadcasting, for television, for radar, and for other purposes.

Some broadcast transmitters are automatic. They are switched on and off by a time switch, and whilst in operation are monitored by automatic equipment which will call attention to any faults which may develop by ringing an alarm at the nearest manned station. In addition, the automatic monitor can, in certain circumstances, change over, or switch off, defective items of equipment without interrupting the service.

**Aerials.**—The function of the aerial is to place the high-frequency oscillations generated in the transmitter in contact with as great a volume of space as possible, so as to permit a relatively large radiation of energy into space. Conversely, a receiving aerial, because it is in contact with a comparatively large volume of space, can absorb a larger amount of energy from the passing wave than the receiver circuits themselves. All radio receivers—except those fitted with a built-in "frame" aerial—should therefore be connected to an efficient aerial in order to obtain the best results.

Transmitting aerials vary considerably in design and construction, according to the wavelengths upon which they are intended to operate and the degree of directivity which it is desired to achieve.

Medium-wave aerials generally consist of an earthed vertical radiator a quarter of a wavelength long, this being the best condition for efficient radiation with such an aerial. Sometimes a horizontal "roof" is added to the vertical part, and a "loading coil" is usually provided by means of which the aerial may be "tuned" over a range of wavelengths. By using more than one vertical aerial it is possible to direct the radiated energy towards a particular area, but the effect is limited. In recent years "mast-radiators" have come into use in increasing numbers. In an aerial of this type the mast itself is mounted upon insulators, and the steelwork used for its construction becomes the radiating system. Such an arrangement is not only economical but also possesses other advantages. For example, by fitting a "capacity top"—a series of arms similar in appearance to the ribs of an umbrella—the electrical characteristics of the aerial, in particular its effective height, may be altered. Thus the aerial may be tuned, and in certain circumstances the shape of its service area can be slightly adjusted, which is sometimes very valuable, particularly in the case of aerials being used for broadcast transmission. Mast radiators are sometimes divided into two parts by an additional insulator inserted into the structure at a chosen height. By feeding the output of the transmitter to the two sections of the mast separately—usually at their junction—the effect is that of an elevated half-wave aerial, and it can be adjusted to extend the fading-free range of the station.

Short-wave aerials are usually unearthed hori-

zontal lengths of wire, half a wavelength long, connected to the transmitter by feeder lines so arranged as to have no effect on the wavelength. Short radio waves are easily "beamed," that is to say they lend themselves to transmission in specific directions. In long-distance transmission this is generally desirable, and it is achieved by increasing the radiated energy in certain directions and suppressing it in others. The energy is concentrated not only in azimuthal directions, but, so that it may reach only the desired reflecting point in the ionosphere, in vertical directions as well. This is usually done by using an aerial "array" consisting of a number of half-wave aerials arranged in rows, in both the horizontal and vertical planes; in general, the greater the number of aerial elements there are, the narrower can the beam be made in both planes. The vertical angle in which the beam is projected is controlled by the height at which the array is suspended above the ground.

In order to suppress the energy in unwanted directions a "reflector curtain" is hung behind the main array and spaced a quarter of a wavelength from it. This "curtain" consists of a similar arrangement of half-wave aerials, but it is not fed with energy from the transmitter. If it is desired to transmit at different times to places lying in opposite directions, special switching facilities are often provided for the arrays. These are so arranged that when a particular aerial has finished transmitting in, say, a northerly direction, it can serve as a reflector for the aerial working in a southerly direction, which had previously acted as a reflector for the north-bound transmission. By such means economies can be effected in the use of materials and ground space.

There are several other varieties of short-wave aerials available, and the precise type to be used for any project is largely dictated by the particular purpose for which it is required and any special circumstances which may be involved.

For television and other ultra-short-wave transmissions it is also usual to employ half-wave aerials, but in these cases the wavelengths are such that rigid conductors may be used. The most important single factor to be considered in this wave range is the height of the aerials above the ground. They should be as high as practicable, as, at these very high frequencies, the waves travel directly through the lower atmosphere, and the greater the height of the aerial the greater the distance range of the transmissions. The most common aerial used in this wave band is the half-wave dipole, which is frequently constructed from rods or tubes, although some transmitting aerials are made from heavy metal strips. For receiving, a rigid vertical rod with a reflector behind it—the familiar "H" aerial—is most commonly used, and increased "gain" in the direction desired is often achieved by the fitting of additional elements in front of the receiving aerial itself. Yet another type of transmitting aerial, suitable for use at very high frequencies, is known as the "slot aerial," and consists of one or more narrow rectangular apertures half a wavelength long in an electrically conductive sheet. In practice, the slots are usually arranged round the periphery of a vertical metal cylinder so as to give a uniform signal in all directions. Each slot is energised by a vertical rod placed just behind it inside the cylinder and connected to the transmitter by a co-axial feeder. Since the actual slot may be filled with an insulating material, such as Perspex, an aerial of this type can readily be made weather-proof, and the mechanical construction is relatively simple.

**Radio Receivers.**—Although the broadcast receiver is only one of the many types of radio-receiving equipment in everyday use, the general principles underlying its operation are common to all radio-receiving apparatus.

As stated earlier, its main functions are to accept the energy picked up by the aerial from the passing radio waves; to separate the low-frequency programme impulses from the high-frequency carrier wave; and, having separated them, to amplify these programme impulses to a power level sufficient to operate the subsequent apparatus, usually a loudspeaker, for reconversion into sound.

**Tuning the Receiver.**—In order that the receiver may respond to the waves sent out by the station it is desired to listen to, and not to those of stations operating on other wavelengths, means must be provided to adjust it to accept signals of one wavelength, and to reject the others. This process is called "tuning" and makes use of the principle of "resonance."

When travelling by bus it is frequently noticed that at a certain speed a particular window will commence to rattle violently; above or below that speed the window is quiet. This phenomenon is caused by mechanical resonance. The window—due to its shape and size and the physical properties of the materials of which it is made—possesses a certain natural frequency of vibration. When the engine of the bus is running at the speed which sets up vibrations in the vehicle at or very near that natural frequency, the window starts to vibrate in sympathy. Now in electrical circuits which are made up of inductance and capacity each individual circuit has a resonant frequency. At this particular frequency the circuit will pass its maximum current, and, like the bus window, if it is "excited," this time by electrical oscillations at or very near that resonant frequency, it will respond readily, whereas it will be almost unaffected by oscillations of a different frequency. In the radio receiver therefore it is arranged, by the process of "tuning," to alter the resonant frequency of the circuit to which the oscillations picked up by the aerial are fed. This alteration can be achieved either by changing the number of turns of wire on the tuning inductance, or by altering the capacity of the tuning condenser, or both. In practice, it is not very convenient to keep changing the number of turns of wire on the coil, so the circuits are generally arranged in such a way that for a particular waveband—say the long waveband—the inductance is kept constant and the capacity of a variable condenser connected across it is varied to effect the necessary changes in the tuning circuit. To make the operation of the receiver as simple as possible it is usual to choose a value of condenser and inductance such that a complete waveband can be tuned by altering the condenser from maximum capacity to minimum capacity. When it is desired to make a larger change in the wavelengths to which the set will respond, the value of the inductance is changed—by switching in another coil, by the operation of the "wave-change" switch. This enables the same condenser to vary the circuit characteristics over yet another range, the wave-change switch usually providing "long" and "medium"-wave ranges and often one or more "short"-wave range. The tuning condenser is operated by turning the tuning knob on the front of the receiver, the precise wavelength, or frequency, to which the set is tuned being indicated on a dial or other indicator suitably geared to the driving spindle of the variable condenser. Some broadcast receivers are equipped with push-buttons for tuning, and these buttons are either arranged to switch in and out different circuits, each tuned to a specific wavelength, or to operate an electric motor geared to the tuning condenser so that the latter is driven round to the required position and then stopped until a different button is pressed.

**Coils and Condensers.**—A very desirable, in fact almost essential, feature of a modern broadcast receiver is high selectivity. This means that it must be able to receive the desired station adequately, but without any overlapping and interference from others. It should be apparent from foregoing sections that if this result is to be achieved, the receiver must respond not to one precise frequency only, but rather to a small band of frequencies on either side of the carrier frequency. This is because the modulation of the carrier by the low-frequency programme impulses causes the radiated energy to be spread over a limited band of frequencies known as the "sidebands." In order that the quality of the received programme shall not be impaired, it is necessary that the receiver shall respond to these sidebands as well as the carrier. A selective receiver tuned to a given point will therefore respond to the desired carrier wave and its sidebands, but not to frequencies outside this range.

One important factor in securing a high degree

of selectivity is the efficiency of the tuning coils, and much care and ingenuity has been devoted to the design of modern coils in order to reduce all the avoidable losses to an absolute minimum. Almost equally important is the actual arrangement of the circuits themselves in the receiver. The use of several tuned circuits operating together is a potent influence in providing the selectivity necessary under modern conditions, when large numbers of transmitting stations are operating simultaneously on closely adjacent frequencies.

As described earlier, such circuits are generally tuned by varying the capacity of a condenser connected across a coil. The variable condensers usually consist of two sets of interleaving metal plates, one fixed and one moveable, insulated from each other by an air space or other insulator. The amount of capacity in circuit is determined by the degree of interleave of the plates, the moving set being controlled by the tuning knob. When several circuits are required to be tuned simultaneously the condensers in each circuit are "ganged" together by mounting them in one rigid assembly holding the fixed plates, and providing a common driving spindle for all the moving plates. The movement of the one tuning knob thus varies all the condensers at once, and so all the circuits are tuned together in one operation.

**Detectors.**—Having made provision to tune the receiver to the incoming waves, the next step is to incorporate within it some means of detecting the intelligence carried by them. This is necessary, because the incoming waves as received, although modulated by the programme, are still at frequencies far too great to be audible to the human ear, even if the loudspeaker could reproduce them. In some way therefore the low-frequency programme impulses must be sorted out from the carrier, and the latter removed. This is the function of the detector. What it does it to produce a low-frequency current in the receiver, a current which varies in sympathy with the amplitude of the waves being received. It does this in the way described below, where the detector is assumed to be a crystal.

Reference to Fig. 2 (c) will show that the low-frequency programme currents caused the variations in the amplitude of the carrier wave. The rate at which the amplitude of the carrier is changed therefore is the frequency of the programme current at any instant, and the amount by which the amplitude is changed is the strength or loudness of the programme. The detector, whether it be a crystal or a small metal rectifier, acts as a one-way device, and so when the high-frequency oscillations produced in the tuning circuit by the modulated carrier are applied to it, current passes freely in one direction, but not in the other. The result is that half of the high-frequency oscillations are stopped, and a series of pulses of high frequency are left, all acting in one direction. The rate of change of amplitude of these pulses is the same as that of the currents which modulated the carrier wave at the transmitter. The diagram Fig. 3 shows the pulses in

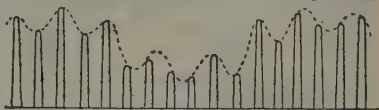


FIG. 3.—SHOWING DETECTION PROCESS.

full lines, and the varying mean current which results from them as a dashed line. Now if a pair of headphones is connected across the detector the individual pulses will be of such a high frequency that they will not operate the diaphragms in the headphones, but the mean current indicated by the dashed line is changing much more slowly, and to this slower change the diaphragms will respond. The mean current is, in fact, varying at low frequency, and is the modulation imparted to the carrier wave by the original programme sounds (compare Fig. 2 (b) with the dashed line of Fig. 3), and so the telephone diaphragms, as they respond to its variations, faithfully reproduce the sounds which caused the electrical impulses in the studio microphone.



**The Diode Valve Detector.**—Fleming's original thermionic valve had only two electrodes, and although the addition of more electrodes has increased its usefulness, the original two-electrode type or "diode," as it is called, is still used to-day, being one of the most popular modern detectors. The diode valve consists of the familiar highly evacuated glass envelope containing a fine wire filament and a metal plate called the "anode." If an electric current is passed through the filament it becomes heated and gives off electrons. When the anode of such a valve is positively charged it will attract the negatively charged electrons, which will flow through the valve to the anode and thence through the external circuit, thus producing an electric current. If, however, the anode is negatively charged it ceases to attract the negatively charged electrons emitted by the filament, and the current stops flowing. From this it will be clear that, if the high-frequency voltages set up in the receiver circuits by the radio waves are applied to the anode of a diode valve, current will flow through the valve during each positive half-cycle, while during each negative half-cycle the current will stop. Such a valve, therefore, behaves in a manner identical to the crystal detector already described, suppressing every other half-cycle of the high-frequency currents and allowing the remainder—all flowing in one direction—to pass. The resulting uni-directional current impulses produce a "mean valve current" varying at low frequency in the same way as that described for the crystal, and this low-frequency current can be used to actuate the diaphragms of the headphones.

**The Triode Valve.**—This valve, as its name suggests, is one which contains three electrodes, and was developed by Lee de Forest from Fleming's original diode.

It has a filament and an anode like the diode, but in addition it is fitted with a "grid." This grid is usually in the form of a fine wire mesh placed between the filament and the anode. Normally the electrons leaving the filament can pass through this grid without interruption, and reach the positively charged anode. If, however, the grid has a negative potential applied to it, it will restrict or even stop the flow of electrons to the anode, depending on the strength of the negative potential. This important property of a triode can be used to amplify weak signals so as to render them strong enough to be useful. If this amplification—the principle of which will be described later—is used before the detector stage it is called high-frequency or radio-frequency

receiving circuits are very weak, as they are only those set up by the incoming waves. If the ends of these circuits are connected between the grid and filament of a triode valve the oscillating voltages set up in them by the incoming waves will make the grid alternatively positive and negative. Now if the grid is positive it attracts electrons; if negative it repels them, thus the anode current, or current passing through the valve, is caused to rise and fall in sympathy with the incoming signals. These incoming signal voltages are thus enabled to control the much greater power flowing between anode and filament, which is derived from local batteries or from the electric mains.

Fig. 4 explains this action more clearly. The sloping curve on the left is a typical valve characteristic, and consists of a graph showing the relationship between anode current and grid voltage.

Let us suppose that the normal grid bias applied to the valve whose characteristic is shown in Fig. 4 is 1.5 volts. It will be seen that with this amount of bias the anode current will remain steady at a value of about 3.5 milliamps., corresponding to point A on the characteristic curve. Now the currents set up in the receiver circuits by the passing radio waves are very much less than this. So if the voltage produced by them is applied to the grid, and, for example, varies the grid potential from zero to 3 volts negative, as indicated by the curve below the base line, the anode current will be varied between point B and point C on the curve. Thus we have a varying current many times stronger than the original, yet, as will be seen from the curve on the right, varying exactly in sympathy with the original.

If a coil is connected in the anode circuit the rising and falling current passing through it produces a rising and falling magnetic field, which, in turn, sets up an oscillating voltage across the coil. Since the changes of anode current are greater than the original changes set up by the radio waves in the first circuit, the voltages appearing across the anode coil will be correspondingly greater, and thus the original signals have reproduced themselves—via the valve—in a considerably amplified form.

A similar type of valve and circuit arrangement may be used for amplifying the low-frequency voltages obtained after detection, thus strengthening them to a power level sufficient to operate a loudspeaker.

The triode can also be used as a detector if a suitable circuit arrangement is employed. One method—known as the "anode bend" method—is to arrange for the grid-bias voltage to restrict the anode current to the point where the curve bends sharply—indicated by point X in Fig. 4. When biased to this point, only grid voltages swinging in a positive direction are able to increase the anode current, negative swings having no effect upon it. In this way the alternate negative half-waves are suppressed, and the circuit behaves in much the same manner as that of the diode described earlier and illustrated in Fig. 3. Yet another method is to insert a fixed condenser in the grid lead, and a resistance—known as the grid leak—between grid and filament.

**Multi-Electrode Valves.**—So far we have dealt only with the simpler types of valve—the diode and the triode—but nowadays there are many more complicated types. These have been evolved by the introduction of additional electrodes into the earlier valves in order to improve their amplifying properties for both high and low frequencies, and for various other purposes.

One of the deficiencies of the triode valve is that when used as a high-frequency amplifier there is a limit to the amount of amplification that can be attained owing to the liability of energy being fed back from the anode to the grid—as it were through a capacity—thus causing the arrangement to become unstable. This tendency can be overcome by interposing an extra grid between the anode and the ordinary control grid, and valves of this type—known as the "screen-grid"—are often employed for high-frequency amplification. The extra grid, which is kept at a steady potential somewhat lower than that of the anode, screens the latter from the control grid, prevents the feed-

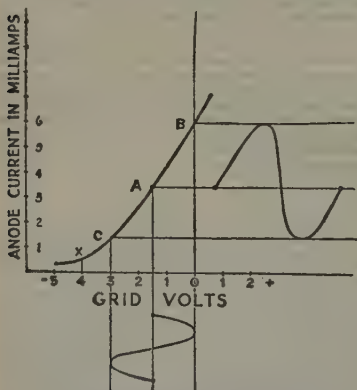


FIG. 4.—SHOWING RELATION BETWEEN GRID VOLTS AND ANODE CURRENT.

amplification, and if used after the detector stage it is called low-frequency amplification.

Both types of amplification are frequently employed to increase the "sensitivity" of a modern radio receiver. The currents flowing in the first

back of energy from the anode to the control grid, and so permits greater amplification to be achieved without instability.

For low-frequency amplifiers the "pentode" valve, having five electrodes, is commonly used. This valve is capable of handling a large amount of power and has a high amplification factor; it is therefore particularly suitable as a final amplifier in a receiver, where it can be utilised to provide a relatively large amount of power for the loudspeaker. Five electrode valves of a different type are also employed for high-frequency amplification.

It is also common practice to perform the functions of more than one valve within a single glass bulb—i.e., one valve envelope may, for example, contain assemblies to amplify high-frequency oscillations, generate local oscillations, and detect. The diode detector is often included within the bulb of another valve: sometimes there are two diodes—one to act as a detector and the other for automatic volume control—as well as a triode assembly, all within the one bulb. In super-heterodyne receivers it is necessary to generate local oscillations in the receiver itself and to mix these with those set up by the incoming signals, and for this purpose several different valve types having various arrangements of electrodes are in use.

**The Super-Heterodyne Receiver.**—Most modern broadcast receivers are of the "super-heterodyne" type, in which the "heterodyne" principle of reception is employed. In this system local high-frequency oscillations are generated within the receiver, but of a slightly different frequency from those being received. The two sets of oscillations are allowed to "beat" together, and the result is that, after detection, a third set of oscillations of yet another frequency is produced.

The advantages of the super-heterodyne receiver are that the necessity for tuning all the circuits of the amplifiers to the wavelength or frequency of the incoming wave is avoided, and most of the amplification required can be performed at one fixed high frequency, no matter what wavelength is being received. This permits the amplification to be carried out in a particularly efficient way, since the circuits can be designed to work at maximum efficiency when only a single frequency has to be handled; furthermore, the system greatly facilitates interference-free reception.

The super-heterodyne receiver uses an oscillator so arranged as to be always mistuned to the frequency of the incoming signals by a certain fixed amount, so that "beats" at, for example, 465 kilocycles per second are produced, irrespective of the frequency being received. These beats are detected and passed to the anode of a valve, where oscillations at 465 kilocycles per second are established. This frequency is termed the "intermediate frequency," and the circuits of the succeeding amplifying valves remain constantly tuned to this one frequency. If a broadcast programme is being received, then the amplitude of the intermediate frequency oscillations varies at audio-frequency, and a second detector is required to sort out the audio-frequencies of the programme from the intermediate frequency, so that they may be fed to the loudspeaker.

**Automatic Volume Control.**—As has already been explained, the anode current flowing through a valve may be limited by the application of a steady negative voltage to its grid. This is called grid "bias," and it may be derived from a battery or from the voltage developed across a resistance in the circuit. In modern receivers this characteristic is made use of to counteract "fading," i.e., the rise and fall in the strength of the incoming waves due to variations taking place during their journey from the transmitter to the receiver. A diode valve is incorporated in the circuits following the intermediate-frequency amplifier and supplied with voltages at the intermediate frequency. These are then detected and fed back to the control grids of the pre-detector amplifiers. Thus, when the strength of the incoming signals rises above normal a negative voltage is applied to the amplifying valve control-grids, and so their amplification is reduced. Conversely, when the

incoming signal strength drops below normal, less negative voltage is fed back from the diode to the amplifier-valve grids, their amplification is increased, and more voltage is delivered to the second detector. In this way most types of fading can be overcome, or at least considerably reduced, and the input to the low-frequency end of the receiver maintained at an approximately constant level.

**Power Supplies.**—Portable radio receivers and certain sets intended for use, for example, in ship's lifeboats or in remote country districts, derive their power from batteries, but the vast majority of modern receivers are fed from the electricity-supply mains. There are two kinds, alternating current (A.C.) and direct current (D.C.). Alternating current mains supply is nowadays almost universal, and in the A.C. mains-operated receiver power is supplied to a transformer which changes the voltage to values appropriate for the "high-tension" and "low-tension" supplies for the valves. In the case of the "high-tension" supply the power has to be converted to direct current (D.C.), and this is done by a rectifier, which may be a metal-rectifier, a mercury-vapour rectifier, or a double-diode valve. Like the detector any of these rectifiers produces a series of unidirectional pulses of current. These pulses require "smoothing," and this is carried out by means of condensers and a choke coil, the final smoothed D.C. supply being fed at a suitable voltage to the anodes of the receiver valves.

Receivers working from D.C. mains cannot be fitted with transformers, and their circuits have therefore to be designed to operate at voltages slightly below those commonly found in D.C. mains supplies. Resistances are used to provide voltages below those of the mains, and smoothing equipment is incorporated to remove any "ripple" present in the supply, as this, unless smoothed out, would produce unwanted noises in the programme heard from the loudspeaker.

The valves may be heated directly or indirectly, and the filaments of the directly heated type, or the heaters of the indirectly heated type, are supplied from low-voltage windings provided for the purpose on the mains transformer in the case of A.C. operated sets. In the case of sets operated from D.C. mains they are supplied through high resistances which "drop" the mains voltage to the appropriate value.

## TELEVISION.

**Historical.**—So important is the sense of sight that men have, from very early times, been constantly trying to increase its range and to enlarge its power. It is not surprising, therefore, that many of the scientific discoveries that have gone to make television possible took place before radio itself had become a practical proposition. One of the most significant of these was the result of a pure accident, which led to the discovery by Willoughby Smith in 1873 that the electrical properties of selenium vary according to the amount of light to which it is exposed. This discovery pointed to the possibility of converting light waves into electrical impulses.

Here certainly was the first requirement for the transmission of sight by radio or by wire, but it was evidently by no means enough, for it did not show how all the infinite variations of light and shade in a scene were to be transmitted to a distance and yet presented to the viewer's eye simultaneously. It was evident that the scene would have to be broken down into a number of small elements, each of which could be transmitted separately and then reassembled at the receiving point. The thing must be done so rapidly as to deceive the eye into thinking that it sees all the elements at once, and furthermore, consecutive pictures must be built up so rapidly as to give the eye the impression that it sees a continuous scene.

A means of doing this was provided by Nipkow in 1884, when he invented his famous scanning disc, and later Weiller invented the mirror drum for the same purpose. Such mechanical devices as these held the field for many years, and in 1923



Baird in this country and Jenkins in America were both using them for the experiments which, in 1925, led to the successful transmission of shadows and simple outlines. It was not until 1926, however, that the first practical demonstration of television, as we understand it, took place. In London, on 27th January of that year Baird transmitted by radio moving pictures of living human faces over a short distance.

In 1927 transmission of a picture by wire over a distance of 250 miles took place in America, and the demonstration was repeated by radio shortly afterwards.

In 1929 the B.B.C. gave facilities to Baird Television Ltd. for experimental television transmissions. The programmes, which originated in Baird's studio in Long Acre, were radiated by the B.B.C.'s Oxford Street (2LO) station on a wavelength of 365 metres. These transmissions used 30 scanning lines to the picture, and 12½ pictures per second were transmitted. The Oxford Street station radiated vision only, but in 1930 this low-definition television service was transferred to the B.B.C.'s new London Regional transmitting station at Brookmans Park, and sound was added to the programmes. The 30-line transmissions were of sufficient technical interest for the B.B.C. to equip one of the studios in Broadcasting House, London, with Baird apparatus, and this was brought into operation in 1932.

At this time much thought and energy was being expended upon the problem of improving the "definition" of the television pictures, and it was becoming apparent that a satisfactory standard could not be reached using mechanical scanning methods. Attention was returned to an idea which had been put forward by A. A. Campbell Swinton as long ago as 1908, when he had suggested a television system using cathode-ray tubes at both the transmitter and receiver. He had expanded this idea in his presidential address to the Röntgen Society in 1911, when he envisaged a special type of cathode-ray tube at the transmitter—the forerunner of the television "camera" of to-day. At the same time he described in detail arrangements for moving the beams of the transmitting and receiving tubes exactly in synchronism. The great advantage of this idea was that by using an agent like the cathode-ray, which possesses practically no weight or inertia, and is, therefore, capable of being swung about with tremendous speed and accuracy, the great difficulty with the mechanical systems of securing the extremely accurate yet rapid motion of the scanner, disappeared.

By 1934 "cameras" on these principles had been developed both by the Marconi-E.M.I. Co. in this country and by Zworykin in America, and it seemed possible that a television service with markedly improved definition might be practicable. In May 1934 the Postmaster-General appointed a committee under the chairmanship of Lord Selsdon to report on the relative merits of the various systems then being developed.

On the recommendations of this committee the B.B.C. was entrusted with the task of erecting a television transmitting station at Alexandra Palace, London, and Baird Television Ltd. and the Marconi-E.M.I. Television Co. Ltd. were invited to tender for the supply of apparatus for their respective systems. These two systems were operated alternately, the Baird system on 240 lines, 25 pictures per second with sequential scanning; the Marconi-E.M.I. system on 405 lines, 25 pictures per second with interlaced scanning, giving 50 frames per second. The Radio Exhibition at Olympia in August 1936 was the occasion of the first public transmissions by the two systems from Alexandra Palace on an experimental basis, and the station recommenced transmissions with a series of trial programmes in October, these lasting for two hours daily.

The Alexandra Palace Station was formally opened by the Postmaster-General on 2nd November 1936, and this marked the start of the world's first public high-definition television service. Programmes were radiated for two hours each day, the two alternative systems being used during alternate weeks. On 6th February, 1937, the Postmaster-General announced that the Television Advisory Committee, as a result of the experience gained from these transmissions,

recommended the adoption of a single set of standards—those of the Marconi-E.M.I. Co. Accordingly, from 6th February, 1937, this became the standard system for British Television, and the service from Alexandra Palace continued until the outbreak of war, when the station closed down. Alexandra Palace reopened to provide a television service for the London area on 7th June, 1946, using the pre-war standards.

Since that date the B.B.C. has brought several new high-, medium-, and low-power television transmitting stations into operation, and at the end of 1955 its television service was available to 93 per cent. of the population of Great Britain. Many other stations are, of course, operating in America, Europe, and elsewhere.

The London Television Station was moved to Crystal Palace, Sydenham, in March 1956, when its power was increased. This and other measures will increase the B.B.C.'s television service coverage still further.

The B.B.C. has in existence plans for the provision of alternative programmes and for the development of a system of colour television. The Television Advisory Committee has recommended, however, that any colour television system which may be used in the future should be so arranged that its transmission would provide black-and-white pictures on receivers not designed for colour. To facilitate development work on the many problems associated with a colour-television transmission system the B.B.C., in conjunction with the British Radio Equipment Manufacturers Association, radiated a series of colour test transmissions from its Alexandra Palace station in the autumn of 1955.

In addition to the television programmes provided by the B.B.C., separate programmes have, since September 22, 1955, been radiated by the Independent Television Authority from its station near Croydon, Surrey. The I.T.A. plans further stations in other parts of the country which will increase the coverage of the Authority's programmes.

**The General Principles.**—There are certain fundamental differences between the broadcasting of sound and television, and these differences are mainly concerned with the senses by which the broadcasts are perceived. The ear, with which sound broadcasting is concerned, will respond to a single note, but if a chord is struck it does not differentiate between each individual note, but presents to the brain a composite sound made up of all the notes in the chord. In all cases where there is a combination of sounds, such, for example, as in speech or music, it is a complex wave combining all the sounds together which excites the ear-drum and is passed to the brain.

The sense of sight, however, is completely different in its method of operation, and to understand the problems of television it is necessary to consider the action of the human eye. Basically the eye consists of a lens which projects an image of the scene before it upon the retina, a light-sensitive screen at the back of the eye. The retina is made up of several millions of tiny light-sensitive elements, each quite separate and distinct from its neighbours, and each separately connected to the brain by an individual fibre in the optic nerve. Thus the eye is a very complex organ, and it is able to pick out numbers of tiny details from a scene and convey each detail separately and simultaneously to the brain. It does not send a blend of different points of light and shade in the same way that the ear sends a blend of different sounds; if it did the brain would receive a completely unintelligible blur. From this it will be seen that a television system which transmitted a mixture of detail would be useless; it must transmit all the details in a scene separately, yet almost simultaneously, and re-assemble them at such a speed that the eye cannot observe the building-up process. The photo-electric cell reacts to light in a manner similar to the light-sensitive elements of the eye, and would therefore reproduce picture details as electrical impulses, but in order to produce a picture having good definition it is necessary to transmit nearly a quarter of a million separate details. As it is obviously out of the question to use such a large number of cells,

each requiring a separate radio transmitter and receiver, to convey the information, some artifice is necessary to make television practicable. The one used is known as "scanning." This process, which is carried out in the television camera, consists of dissecting the scene into a large number of small pieces, rather like the dots visible in a newspaper reproduction of a photograph. Each one is then transmitted separately, and they are re-assembled at the receiver so rapidly that the eye is tricked into believing that it sees the whole picture at the same time.

In the scanning process the picture is divided up into a large number of horizontal lines, each line consisting of a number of the small pieces just mentioned, and the detail in each line is detected by the scanning beam and faithfully reproduced by a similar beam at the receiver. The scanner also transmits "synchronising pulses," which tell the receiver when to start each new line and each new "frame" or picture. As the eye normally takes about  $\frac{1}{16}$  of a second to register a scene, any happening taking less than  $\frac{1}{16}$  of a second is not properly observed. Thus, if successive pictures are built up with sufficient rapidity the fact that they are separate pictures is not conveyed to the brain. The ordinary cinematograph relies on this principle of "persistence of vision" to create the impression of continuous movement.

The television standards used in Great Britain are based on the transmission of twenty-five complete pictures every second, each picture being composed of 405 horizontal lines. The twenty-five pictures per second are not in themselves sufficient to avoid "flicker," and this is overcome by using "interlaced" scanning. In this system the scanning beam first passes over all the odd-numbered lines from top to bottom of the picture, and then returns to the top and scans all the even numbered lines. The two "frames" thus produced mesh together to form the complete picture but as the frames are transmitted at the rate of fifty per second, there is no noticeable flicker.

Let us now consider some of the apparatus which makes television possible.

**The Television Camera.**—Although there are several different types of television camera in use at the present time, they all make use of a lens system to produce an image of the scene before the camera upon a photo-electric plate. Probably the simplest one to understand is the original "Emi-tron" camera, a simplified diagram of which is shown in Fig. 5. It will be seen to consist of a highly evacuated glass tube with a large bulb at one end. This bulb contains the mosaic screen (a) upon which is focused, by means of the lens (b), an image of the scene to be transmitted, the light rays passing through the "window" in the bulb. The mosaic screen consists of a sheet of insulating material backed by a metal plate. On the front of the screen is the mosaic itself, which is made up of several thousands of minute light-sensitive elements—each virtually a tiny photo-electric cell—every one of which is electrically separated from those surrounding it. Each of these little cells

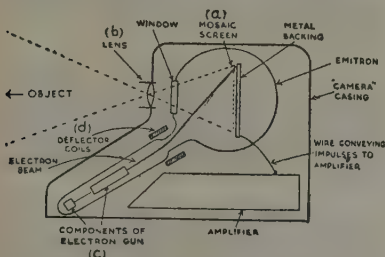


FIG. 5.—TELEVISION CAMERA.

takes up an electric charge proportional to the amount of light falling upon it, and thus the mosaic as a whole acquires an "electrical picture" of the scene. In the tube below the bulb is situated the

"electron gun" (c), which aims a finely focused beam of electrons at the mosaic. The deflector coils (d), near the neck of the tube, cause the beam of electrons to move across the mosaic in a series of horizontal lines, first the odd-numbered lines then the even-numbered lines, as mentioned earlier. As the electron beam passes over each of the "cells" of the mosaic, the cell is discharged and, as a result of this, a series of minute electrical impulses is induced into the metal back plate of the screen, each impulse being proportional to the amount of light falling upon the cell from which it emanated. These impulses are extracted from the tube, along the wire which passes out of it. In this way the picture is taken from the camera spot by spot and line by line as a series of electrical impulses. These impulses are amplified and have added to them the "line-synchronising" and "frame-synchronising" pulses, and are finally used to modulate the carrier wave of the vision transmitter, which carries them through space to the receiver.

**The Television Studio.**—As with sound broadcasting there are several intermediate stages between the camera and the transmitter. In this country the studios operated by the B.B.C. at Alexandra Palace and Lime Grove contain up to four cameras each, and their outputs are taken to the "vision" mixer panel in the vision control room associated with each studio. In this room the pictures viewed by each camera (and sometimes a picture obtained from a "film scanner") are displayed on picture monitors in front of the producer. As the programme proceeds he and his assistant select the particular camera or film scanner output to be transmitted. They can make an instantaneous change from one picture to another, fade one out and another in, or superimpose one upon another according to the programme requirements.

The film scanner is a device which allows cinematograph film pictures to be included in television programmes either for effects purposes or even for a full-length item such as the Television News-reels, in much the same way that the gramophone pick-up allows records to be used in sound broadcasts.

The outputs from the individual studio control rooms are passed through a central control room which performs a similar function to that of its sound counterpart. In addition, means are provided for adjusting the technical quality of the pictures. From the central control room the vision signals are fed to the distribution network linking the studio centres with the transmitters.

**Television Distribution Network.**—This is the apparatus employed for conveying the television programme from the studio to the distant transmitters, and in this country the G.P.O. provide and maintain this equipment. Since the frequency range of picture signals is very much greater than that necessary for sound broadcasting, different and more complex apparatus is required. Cables are used for conveying the picture signals from London to Birmingham, although a radio-link is also available in case of need. The former are of a type known as "co-axial" cables, and are specially designed to carry very high frequency currents. Since the losses are greater at vision than at sound frequencies, repeater stations have to be closer together than would be necessary for sound circuits. Co-axial cables are also used between Birmingham and Manchester and London and Cardiff. The programme for the Kirk o' Shotts station in Scotland is relayed from Manchester by a series of radio links.

In the case of some stations, such as Rowridge in the Isle of Wight, Meldrum near Aberdeen, Divis in Northern Ireland, and Norwich, the vision programme from one of the high-power transmitting stations is received by the G.P.O. on specially designed receiving equipment. It is then passed either directly over a short length of cable or over one or more radio links to the transmitting station.

**The Television Transmitter.**—The principle of the television transmitter is similar to that of transmitters used for sound broadcasting, except



for certain special features, and for the fact that it operates on very much higher frequencies. In order to convey the extraordinarily large number of impulses which go to make up the vision information, the frequency band required for the radiated energy is much wider than for a sound transmission, and this large band-width of about 5 Mc/s. (5 million cycles per second) can only be provided in the very high frequency bands. The television transmitting stations at present operating in Great Britain occupy the frequency band 41-68 Mc/s. and 174-216 Mc/s., Bands I and III respectively.

As explained earlier, the use of these very high frequencies limits the range of the transmitters, and consequently good reception is usually obtained only out to a distance of about 50 miles, although satisfactory pictures are often obtained beyond this distance under favourable conditions. The bands mentioned above are divided into channels, Nos. 1-5 in Band I and Nos. 6-13 in Band III. Each of these channels carries, or will eventually carry, a television programme—although not all channels will be receivable in all districts—and in some cases transmitters widely separated geographically may share the same channel. For example, the B.B.C. transmitters at Kirk o' Shotts in Scotland and Rowridge in the Isle of Wight share channel 3, whilst the I.T.A. transmitter in London will eventually share channel 9 with its counterpart in Lancashire.

**The Television Receiver.**—So that viewers may select the channel or channels appropriate to the districts in which they live, most modern television receivers are fitted with some form of tuning device covering all thirteen channels in Bands I and III. There is, of course, no point in providing continuous tuning as is commonly done in sound receivers. The vision and sound signals from the transmitters are received by a single aerial, but, owing to their being on different frequencies they are separated by the tuned circuits in the receiver, and fed to the vision and sound sections of the receiver respectively, the sound section following normal broadcast-receiver practice. The vision signals are amplified in much the same way as that described for sound broadcasting, and are ultimately applied to the circuits controlling the cathode-ray tube. This consists of an evacuated glass tube containing an electrode which, when heated, emits electrons. The electrons are accelerated and focused into a very thin beam, which can be deflected in vertical and horizontal planes by coils provided for the purpose. Beyond these coils the glass tube is splayed out, and its end is flattened so as to form the viewing screen, the inside of this part being coated with a very thin layer of fluorescent material which glows when bombarded by the electron beam. The brilliance of the glow is proportional to the number and speed of the electrons striking it. The amplified vision signals are caused to vary the strength of this beam, and it is made to move across the screen in horizontal lines one below the other, this movement being controlled by the "line-synchronising pulses," which are added to the vision signal before transmission. It will be seen, therefore, that as the beam moves across a particular line it causes the fluorescent material on the end of the tube to glow more or less brightly according to the strength of signal which the cathode-ray tube receives, and as this signal is originally derived from the impulses from the camera tube, the light and shade of the line varies according to the light and shade of the corresponding line of the scene which the camera is viewing. In this way the original picture is re-assembled spot by spot and line by line. At the end of each picture or "frame" the frame-synchronising pulse deflects the electron beam back to the top line, so that it is ready to trace out the succeeding frame.

The size of the picture in "direct-viewing" receivers is, therefore, decided by the size of the cathode-ray tube, and although pictures up to 21 inches across can be obtained by direct viewing, tubes which give pictures of this size are exceedingly costly. As, however, the demand for large pictures is considerable, a different type of receiver has been produced to meet it. Known as the "projection" receiver, it uses a small cathode-

ray tube having a screen only about 2½ inches in diameter, but arranged to provide a very bright picture. The light from this small tube is passed through an optical system of mirrors and lenses and thrown on to a translucent screen. In this way the picture on the screen can be made very much larger than that on the actual tube by purely optical means.

The above description of the elements of the television system is, of course, a very brief and simplified one, and there remain several aspects and developments of television that we can do no more than mention. The technique for covering outside television broadcasts, for example, is highly developed in this country, though it follows, in general, along the lines of that described for giving broadcasts from the studio. On the Continent standards different from the British 405-line pictures are in use (441, 625, and 819 lines per picture), and this fact has complicated the international exchange of television programmes. Nevertheless, the B.B.C. has developed means for overcoming this difficulty, and in 1952 pictures from the French system were relayed by the B.B.C., whilst the B.B.C. television broadcasts of the Coronation were relayed over the systems of several Continental countries. Frequent exchanges of television programmes with countries on the Continent now take place, and the first part of a permanent television link between London and Europe—a two-way co-axial cable link between London and St. Margaret's Bay—is already in use. Considerable success has been achieved in the field of colour television, and it seems possible that this development may reach the public in the not too distant future. Thus it will be seen that tremendous advances have taken place in the television field since Baird transmitted the first television picture only thirty years ago.

## RADAR.

**Historical.**—In September 1939 Britain's Fighting Services already had in regular operation a new radio technique, by means of which it was possible to detect the approach of hostile aircraft, to plot their positions, and to follow their movements, and by the aid of which the defending forces could be rapidly brought into contact with them. Though the principles of this device were well known abroad, Britain was the first country in the world to evolve a practical system of radar and to put it into regular operation.

The original English name for the technique was "Radiolocation," a term which well describes the process, but, during the war the "synthetic" word "Radar" was adopted from America, a word which we are given to understand is derived from the phrase "Radio Detecting And Ranging."

As in the case of so many of the inventions primarily developed for the purpose of waging war, many useful applications have been found for radar in times of peace, and, in particular, it has proved of great service as an aid to aerial and marine navigation.

The basic principle of radar is very similar to that of sight. We switch on a light in the dark, and we see an object because the light waves are reflected from it and return to our eye, which is able to detect them. Similarly, the radar station sees an object because the invisible radio waves sent out from the transmitter are reflected from it and return to the receiver, which is able to detect them.

The utilisation of radio waves for the detection of reflecting surfaces began with the classical experiment of Dr. (now Sir) Edward Appleton in 1925, which he conducted in order to demonstrate the existence of the Heaviside layer in the upper atmosphere. Then two American scientists found a somewhat different way of doing the same thing—they sent short, sharp "pulses" of radio energy up towards the sky, and found that the Heaviside layer reflected them and sent them down again so that they returned to earth as echoes.

The development of these methods of atmospheric-layer location into a radar system for the detection of smaller objects was only a matter of time, and in this country was placed in the hands of a team of scientists headed by Sir Robert Watson Watt. An experimental station was set up on the East Coast, and soon it became possible to see, on a cathode-ray tube, a clear image of an aircraft flying many miles beyond the range of ordinary vision, and to determine with good accuracy its position in space. Next the process had to be reduced from a scientific experiment to a common routine measurement, capable of being performed by relatively unskilled personnel, whilst equipment had to be produced capable of standing up to the wear and tear of continuous operation under Service conditions. As has been said, all these things were accomplished before war began, whilst during its course developments took place which tremendously improved the methods and instruments used.

**Principles.**—The essential difference between radar and the older methods of radio position finding is that with radar no active co-operation on the part of the located object is required. Radio waves are sent out from the radar station and, being reflected or scattered by the object whose position is desired, some of them are returned to the radar station, which is then able to tell the direction and distance of the object from which they were reflected, and, in the case of an aircraft, the elevation angle as well.

All that is necessary for this to happen is that the object to be located shall be of a material possessing different electrical properties from those of the medium surrounding it, in which case, when a radio wave impinges on it, part of the energy is scattered at the surface of the new medium. What happens is that the wave sets up electric currents in the material, and these re-radiate energy, so that the new material behaves like a small transmitter. Fig. 6 will help to make the

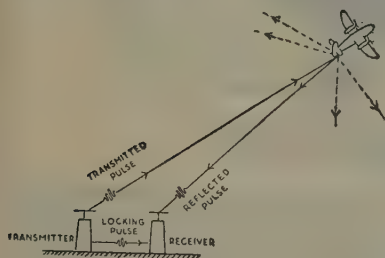


FIG. 6.—RADAR SYSTEM.

matter clear. Note that the reflected waves go out in all directions, but that some part of the energy is returned in the direction from which the wave has come. It is thus received at the radar station again, and from it is obtained the desired information about the object from which it was reflected.

A radar station consists of a transmitter and receiver working usually on centimetre wavelengths, and employing directional aerials which concentrate the radiated energy in the form of a sharp beam. The transmitting aerial can be swept around so as to cover different azimuthal and vertical directions, and the receiver aerial also sweeps around so as to receive only from the direction in which the transmitted beam is being sent.

The energy is sent in very short bursts called "pulses," and the receiver output is connected to a cathode-ray tube, upon whose screen the received pulses appear, as in Fig. 7. It is so arranged that as a pulse is sent off the fluorescent spot starts its sweep from the left of the tube, at O. A certain time will elapse before the reflected pulse is received, during which time the fluorescent spot is moving to the right (towards A) at a certain speed, and a bright line therefore appears on the

screen. When the reflected pulse is received it is made to produce a deflection of the spot such as will produce a pattern like P in Fig. 7, and the position at which the pulse appears, as measured from the left, depends upon the time taken for the pulse to travel to the "target" and back, in other words upon its distance away. As we

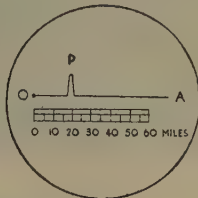


FIG. 7.—RADAR DISPLAY.

know that the speed at which the pulse travels is substantially 186,000 miles per second and as the speed at which the spot travels is also known, its sweep across the tube can be marked in a scale of miles, and the distance of the "target" read off directly.

The distance thus indicated is only one of the pieces of information necessary in order accurately to plot the actual position of the target. It is necessary also to ascertain its direction or azimuth, and, if the target be an aircraft, its angle of elevation above the horizontal, as well. The means for obtaining these vary somewhat with the wavelength used, but in most modern radar installations they are determined by training the receiving aerial most accurately in the direction from which the received pulses are coming, a fact which is indicated by maximum deflection of the spot on the cathode-ray tube. Then the azimuthal direction and angle of elevation are read off from horizontal and vertical scales, and, the range being observed from the position of the pulse along the tube, the position of the target in space is given.

**Radar Developments.**—The above is a brief outline of the basic principles of radar, and of its use in determining the position of a distant object, such as an aircraft or ship. Many variations and developments of the original idea have taken place, some of which have tremendously useful applications of a peace-time character. One or two of these may now be mentioned.

Quite early there was developed a special type of cathode-ray tube known as the "Plan Position Indicator" or P.P.I. In this the fluorescent spot is caused to start in the centre of the screen and to sweep outwards to the edge, but at the same time to revolve about the centre so that it covers the whole screen perhaps twenty times a minute. Used in conjunction with aerials which rotate in synchronism with the spot, this causes located objects to appear on the screen in their true position relative to that of the radar station, whose position is represented by a mark at the centre of the screen. Fluorescent screens with a long "afterglow" are used, so that the brighter spots indicating the located objects persist on the screen until the spot sweeps over them again.

A further development of this idea takes the form of a compact radar equipment for use on ships or aircraft, by means of which a kind of television picture of the area surrounding the ship, or that below the aircraft, is shown upon the screen of the cathode-ray tube. As fitted on ships the equipment consists of a radar transmitter and receiver working on centimetre wavelengths, with a small aerial which radiates a beam of energy, and which rotates in synchronism with the fluorescent spot of the P.P.I. tube. As the aerial rotates the beam sweeps over a large circle of territory corresponding to the size of the screen of the tube, the centre of which represents the point at which the ship is located. Anything that stands well up above the surrounding territory sends back strong reflections, whilst flat portions do not. Thus the surrounding sea appears black on the screen, ordinary level soil sends back weak



reflections which cause the screen to glow faintly, but buildings and other structures, coast-lines, ships, and other outstanding features send back strong reflections and the tube glows brightly. Since the receiving aerial is at any instant "seeing" only that part of the landscape being illuminated by the beam, and since the fluorescent spot is, at the same instant, moving over the appropriate part of the screen relative to the ship at the centre, every reflected echo appears at the correct position upon it. Thus a "map" of the surrounding territory appears upon the screen showing all the prominent features of the landscape. It may be imagined how useful this can be in marine or aerial navigation, for it enables the navigator virtually to see through darkness or through fog, and to observe with clarity those objects surrounding him which are dangerous to navigation under conditions when they would

running across the line joining the two stations. An instrument on the ship somewhat like an ordinary electricity-meter continuously records the maxima and minima passed through as the ship moves along, so that, when consulted by the navigator at any time it tells him the number of the "lane" which he is in. A third transmitter, whose waves also interact with those from the first produces another independent pattern of "lanes" which criss-crosses the first pattern, whilst a second instrument on the ship continuously records the ship's position in this pattern, and tells the navigator the number of the "lane" he is in within the second pattern.

Actually the "lanes" are divided into numerous subdivisions, which are indicated by the numerical indications of the two meters. In order to fix his position the navigator merely reads off the number indicated by the first meter and that indi-



FIG. 8.—THE DISPLAY SCREEN OF A SHIP'S "RADIOLOCATOR" PRODUCED BY THE MARCONI INTERNATIONAL MARINE COMMUNICATION CO., LTD.

The ship is in the Straits of Messina, its position being indicated by the white dot, and its direction of heading by the white line.

otherwise be totally invisible to him. This apparatus is of particular use when approaching or traversing a tortuous channel or estuary, and furthermore, since it permits of the observation of other mobile objects, it is of great help in the avoidance of collisions. Fig. 8 depicts the sort of display which appears upon the radar screen of a ship proceeding up a restricted channel, the instrument in use being the Marconi Company's "Radio-locator," and the ship's position being indicated by the dot in the centre, and its direction of heading by the thin white line.

A further class of navigational aids has been developed, and is now widely used, which, though not actually working on the radar principle, may conveniently be mentioned in this section. In these systems the aim is to produce, in one way or another, a radio "pattern" over a wide area, so that the ship or aircraft can, by observation of the radio signals, tell at which point in the "pattern" it lies, and so fix its position upon a chart or map. As an example of this class of radio navigational device we may mention the "Decca Navigator," an apparatus by means of which the geographical position of a ship or aircraft may be found instantaneously at any time. The system here is for several synchronised transmitting stations on shore continuously to emit unmodulated waves, which, because of the interaction between the waves from the separate stations, produce a "space pattern" over the adjacent land and sea territory which is recognisable by instrumental means. Thus the waves from two such stations can be made to interact, so as to produce a series of maxima and minima, which take the form of curved "lanes"

cated by the second, and then looks for the two correspondingly numbered lines in the two criss-crossing patterns on the chart. The point of intersection of these two lines is the ship's position. It will be appreciated that the above is a simplified description of the working of this system, and that various details have been omitted. It is easy to see, however, that such a continuously recording navigational aid is of great use in ships and aircraft, especially under conditions of fog or darkness, for it enables the position to be ascertained at any time with considerable accuracy, and independently of the ability to observe the usual navigational aids, such as lights, buoys, the sun, or the stars.

Other systems use synchronised transmitters from which pulses are sent out, and the receiver on the ship or aircraft is used to measure the transit times of the pulses from the different transmitters in the group. The measurement is done on a cathode-ray tube, and the position of the pulses on the tube trace indicates the position in a criss-crossing pattern of lines on a chart, similar to that just described.

It will be seen, therefore, that a ship fitted with radar by means of which it is able to "see" the main features of the surrounding territory, with the addition of an aid like the Decca Navigator by means of which its position is accurately indicated at any time, is able to navigate through darkness and fog with almost the same security as would ordinarily apply under conditions of clear visibility. Thus has radio, apart entirely from its value as a means of communication, continued to prove a boon to the seaman and the airman.

# Family Affairs



## LIST OF CONTENTS

I. Human Relations	926-33
II. House Purchase	933-36
III. Guide to Insurance	937-38



# Family Affairs

## INTRODUCTION.

THIS section has been written with an entirely practical purpose: for it is going to deal with the problem of how you or I, the man, or woman, in the street can be happy and make the most of our opportunities in this exciting, fascinating, but often perplexing and terrifying world in which we live.

Of course, it would be impossible to deal with every special human problem in the space available here. Nor is it desirable to do so; for most problems cannot be solved merely by reading about them. The section attempts to do two things: first, to give understanding (which is the first step in solving any problem) and, second, to suggest where you may go for more personal and detailed advice.

There are also suggestions in this Family Affairs section for those who may require advice on personal problems and marriage and home problems, and some of the principal organisations offering such help are listed at the end of Part I; a list of useful books and pamphlets is also given. Advice is also offered to those who are thinking of buying a house; and there is a guide on the whole field of insurance, both on life and property. It would indeed be a tragedy if you should be needlessly worried or unhappy when there are so many people willing to help. Let us see what can be done!

## I. HUMAN RELATIONS

*By a Doctor*

In most countries scientific knowledge has made possible greater material well-being, better education, better health, and a higher standard of living for the ordinary man and woman, yet it is doubtful whether our capacity for happiness and peace of mind has correspondingly increased. There is an old saying, "happiness is with people," which means that satisfaction in living springs from good relationship with our fellows. This is something which wealth, health, and good education cannot guarantee, no matter how important these things are in themselves.

### CAUSES OF UNHAPPINESS.

If you were a doctor, a social worker, or a psychologist, you would soon find that there are three immediate causes of unhappiness: ignorance, environmental problems, and psychological problems. Most unhappy people are suffering from a mixture of all three.

By *ignorance* I mean that many people are discontented or troubled either because they do not know where to turn for help when it is needed or because they have got into difficulties through not knowing the rules of living.

By *environmental problems* I mean not getting on with the people one has to associate with, being in a job which one finds unsatisfying, and all the other everyday situations which arise from clashes between the individual and his surroundings.

*Psychological problems* are difficult to define; but, generally speaking, I shall speak of "environmental problems" when I mean that the trouble lies mainly in the person's surroundings and circumstances, and of "psychological problems" when I mean that the trouble lies mainly within the individual himself. If, for example, a man is unhappy in a particular job, leaves it, and later finds a job in which he is quite satisfied, we should suppose that it was originally a case of "right man, wrong job"; but if he goes from one job to another, never finding the "right" one, then there is surely something wrong with the man. Similarly, it is quite possible for a girl to meet the wrong man once, or even twice, but if all her attachments end unhappily, it is likely there is something wrong within herself.

### EVERY PERSONAL PROBLEM IS ALSO A SOCIAL PROBLEM.

This means that most of our problems, no matter how personal they may seem, are connected with the type of society in which we live. How to bring up children, what to do with old people, whether a married woman should go to work or stay at home, problems of loneliness, of the unmarried woman, of sex, and even of religion, are problems of people living in a particular society

at a particular time and place. If you are living in present-day Britain, some of these matters are bound to affect you. But if you are living as a small farmer in the South of France or Italy or Greece—or even in the West of Ireland or the North of Scotland—they may hardly have begun to affect you at all. In Central Africa, parts of Asia, or of South America, you could not even conceive of them. Why should this be so?

**Peasant Communities.**—First of all, those areas—rural France, Britain, Italy, Greece, and much of Asia, Africa, and South America—which we choose to think of as relatively "backward," are, in fact, leading the sort of life which was the rule almost the whole world over prior to about 1750. That is to say, they are areas where people make a living on the land, dwell in villages or small towns, and are guided in their conduct by tradition. Peasants living this sort of life have large families, and you would probably find numerous children, the parents, and the grandparents living under the one roof. There are no financial problems relating to children and grandparents, because both are economic assets: from a very early age the children can work with their parents in the fields, and the grandparents stay at home and look after the very young ones. Nor do problems of how to bring up children arise, because tradition ensures that all children are brought up (rightly or wrongly) in the same way. For the same reason, there are few difficulties about sex or religion or moral conduct generally; most people have the same religion (in Southern Europe, the Roman Catholic Church) and the same rules are accepted by everyone. Women work in the fields or at home, and no question of the type—career or family?—can arise, because the choice does not even exist. Nor is it possible to be lonely in such circumstances—in the village or small town everyone is acquainted with everyone else, and whether their feelings are of liking, disliking, or indifference towards any one person, at least they are never unknown to each other. In peasant society there is little room for romantic love, and the plain woman has just as good a chance of marrying as the good-looking one. There is no need to struggle against one's fellow-men, because few people move up, or down, the social scale, and what one is born, one remains. Man's main fight is against Nature, against disease, hunger, and the weather.

**Industrial Communities.**—With the arrival of industrialism all this changes. Great cities arise in which a man does not even know his next-door neighbour; children are unable to work until they are fourteen or fifteen years old; old people and young children are a financial liability, so families become smaller, and the old a problem. People find that the traditional ways of behaving are not

always appropriate to changed circumstances, so tradition disintegrates, and under the impact of science the new ideas that take its place are constantly changing. Instead of the old certainty, there arise new theories about how to bring up children, new beliefs about sexual conduct, marriage, and divorce. Competition becomes the rule, and, instead of remaining in the position to which he was born, a man feels he must strive to outdo his neighbours—to get more money, a better social position. Advertising makes people imagine that they need things they had never thought of, and, although wealth increases, so does frustration. The man whose great-grandparents used to feel frustrated through lack of food feels frustrated because he is unable to buy a radio or television set like his neighbour. (For people are frustrated, not in absolute terms, but in terms of what they actually have and what they have learned to feel they are entitled to.)

**The New Position of Women.**—The First World War brought women into industry to replace the men who had gone to fight, and once they had acquired the taste, they were less satisfied with life at home. Earlier wars had always been small affairs fought by professional soldiers, but from 1914 onwards the rule was total mobilisation of the larger part of the male population, which meant that women *had* to replace the men. This had a number of effects upon the attitude of women. For example, it was now possible for a woman to become economically independent and therefore to divorce an unwanted husband, whereas in Victorian England and in all earlier periods a woman had to put up with a bad husband because he was her only means of support. Also, there arose in the mind of the average woman the conflict—career or family?—which had never arisen before. The new situation meant that the married woman in her less happy moments could look back and say: "What might I not have been if I had continued in business?" Whereas the unmarried business woman could wonder: "How happy I might have been had I married and had children?"

### THE MEANING OF HAPPINESS.

**Pleasure and Happiness.**—Many people confuse two quite different things—pleasure and happiness. *Pleasure* is always temporary and usually physical in origin, and is associated with those things which one usually (depending, of course, upon one's tastes) considers "fun" to do: having a good meal, making love, lying in the sun, listening to music. You will notice that all these things have this in common: (1) they all come through the senses of sight, feeling, hearing, and tasting or smelling; (2) they are always temporary; (3) they are all "pleasant" in the sense that they are, quite simply, enjoyable in the most obvious way. But *happiness* is something quite different; for while it is true that all people enjoying pleasure are, for the time being, happy, the reverse is not true. One can be happy when quite unpleasant things are happening. Let me give you an example. During the War I met three middle-aged ladies who were in charge of a first-aid station—they had never done any job before, because each had been looking after old and infirm parents. At the first-aid station they had to work hard, they were exhausted by the end of the day, they saw unpleasant sights, and they had a lot of responsibility they had never had before, but each of them was happier than she had ever been in her life. Why? *Just because* she was working to some purpose (that is, had an aim in life); *just because* she had responsibility; and *just because* she was doing something which was appreciated by others. "Happiness," said a famous psychologist, "is a state of going somewhere." It is no coincidence that the suicide rate always drops in war-time; for war, in spite of all its horrors, supplies the three emotional needs felt by all normal people—the need to be appreciated—to "belong" as the Americans say; the need to be useful; the need to have an aim in life. There is a dramatic relationship between human misery and loneliness or lack of an aim in life.

**Conclusions.**—In order to be happy one needs a goal to strive for, the love of a few, and the respect of those who share our views. The opinions of others need not matter. Therefore one is unhappy:—

- (1) If one has no goal.
- (2) If one is prevented by circumstances from attaining reasonable goals.
- (3) If one has chosen unreasonable goals which cannot be attained.
- (4) If one is compelled by circumstances to mix with the kind of people one finds uncongenial.
- (5) If one is prevented by one's own personal defects (shyness for example) from mixing with those who are congenial.

There may be three causes of all these five: ignorance, environmental maladjustment, and psychological maladjustment, as has been explained on an earlier page. The second and fourth, for example, are likely to be due to environment, the other three are more likely to be psychological in origin.

### IGNORANCE.

You might be surprised if you knew how many people are miserable through sheer lack of knowledge. Let me give you some examples of what I mean:

**Unnecessary Loneliness.**—Here is Mary, a cheerful, friendly, but rather shy girl who comes to London to get work. Soon she finds herself lonely and quite at sea. The other girls she meets are not the types she can get on with—they are mostly interested in cinemas, parties, sport, and dancing, while she is interested in books and music. Of course, it is easy to say that Mary can, in London, go to as many concerts as she likes, but being shy, she does not like to go by herself, nor has she much money. Yet if Mary would only look up the small advertisements at the back (for example) of the weekly journal *The New Statesman* or *The Spectator*, or at the notices in her public library, she would find that there are many societies catering for people with all sorts of interests—musical societies, political, religious, art, chess, philosophical, and so on, all of which would be only too glad to welcome her. (There is a Guide to Societies on pp. 147–48.)

**Unnecessary Frustration.**—Then there are many men and women who want to do something to help others and feel frustrated in a job which pays good wages but is not really interesting. They would have liked to train as psychologists, social workers, or something "really useful," but find that they are too old to begin, or cannot afford the training, or have inadequate educational requirements. But there are many bodies who urgently need people to do work of this type in their spare time: prison visiting, voluntary work in psychiatric clubs or with the National Association of Mental Health, the St. John's Ambulance, the Red Cross, the W.V.S., amongst others. Many people find that spare-time work of this sort changes their whole life and is capable of giving them a sense of fulfilment.

**Unnecessary Fears.**—Even more tragic are those who suffer from medical or legal problems which could be solved in many cases in a matter of a few minutes by going to the right authorities. Sometimes fear keeps people from consulting a doctor. But uncertainty nearly always causes more misery than knowing the worst—and the worst is not always so bad. Some women, being childless, make themselves (and their husbands) desperately miserable, not realising that there are clinics which deal specially with this problem and can cure infertility. If the infertility cannot be removed, there are the Adoption Societies, who can advise about adopting a child. Many women again who are afraid of having more children either do not know or are too embarrassed to seek aid at a birth-control clinic. Much the same is true of intimate sexual problems, a matter which



will be briefly discussed later. (There is Guide to Organizations prepared to help you on p. 932.) Legal problems concerning housing, hire-purchase, relationships between landlord and tenant, divorce, separation, maintenance often impose a great strain. These, too, can be dealt with when one knows the sources to which one may apply for aid.

**Starting Afresh.**—Lastly, there are those unfortunate people who may have done some wrong at some time in the past, and cannot stop thinking about it. The thought of the evil they have done distorts and spoils their whole life. To such I would like to quote from a great writer: "To have sinned or not to have sinned—what does it profit us in Heaven? In the time I am brooding on my sins, I could have been stringing pearls for the joy of Heaven. That is why it is written: 'Depart from evil and do good'—turn wholly from evil, stop thinking about it, and do good. You have done wrong? Then balance it by doing right." Everyone has made mistakes, everyone has done wrong—but if you go on brooding over it and let it interfere with your duties of today, you are doing much more wrong. (And, besides, you are being intolerably conceited if you seriously think you are much better—or worse—than your other fellow human beings.)

### ENVIRONMENTAL PROBLEMS.

**Difference between Problems of Environment and of Psychology.**—We have already seen that the difference between environmental and psychological problems lies in the fact that in the first case the person's surroundings or circumstances really are difficult; whereas in the second we can see that he has largely created the problems for himself by the way he looks at, or interprets, his surroundings, and, of course, by the way he responds to them.

**No Problem is Entirely Environmental.**—Although the distinction we have made is a useful one, no problem is entirely environmental, for the result always depends upon how the individual sees his situation, and what he does about it. It is "natural" to be unhappy in prison, but some people have been happy there; it is "natural" to be unhappy when one suffers from incurable disease, but, in fact, a large number of people with incurable disease find happiness and more peace of mind than those who are not sick. No, strictly speaking, there are no purely environmental problems—all your troubles are confined in a small area—your head. However, it is useful to make the distinction for practical reasons, for if you are trying to help an unhappy person, the first practical question to ask is: "Can I help him, or her, by getting him a new job, a new home, or new friends, or would he be miserable almost anywhere?" Of course, many people in trouble want to believe it is all the fault of others, of circumstances, of fate (in fact, the more it is their own fault, the more they like to believe otherwise). Some women, for example, assert that all their problems are due to the kind of house they live in, and five or six houses later they are still miserable. Some men are never able to find a "good" job, even after trying dozens. There are men and women who are always complaining of ill-health but who would be desolated if some doctor were cruel enough to remove their only hobby—their real or imaginary illness and their absorbing interest in it. Although we may agree that all troubles are in the mind, it is necessary to distinguish between those that can be cured by a change of surroundings and those which require a change of oneself. The two overlap quite considerably. So, under the heading of "environmental problems," I am going to discuss such everyday matters as bringing up children, marriage, the problems of old people, and some general rules for leading a happy and useful life. You will have to decide for yourself where your own problem lies: are you an ordinary person in unhappy circumstances, or an unhappy person in ordinary circumstances? If you are seriously troubled, it would be a good idea to go to one of the bodies listed at the end of this section (p. 932).

Misery is not conducive to clear thinking, and it is always advisable to get the advice of others, particularly when they are experts in such problems.

**Childhood.**—Psychologists believe (and most sensible people have known for centuries) that the really significant time in life from the point of view of character building is the first five years. That is why it is so important for a child to have a proper start, as reflected in its early training. Some parents fuss and worry over their children in the late teens, when the fact is that if a child is not able to look after itself by that age, the parents must have made a sorry mess of their job. Detailed rules cannot be given about a subject such as this. It would almost be true to say: "It's not what you do—it's the way that you do it." The only fundamental rule—and, of course, I am talking here about the child's character, not its bodily health—is complete, unconditional, and unpossessive love on the part of the parent. If you cannot give this, then all the rules in textbooks are of no avail.

**The Spoilt Child and the Neglected Child.**—There are two kinds of children who grow up into problem people: the neglected child and the spoilt child. The neglected child has had too little love, the spoilt child has had too much of the wrong kind of "love," possessive love, which is not love at all. Here are two examples to show you what I mean:

The first home consisted of father and mother and two daughters. To look at it, you would have said: "What a devoted family." There was nothing the parents would not have done for their children (except to allow them to develop freely). The children were never punished (at least, not physically—but the sorrowing look on the mother's face when they did "wrong" soon brought the children guiltily to heel). Everything the children did was regulated, and now one child at the age of thirty has a nervous breakdown, the other is an old maid at thirty-three.

The second home was a wealthy one, and here, too, there was nothing the parents would not do—at least nothing that money could buy. But the son and daughter were brought up by servants, and the only time they were seen by their parents was in the evening, when they were paraded, in their best clothes, before the adoring father and mother. The daughter, today, has been divorced three times, the son can only manage to live on the money he is continually sponging from others, and the parents cannot understand how all their labours can be so ill rewarded.

**Children Learn by What You Do.**—Children do not learn by what you say, but by what you do. The children in the family first mentioned were spoilt, and, so far from being encouraged to grow up, were encouraged to feel: "All our desire for independence is wrong; we mustn't hurt Mummy's feelings." As adults both children still feel that mother and father want them to stay at home, as indeed they do. The possessive love of the parents had caused the one daughter to remain unmarried, the other, who wanted to get married, and was afraid to hurt her mother's feelings, developed a conflict which made her ill. Perhaps you may say about the second case: "Well, at least I'm not that kind of parent, because I have no servants and I am not wealthy." Perhaps you are not wealthy, but what about the mother who goes back to work when her child is a few months old? The results are just the same.

**Unconditional Love and Consistency.**—Two things are necessary in order to rear happy children: unconditional love and consistency. Unconditional love means that, whether the child does right or wrong, it can feel that the parent's love is always there, that however much one dislikes the deed, one never ceases to love the child. Consistency means that there should not be too many rules, but the rules, once made, should in all circumstances be maintained. If

you make too many rules, the child will lack character, since it is never free to choose and make its own mistakes; if there are too few, the child feels insecure because it never knows "what's what." In short, children should be as free as they are fit to be at any given age. The whole aim of a good upbringing is not that the father and mother should try to coerce their offspring according to their own parental ideals, but rather that father and mother should protect the children while they are growing into their true selves. After all, few people are such big successes in life that they are entitled to force their children into their own mould.

**Mental Cruelty.**—Most people in this country are, quite rightly, sensitive to the problem of cruelty to children—that is to say, obvious physical cruelty. But I doubt whether they are equally sensitive to the problem of mental cruelty. Take the example of the little girl or boy of three or four years old who is allowed to feel neglected upon the arrival of a new baby. Previously he has been in the centre of the picture, yet now he is suddenly left out of it, and assuredly his future happiness will not be helped thereby. Or the mother who would be shocked by the idea of hitting her child, but punishes it by saying: "Mother doesn't love you any more." "All right, go away, we don't care." Or the mother who said that she could always bring her little boy to heel by taking away his best-loved toy when he misbehaved. Or the mother who is always taking her child to a doctor at every slight ache or pain, and in front of the child tells the doctor: "Oh, doctor, I'm so afraid, his father had pains just like that and had to have a serious operation. He's never been the same since." Is this boy likely to grow up feeling a sense of security and having the courage to face life? What do children feel when the two people upon whom their whole security depends quarrel violently in front of them, or when they are always being left under the care of others while the parents go out? No, cruelty is not always physical, and I would even go so far as to say that the most devastating type of cruelty in its effect upon the child is the type of mental cruelty we have just been describing.

**Child Guidance Clinics.**—The infant is primitive, born without morals and only gradually comes to share the grown-up's views on sex, cleanliness, and affection. If you get worried at such things as dirtiness or absence of shame you are revealing more about your own lack of emotional balance than about the child's naughtiness. There is a famous, and very true, saying, "There are no problem children, only problem parents," so if your child is a problem, ask first what mistakes you have made and remember that all psychological difficulties in childhood are due to lack of emotional security. When you notice such signs, take the child to a doctor and ask him to arrange an appointment at the local Child Guidance Clinic. Fortunately, the problems of children are much more easily dealt with than those of adult life. Danger signals which indicate that something should be done are: when the child is more noisy, aggressive, or destructive than the ordinary child; when it is too silent and unwilling to associate with other children; thumbsucking; bed-wetting; nightmares or crying or screaming at night; frequent complaints of pain or sickness when your family doctor can find nothing organically wrong. Remember, the Child Guidance Clinics are there for the purpose of helping you, so there is no need to be hesitant in asking for their aid.

**Marriage.**—Most people nowadays seem to suppose that the only basis of a happy marriage is romantic love. Till fairly recent times marriage was as much to do with parents as with the bride and bridegroom and was regarded as a career for the woman—a career to be carefully prepared for by sex-instruction, and a training in cookery, child-management, and the running of a house. Today many girls rush into marriage from their work in a factory or office knowing considerably less about

running a home, mending, or cooking than the man they marry, who may have been looking after himself for some years. Both men and women frequently share the most childish "romantic" notions, perhaps based upon the films they have seen. They seem to suppose that pleasure, rather than happiness, is the aim of life; that romantic love must last for ever; that marriage is the goal of life (whereas it is only the beginning of learning to adapt to a new way of life); that children are nice but a nuisance; that one's wife, or husband, should remain beautiful or handsome. And, of course, when one is disappointed, there is the final delusion: that divorce is always a solution.

**The Complaints of a Man.**—When this stage is reached, the man will tell the psychologist or the lawyer or the family doctor: "Before we were married my wife used to look so attractive, now she pays no attention to her appearance; she doesn't care properly for our children, and went back to work six months after the last one was born—she was always grumbling about how dull it was being at home all day. Once she liked making love, now she makes all sorts of excuses."

**The Complaints of a Woman.**—The wife's story is the other side of the same picture. "I didn't know marriage would be like this, sitting about all day at home with no friends to talk to. I like my children, but they tie you to the house, and the neighbours complain of the noise they make. So why shouldn't I work? My husband doesn't make enough money, and anyhow I want to meet people. In the evenings he either wants to stay at home or else goes out alone and leaves me to look after the children. Maybe I don't like making love—I'm terrified of having more children."

**Some General Points about Marriage.**—Reading about problems is useful because it can show what is wrong and can give some degree of understanding. But full understanding comes only from experience and personal contact with others. So the points I want to make about marriage must be made quite briefly: First, you will notice in the typical case described above how many of the aspects are social problems peculiar to our times. Second, you will notice an illustration of what has already been said about frustration—that one is always frustrated in terms of what one expects and does not get, not at all in terms of objective reality. In other words, if you expect too much, or if you expect different things from what you are going to get, you are bound to be disappointed no matter how "lucky" you appear to other people. It is not always life or "fate" that is to blame for human misery; very often it is the way the individual looks at life and his unrealistic demands upon it that causes the trouble. This point is so important, and so little understood, that it is worth while saying something more about it. When one says that every personal problem is also a social problem, what is meant is that the kind of problem we have to face is partly created by the society in which we live. It does not mean that we are the helpless playthings of fate; for the way in which we deal with the problems is very largely our own responsibility.

Divorce is sometimes the only solution to a marriage which has failed, but there are two dangerous things about divorce which should be taken into consideration. First, the fact that divorce is possible makes people think of it as the obvious answer when trouble arises instead of trying to do something when a marriage could still be saved. Second, just because failure in marriage is always due to the personal defects of both people, unless these defects are remedied the second marriages will be no better than the first. Divorce, as any doctor or lawyer could tell you, is often a case of "out of the frying-pan into the fire," when the individuals concerned remarry. One woman I knew married no less than three times—and each time "happened" (because of "fate" she said) to marry a drunkard. Of course, the only element of fate involved was within herself, the defect in her own personality which made her choose a certain type of man.



**Steps to Happy Marriage.**—I could have occupied some space in this section telling you about the sort of behaviour which leads to a happy marriage: a spirit of give and take, tolerance, and so on. But, unfortunately, people either have these qualities or they do not, and you certainly cannot obtain them by reading about them. So, if your marriage is in serious difficulties, the proper thing to do is to go to a Marriage Guidance Clinic for help. However, here are some aspects which you can do something about, and most doctors and psychologists would agree with the following points:—

(1) Before marriage a woman should learn something about running a house, cooking, and bringing up children.

(2) Reflect upon the meaning of love. Although "love" is a word which is often talked about rather glibly, it can have a number of different meanings. *Romantic love* is based upon sentiment (often upon sentimentality), and its essential feature is an idealisation of the other person, so that one all too often sees in the beloved qualities which are not there. That may be a good thing, but it is certainly no guarantee in itself of a happy marriage as the divorce courts make painfully clear. Reflect carefully upon the nature of *possessive love*, based upon a desire to possess the other person regardless of his or her own best interests. One thinks here of the mother or father who unwittingly prevents children who have grown up from leading their own lives, or of the jealous wife or husband who will not let his or her partner in marriage go out or meet other people. Possessive love is not really love at all. True love is based upon mutual respect and a deep desire to further the other person's best interests whatever sacrifice one has to make oneself. A famous French writer said this of possessive love:—"If (possessive) love is judged by its effects, it resembles hate more than friendship." If your "love" leads to bad results, whether in your husband, wife, or child, you had better look within yourself for the reason why.

(3) Keep your good appearance. Both husband and wife should keep up appearances after marriage just as they did before; they should not, in other words, let themselves "go to seed" in the home, lose their good manners, or dress carelessly, with the implied attitude that it no longer matters what the other partner thinks. In this sense marriage should be an eternal courtship in which one always goes on trying to please the other. True, this will not save a basically impossible situation, but lack of the observance of this rule may break up a marriage which well might have been saved.

(4) Lastly, two observations about children. First, a couple should never have a child with the sole intention of trying to prevent a marriage from going on the rocks. It is unfair to the child, and if a marriage is in such a bad way, having a child is unlikely to have the desired effect. Second (and this may be an unpopular statement), *every child needs the full care of its mother in the first five years of its life*. One of the reasons for the increase in juvenile delinquency in recent years is the failure of mothers to give the child full attention. The family has been called "the character factory of society," and character is formed in the first five years of life; without the mother the factory cannot work properly.

**Sex.**—It is often said that more marriages break down because of sexual difficulties than for any other single reason. As it stands, this statement is not true. Sexual difficulties come into two categories: those due purely to ignorance, and those basically due to *personality* problems between the two partners. The first kind are a straightforward medical matter, which can be solved by a family doctor, by a Marriage Guidance Clinic, or even by reading a good book on sex technique. The other kind are an entirely different matter: for here the sexual difficulty does not cause the trouble in the everyday relationship between husband and wife, but their unsatisfactory everyday relationship causes the sexual difficulty. For example, if the wife

suspects infidelity on the part of her husband, if she has had an unhappy home life with her parents which leads her to suspect men or fear sex or marriage, if she is afraid of having more children, or if she feels a latent resentment towards her husband over some matter quite unrelated to sex, these feelings may make her sexually frigid. With women, as contrasted with men, sexual happiness is impossible unless the total personal relationship between the partners is satisfactory. A list of books about sex is given on a later page, but where the problem lies in the sphere of personal relationships the help of a psychiatrist or the Marriage Guidance Clinic must be sought. We must, therefore, reverse the statement that sexual difficulties (except those due to ignorance) cause marriage difficulties; the truth is that difficulties in the everyday relationships between the partners cause sex difficulties.

**Old People.**—We live in a society which has the highest proportion of old people anywhere in the world, and the proportion will go on increasing. Old age is, of course, associated with a decline in physical and mental powers, but social and medical factors may hasten or slow down this decline. For example, the person who has led an active life often rapidly deteriorates when he has to retire or when he lives by himself and is thus cut off from human society; he loses interest, becomes untidy, and does not look after himself properly. He has, in fact, nothing to live for and shows it in his behaviour. In cases like this there is often a dramatic improvement when the old person goes to a Residential Home where he gets proper food and, above all, company and things to do. *A great deal of the appearance of deterioration in old age has to do, not with physical, but psychological factors:* lack of a goal, a feeling of being unwanted, loneliness, and all the things we have already seen to be so important for psychological health and happiness at all ages. The grumpiness, the interfering, the selfishness often associated with old age are largely due to circumstances rather than natural "cussedness"; they are the reactions of anyone who feels unwanted or useless, and many of the so-called problems of the aged would be removed if they were allowed to continue work under suitable conditions. The aged may be cared for:

- (1) in their own home, living alone;
- (2) in the home of their children or relatives;
- (3) in an Old People's Residential Home;
- (4) in the Geriatric Unit (for the sick and aged) of a Hospital.

**Welfare of Old People.**—In 1940 the National Council of Social Service sponsored the formation of the National Old People's Welfare Committee, which now co-ordinates the activities of voluntary organisations, seeks to bring about improvements in legislation, and, in general, studies the needs of the old. Some of the services provided by various bodies, information about which may be obtained from the secretary of the local Old People's Welfare Committee, are: Home Nursing Service, Health Visitor Service, Home Helps, Night Attendance, Physiotherapy, Chiropody, Meals Service (meals brought to the home or arranged in nearby centres or restaurants), extra foods, baths, free laundry service, mending service, coals and logs, and holiday schemes.

**Attitude to the Old.**—Where the aged are cared for depends primarily upon medical factors, which should be discussed with the family doctor. Obviously, a sick person cannot stay by himself at home, but, on the other hand, a healthy person cannot be sent to the Geriatric unit of a hospital. One must think of the other members of the family, and here the moral problems begin: should one look after one's aged relatives even if they are troublesome and a whole-time problem, or should there be a limit set to one's responsibilities in this respect? The answer must be personal, and one suggestion is that the old (and, in particular, our parents) are entitled to expect some attention from their

children. But, on the other hand, nobody is entitled to expect another person to give up his whole life to this end. A parent is fully entitled to expect from son or daughter as much as the parent has done for them, and a parent will accept what son or daughter willingly chooses to do. But a parent must not demand the sacrifice of marriage, career, or happiness. If an unmarried daughter genuinely wishes to look after her father or mother, giving up all hope of any other career, she may, of course, do so; but to give up her whole life *unwillingly* to this end is not being self-sacrificing, but wrong. We have a duty to others, and particularly to our parents; but we also have a duty to ourselves. Such problems should be solved by considering the best interests of all those involved—the greatest happiness of the greatest number—and the younger the individuals concerned, the more consideration they are entitled to. One should help one's parents or parents-in-law, even at considerable sacrifice, but not to the extent of sacrificing the whole of one's life, the happiness of one's marriage or children.

**The Sacred Rule of Non-interference.**—No situation is more liable to cause trouble than the interference of one generation in the affairs of another. In particular, the older generation should never give unasked advice to the younger—especially concerning the upbringing of grandchildren. If your children are not capable of reasonable behaviour once they are adults, they are certainly not likely to be changed by unwanted advice. Nor should parents interfere in the quarrels of their married children; if any interference is called for, it should come from those who are less emotionally involved.

### PSYCHOLOGICAL PROBLEMS.

We have seen that a psychological problem is one which is caused less by your surroundings than by the way you look at them. You should suspect that your problems are primarily psychological: (1) if the same situation in life keeps cropping up—love affairs always ending unhappily, jobs always being lost or given up, and so on; (2) if you have difficulty in getting on with your fellows; (3) if you are depressed, anxious, or unhappy without obvious reason; (4) if you have nervous symptoms, *e.g.*, irrational fears (of closed spaces, open spaces, or disease), sudden attacks of panic or anxiety, or pains for which the doctor can find no adequate explanation. These conditions, whether they masquerade as personal problems or as "nerves," have this in common: they are caused by a faulty attitude to life, and, in particular, to other people, originating in early training. "*Nerves, neurosis, and psychological problems in general are not diseases in the ordinary sense, and are always caused by fundamental misunderstandings in the sphere of human relationships.*"

**The "Bad" Emotions.**—Many people have troubles of this sort, and doctors say that 60-70 per cent. of all their patients come into the category of people who are suffering from the "bad" emotions of hate, anger, resentment, fear, and anxiety—people who are ruining their own lives because of the past. Some of them create their own problems in everyday life, others suffer from "nerves," and yet others develop those physical illnesses due to prolonged worry and emotional stress: stomach ulcer, "fibrositis," high blood-pressure, heart trouble of certain types, headaches, some kinds of skin disease, and so on.

**Needless Distress.**—Most of us have such problems from time to time, and sooner or later they pass, but when such problems are persistent it is necessary to consult a psychiatrist. True, in most cases such states are not dangerous—men and women with "nerves" do not (as so many of them fear) go insane. But they suffer a lot of needless misery. If you are suffering from any of the problems mentioned above it would be a good idea to ask for expert advice at one of the bodies mentioned below.

**Some General Advice.**—Here is some advice, collected from widely different sources, dealing with the rules of happy living:—

(1) *Don't Worry.*—Worry is a waste of time; it is also dangerous. Try not to worry about either the dead past or the unborn future. Sir William Osler, one of the greatest doctors who ever lived, said this: "Shut off the past! Let the dead past bury its dead! The load of tomorrow, added to that of yesterday, carried today, makes the strongest falter. Shut off the future as tightly as the past—the future is today—there is no tomorrow. The day of man's salvation is now. Waste of energy, mental distress, nervous worries dog the steps of the man who is anxious about the future." Much the same advice was given in the New Testament: "Take therefore no thought for the morrow; for the morrow shall take thought for the things of itself. Sufficient unto the day is the evil thereof." Note that the words "take no thought" do not mean "make no plans"; in Biblical language they mean "don't worry" about the future.

(2) *Work Well.*—The best cure for worry is hard work. Bernard Shaw wrote: "The secret of being miserable is to have the leisure to bother about whether you are happy or not."

(3) *Have Good Aims.*—"Happiness is a state of going somewhere"; have an aim in life. Cultivate friends and concern yourself with other people's well-being rather than exclusively with your own. Happiness is a by-product of leading a useful life and cannot be found by a deliberate search for it. "Whoever will save his life shall lose it."

(4) *Help Others.*—Try to help others whenever possible, but do so from the inner joy of giving and helping, not in order to earn their gratitude. Gratitude is one of the rarer virtues.

(5) *Don't Expect too much from Others.*—Don't be cynical about people, but, on the other hand, don't expect too much of them. Marcus Aurelius, the Roman emperor wrote: "I am going to meet people today who talk too much, people who are selfish, egotistic, ungrateful. But I shall not allow myself to be surprised or disturbed, for it would be impossible to imagine a world without such people."

(6) *Be Modest in Your Demands of Life.*—Don't expect too much of life, and certainly don't allow yourself to feel permanently frustrated if you fail to get what you want. The Roman philosopher Seneca said: "If you have what seems to you to be insufficient, then you will be miserable even if you possess the world."

(7) *Avoid the "Bad" Emotions.*—Avoid like the plague the harmful emotions of anxiety, fear, hate, resentment, and jealousy. They are a waste of energy; they make you an unpleasant companion to others; and they may make you seriously ill. The resentful and jealous or aggrieved person is, as Shaw puts it: "a self-centred little clod of ailments and grievances complaining that the world will not devote itself to making him happy."

(8) *The Character of Our Own Thoughts.*—In the last analysis all troubles are psychological—they are never entirely determined by circumstances. "Our life is what our thoughts make it," said Marcus Aurelius.

(9) *The Selfishness of Depression.*—Nearly all depression is a form of selfishness. Alfred Adler the psychologist wrote: "It is the individual who is not interested in his fellow men who has the greatest difficulties in life and does the greatest injury to others. It is from among such individuals that human failures spring."

(10) *Cultivate Your Religion.*—Dr. A. A. Brill, a leading psycho-analyst, has said, "anyone who is truly religious does not develop a neurosis," and the greatest living psychiatrist, Professor C. G. Jung wrote: "Among all my patients over thirty-five there has not been one whose problem in the last resort was not that of finding a religious outlook on life. Every one of them fell ill (with neurosis) because he had lost that which the living religions of every age have given to their followers, and none of them has been really cured who did not regain his religious outlook."



## WHERE TO OBTAIN HELP ON PERSONAL PROBLEMS AND ON MARRIAGE AND HOME PROBLEMS.

The following are some of the principal organisations:—

**Marriage Guidance Councils**, 78 Duke St., Grosvenor Sq., London, W.1 (Mayfair 2731-2).—Marriage Guidance Councils are at work throughout the country; and headquarters at the above address will gladly give the address of any of these local Councils. The Scottish Marriage Guidance Council at 44 Queen St., Edinburgh, co-ordinates the Councils in Scotland.

The Councils offer skilled, kindly, and confidential help to those who want it before marriage and after. Besides mutual love, the important factors in success in marriage are a happy home background, agreement on fundamentals, loyalty, courage, and humour. People cannot be given a sense of humour, but there are things they should themselves settle in advance of marriage, like religious belief, family intentions, sharing of money, and relations with in-laws.

Particular help is given to engaged couples on all aspects of marriage and parenthood. This is done by private consultation and by informal discussions for small groups of engaged couples.

After marriage, Marriage Counsellors—men and women volunteers most carefully selected and trained for the task—offer help in all aspects of marriage to those who seek it.

The Council issue a list of recommended books and pamphlets, which are normally available at the Council's Book Room for inspection. Books can be despatched by post in plain wrappers. Some of these books and pamphlets are referred to in the list given in this section.

**The National Association for Mental Health**, 39 Queen Anne St., London, W.1 (Welbeck 1272).—This voluntary body provides an advisory service for individual cases. It can help you to understand your children's problems; or (if you are a teacher) it can help with courses about the development of children and their intellectual capacities). If you have the care of old people it can help you to make the best arrangements for their care; and if you have a backward child it can help you about schools and special centres. If you have a personal problem the Association can put you in touch with good advisers. It will help you to find the nearest Psychiatric Out Patients Clinic or Child Guidance Clinic. You may want to help mentally handicapped people, and if so the Association can advise you about training and can offer courses to qualify you for work with backward children.

There are 20 voluntary Mental Health and Mental Welfare Associations under the aegis of this National Association throughout the country.

**Family Planning Association** (1930), 64 Sloane St., S.W.1 (Sloane 0451).—*Objects:* (a) To advocate and promote scientific contraception so that married people may space or limit their families. (b) To advocate and promote the establishment of Family Planning Centres, at which, in addition to advice on scientific contraception, advice and, where necessary, treatment are given for any or all of the following—(i) involuntary sterility; (ii) difficulties connected with the marriage relationship. (c) To encourage the production of healthy children who are an asset to the nation, provided that their parents have the health and means to give them a reasonable chance in life. (d) To examine such other problems as are relevant to the above, and to take such action as may be considered advisable.

The F.P.A. has 200 clinics throughout the country, many on local authority and hospital premises, and a sub-fertility investigation unit and postal advice department and pregnancy diagnosis service at its Headquarters. The Association is supported by voluntary funds, and the clinics' fees are modest; no one is refused advice because of inability to pay.

**Family Welfare Association**, Denison House, 296 Vauxhall Bridge Rd., London, S.W.1 (Victoria 733418). The National Assistance, National Insurance,

and National Health Service Acts have assured to the citizen the satisfaction of many basic needs, but many people still require certain forms of personal service which the State does not provide. It is here that the Family Welfare Association has its place.

The Casework Service of the Association is carried out in local offices, of which a list can be obtained. Many family difficulties can be resolved by comparatively simple forms of help. In addition to providing a casework service, the Association, in its local offices, gives practical training to students in family casework.

In addition, the Association sponsors: (1) the Old People's Homes Committee, which gives advice on suitable Homes for elderly people and problems of old age; and, (2) The Family Discussion Bureau, described below.

**The Family Discussion Bureau**, 4 Chandos St., London, W.1 (Langham 7045/6).—The Bureau is a centre serving the London area where people of all ages, married or single, may go and discuss freely difficulties in family relationships. Interviews take place in a quiet informal atmosphere and under conditions of professional confidence. Difficulties of sharing a house or managing children, sexual maladjustments, and other marital anxieties are real enough in themselves, but it is often the personal unhappiness underlying these which make them so impossible to bear. The service is free. Those wishing to consult the Bureau, or to refer to others, are asked to telephone or write. Appointments can usually be arranged within a few days.

**Family Service Unit**, 25 St. Mary's Grove, London, N.1 (Canonbury 6662).—(There are Units also in Islington, Kensington, and Stepney, London; and in Liverpool, Sheffield, Leicester, York, Manchester, Birmingham, and Bristol. For addresses apply to above address.) This organisation provides a voluntary specialised service for "problem families." For this purpose "problem families" does not mean any family in difficulties, but families where conditions have been such as to lead to neglect of children. Sometimes parents are disabled or suffering from chronic illnesses. For the families' own welfare and that of the community they need help. Family Service Units exist to meet this need.

**The National Association for Maternity and Child Welfare**, 5 Tavistock Place, London, W.C.1.—Gives enquirers much useful advice on these matters.

**Maternity and Child Welfare Centres**.—The address of the nearest Centre can be obtained from your doctor, a hospital, or the local council offices. The Local Education Authority provides Nursery Schools for children between two and five.

**Home and School Council of Great Britain**, 81 Endsleigh Gardens, London, W.C.1.—Gives advice on the formation of a Parent-Teacher Association, if there is no such association at a school.

### Other Useful Addresses.

The National Adoption Society, 4 Baker St., W.1.

The National Children Adoption Association, 71 Knightsbridge, S.W.1.

The After Care Association for Physically Handicapped Children, 54 Bloomsbury St., W.C.1.

The National Institute for the Blind, 224 Great Portland St., W.1.

The National Institute for the Deaf, 105 Gower St., W.C.1.

### SOME USEFUL BOOKS AND PAMPHLETS.

For Married or Engaged Couples.

*The Art of Marriage*, Dr. Mary Macaulay (Dellisle, 7s. 6d.).

*The Sexual Side of Marriage*, Dr. M. J. Exner (Guild Books, 2s.).

*The Sex Factor in Marriage*, Dr. Helena Wright (Williams & Norgate, 3s.).

*Modern Contraception*, Dr. P. M. Bloom (Dellisle, 2s.).

**Childbirth and Baby Care.**

- Fearless Childbirth*, Minnie Randall (Churchill, 3s. 6d.).  
*The Nursery Years*, Dr. Susan Isaacs (Routledge, 2s. 6d.).

**Marriage Problems.**

- Any Wife of Any Husband*, Medica (Heinemann, 10s.).  
*The Change of Life and its Problems*, Dr. L. B. Jeffries (Gollancz, 4s. 6d.).

**Young People.**

- Grow Up and Live*, Dr. Eustace Chessier (Penguin, 2s. 6d.).

**Parents.**

- The Intelligent Parents' Manual*, F. Powdermaker and L. Grimes (Penguin, 2s. 6d.).  
*You and Your Children*, Dr. Doris Odum (H.M.S.O., 9d.).

**The Home.**

- Your Home and You: The Homemaker's Encyclopaedia*, Kay Smallshaw (Peter Nevill, 21s.).

**Women.**

- The Art of Being a Woman*, Amabel Williams Ellis (Bodley Head).

**Everyone.**

- How to Stop Worrying and Start Living*, Dale Carnegie (Pocket Book Inc.) (published in America but available in the U.K.).

**Retirement.**

- Retire and Enjoy It*, Cecil Chisholm (Phoenix House, Ltd.).  
*How to Retire and Start Living*, Eleanor Brockett (Staples).

## II. HOW TO BUY A HOUSE

### 1. INTRODUCTION.

The following guide has been compiled to help those who want to buy a house, especially young people founding a home. For many of us the need to buy a house comes but once in a lifetime; or, at any rate, so seldom that we have little experience to guide us. Many people, therefore, pick up such knowledge as they can at the last moment as they go along. That they tumble unawares into pitfalls is not therefore surprising. It is to save the house-seeker from those mistakes, which can be so costly and worrying to him, that the following guide is offered.

The guide has two main parts: first, how to make sure that the purchase is a sound one; and second, how to obtain the necessary funds. In addition, there is an explanation of the rates and income tax on a house and what reliefs can be obtained.

The advice may well seem more complicated, at first sight, than the newcomer to the problem expected. But when he reads it the main points will be found to be simple and clear, and the advice will repay careful study.

In addition to an explanation of how to select a house and get the money for it, information is offered on important subsidiary matters, such as how the purchaser may assure his family if he dies before a mortgage is paid in full. It is also explained how grants can be obtained for conversions and improvements.

The figures quoted in this section are those ruling at the time of going to press.

### 2. THE ESSENTIAL QUESTIONS TO ASK.

**The Nature of the Property.**—There are certain preliminary points which you need to get clear before entering into any commitments. You should think most carefully over the general position of the site; the nature of the soil; handiness to shops; what daily transport is available and what schools there are in the neighbourhood. You should ascertain the exact nature of what is being sold. Is the land leasehold or freehold? If it is leasehold, your ownership will be only for a stipulated number of years, often ninety-nine, sometimes more and sometimes much less; rent will be payable; and there are likely to be restrictions on its use. Though freehold usually means outright ownership of the land, freehold may also carry restrictions, such as debarment on use for business purposes or conversion into flats, or there may be limitations on the type of structure or size of house which can be built.

**The Nature of the Neighbourhood.**—Next comes essential information about the neighbourhood as a whole. Is it already zoned, or likely to be zoned, for industrial or other non-residential development? Are developments in hand, or possible, near enough to be inconvenient or liable to affect the amenities or value? The local Planning Authority (whose address you can find

from the local council office) can usually give guidance on all these points. Equally essential is to find out if the land is subject to any rights of way, or other "easements" as they are legally termed.

**Services and Roads.**—Handiness to main drainage and gas, electricity and water supplies must be considered; installation may be costly, if any or all of these services have to be carried some distance. If roads have not been made up or adopted by the council, it should be found out when they will be built or adopted, where they will run, and the probable liability in road charges.

**Local Bye-laws and Planning Clearance.**—Assuming a clear bill up to this stage, local bye-laws and planning rules must be taken into account if a new house is to be built. Not any kind of building can be put up. It must conform to local standards of construction and safety. Its outward appearance and the facing materials used must also be approved by the local Planning Authority. An architect is the best adviser on these points. Once bought or built, owners cannot do anything they wish with houses. In addition to any restrictions going with the land, as mentioned above, the local Council and Planning Authority may have a definite say in all proposals. For example, their approval is necessary before a house can be converted to flats or for business purposes, or put to any other use.

**The Need for a Surveyor and a Solicitor.**—A qualified surveyor should be called in to report on the condition and value of an existing house in which you are seriously interested. You will thereby know exactly what it is you are thinking of buying, and you will know within limits what you ought to pay. Various legal points must also be considered, and a solicitor should be consulted at the earliest stage of negotiation, to look after matters such as the title to the property, restrictions on use, conveyance and, a complicated matter calling for expert advice, the likelihood of the land being lost by compulsory purchase. On written application to the local council it must state whether, so far as it knows, the land is liable to compulsory purchase within five years.

**The Golden Rule**, is therefore: 'Obtain professional advice at the earliest stage—from a surveyor and a solicitor acting for you and independent of another party to the transaction. Where necessary, as, for example, when building a house, you should also consult an architect. The safe rule is not to enter into any commitment of your own bat. But if you do make any undertaking make sure that you introduce into your undertaking the words "subject to contract." Thus if you pay a deposit to a house agent as stakeholder state, in writing, that the payment is "subject to contract."



### 3. HOW TO BUDGET.

**Stamps and Fees.**—Sufficient money must be available to cover every need. You will, of course, remember that expenditure does not stop at the cost of the property itself. You will need to have money for stamp duties, legal charges, and expenses on the conveyance (or transfer) of the house if it is being bought, or on the land only if it is being built to plans; stamp duties, legal and inspection fees, and expenses in connection with the mortgage if money is being borrowed; and a fee for the surveyor who examines before purchase. All are payable by the purchaser. The actual amounts depend on the purchase price of the property or land and the amount of any mortgage advance. Stamp duty, payable to the Inland Revenue, as from August 1, 1956, is 10s. a £100 between £500 and £3,500; £1 per cent. between £3,500 and £4,250; and £1 10s. per cent. over £4,250 but not exceeding £5,000. Legal charges are at a set scale related to the purchase price. For example, if the land is unregistered the scale is 2½ per cent. on the first £1,000, 1½ per cent. on the next £2,000, and ½ per cent. on the next £7,000. If the land is registered at H.M. Land Registry, fees are less, rates being 1½ per cent. on the first £1,000, 1 per cent. on the next £2,000, ½ per cent. on the following £1,000, and so on; but Land Registry fees will be payable at the rate of £3 15s. for the first £1,500 and 2s. 6d. for each extra £50 or part of £50.

**Total Expense for the Conveyance.**—A reasonable estimate of the maximum total expenses for conveyance, including incidental expenses and stamp duties, is, therefore, about 3½ per cent. on the purchase price—less, of course, if the land is registered. Further, though smaller, sums will be payable if a mortgage has to be arranged. The whole set of expenses can add as much as 4–4½ per cent. to the outlay.

**Other Monetary Needs** may include: removal expenses; cost of fittings, curtains, and new carpets; structural alterations, decorating, etc.; new or additional furniture; and laying out a garden, including the cost of tools. The total will depend on circumstances and particularly whether you are moving to a new house or setting up home for the first time. The total amount can be substantial, and it is important that before entering into any commitments, you should draw up a budget of what capital you need; and if insufficient capital is available you should ascertain the amount which can be borrowed on mortgage. How to obtain a mortgage is explained in the next paragraphs.

### 4. HOW TO RAISE A MORTGAGE.

**Who Lends Money?**—Building Societies, Insurance Offices, and Local Authorities all lend money to enable people to own their homes. Banks also lend money and, subject to membership conditions, Trade Unions and Friendly Societies. While details may vary, some broad general rules apply to most methods. They are: (1) The property must be freehold or, if leasehold, must have a life of 20–30 years more than the repayment period of the mortgage. (2) The property must, in many instances, be constructed of brick, stone, or concrete—timber-built or half-timbered houses will not be entertained by some lenders. (3) The loan will be calculated on the value as decided by the lender's surveyor or the purchase price, whichever is the lower. (4) Normally, only a proportion of the price or value will be advanced, the amount usually depending on: (a) the age, condition, size, and situation of the house; (b) the lending policy of the mortgagee; and (c) the age, financial position, prospects, and family circumstances of the borrower. A useful general guide to (c) is that, in order to avoid taking on financial commitments which might become burdensome, mortgage repayments, rates, and a fair allowance for repairs should total not more than around one-quarter of the borrower's income.

**How Much is Lent?**—The percentage advanced varies widely, and depends partly on the method of borrowing. But a broad indication for free-

hold or long leasehold properties for owner-occupation costing not more than, say, £2,500–£3,000 is: new, up to 85 per cent.; reasonably modern older types, up to 75–80 per cent. On higher priced, large or pre-1918 houses the amount may be anything from 50 to 66½ or 75 per cent. Where the price is substantially below current market value, such as may happen if a rent-controlled house is being bought at a favourable figure by a sitting tenant, most lenders will advance a larger proportion; though, on the reasonable stipulation that the owner should have some cash stake in the property, probably not more than 95 per cent. of the cost. Likewise, as explained in later sections, larger loans may be made when suitable guarantees or additional security can be provided.

**Loans for Houses Being Built.**—Special considerations apply when building one's own house. Loans are not normally made on bare land; but if its purchase and commencement of building are a more or less continuous operation, an advance may be made on the land if its value is: (a) high in relation to the total cost of the completed property, and (b) more than the borrower will have to find himself. For example, if the land costs £500, building, etc., £2,000, and a loan of 85 per cent. will be made on the total of £2,500, a sum of £125 would be advanced on the land itself. In every case, however, the amount lent will be based on the surveyor's valuation of the completed property. This will take into account the cost of the land, building, and architect's fees, which latter are properly reflected in the value. It is possible in most cases to have the advance in up to three or four instalments as various stages of building are completed. Whatever the nature of the property, the borrower has to pay out of his own resources the costs of conveyance of the house or land, as mentioned earlier, plus legal and other charges in connection with the mortgage. As explained before, the two sets of expenses can add a further 4–4½ per cent. to the cash outlay.

**Three Points for the Future.**—Make sure when arranging the advance that lump sums can be paid off at any time, with a proportionate reduction in the interest payable. You can ask the Building Society if an extra loan will be possible should money be required at some future date to pay for additions, improvements, or heavy repairs. Finally, if for any reason whatever, it is difficult to keep up repayments, discuss the problem with the lender at the earliest stage—a temporary reduction in payments will probably be made to tide over the difficult period.

### 5. HOW A BUILDING SOCIETY HELPS.

**The Need for Early Consultation.**—Building Societies encourage prospective owners to discuss their propositions with them at the earliest moment. By finding out how much you can borrow you can be saved a lot of disappointment and loss of money by way of deposits and survey fees.

**Surveyor's Inspection.**—Inspection of the property by the society's valuer is the first step after the preliminary discussion. A typical scale of fees is £2 on a purchase price up to £500, with additions of 10s. for every extra £250 up to £2,000 (at which level the fee is thus £5) and 4s. per £100 thereafter up to £10,000; plus travelling expenses over a certain distance. The valuer's report is confidential to the society, and is not available to the applicant. A decision to offer an advance is made normally within a day or two of the receipt of the report. In the case of new houses built to individual design preliminary arrangements and the offer of an advance are made on the basis of architects' plans and builders' estimates.

**How Much Will Be Lent?**—Societies, when a substantial loan is wanted, make the figure as large as possible commensurate with the security offered, the ability of the borrower to meet repayments, and their individual policy. Normal maximum amounts are 80 per cent. on reasonably

modern properties costing up to some £3,500 and 85 per cent. on new ones valued at not more than £2,500. Increased proportions may be arranged, however, if additional security is provided. Up to 95 per cent. may be considered if the borrower himself can provide extra security in the form of Trustee Securities, National Savings Certificates, another property, or a life-assurance policy with a sufficient surrender value. Up to 90-95 per cent. may also be arranged if a third party of financial substance will put up good security to cover part of the loan.

**Guarantee Schemes.**—Building Societies offer guarantee schemes in conjunction with insurance companies. One special plan provides for 95 per cent. advances to approved applicants on properties valued at, or costing, not more than £3,350. A single insurance premium of 7½ per cent. is charged on the amount of the extra loan, the borrower paying half in cash and the other half being added to the mortgage debt—*e.g.*, if the extra loan is £200, half the single premium of £15 is paid at the outset by the borrower. Under another scheme covering maximum advances up to 90 per cent. on a value up to £4,500, the whole of the premium may be added to the loan.

**Methods of Repayment.**—Optional methods of repayment are offered by most Building Societies. The *Monthly Repayment* system is the most widely used and popular. Equal calendar (or lunar) monthly instalments paid throughout the term of the mortgage cover both interest and repayment of principal. Typical calendar monthly payments on each £100 borrowed for various periods and different interest rates are:

Number of Years	Interest Rate		
	5%	5½%	5¾%
	<i>s.</i>	<i>s.</i>	<i>s.</i>
	<i>d.</i>	<i>d.</i>	<i>d.</i>
5	38	38	39
10	21	21	22
15	16	16	16
20	13	13	14
25	11	12	12

While repayments can be arranged over any lesser number of years, the normal maximum is twenty to twenty-five, though some societies may arrange longer terms in particular circumstances. The advantage of this system is the even spread of the outgoings. In the early years the greater part of each payment represents interest, which, however, falls steadily as the loan is reduced. The society usually reserves the right to increase—or reduce—the rate of interest on giving due notice. Increases are applied in ways giving the minimum inconvenience to the borrower, often by extending the repayment period.

## 6. HOW LOCAL COUNCILS AND BANKS HELP.

Local Authorities, including County Councils, can, if they wish, advance money for home ownership under the Small Dwellings Acquisition Acts and the Housing Acts. Applications for details of mortgage facilities available for the area in which the property is situated should be made to the Treasurer or Clerk of the appropriate local Council. These facilities apply only where the value or cost of the property, whichever is the lower, does not exceed £5,000. Interest is generally charged at ½ per cent. above the rate at which the Council itself borrows from the Public Works Loan Board, which fixes its rates in accordance with money-market conditions and the term of repayment. Rates charged to home-buyers at the time of writing (September, 1955) are 4½ per cent. for repayment over not more than five years and 5½ per cent. for longer repayments. The interest cannot be increased or decreased

during the period of the loan. There is, of course, no life-insurance protection; but, as explained in the Life Assurance section, this may be arranged by taking out a reducing term, or mortgage protection, assurance.

Loans can be made under the Housing Act for the conversion of buildings into houses or flats and for the alteration, enlarging, repair or improvement of dwellings. (See paragraphs below on Improvement and Conversions.)

**Bank Loans.**—Banks are sometimes prepared to help within certain limits, the main considerations being that: (1) the borrower is an established customer of good standing; (2) the advance can be reduced steadily and repaid entirely over a relatively short period of, say, eight to ten years at the outside; and (3) no more than two-thirds to three-quarters of the value is to be lent, or additional security such as marketable investments, other property, or life assurances with surrender values can be put up. A bank loan is subject to half yearly or annual renewal, and may therefore have to be repaid on due notice, though this is given only in exceptional circumstances.

**Private Mortgages,** up to two-thirds or three-quarters of the value, may also be obtained, mostly through mortgage brokers, solicitors, and estate agents. Interest may be ½ to 1 per cent. more than on building society advances. Repayment may be by instalments, but is more usually in one sum at the end of an agreed term, which calls for the accumulation of funds. This private field is often the best one for raising a second mortgage when it is impossible to obtain enough in the normal way on a first charge. Second mortgages, in view of the risk involved, generally have to be repaid over a comparatively short period of, say, two to three years and the interest ranges up to 7 or 8 per cent.

**Bridging between One House and Another.**—It may be necessary to bridge a gap between payment for the new house and receipt of the proceeds of sale of the old. If the present house is not mortgaged and no loan, or only a relatively small one, is needed on the new property, the bank may be able to help. If the present house is mortgaged, consult the lender. Arrange the financial side well before entering into any contracts or commitments on the new transaction. Established mortgage brokers and insurance brokers can be of help in the arrangement of mortgages, especially where it is desired to link the loan with endowment or mortgage protection assurance; or it is difficult to obtain the full amount required through the direct channels.

## 7. RATES.

Rates, levied by Local Authorities, are payable on all occupied house property—by the owner if he is also the occupier and often by the tenant if a house is rented. The amount depends on: (a) the rateable value, and (b) the rate in the £ levied by each Council. The latter varies widely Council by Council, and is liable to annual or even half-yearly change.

**Rateable Value.**—Under a comprehensive re-valuation completed in 1955 all dwellings have been reassessed on a common basis laid down in the Valuation for Rating Act, 1953. The starting point is the *Gross Value*, which is the rent at which the property might reasonably have been expected to let at end-June 1939, with: (a) the tenant paying all usual tenant's rates and taxes (but excluding income tax); and (b) the owner meeting the cost of repairs and insurance. A *Repairs Allowance* is next given at fixed scales. The net figure left is the *RATEABLE VALUE*, and it is the one on which rates are paid. The new values came into effect as from April 1st, 1956. Ratepayers may appeal for reductions in the gross value at any time during the currency of the rate. This right is particularly important when a new



house is first valued. An appeal must first be made to the local Inland Revenue Valuer, whose address is obtainable from the town hall or council offices.

If the valuer's decision is unfavourable the appeal can be carried to the local Valuation Court. A final appeal can be made to the local Land Tribunal, which, however, may entail certain costs. A qualified rating valuer should be consulted in complicated cases.

## 8. INCOME TAX.

**Net Annual Value.**—Income Tax assessments on property, made separately by the local Commissioners of Income Tax, also start with a *Gross Value*, which can be defined as the fair rental value with the tenant paying rates and the owner repairs and insurance. (The income-tax figure, it should be noted, is not necessarily the same as the rating gross value.) A repairs allowance (automatically given) is based on the gross annual value, as under:—

G.A.V.	Repairs Allowance
Up to £40	One-quarter of the G.A.V.
£40-£50	£10.
£50-£100	One-fifth of the G.A.V.
Over £100	£20, plus one-sixth of the G.A.V. over £100.

The balance, known as the *Net Annual Value*, is the amount on which Schedule A, or Property Tax, is assessed.

**Appeals.**—An appeal for a reduction in the gross annual value can, as with rating valuations, be made by the owner at any time. When a new house is assessed for the first time an appeal must be made within forty-two days of receipt of the notice. All appeals should first be made to the local Inspector of Taxes and, if no satisfactory agreement can be reached, taken next to the local General Commissioners of Income Tax.

**Relief for Repairs.**—Rebates may be claimed for repairs when actual expenditure over specified periods exceeds the fixed allowance. The normal basis for making what is called a *Maintenance (or Excess Repairs) Claim* is the average spent over five consecutive years, generally ending March 31st. After making the initial claim, subsequent claims are made year after year by dropping out the expenditure for the earliest year and adding that for the newest, until the five-year average drops below the fixed allowance. One useful exception to this general rule may apply where a property has been owned for less than five years and a lot of money has been spent on it. If the previous owner's expenditure is known it can be included with such outlays to arrive at the five-year average. Alternatively, it may be possible to arrange with the Inspector of Taxes to work on actual yearly expenditure until a full five years' figures are available. All claims must be supported by receipted and detailed bills, which should always be kept. The cost of insuring the house—but not the contents—should be included. Money need not be spent each year; it is the five-year average which matters. Claims must be made by the owner within six years of the end of the relative tax year to the local Inspector of Taxes.

**How the Owner Pays Income Tax.**—When it comes to calculation of the income-tax liability on a house the net annual value is taken into account as part of the owner's income. Tax, if any, is then payable at the rate or rates applicable to the total income from all sources after deduction of personal and other allowances and reliefs. The owner obtains relief, in addition to any maintenance relief, in respect of the annual interest paid on a mortgage or loan on the security of the house. If the interest is paid to a building society, local council, certain insurance companies or a bank, relief will be given normally by setting off as much as possible against the assessment on the house and the balance, if any, against other in-

come. But if the mortgage is the type where income tax is deducted from each interest payment such tax will have to be paid over to the tax collector and the assessment, or part of it, will remain. Though this seems to be a complicated way of doing things, the net effect is the same and full relief is given. All queries about property tax assessments should be addressed to the local Inspector of Taxes.

## 9. GRANTS FOR IMPROVEMENTS AND CONVERSIONS.

**What Grants Cover.**—Grants towards the cost of certain types of improvements and for conversions can be made to property owners by Local Authorities, the Government paying approximately three-quarters of the amount and the Council the balance. *Improvement* for this purpose means work, other than ordinary repairs, necessary to bring a dwelling up to reasonable modern standards of convenience and comfort. It includes such essentials as installation of indoor water supplies, bathroom or indoor w.c., gas or electricity from a nearby main, hot-water system, standard kitchen equipment, and new windows to improve ventilation or lighting; putting right any fundamental defects in the structure; and provision of proper food and fuel storage. *Conversion* work includes the division of a suitable house or group of houses into flats or other self-contained dwellings.

**Conditions of Grant.**—To qualify for a grant council approval must be obtained before any work is started. The property must be brought up to certain defined standards and usable life and the estimated cost of approved work must be more than £100. The maximum grant for each dwelling provided is one-half the approved cost or £400, whichever is less. Fees for professional help and advice may be included in the approved cost.

## 10. PROTECTION OF DEPENDANTS AND HOME BY ASSURANCE.

**Freedom from Debt in Case of Death.**—Life assurance can be linked with house purchase in various ways to provide not only finance, but protection for dependants and, perhaps, a fund for meeting major expenditure some way ahead. A popular method is a loan from a life insurance office repayable by means of an endowment assurance. It is a two-way transaction. The insurance office makes a fixed loan for an agreed number of years. Simultaneously, the borrower takes out an endowment assurance for at least the same amount and the same period. Thus—which is the great merit of this method—if he dies at any time after paying the first premium the endowment pays off the mortgage and leaves the house free of debt. The maximum maturity period of the endowment assurance is normally twenty to twenty-five years or age sixty-five, whichever is the shorter term.

**Home Protection Insurance.**—A growingly popular and cheaper method of "insuring" reducing types of loan is, however, a reducing-term insurance, more popularly called "mortgage protection," "home protection" insurance, and so on. Though a number of variations are available, the basis is similar—the amount assured falls annually as the mortgage is reduced. Under the simplest form the insurance provides enough to repay the balance of the mortgage if death occurs before its complete repayment, but the borrower obtains no cash benefit if he lives to the end of the term. Premiums, payable for only a limited number of years, vary according to the age of the borrower and rates for younger age groups are no more than a few pounds per £1,000 original loan. The need to insure your house and contents is explained in Part III.

### III. A GUIDE TO INSURANCE

It is simple prudence to secure the benefits of insurance. You should ask yourself not whether you ought to insure but which pattern of insurance suits you best. Life assurance will give you confidence and your dependants too; and this will promote that trust which makes for happy relationship. Moreover, life assurance is a form of systematic saving against the inevitable rainy day. And there is a special word of advice for women, who are naturally especially concerned about financial security.

The figures quoted are those ruling at the time of writing (September 1955).

**Life Assurance: Who may Insure.**—You may insure your life and thus provide for your family in the event of your early death. A husband may take out an insurance on the life of his wife, and vice versa. It is a condition of the grant of a life policy that the person effecting it should have an interest in the life to be insured, known as an insurable interest. Every adult person has an unlimited insurable interest in his or her own life. A husband has an unlimited insurable interest in the life of his wife, and vice versa. These are, however, exceptions to the general rule, which is that the interest must be pecuniary, i.e., measurable in terms of money. Relationship in itself does not constitute an insurable interest. Thus a parent as such has no insurable interest in the life of his child, nor a child in the life of its parents. It is to be noted that provided the insurable interest subsists at the time the policy is effected, the interest may be reduced or disappear entirely during the term of the policy without invalidating the contract.

**"With" and "Without Profit" Assurance.**—Both whole-life and endowment assurances can be obtained either with or without the right to participate in profits, termed bonuses, a larger premium being charged for participation. A policy-holder's share in the profits is usually added to the sum assured. It is known as a reversionary bonus, and is payable with the original sum assured at the time of claim. These bonuses may, if desired, be surrendered for immediate cash without disturbing the original assurance, but the cash value, is, of course, considerably less than its reversionary value as an addition to the sum assured. The bonus may be calculated as a "simple" bonus on the sum assured or as "compound" bonus on the sum assured and any bonuses already added.

**Whole Life Assurance.**—The first contract should provide life assurance for as long as it can possibly be needed, which generally means a whole of life policy. The premiums may be payable throughout the lifetime of the assured, or can be limited to a fixed term of years, when, if the life assured survives beyond the fixed term, the policy continues in force without further payments of premiums. A whole-life policy under which premiums are payable throughout the life of the assured, and which does not participate in profits, is the cheapest form of permanent life assurance because it provides the maximum sum assured with the minimum premium outlay. A whole-life policy, either with or without profits, and preferably with premium payments ceasing not later than retirement age, should form the backbone of every well-planned scheme of life assurance. At age 25 a whole-life "without profit" policy for £1,000 will cost around £15 a year subject to rebate of income tax, or, say, £17 a year if it be arranged for premiums to cease at age 65. If effected on the "with profit" plan, a whole-life policy for £1,000 with premiums payable throughout life will cost about £22 at age 25, or around £24 a year if premium payments cease at age 65. The bonus additions to the sum assured, although not guaranteed, should average some £20 a year, or may exceed this estimate. A whole-life policy can be used as collateral security for repayment of a loan in the event of death of the borrower; to secure an estate against the impact of death duties; or a business against possible difficulties by withdrawal of capital upon the death of a partner.

**Endowment Assurance.**—In its simplest form an endowment assurance secures a stipulated sum upon the survival of the life assured to a stated date, or upon his death should that occur earlier. The most important advantage of endowment assurance is provision for old age. Where adequate assurance has already been effected as a provision for dependants, a short-term endowment assurance is often the best means of making provision for school expenses or providing a child with a start in life. But apart from special circumstances of that kind, the best form of endowment assurance in the great majority of cases is a policy maturing at the prospective age of retirement. Many men, of course, come under a pension scheme, but the pension will by no means equal their earnings, and may die with them. Their wives may enjoy the protection of a widow's pension, but this is likely to be a modest amount and perhaps inadequate, even allowing for an amount under the National Insurance scheme. There is therefore no better object for your savings than an endowment assurance maturing at 65. It provides a reasonable amount for dependants in the event of early death, while if the assured survives to 65 he receives a capital sum, when he can convert the policy moneys into a pension for himself, or himself and his wife.

**Endowments by Instalments.**—The proceeds of an endowment assurance may be payable by instalments over a period of, say, 5, 10, or 15 years free of income tax. The person assured would, of course, have an option to take a lump-sum payment at maturity instead of payment by instalments, and his representatives could make such a choice in the event of his death during the policy term.

**Optional Endowments.**—An option to convert to an endowment assurance can always be attached to a whole-life policy, so that if at the end of, say, five or ten years an endowment would better suit the assured's needs, the change can then be made. The option is with the assured, and if ill-health has overtaken him since effecting the whole-life assurance, he will no doubt prefer to retain the cheaper form of policy. This freedom of choice is of great value whether the policy is intended as a complete provision in itself or whether it is to be used in combination with other policies.

**"Income" for Dependants and Retirement.**—The "family-income" type of policy has been devised because it is when the family is young that it needs the most support. There is a plan to suit every need and every purse. Although some offices assure "income" independently of "capital" provision, the most beneficial plan is where the income benefits form part of a whole-life or long-term endowment assurance, to which the income benefits may be added at any time. At age 30 next birthday, an annual premium around £22 payable during the first 20 years and then reducing to around £17 will provide, in the event of death of the assured within 20 years, a tax-free payment of £150 per annum by monthly instalments for the remainder of that period, and, in addition, a cash sum of £1,000 at the end of the income benefit period. If death occurs after 20 years from the commencement of the policy, a cash payment of £1,000 is made at death. There are various varieties of this principle.

**Financial Security for Women.**—An increasing number of women are effecting policies, both as provision in the event of death as well as for old age. The woman following a career can provide for retirement at 55, or, at the latest 60, by an endowment assurance, or by what is known as a double-endowment assurance, or by the purchase of a deferred annuity. The two former have the advantage of tax rebate not allowable on premiums under a deferred-annuity contract. For a young woman the problem is: "If I marry, a policy on my husband's life is important. If I do not marry, a pension for myself is necessary." For this situation a number of special assurance schemes have been devised. Under one such



scheme a single woman assures her own life for a sum payable, either with or without bonus additions, at 55 or 60, and has the option, should she marry, to exchange the assurance for one on the life of her husband. By another, she has the option on marriage to take a small cash payment and, subject to her husband's not having reached 45, can exchange the policy for an assurance on her husband's life. In both cases the substituted policy remains for her absolute benefit, and is issued without medical examination of the husband or other evidence of his health.

**Assurances for Children.**—The cost of education can be met by an endowment assurance on the life of the parent or guardian. There are special assurances available with the sum assured payable at *termly* intervals over a period of years. In the event of premature death of the parent or guardian premiums cease at once, and the education fees provided for would then commence, or, alternatively, fees of the original period of the assurance. The ordinary rebate of income tax can be claimed on the premiums of these policies.

**Child's Deferred Assurance.**—A popular form of policy for the benefit of a child on reaching maturity is the child's deferred assurance, which becomes the property of the child on becoming 21 or 25, when a number of valuable options may be exercised. The most valuable option permits the assurance to be continued on a whole-life or endowment basis—with or without profits—at the same low premium, irrespective of the state of health of the child at that time, and without regard to occupation, travel, or foreign residence. The policy may thus be said to provide insurance against uninsurability, and this possibility is a very real one. The policy sometimes carries a special educational option at, say, 15, to meet school fees. Varying schemes of this nature are offered at comparatively small premiums, often no more than £10 per annum, or £1 per month. A small extra premium, which varies with the age of the parent, will provide that, if the parent dies, all premiums cease up to the option age. No loss can be sustained under this class of assurance, for all premiums paid are returned should the child not survive to the agreed "option age."

**Life Assurance and House Purchase.**—No man should buy a house on mortgage without making sure that, in the event of his death before the mortgage has been paid off, his wife and family will be free from any liability in connection therewith. The only way to safeguard one's dependants is through life assurance, and particularly by means of a life policy specially adapted to the purpose. Enquiry should be made as to the various kinds of assurance for this purpose.

**Loan, Surrender, and Paid-up Values.**—Both whole-life and endowment assurances acquire a surrender value after a minimum number of annual premiums (usually two or three) have been paid. Alternatively, either type of contract can be converted into a paid-up policy, i.e., the payment of future premiums is dispensed with, but, of course, a reduction is made in the sum assured. The surrender value of a whole-life or endowment assurance increases as time passes, and provided that premiums are regularly paid, policies form good security for a loan either from the office itself or from a bank. This may prove very valuable in the event of temporary financial embarrassment. Policies acquiring a surrender value are in general subject to special conditions of considerable value to the policy-holder in the event of premiums not being paid when due. Under what are termed "non-forfeiture regulations" the accrued surrender value is applied automatically to keep the assurance in force. The non-forfeiture period lasts so long as there is a surrender value sufficient to cover the unpaid premiums.

**Income-tax Allowance.**—Under existing legislation relief of income tax may be claimed on the amount of the premiums paid for life assurance effected by a person on his own life or on the life of his wife subject to the following conditions:

1. The amount on which relief is allowed is not to exceed one-sixth of the total income.
2. No allowance will be made in respect of

that portion of any annual premium which is greater than £7 for each £100 assured if the annual premiums are £25 or more.

Subject to the above conditions, an allowance of income tax is granted as under, calculated at the highest rate of tax paid, i.e., 2s. 3d., 4s. 9d., 6s. 9d., or 8s. 6d. in the £ (in border-line cases the allowances will be partly at one rate and partly at another):

(a) When premiums eligible for relief do not exceed £10 annually, tax allowance is made on the actual premiums paid.

(b) When premiums exceed £10 but do not exceed £25 annually, tax allowance is made on £10 only.

(c) When premiums exceed £25 a year, tax allowance is based on two-fifths of the premiums paid.

It was proposed in the 1956 Budget to give relief from tax in respect of premiums paid to provide retirement annuities in the case of self-employed persons and employees not in pensionable employment.

**Fire—Burglary—Accident—Personal Liability.**—The householder can incur heavy losses through fire, burglary, storm, flood, and burst pipes, or maybe Common Law liability to servants or temporary and occasional employees about the house, or, as owner or occupier, to members of the general public. The householder should therefore effect an insurance on both building and contents against these and other risks under an appropriate comprehensive policy. A comprehensive policy—whether on buildings or contents or on both—gives a wider cover and is cheaper than separate policies. A liability with the possibility of heavy loss is that of a house-owner to the public arising out of accidents resulting in bodily injury or damage to property, for which the comprehensive insurance grants indemnity up to £25,000, with costs and expenses incurred additional. The normal comprehensive rate is 2s. 3d. per cent. on the full value of the building and 5s. per cent. on the value of contents.

**Accident and Sickness Insurance.**—Accidents mean lost earnings during incapacity, and often even in these days of the Welfare State, medical and surgical expenses. Personal accident and sickness insurance is therefore of undoubted value. Various schemes are available with premiums ranging from, say, £2 a year, according to the cover granted and the occupation of the proposer. The main types of cover are:

- (a) an accidents only policy;
- (b) an accidents and specified diseases policy;
- (c) an accidents and all-sickness policy;
- (d) a permanent sickness and accident policy.

These schemes are year-to-year contracts, renewable each year being at the option of the company. A permanent non-cancellable sickness and all-accident policy is available under which the company guarantees continuous cover to a given age whatever the sickness record may be. A permanent contract of this nature is particularly suited to the professional or business man, who, whilst able to command a substantial income so long as he is physically fit, would suffer considerable loss of earning power, and perhaps complete loss of income, in the event of a prolonged breakdown in health. The non-cancellable form requires a somewhat higher premium than the year-to-year contract, and is only issued by certain specialist companies after the proposer has been proved in good health by medical examination.

**Personal Liability.**—In daily life individuals may incur legal liability in many circumstances. If the individual is negligent, and through his negligence some other person suffers injury or damage to property, the negligent party may be responsible and have to make redress. Instances of this nature have increased considerably in recent years. Even where negligence is not proved, the cost and worry of defending a claim is something to be avoided by the layman. The proposal form of personal liability insurance is very simple, often requiring no more than the name, address, and signature of the proposer.

# Sports and Pastimes



## LIST OF CONTENTS

<b>Outdoor</b>			
Athletics	940	Weight-Lifting	958
Baseball	941	Wrestling	958
Basketball	942	<b>Indoor</b>	
Bowls	943	Bridge, Auction	959
Boxing	943	Bridge, Contract	960
Cricket	944	Chess	961
Croquet	945	Darts	962
Cycling	945	Old English Games	964
Fencing	946	Shove-Ha'penny	963
Football, Association	947	Whist	963
Football, Rugby	948	<b>Records</b>	965-66
Gaelic Games	949	European Athletic Championships	965
Golf	949	Historic World Records (mile and 3 miles)	965
Hockey	951	Olympic Games, 1952	966
Korfball	952	University Boat Race	966
Lacrosse	952	The Derby	966
Netball	943	F.A. Cup	966
Racket Games	954	Association Football World Cup	966
Rowing	956	Rugby League World Cup	966
Skating	956	Cricket County Championship	966
Swimming	957		



# Sports and Pastimes

By JAMES AUDSLEY

## INTRODUCTION.

THE field of sports, games, and pastimes is such a vast one that no editor of a work of this kind, with but one section of the volume at his disposal, can hope to cover everything in it. Omissions being unavoidable, it was, therefore, necessary to work out a plan that would give as wide a coverage as possible, within the limits set.

The first step was obviously some kind of division of the subject into sub-sections; and the obvious choice was Outdoor Games and Indoor Games. Some sports, however, such as basketball, boxing, wrestling, weight-lifting, etc., though played indoors, seemed to belong more with outdoor sports such as athletics and football than with games like bridge and chess: so the final decision was, first, Sports and Outdoor Games, followed by Indoor Games and Pastimes.

Then came the problem of limiting the field. In the outdoor section, it was decided to omit all sports in which competitors depended upon mechanical aid in addition to their own skill. This ruled out such things as aeroplane racing, motor racing, motor-boat racing, and motor-cycle racing. Speedway racing thus had to be left out too, for it would have been manifestly unfair to include this, while omitting other types of motor-cycle racing. Sports using horses are also omitted. A proper description of a vast subject like racing was out of the question; and the inclusion of driving, trotting, and polo seemed inappropriate without racing. Greyhound racing, a sport in which no one can actually participate, is also excluded.

Most games popular in Britain are described as clearly as is consistent with reasonable brevity; and certain games which are fairly recent arrivals from abroad, such as baseball, basketball, ice-hockey, and korfbal, are included. Some mention is also made of overseas versions of certain games, such as the American, Australian, and Canadian brands of football. It was also thought desirable to include some records, but, with the material for this work having to be prepared some time in advance, the choice was not an easy one. There are, however, lists of current Olympic and European athletic champions, who, of course, hold their titles for four years.

The indoor field is so vast that selection had to be almost completely arbitrary. With cards, for instance, there are games of sheer skill, games of pure chance, and games at every level between these two extremes. There are also many games which actually derive from and resemble each other. Bridge, the most widely discussed and widely played card game, has first claim to inclusion. Whist, which might be called the basic card game, is the only other card heading, but more than one game is included under it.

Amongst board games, history, tradition, and the sheer skill which it demands guarantee the inclusion of chess. Using the same board and also extremely popular is draughts, which is also described. Darts could hardly be omitted, and is not; and shove ha'penny also finds a place.

In addition, there is a selection of Old English Games, some of them still played to-day, others of interest as they are so clearly ancestors of games played to-day. They are a varied collection: so the Pastimes sub-section seemed the most suitable place for them.

## SPORTS AND OUTDOOR GAMES

### ATHLETICS.

The sport of athletics, which comprises competitions in running, walking, jumping, and throwing, is really the most natural of all sports. Walking and running, the one only an intensified form of the other, are perfectly natural physical movements, and a glance at children at play will soon satisfy any doubts as to whether or not jumping and throwing also come into this category.

The history of athletics actually starts in the days of pre-history, or of mythology. We have details of the Olympic Games of 776 B.C., and it is certain that the Games were being held before this—perhaps long before this. The story of athletics from before the Olympic Games of 776 B.C. to those of today, however, is not a continuous one. The Greeks were followed by the Romans, who discontinued the Olympic Games: so the historian seeking the beginnings of the present-day sport might then turn to the country sports of various periods of English history. There were such sports, and they included some races, but they did not really give very much indication that they would lead to athletics as we know it to-day.

The true beginnings of athletics can be found almost exactly a century ago: for it was in 1849 that the Royal Military Academy, Woolwich, instituted a sports meeting, and a year later that Exeter College, Oxford, gave a lead that was soon to be followed by the other Colleges of Oxford and Cambridge. The Civil Service were also early in the field, and the first actual athletic club to be formed was the Mincing Lane Athletic Club, which is still active to-day as the London Athletic Club. There was also an organisation called the Amateur Athletic Club, which ran an annual championship meeting which was to all intents and purposes a national meeting. Then, in 1880, the Amateur Athletic Association was founded. It took over the organisation of the annual championships, and started the government of the sport which it still

rules to-day. Other countries, particularly the United States, were soon in the field, and, in 1896, the first modern Olympic Games took place at Athens. Subsequently the Empire Games, the European Championships, the Balkan Games, and many other international meetings and matches came into being; and championships and competitions of all standards were instituted in almost every country in the world.

Athletic events have now become standardised so that races are generally at one or another of a series of recognised distances, and throwing and jumping events are held in accordance with certain internationally agreed rules. With regard to races, there are actually two lists of standard events, one being in the yards and miles of British and American measurement, and the other in the metric equivalents of these distances. Some idea of the scope of the sport can be gained from a list of the events included in the A.A.A. Championships and from those included in the Olympic Games.

The A.A.A. Championships consist of: 100 yards, 220 yards, 440 yards, 880 yards, 1 mile, 3 miles, 6 miles, Marathon (standardised at 26 miles 385 yards—not the distance from Marathon to Athens, but that covered in the Olympic race of 1908, just when the desirability of standardising the distance was becoming apparent), 120 yards hurdles, 440 yards hurdles, 3,000 metres steeplechase, high jump, long jump, pole vault, hop-step-and-jump, putting the shot or weight (16 lb.), throwing the hammer (16 lb.), throwing the discus, throwing the javelin, 440 yards relay (4 × 110 yards), 1 mile relay (4 × 440 yards), 2 miles walk, 7 miles walk, and Decathlon.

The events in the athletic section of the Olympic Games are: 100 metres, 200 metres, 400 metres, 800 metres, 1,500 metres, 5,000 metres, 10,000 metres, Marathon, 110 metres hurdles, 400 metres hurdles, 3,000 metres steeplechase, high jump, long jump (called the broad jump in the United States), pole vault, hop-step-and-jump, shot-put, throwing

the hammer, discus and javelin, 400 metres relay (4 × 100 metres), 1,600 metres relay (4 × 400 metres), 20,000 metres road walk, 50,000 metres road walk, and Decathlon.

The Decathlon is an all-round test in which the competitor has to take part in ten events, the 100 metres, 400 metres, 1,500 metres, 110 metres hurdles, high jump, long jump, pole vault, shot-put, throwing the discus, and throwing the javelin, all within two days, and score points in each or else retire from the competition. This, the severest test of strength, speed, stamina, and fortitude to be found anywhere in the whole world of sport, was won at the Olympic Games of 1948 by Bob Matthias, an American then aged seventeen.

Walking has actually a governing body of its own, the Race Walking Association, though, as will have been noted, there are track walking races held under the auspices of the A.A.A. Some walkers concentrate on long road races all the year round, but the majority take part in road races during the winter and shorter track races during the summer. The road season is carefully organised so that almost all races arranged early in the season are at 7 miles. Later on, this increases to 10 miles, and, at this stage, the R.W.A. 10 miles championship and 10 miles junior championship take place. Distances continue to increase, and there is a championship at 20 miles. The final championship, which takes place early in the summer when the track season has already started, is the 50 kilometres, and this attracts chiefly the confirmed, all-the-year-round road walkers. There are regular races from London to Brighton, and, every four years, there is a race from London to Brighton and back—actually from Croydon to London, then to Brighton, then back to Croydon.

Athletics is mainly a summer sport, and many runners turn to cross-country running—governed by the English Cross-Country Union—during the winter. There is a vast annual programme of matches and championships, the latter including County championships, an Inter-County championship, North of the Thames and South of the Thames championships, Northern, Midland and Southern championships, National championships for seniors, juniors and youths, and the International championship. This last used to be between England, Scotland, Ireland, Wales, France, and Belgium, but, in recent years, several other countries have entered as well. Major cross-country championships are over courses of about 10 miles.

Athletics is entirely an amateur sport, controlled in England and Wales by the A.A.A., and in Scotland and Northern Ireland by similar bodies, the three Associations combining to form the British Amateur Athletic Board. There is some professional running, i.e., races with money prizes, but this side of the sport is called, not athletics, but pedestrianism. There is a famous annual professional meeting at the Powderhall Grounds, Edinburgh, and there are some other events in Scotland and the North of England. There are also a number of regular meetings with big prizes in Australia, chiefly in Victoria.

Women also take part in athletics, though they do not, of course, compete in very long races, nor do they throw the men's heavy implements. The Women's Amateur Athletic Association was founded in 1922, and women's events have been included in the Olympic Games since 1928.

## BASEBALL.

Baseball, a summer game with a season running from April until October, is the national game of the United States. The original invention of it is credited to an Army officer, and it has developed from old country games called "One Old Cat" and "Two Old Cat" to the highly skilled, fully commercialised sport of to-day.

Teams are nine-aside, and they take turns in batting and fielding. The main part of the ground is the "diamond." This is an area marked at each corner of the diamond by a "base," which is a sack fixed to the ground, the lines from sack to sack being the "base paths." One of these bases is known as "home," and here the batter stands, by a square of rubber on the ground, which is known as the "plate." The base which is forward and to the right of a right-handed batter is "first," the one straight ahead of him "second," and the

one forward and to his left "third." Each base is 30 yards from its nearest neighbours. Between first and third and 20 yards out straight in front of the plate is the pitcher's "mound." The lines from home to first and from home to third are continued beyond these bases, and are the "foul lines." It is the object of the batting side, using a bat which resembles a very long and heavy Indian club, to hit the ball, which is white in colour, hard, and weighs 5 ounces, and to score runs, one being scored each time a member of the team completes the circuit of the bases, not necessarily from one hit. The team bats in an order arranged before the start, each batter being succeeded by the next as he leaves the plate, either "out" or to proceed to first base or further still. A game consists of nine innings, each innings being completed when three men are out, and each succeeding innings starting at whatever place in the batting order has been reached. The batting order is a continuous one, number one following straight on again after number nine. Should the team batting second score more runs in eight innings than their opponents do in nine innings, then the last half of the ninth is not played. There is no toss for first innings, the visitors always batting first.

The fielding side is divided into three sections, the "battery," the "infield," and the "outfield." The battery consists of the pitcher and the catcher who stands behind the batter. The infield, four strong, consists of the first baseman, at or near first; the second baseman, between first and second; the short-stop, between second and third; and the third baseman, at or near third. The remaining three fielders, out well beyond the infield, are the right, centre, and left outfielders. Each fielder wears a glove on one hand, that of the arm which he does not use for throwing, the catcher and the first baseman being allowed larger gloves than the others. The catcher also wears a chest protector and a mask.

The ball delivered by the pitcher to the batter reaches him without touching the ground. Should it pass over the plate between the batter's shoulders and knees without being hit, it is a "strike." Three such strikes dismiss the batter. Should it pass wide of the plate or too high or too low, it is a "ball"—unless the batter makes a stroke at it, when it becomes a strike if missed. Four balls give the batter a "walk," i.e., a free passage to first base. The batter must run—to first, or farther if he can get farther—if he hits, but he cannot run if the hit goes foul. It must be hit in front of him and between the foul lines. If it passes over the foul lines it is a "foul hit," while, if he snicks it so that it goes behind him, it is a "foul tip." The first and second foul hits are counted against him as strikes, but the third strike that would actually dismiss him cannot be by a foul hit. Any foul hit by a batter who already has two strikes on him does not count, unless it is caught, for a batter may always be caught out from any hit. He can also be "put out" when running the bases, this happening when a fielder, in possession of the ball, goes to the base for which the runner is making and "tags" him as he comes in.

It should be noted that the ball is not dead when an out is made. A man making a catch can still throw the ball to a baseman in the hope of running out another player, and that baseman, having made the put out, can relay the ball to still another team-mate for the same purpose. In this way, it is possible, though it is rare, for the fielding side to make the three outs which complete an innings in one "play." "Double plays" are quite frequent. If there are several runners on the base paths, a fielder will always throw to put out the man running for home, if possible, as otherwise this runner will actually score. If, however, there are already two out, it is not necessary to concentrate on the scoring one of, say, two runners. Any out made at that point ends the innings, and no runs scored on that actual play count. Only one man can occupy any base at one time, so it follows that, if there is a man on first when a batter is walked, then this player must proceed to second. If all the bases are occupied—"full" or "loaded" are the terms used—then a walk will automatically force in one run. Except when this would occur, pitchers often deliberately walk known dangerous hitters.



Once there are runners on the bases, the pitcher's job becomes more complicated. These runners may move at any time, and one or more may attempt to "steal" a base. If this is tried, the pitcher will throw the ball to the appropriate base, instead of pitching to the batter. The catcher will also be watching for an attempt to steal. If he sees one, he will immediately move from behind the batter and call for a "pitch out." The pitcher will throw the ball to him, and he will relay it to the appropriate base. The batting side will have players not actually engaged or coaches coaching at first and third, and advising the runners when to steal. A batter may deliberately "sacrifice" himself to advance a team-mate on the base paths. He does this by hitting the ball gently—"bunting" is the term—towards the pitcher or down the first base line. He is, of course, automatically put out at first, but one or more colleagues may have advanced one or more bases while the ball was rolling. Obviously, this would not be done with two out, as a third would end the innings, and no advance by other runners would be of use. Runners on bases when an innings ends are said to be "left on," and they score nothing. Incidentally, if a batter is hit by a pitched ball, he gets a free passage to first.

Substitutes are permitted, and pitchers who are being hit are often relieved. Spare pitchers will be "warming up" with spare catchers in a special area known as the "bull pen." Also a team desperately in need of runs may want to make a batting change if the lower part of the batting order is "up." Pitchers, being specialists, are rarely good hitters, and if there are men on base who might score, two out, and it is the pitcher's turn to bat, it may be expedient to send in another batter, not one of the actual line playing the game, as a "pinch hitter." If this is done, then a different pitcher must be used when the side fields again.

Although the pitched ball reaches the batter full pitch, pitchers can develop a wide variety of pitches, including very fast balls, curves, etc. It is the catcher, who knows his own pitchers and who studies the strong and weak points of the batters, who chooses what type of ball should be pitched, and this is indicated to the pitcher by a signal, which might be, for instance, two fingers held against the glove in a certain way. The pitcher may accept or refuse a signal. If he refuses and it is repeated, he will know that the catcher considers it urgent that that particular delivery be thrown. Refusals are most frequent when the catcher calls for a fast ball near the end of a game, when the pitcher is tiring. Incidentally, a batter is not automatically struck out when the third strike crosses the plate. He is not out until the catcher, who will be credited with the put out, catches the ball. If he fails to hold it, the batter may run for first, though he will seldom reach there before the catcher gathers and relays the ball.

Detailed score sheets are kept, and against each player's name is shown: his times at bat; his hits; how many of the hits were one base hits (singles), how many two base hits (two-baggers), how many three base hits (triples), and how many four base hits (home runs or homers); how many runs he actually scored; how many runs he batted in, i.e., the number of men who crossed the plate after completing their circuit on his hits; how many sacrifices he made; how many put outs he made when fielding; how many assists, i.e., throws which resulted in a put out; and how many errors, i.e., fumbles, dropped catches, throws to the wrong base, etc., he made. Against the pitcher's name will be shown the number of innings pitched; the number of runs scored against him; the number of hits off him; the number of walks given; and the number of men actually struck out. Batting averages are calculated by dividing the times at bat into the number of hits. An average of 0.400 would be exceptionally good. Pitchers are graded according to the number of games won and lost. The word "hits" in these scores always means a safe hit that took the batter to first base or farther still, and was not a chance. If a batter hits a catch and goes safely to first base because the catch was dropped, he remains at first and plays on from there in the usual way, but he is not credited with a hit.

The game in America is highly organised. There are two major leagues, the National and the

American, each consisting of eight clubs. Each club plays a schedule of 154 games, meeting each of the other clubs in its league 22 times. Games are played every day, including Sundays. The champions of these two leagues meet in a series of the best of seven games, known as the "World Series," for the Championship of the World. Below these two leagues, are two others, the International—so called because two of the teams are in Canada—and the American Association. The champions of these leagues meet in the "Little World Series." Underneath these are numerous professional leagues, classified A, B, C, or D according to the standard of play. Then come the semi-professional clubs and the "sandlot" or amateur teams. The clubs in the major leagues will have an extensive "farm" system, consisting of clubs owned and run by the major organisation in junior leagues of every grade. Promising players will be brought up to major standard through this chain.

Baseball is also the chief summer game of Canada, and it is very widely played in Australia. It has been played in Britain for some years, and, since the war, it has made very considerable progress. There are clubs in almost every part of the country, and games have attracted crowds of up to 20,000. The game may well equal the popularity of cricket, for it is full of action, and games rarely have to be left drawn, as a full match is usually completed within two hours.

Similar to baseball is Softball, which is very popular in America with girls as well as men, and which was demonstrated in Britain during the war by American and Canadian servicemen. The ball is not actually particularly soft, but it is larger than a baseball, and all pitching is underarm. Distances between bases, and between the plate and the mound are shorter than in the parent game.

## BASKETBALL.

Basketball is an ideal example of the winter team game, which is also primarily an indoor game. Originally invented by an American Y.M.C.A. official at Springfield, Massachusetts, it can be played in almost any gymnasium or hall; and it can be played outdoors on an asphalt court. In America it is played by teams of all standards from schoolboys to professionals; and, taking games all over the country into account, it is watched by more spectators than any other American game. In the country of its birth, it can justifiably be called the chief winter team game, especially having regard to the facts that ice-hockey is played only in certain sections of the country, that American football has only a ten-week season finishing early in December, and that lacrosse is played only in the spring. Basketball has spread far beyond the United States, and it is played in almost as many countries as is Association football. It is included in the Olympic Games, and, in the Games of 1948, the basketball tournament occupied the whole Olympic fortnight. It has been played in Britain for some years, and is on the increase. There are specially active centres in London and Birmingham, and the Services, particularly the R.A.F., have taken it up as part of their physical-training schemes, and have helped to popularise it.

Basketball is played five-a-side, but substitutes are permitted. The ball resembles that used in Association football, but it is played only with the hands. The goals consist of posts with iron rings at the top, through which the ball must be thrown. These rings have short nets suspended from them, and the ball must, of course, pass through the rings from above them. Fixed to the top of the posts behind the goals are back-boards, and the ball may be thrown against these so as to fall down through the ring. Running with the ball is not permitted, and it is advanced by dribbling, which means by bouncing it, or by passing. Some hard knocks are inevitable, and most players wear elbow and knee pads. Deliberate bodily contact as a means of defence is not, however, allowed; and the penalty for a "personal" foul is two free throws, while, for a more technical infringement, it is one free throw. Goals thrown during play count two points, and goals thrown from free throws are worth one point. Tactics play a big part in the game, and most teams try to carry out attacks according to a prearranged plan. Defen-

sive plans are also made, these being based on either a man-to-man or a zone defence. Stamina and agility are both needed for basketball, and great height is an asset. There are teams in the United States in which a man 6 feet 4 inches tall would be the smallest man playing.

Basketball has been enthusiastically taken up by girls in the United States and in some European countries, but not as yet in Britain.

### Netball.

Similar to basketball, and, as far as Britain is concerned, very much older, is netball. Unlike basketball, which, though it is played by girls, is primarily a men's game, netball is exclusively a girls' game. It is almost always played outdoors on an asphalt or even a grass court. The ball is similar to that used in basketball, as are the goals, except that these have no back-boards. Netball is played seven-aside instead of five, and substitutes are not permitted.

### BOWLS.

Bowls is one of the oldest of all games, and, like several other almost traditional games, it seems to be steadily increasing in favour in these middle years of the twentieth century. Once dismissed by many people as simply "an old man's game," it now has many devotees of all ages and also of both sexes. It is played indoors as well as out, for there are now several covered rinks operating in various parts of the country. The game certainly goes back to the thirteenth century, and, in its earlier days, its popularity was such that it was one of the games officially legislated against as likely to attract people away from archery. Henry VIII., who was fond of all sports, was a keen player; and the famous game on Plymouth Hoe in which Sir John Hawkins brought his match with Sir Francis Drake to a successful conclusion even after the Armada had been sighted, if not definitely authenticated, is accepted as fact by several competent historical authorities. About a century after this incident, however, Bowls fell on evil times. Many greens were attached to taverns, and the game acquired a reputation as being merely an adjunct to pothouse revelry. It was revived on a rather higher level in Scotland, however, never again to sink so near to oblivion.

Bowls as played to-day is actually two separate games, and each has its own supporters, few players of one attempting the other. These are the Rink or Level Green Game and the Crown Green game. As the names imply, it is the rinks rather than the basic objectives of the games which differ. The Level Green game is the more widely played, and this, as the name suggests, is played on a perfectly flat piece of well-cared-for turf. The Crown Green game, which is very popular in Lancashire and Yorkshire and which is also played in the Midlands, is played on a green of which the centre is 6 inches or more higher than the corners. There are some differences in the actual games—for instance, in the putting into play of the object ball—but basically the two games are similar, so it will be appreciated that a good deal of experience and a very high level of skill is demanded by the Crown Green. This game is usually played between two players who oppose each other, whereas the Level Green game is played between sides each consisting of one, two, three, or four players.

The particular equipment used and the detailed technicalities of Bowls make it a game in which a great deal of skill can be attained, but at first glance it seems a very simple game. Its object is simply the playing of the bowls as near as possible to the object ball. Bearing in mind, however, first, that the object ball itself does not occupy a fixed spot but is put into play by the first player, and, secondly, that the bowls are biased, it will be realised that the elementary objective is more easily planned than achieved.

The object ball or "jack" is a small white ball about 2½ inches in diameter. The bowls used differ in the two games. Those in the Level Green game have a maximum weight of 3½ lb. and a maximum circumference of 16½ inches. Those in the Crown Green game are much smaller and lighter. They are also less biased: but, in this game, the jack is biased. This question of bias is interesting. In the early days of the game, bowls

were little, if at all, biased. Then bias was given by weighting with lead. Now, the bias is achieved by turning one side of the bowl less round than the other.

Players generally use two bowls each in a game, or four if playing singles, and the player or side with the best record of bowls near the jack wins the "end"—doubtful instances being accurately measured. An agreed number of ends make up the game, the side winning the most shots throughout the whole game being the winner. With a number of bowls all being played, and each being liable to a hit from a following player, it will be appreciated that there is a good deal more in Bowls than the mere rolling of a bowl, even a biased bowl, at a small white ball.

### BOXING.

The sport of boxing, sometimes called "The Noble Art of Self Defence," though actually aggression is its keynote and defence an incidental, has a long history, for it is a modern continuation of the old sport of Prize-Fighting.

Prize-Fighting was very popular at the time of the Regency, and it retained this popularity—though illegal and always subject to interference by the authorities—right up to the end of the nineteenth century, when it was succeeded by the present-day glove-fighting or boxing. A prize-fight was a very rugged, not to say brutal, affair. Bare fists were used, and wrestling holds and throws were allowed under the London Prize-Ring Rules, which governed the contests. All fights were to a finish, and a round ended when one of the contestants went down. When this happened, the fighter had 30 seconds, during which he received attention from his seconds or "bottle-holders," to come up to "scratch." It was when a man failed to do this that a fight finished.

Prize-fighting was illegal, and, in this, its position was clearer than is that of boxing to-day. Though not actually illegal, it is certain that boxing, in the sense that it is in actual fact an attempt on the part of two men to knock each other unconscious, is not legal. If there is no knock-out, however, a decision on points is given, and, technically, boxing is a contest of skill for points, the knock-out not being recognised in the official rules. At any rate, properly regulated contests are not now subject to police interference.

Boxing differs from prize-fighting in many respects. First, gloves are worn, and clean hitting only is allowed, holding and throwing as in wrestling being forbidden. Rounds are subject to a time-limit, usually three minutes, and they end after that time, even if both men are still on their feet, as, of course, they generally are. There is a one-minute interval between rounds. As these timed rounds do not end simply because a man goes down, a fallen contestant has ten seconds, counted off aloud by the referee, in which to rise; and it is when he fails to do so that the legally unofficial but practically conclusive knock-out occurs. Should the round end while he is on the floor, then, of course, the fighter has the normal minute interval, during which he may receive attention, in which to recover. The referee may stop the bout at any time if he thinks that a man might suffer serious injury if allowed to continue; and, in this case, the winner is credited with a "technical knock-out"; as he is if his opponent fails to come up when the bell sounds to start a round. In the early days of glove-fighting, fights were to a finish, as in the prize-ring days. Rounds were limited to three minutes, but they were not limited in number. Later on, it became the custom to limit a fight to so many rounds, a points decision being given if there was no knock-out. Fifteen rounds is the limit at the present time.

Boxers, breaking the rules by hitting below the belt or by some other infringement are usually warned once or twice, after which they are disqualified. In the United States, the "no foul" rule operates to prevent disqualifications. The authorities make it a rule for fighters to wear certain protective equipment, and, under these circumstances it is maintained that a foul blow would not actually incapacitate a man. If a foul blow is delivered, the man responsible scores no points at all for that round, and his opponent has five minutes in which to recuperate. There has been some talk about introducing this rule into



Britain, but this has not yet been done, although a recent regulation compels boxers to wear the same protection as is used in America—and which consists of a device invented by an Englishman.

In professional boxing the referee is solely responsible for any points decision. In amateur contests judges give the decisions, the referee voting only if a casting vote is necessary. Amateur bouts are usually limited to three rounds, as the contestants may be required to fight several times during a tournament. In Britain the count following a knock-down in an amateur contest is silent.

The difference between a good professional and a good amateur is probably more marked in boxing than in any other sport. Amateur boxing, incidentally, is the only sport in which the whole of Europe, including Britain, combines to select a team to oppose the United States.

Boxing contests, both professional and amateur, are arranged in classes according to body-weight. The normal divisions are: flyweight, up to 8 stone; bantam-weight, up to 8 stone 6 lb.; feather-weight, up to 9 stone; light-weight, up to 9 stone 9 lb.; welter-weight, up to 10 stone 7 lb.; middle-weight, up to 11 stone 6 lb.; light-heavy-weight, or cruiser weight, up to 12 stone 7 lb.; and heavy-weight, any weight. Amateurs have two additional classes, light-welter-weight, up to 10 stone, and light-middle-weight, up to 11 stone.

Prize-Fighting was governed successively by "Broughton's Code," the "New Rules of the Ring," and the "London Rules." Then, in 1866, the eighth Marquess of Queensberry drafted the rules that have been the basis of boxing ever since. Professional boxing in Britain has been controlled since 1929 by the British Boxing Board of Control. The Amateur Boxing Association has ruled amateur boxing since 1884, when it succeeded the Amateur Athletic Club, which had looked after both boxing and athletics.

### CRICKET.

Cricket can claim a longer history than any other team game. Historians have attempted to trace its origin in various ball games played by ancient races, and, even if some of these derivations are a little far-fetched, we can at least say that 250 years ago the game was being played in a form not so very dissimilar from that of to-day. Hampshire, particularly the village of Hambledon, Surrey and Kent really pioneered this game that was later to be taken so seriously at the other end of England, though the great days of the Hambledon cricketers were somewhat later than our late seventeenth-century starting point.

Cricket to-day is played by two teams, each consisting of eleven players, which take it in turn to "bat" and to "field." It is the object of the batting side to score "runs," and to score as many as possible before they are got "out" by the fielding side, who then take their turn with the bat. The ground is generally oval in shape, with a white line, called the "boundary" line, marked round it. The "wickets," which the batsmen have to defend, are pitched near the centre of the ground on a specially well-tended piece of turf, or on matting or concrete. There are two wickets, each consisting of three "stumps," joined across the top by two "balls." The wickets are pitched opposite each other 22 yards apart. The bats used have a flat striking surface, and the ball, which weighs about 5 ounces, is red in colour and hard.

The ball is delivered by "bowling," not throwing, it from one wicket to the batsman at the other, six balls—comprising one "over"—being bowled from each end in turn. The batting side bat two at a time, one at each end, so it follows that with eleven men in a team, the fielding side has to get ten out to finish the innings, as the remaining batsman then has no one to partner him. There are a number of ways in which the batsman can be got out. If the ball, passing the bat, hits the wicket, or if he plays the ball on to his wicket, he is out "bowled." If he hits the wicket with his bat when making a stroke, he is out "hit wicket." If he leaves his ground, misses the ball, and the wicket-keeper, having taken the ball after it passed the wicket, "breaks" the wicket, he is out "stumped." If he hits the ball and it is caught before it touches the ground, he is out "caught." If, when running, he fails to reach his ground before the wicket is broken, he is out "run out." If the

ball when bowled would have hit the wicket, but hits his leg instead, he is out "leg-before-wicket"—though this is a very complicated rule, and there are occasions when, if the ball did not first pitch in line with the wicket, the batsman is not out, even though only his leg stopped it hitting the wicket. A batsman may also be given out if he obstructs any of the fieldsmen.

Runs are scored by the two batsmen running past each other from wicket to wicket while the ball is being retrieved after a hit. Naturally, the batsmen will run as many runs as possible for a hit, but if the ball crosses the boundary line it automatically counts four, or, if it does so without touching the ground, six. Certain runs, called "extras," can be scored without the ball being hit. If the ball passes the bat without hitting the wicket and goes far enough for a run, this is counted as a "bye." If it goes off the batsman's leg, not having been kicked away deliberately, and they run, it is a leg-bye. If it is bowled so wide of the wicket that the batsman cannot reach it, it is a "wide," and one run is added to the score. If the bowler comes in front of the wicket at his end before delivering the ball, or if he throws it, it is a "no-ball." In this case, the umpire shouts "No-ball" as quickly as possible, and the batsman can then hit at it, counting any runs he scores, but not being out if he misses it or is caught. If he does not score off a no-ball, then one run is added as an extra. Wides and no-balls do not count as part of the over.

It is obvious that members of the fielding side will be disposed about the field in what are considered the best positions for preventing runs and for assisting in getting the batsmen out. One man, of course, is the bowler, and one other position is fixed. This is the wicket-keeper, who stands behind the batsman's wicket. The remaining nine positions are not fixed, but there are a large number of recognised positions: far too many, in fact, for them all to be occupied at once. Those which are occupied will depend on a decision reached by the bowler in consultation with his captain, and arrived at in the light of the particular type of bowling, and how the batsman is likely to deal with it.

To gain some idea of the recognised positions, imagine a right-handed batsman standing ready at the wicket, his body at right angles to the line from wicket to wicket. The side of the field in front of him, nearer to his bat than to his body, and on the left of the bowler, is the "off" side. Behind him, nearer to his body than to his bat, and on the bowler's right, is the "leg" side. On the off, to the right of the wicket-keeper, behind the wicket and close to the bat are the "slips." There may be up to four of these, called, going from the wicket-keeper outwards, "first," "second," "third" and "fourth slip." Behind them, near the boundary, is "third man." Coming a little forward from the slips, but still behind the bat and close to it, is the "gully," where there may be two men. Level with the bat, in front of it and close to it, is "point," or, if he is standing farther back, "deep point." Coming farther forward, in front of the bat on the off, but not so far round as to be level with the bowler's wicket, is "cover," who may have a man some way behind him at "extra cover." About level with the bowler, or a little farther back, is "mid-off," with, possibly, a man behind him on the boundary at "long off." All these positions have their counterparts on the leg side. The leg equivalent of "long off" is "long on"; of "mid-off," "mid-on"; of "cover" and "extra cover," "mid-wicket" and "deep mid-wicket"; of "point" and "deep point," "square leg" and "deep square leg"; of "gully," "short leg"; of "third man," "long leg"; and of "slip," "leg slip."

First-class matches, i.e., international or "Test" matches and County Championship matches, last three days or longer, and are two-innings matches. Most club matches are restricted to one day or to half a day, and consist of one innings each. In a one-innings match, the side batting second need not continue its innings after the opponents' score has been passed, as the match is then considered won by so many wickets, i.e., the number out of the ten which have not been captured. The same applies, of course, during the second innings of a two-innings match. Should the side batting first prove the winners, it wins by so many runs, i.e.,

those scored in excess of the opponents' final total. In a two-innings match, the innings are alternate, i.e., the side which bats first also bats third: but there is an exception to this rule. Should the side batting first get its opponents out while they are still 150 or more runs behind, then the side which is ahead can, if it wishes, require the other side to bat again at once, the leading side keeping its second innings in reserve to be used if necessary. If a batting side thinks that it has scored sufficient runs, and that, if it continues to bat, time will be up before the other side has been got out, it can declare its innings closed. In this case, should the other side get the necessary runs, it wins, of course, even though it may have lost more wickets than had the other side by the time of the declaration.

Although cricket quickly spread over England and became known as "England's National Game," its story outside England has been a peculiar one. Even as close at hand as Scotland and Ireland, it has never been taken up very seriously or with much enthusiasm; and the Continental countries which have adopted so many English games have, with one exception, left cricket severely alone. The exception is Holland, where the game is played enthusiastically, the standard of the best players being about equal to that of good English club cricketers. Cricket is played in the United States and Canada, but only to a slight extent, and then, particularly in the United States, chiefly by Englishmen. Apart from Canada, however, the Commonwealth countries have been enthusiastic. The standard in Australia is almost certainly the highest in the world; and South Africa, New Zealand, the West Indies, India, and Pakistan can all turn out teams capable of holding their own with England.

Cricket has its disadvantages. It does not offer a speed-loving era a great deal of action; it is utterly dependent on fine weather; and many games have to be left inconclusively drawn. Its retention of the title of England's National Game is now more of a courtesy than an indication of fact; but cricket's place in the scheme of things sporting seems secure enough. There are many people who, despite frequent suggestions for "brightening up" the game, are perfectly satisfied with it exactly as it is.

### CROQUET.

Croquet has been played in Britain for almost exactly a century, having come to this country from France. The governing body, the All-England Croquet Club, was founded in 1868, with headquarters at Wimbledon. This fact is important, because, not long afterwards, Wimbledon also became the headquarters of Lawn Tennis, and it seems likely that the very rapid growth in the popularity of this game was a factor that may have restricted the development of Croquet. Croquet retained, and still retains, its following, however; and, in addition to championships and tournaments, it is widely played on the lawns of private houses.

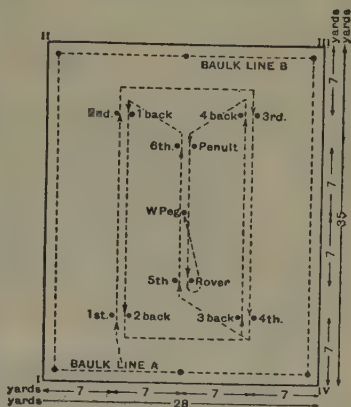
The equipment consists of four balls, coloured blue, black, yellow, and red; four mallets usually also marked blue, black, yellow, and red on the handles; six hoops; and a peg. The standard size of the lawn is 35 yards by 28 yards, but a smaller lawn can be used, provided that length and width are in the proportion of 5 to 4.

The hoops, which stand 1 foot out of the ground, and the peg are set out as shown in the diagram, the peg being exactly in the centre of the lawn. Usually two players, taking the blue and black balls, oppose two using the yellow and red, though singles may be played. In this case, each player has two balls, one using blue and black and the other yellow and red. Each player must pass his ball through the hoops, going round the circuit twice in the order illustrated, and finishing by hitting the peg, or "pegging out." Balls must pass through each hoop from the front. Each side, though not necessarily each ball of each side, plays in turn. Full points for a completed round are 26, and, to win, a side must finish both its balls before the other side does so.

There is a good deal of scope for skill and tactics in Croquet, as players may earn extra turns, or the right to try to "make a break," in various ways, such as hitting another ball with their own or

passing through, or "running," a hoop. It is also sometimes expeditious to play a shot designed to increase the other side's difficulties, rather than simply to advance one's own course round the circuit. While endeavouring to score his own

### STANDARD SETTING.



Only those portions indicated by a continuous line need be marked on the court.

The order of making the points is indicated by the arrows.

points, a player will also be considering ways and means of leaving his opponents at a disadvantage.

There is a system by which handicap matches may be arranged, a certain number of extra turns, or "bisques," being given to one player. A "half-bisque" is an extra turn in which no hoop may be scored.

### CYCLING.

Few inventions can have been so widely adopted so rapidly as the bicycle. This is not surprising, for this comparatively simple method of transportation offers many advantages, with few counterbalancing disadvantages, in all of the three main activities for which it is used—cycling for utilitarian purposes, cycling for recreation, and cycling as a competitive sport.

Utilitarian cycling includes using a bicycle for "going to and from work, for going shopping, and for every fairly short journey that has to be undertaken. One advantage is that a limited amount of luggage can be carried; and another is that, like walking, it offers some exercise, but it enables the traveller to cover the ground three or four times as fast as when walking. It makes one independent of local bus and train services, and yet, in towns, it is probably as fast as the public transport. A bicycle is not a very expensive item; it should last for many years; and it should soon save its cost in fares and in shoe-leather.

It is also ideal from a recreational point of view, for the touring cyclist enjoys most of the advantages of either the walker or the motorist, while avoiding their disadvantages. The walker gets plenty of exercise and a splendid view of the country, but the distance he can cover is very limited. The motorist gets plenty of distance, but at too fast a pace to see the country, and he gets no exercise. The cyclist, however, gets exercise, while moving fast enough to cover four times the ground seen by the walker, yet not so fast that he cannot see the country through which he is passing.

Cycling as a competitive sport is a vast subject, for no other sport in which most of the competition takes the form of racing offers so many different types of racing. A cycle-racing meeting provides, not only first-class sport, but also a wide variety of sports. On the Continent, the popularity of



cycling far exceeds that of any other sport, and the leading riders are the objects of tremendous hero-worship. The sport also has a large following in Britain, and a growing one, which would grow even faster if there were more tracks available for top-class meetings.

Cycle racing takes place on banked tracks like motor racing tracks, on flat grass tracks, on cinder tracks, on indoor board tracks, and on roads. There are races at all distances from short sprints to the Tour de France, which lasts for a month. The sport includes ordinary straightforward massed-start races; short-distance championships in which the competitors are drawn against each other in pairs, the winners going on to the next round, and so to the final; time trials, in which each rider completes the course separately against the clock; point-to-point races, in which the first three at the end of each lap score points, and the rider with the most points is the winner, even if he does not actually finish first; courses des primes, in which the leader at every lap wins a prize; motor-paced races, in which each rider races behind a motor-cycle, which has a large windscreen and a small roller at the back, right on to which the cyclist rides; pursuit races, in which the riders start spaced out round the track and try to catch each other, anyone so caught being eliminated; Madison races, in which teams of two race, with one man actually on the track and his team-mate relieving him at will (this is the system used in the six-day races); and tandem races.

There is also cycle roller racing, in which the cycles are on sets of rollers. The riders do not actually move forward at all, but the distance they cover is automatically registered on large dials. Then there is the latest form of cycle racing, cycle speedway. This is a sport devised by youths, who started it simply by trying to imitate the motor cycle speedway riders by holding cycle races on pieces of waste ground. They raced as the speedway riders do, one pair opposing another pair, and with all the races at the same distance. This informal activity spread like wild-fire, and, in an amazingly short time, another properly organised sport had arrived. The National Cyclists Union, the governing body of cycle racing in Britain, then acted most sensibly. Realising that these youngsters had started this sport out of admiration for speedway racing, into which they might well gravitate in the course of time, the cycling rulers took over the organisation of this new sport in the hope that they might be able to persuade these youths to come into cycling instead.

Cycle racing is both amateur and professional, and both types of rider may appear at the same meeting. There are not many professionals in Britain, but, as far as this side of the sport does exist here, the N.C.U. governs it as well as the amateur racing. The N.C.U. also has a touring side, though this is not, perhaps, as well known as the activities of the Cyclists Touring Club, which concentrates entirely on touring. This is a tremendous organisation, on the working of which, it is interesting to note, the methods of the Automobile Association were based—for the C.T.C. came first by many years. Another cycle racing body is the British League of Racing Cyclists. This organisation is in rivalry to the N.C.U., and B.L.R.C. cyclists are not recognised as amateurs by the N.C.U., nor for the purposes of such competitions as the Olympic Games. The main point of difference between the N.C.U. and the B.L.R.C. is massed-start road racing. This is extremely popular on the Continent, where everything stops for it, and where roads are specially closed. In Britain, however, roads are not closed for racing, and the N.C.U. will not permit massed-start racing, except on closed circuits such as parks, most road races being time trials, which take place very early in the morning. The B.L.R.C. does organise massed-start road races, the riders being subject to certain rules such as "No overtaking in towns," etc.

Finally, it would be surprising if no team game involving the use of cycles had been invented; and in fact, there is such a game. This is bicycle polo, which has its own governing body, the Bicycle Polo Association. This is a dangerous game, involving hard wear on men and machines, and requiring great cycling skill and considerable nerve. It is very popular, and there are international matches between the home countries

## FENCING.

Fencing can claim a longer history than most competitive sports, for it is, of course, the present-day equivalent of the old custom of duelling; and, like some other very ancient recreations—Archery, for instance—it is fast growing in popularity, and has shown an extraordinarily rapid development during the last few years.

As far as Britain is concerned, the earliest form of duel with which most of us come in contact through reading is the clash of mounted knights armed with lances in the mediæval Tournaments; and it is interesting to note that this was not confined to occasions when the protagonists were out to kill or seriously disable each other, but was often a purely sporting affair in which special less-lethal lances were used. In later times, duelling became dismounted and the weapons changed. In Elizabethan days, duellists fought with a sword, for attacking thrusts, in the right hand and a dagger, for defensive parries, in the left; a very highly skilled form of swordsmanship which can still be seen demonstrated occasionally in such displays as the Royal Tournament. Later still, the dagger was discarded, and duels were fought as are the fencing bouts of to-day with only the one weapon, the sword, for both attack and defence.

Duelling began to decline in Britain during the Regency period, though the gentlemen of those days continued to learn swordsmanship, and to fence with the practice weapon, the foil. At that time, however, it became fashionable for young men of aristocratic upbringing to learn how to use their fists for fighting, and it was a proud boast in any circle to be able to say that you could hold your own with a professional pugilist. Thus was born the "good old English" method of settling disputes with the fists, and duelling was relegated more and more to the ranks of purely "foreign" customs. Though actual duelling is now illegal almost, if not quite, throughout the world, it is still carried on occasionally on the Continent. Even before the cult of fist-fighting came into being, the art of swordsmanship had made most of its advances on the Continent, rather than in Britain, France and Italy being the nations most prominent in its development. To-day, the fencers of these and other Continental countries are still the best in the world, and, though countries like Britain and the United States are taking more and more interest in the sport, the international teams of those countries at the present time rely to a large extent on fencers of Continental European descent.

The right to duel in olden times was restricted to "Gentlemen." Only Knights fought in mediæval Tournaments, and only men of aristocratic birth duelled in Elizabethan times and later; and something of this restricted atmosphere pervaded the early days of fencing as a modern sport. Not that embryo fencers' antecedents were subjected to investigation, but clubs were few and expensive and rather exclusive. In more recent times, however, things have changed, and class tuition in fencing has opened a first-rate sport to anyone who wishes to take part in it. Fencing classes have long been a part of the curriculum at dramatic academies, and they are now included by some educational authorities in their programmes of adult evening classes. Almost invariably more students wish to enroll than can be accommodated, and the number of fencers almost doubled in the year which followed the 1948 Olympic Games. Fencing is regularly included in the Olympic Games, and there are many other championships, international contests, and competitions as well.

Modern competitive fencing offers contests with three different weapons: the foil, which, formerly merely a practice weapon, is now the only weapon with which women fence; the epee, the real duelling-sword; and the sabre, with which hits are scored by cutting with the blade, as well as by thrusting with the point. All the terms used in fencing are in French, and many of these, describing classic cuts, thrusts, and parries, are traditional. Fencing is a sport which must be learned by personal tuition, either in private or in class, and which cannot be picked up from books.

Some special equipment is required. The weapons, of course, have "buttons" on the points, but these can come off, and fencers wear a special glove on the sword hand, a padded jacket, and a

mask. Even so, accidents happen, and it is extremely foolhardy to attempt even the lightest practice without this equipment. Actual fatalities not only can happen, but have happened through fencers practising without masks. An exceedingly dangerous habit which should be avoided at all times, but which is not always avoided even by top-class fencers, is the whipping off of the mask to claim a hit before the officials have stopped the bout. Many fencers do this. They think they have hit, so they immediately shout out and whip off the mask. The opponent may be in the very act of thrusting or cutting as they do so, and no accident caused in this way puts any blame on anyone except the injured person.

The fact noted above that fencing is a regular subject at dramatic academies hints at one of its assets. It will do much to inculcate grace of movement and lightness of foot. It requires considerable agility, strength of wrist and forearm, good eyesight, and quick mental reactions—and it will, of course, help to develop all these qualities, including eyesight, which can be improved through eye exercise. Incidentally, people whose eyesight is below normal, except with glasses, are not debarred from fencing. As masks are worn, it is perfectly practicable to fence wearing glasses, and, in fact, several of the world's leading fencers do so.

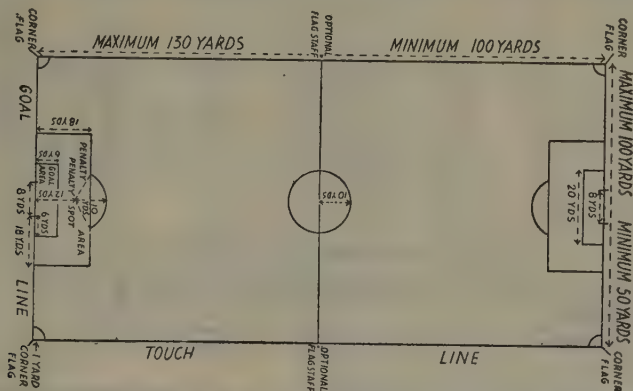
not surprising that these early discussions took place at the Universities—particularly, as a matter of fact, at Cambridge—as it was there that boys from all the schools met just after leaving school.

It soon became apparent that there was no reconciling those who wished to permit handling of the ball and those who opposed this, so the two schools of thought agreed to differ, and to go their separate ways. So, right from the outset, there were to be at least two kinds of football. It was the non-handlers who went ahead the faster, and whose game was to spread to almost every country in the world.

### Association Football.

Those whose idea of football was that it should be a kicking, and not a handling, game worked out their rules, and, in 1863, the Football Association was formed to govern the game. It was from the name of this body that the game took the name of Association Football, or, as it is more widely known, especially outside Britain, Soccer.

Soccer is played with a round, leather-covered ball weighing from 14 to 16 ounces and with a circumference of from 27 to 28 inches, on a pitch marked out as in the accompanying diagram. A team consists of eleven players, the positions being



### FOOTBALL.

If the growth and popularity of sport during the twentieth century has been remarkable, hardly less remarkable is the huge proportion of that sport which takes the form of one kind of football or another. There are seven different games of football now widely played, and one of them, Association football, is almost certainly the most popular sport in the world. It is interesting to note that this is the only kind of football in which handling of the ball is not permitted.

It is impossible to say just who first thought of football. Attempts have been made to trace the game back to the Romans; and it is certain that some form of the game made a very early appearance in Britain, for it was one of several sports legislated against in favour of archery. This early football, however, took the form of struggles between whole villages, whose citizens used to oppose each other *en masse*, and play over a cross-country course of several miles. People past whose houses the battle was likely to rage barred and shuttered all doors and windows, and, altogether, the performance bore little resemblance to anything we know as football to-day.

The direct ancestors of present-day football were the games played at English public schools a century and more ago. Several schools played football, but all the games differed, the rules often depending on purely local considerations regarding the available space. These games were popular, and it was almost inevitable that, sooner or later, old boys of these schools should try to work out a set of rules that could apply universally. It was

goalkeeper, right and left backs, right, centre, and left half-backs, and the five forwards—outside-right, inside-right, centre-forward, inside-left, and outside-left. The object of the game is to score goals by putting the ball between the goal-posts and under the cross-bar which is 8 feet high. The ball is advanced by kicking or heading it, and it must not be handled, except by the goalkeeper, who may catch, punch or throw it when in his own penalty area, but who may not run with it. A game lasts for 90 minutes, divided into two 45-minute halves with an interval of not more than 5 minutes between them. The teams toss for choice of ends or for kick-off, the side which does not kick-off at the start doing so after the interval, at which ends are changed.

The game is started by a player kicking the ball from the centre of the field. It must travel at least its own circumference into the opponents' half, and the kicker must not play it a second time until someone else has done so. The opponents must remain outside the centre circle and in their own half until the ball has been kicked. The game is restarted in this way after a goal has been scored, being kicked-off by the side against which the goal was scored.

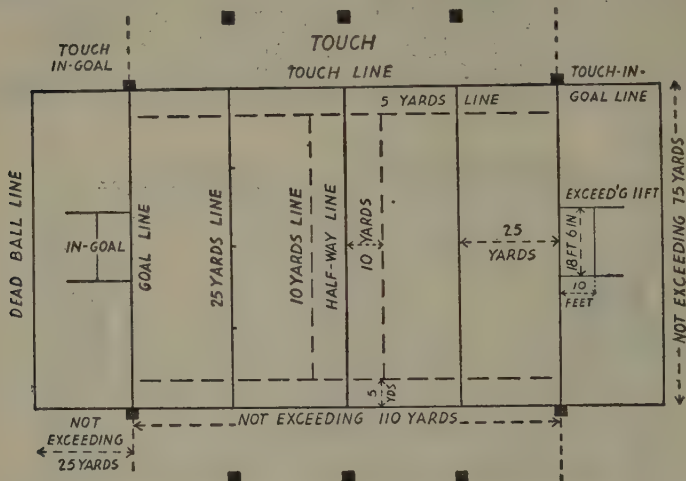
If the ball goes over the touch-line, it is thrown in by a player of the side which did not put it out, the thrower using both hands. If it is kicked over the goal-line wide of the goal by the attacking side, it is kicked-off by a defender from the 6-yards line. If it is sent over the goal-line by a defender, the attacking side kick it in from the intersection of the goal- and touch-lines. Free kicks are given for infringements, these being either "direct" or



"Indirect," Direct kicks, from which a goal may be scored, are for deliberate infringements; indirect, from which a goal cannot be scored, for more technical offences. For an offence by a defender in the penalty area, a penalty shot is awarded, this being taken from the penalty spot with no player, apart from the kicker and the goalkeeper, who must not move until the ball has been kicked, within 10 yards. For certain offences in the penalty area, however, such as "carrying by the goalkeeper" and "obstruction," an indirect kick is given.

A player is "offside" if he is nearer his opponents' goal-line than is the ball, unless there are two opponents between him and the goal-line, or unless the ball was last touched by an opponent. He cannot, however, be offside in his own half, nor from a throw-in. If a player in an offside position interferes with the game, a free kick is awarded against him.

The main objects of Rugby are the scoring of "tries" and the kicking of goals. Tries are scored by touching the ball—which is oval in shape—down behind the opponents' goal-line but in front of the dead-ball line. Goals are scored by kicking the ball between the goal-posts but over the cross-bar. The game is started by a kick-off, and the ball may be advanced by kicking or carrying it. It may also be passed by hand, but it must not be thrown or knocked forward. Players in possession may be tackled by being caught hold of and thrown down, but they must not be tripped. They may ward off tacklers by pushing out their hands, with the fists unclenched, towards them. When a player is tackled in possession, the ball must next be played with the foot. A frequent method of restarting the game after a stoppage is the "scrummage." In this, certain players—from six to eight of each side—bend down and push against each other, the first



#### NOTES:—

■ Indicates Post with Flag. Length and breadth of field to be as near to dimensions indicated as possible.

--- These broken lines indicate 10 yards and 5 yards from half-way and touch lines respectively.

Goal dimensions.—10 feet is taken from the ground to the top edge of the crossbar and 18 feet 6 inches from inside to inside of the goal posts.

Soccer is easily the most popular game in Britain. In England alone there are ninety-two major professional clubs with some 2,750 professional players, apart from countless amateur clubs of all standards. There are innumerable Cup and League competitions, and the F.A. Challenge Cup competition is one of the best-known annual sporting events in the world. This attracts well over 600 clubs each year. Officially a winter game, the Soccer season runs from August until May—and, in Scotland, even the short summer months are filled in with five-a-side tournaments. The game is extraordinarily popular all over Europe and in South America, and it is played to some extent in the United States, Canada, Australia, and South Africa. It is included in the Olympic Games, and there is a periodical tournament for the Championship of the World, open to the best team, professional or amateur, that any country can produce.

#### Rugby Union and Rugby League.

The first organised handling game of football was based on the game played at Rugby School, and it took this name, the governing body being called the Rugby Union. Within twenty-five years of its beginning, however, there were two distinct versions of Rugby.

Played on a pitch marked out as in the diagram,

row of each side consisting of three players and the remaining "scrummagers" forming two subsequent rows. The ball is then put into the tunnel between the front rows, who endeavour to hook the ball back through their scrum with a view to putting their team-mates in possession for a passing or running movement.

The division into two separate games came in 1895, when there was a dispute on the question of legalising payment for time lost from work by players. The Union would not agree to this, so twenty-two clubs, mainly in Yorkshire, seceded and formed a new independent governing body, first called the Northern Union, but now called the Rugby League. At first, both bodies were controlling the same game, but as each has made various rule changes during the last fifty years quite independently of the other, the games, though still basically similar, now do contain certain marked and important differences.

The foregoing brief description of the game applies to both codes, but, beyond that, there are two versions of almost every regulation. To start with, the number of players in a team is not the same in the two games. Rugby was originally played twenty-a-side, but this was reduced to fifteen, and this was the number at the secession. It is still fifteen in R.U., but, in R.L., it is now thirteen—the positions being seven backs and eight forwards in R.U. and seven backs and six

forwards in R.L. Scoring is also different, though the basic score, the try, counts three points in either game. Four kinds of goal are possible in R.U., these being a goal scored by a place-kick from an attempt which is awarded following a try, a goal scored by a drop-kick during play, a goal scored by a place-kick or a drop-kick when a free kick has been awarded, and a goal scored by a drop-kick when a player has made and claimed a "mark" or "fair catch," i.e., when he has caught the ball and simultaneously driven his heel into the ground and called "Mark." The goal after a try counts two, and any other goal three. In R.L., any of these goals is permitted, except the goal from the mark. Marks are allowed, but goals cannot be kicked from them. Any kind of goal counts two.

There are several differences in actual play. In R.U., the ball may be kicked out of play, and it is then put in again level with the place where it crossed the line. In R.L., direct kicking out is allowed only from a free kick. If the ball goes out without first bouncing in the field of play from any other kick, it is put into play at the place where it was kicked. In R.U., the ball is put back into play after it has crossed the touch-line, either by a throw-in or by a scrummage, as may be decided by the side which did not put it out. In R.L., it is always a scrummage. Incidentally, whereas in R.U. the ball is put into the scrummage by a player of the side not considered responsible for the stoppage, in R.L. it always put in by a member of the defending side. Also, in R.L., a player tackled in possession must be allowed to get up and play the ball, a privilege not accorded him in R.U.

The total effect of these variations is that R.L. is a faster and more open game than R.U. Fewer forwards mean less "spoiling" and more passing and running among the backs; the rule against kicking out keeps the ball in play much more; and the rule by which tackled players must be given room to get up prevents loose "mauling" and keeps the ball in view. A Rugby game under either set of rules lasts for 80 minutes, divided into two 40-minute halves.

In addition to Britain, both types of Rugby are played in France, Australia, and New Zealand, and the Union game is also played in South Africa. There are isolated outposts in some other countries as well. Both games are primarily amateur, the Union game entirely so, and the League game to the extent that, while there are well over 800 amateur clubs, there are fewer than thirty professional clubs, and these are almost entirely part-time.

#### Other Codes.

Other forms of football, all of which permit handling, are American, Canadian, Australian, and Gaelic football.

American football is played eleven-aside on a pitch marked by a line across it every 5 yards; and with a ball and goals, which resemble those used in Rugby. Scoring is by "touchdowns," which are like tries, but which count six; conversions after touchdowns, which count 1; field goals scored during play, which count three; and "safeties," which means that, if the defending side carry the ball across their own goal-line and there touch it down, two points are awarded to the attacking side. The ball is advanced by carrying it, passing it—and it may be passed forward—and kicking it. The game consists of a series of "plays" or "downs," the ball becoming dead as soon as the ball-carrier, when tackled, touches the ground with his hand or his knee. A team must advance 10 yards in four downs or give up the ball to the other side. Players are allowed to run ahead of the ball-carrier to protect him from tacklers by "blocking" them out of the play with their shoulders. Penalties take the form of distance, usually 5 or 15 yards, lost. A game lasts 60 minutes, divided into four 15-minute quarters. Canadian football resembles American, but is twelve-aside, uses only three downs, and limits blocking. Touchdowns count five.

Australian football is a fast open game played eighteen-aside on large oval grounds, there being no offside rule and high scoring in goals and behinds (i.e., near misses) being common. It is played to the practical exclusion of all other forms of football in the southern half of Australia.

In addition to the widely known Rugby game, several other school games are still played at the schools which invented them. Eton has the Field game and the Wall game. Harrow the Base game, and Winchester the Net game.

#### GAELIC GAMES.

The term "Gaelic Games" is usually taken to mean hurling and the particular brand of football called Gaelic football. They are, of course, Irish games, and they are seldom, if ever, played by people of any other nationality. They are, however, played regularly outside Ireland, for exiled Irishmen have formed Associations to organise them in several parts of the world. In England they are played in London, Warwickshire, Lancashire, and the East Midlands; and there are active centres in New York, Boston, and San Francisco, and in Australia and South Africa. In some Celtic centres, such as Wales, Cornwall, Devon, and the Isle of Man, the games have died out, but a form of hurling, known as shinty and with slightly different rules, is preserved in Scotland. Hurling is of very great antiquity, and English authorities in Ireland first tried to suppress it six hundred years ago. The game was kept alive, however, and it is still very much alive to-day.

To make a comparison with more widely known games, hurling could be called the Irish brand of hockey, while Gaelic football is, of course, an Irish equivalent of Association football—though it is, as a matter of fact, a blend of Association and Rugby football.

Hurling is played by teams of fifteen-aside, and it is said by some people to be the fastest game, using a ball, in the world. The ball and sticks, or, more correctly, the "slitter" and "hurleys," bear some resemblance to hockey balls and sticks, but nothing like hockey's "sticks" rule applies. The ball may be hit at any height and with either side of the hurley; and it can also be kicked or caught, though it must not be carried more than three steps nor picked up off the ground. There is a good deal of hard bodily contact, and it is one of the toughest games in the world. Despite this, the goalkeeper wears no protective padding, though he does have a larger hurley. Injured players may be replaced by substitutes. Certain things are prohibited, of course, and it is a foul to push, trip, kick, catch, hold, jump at, or butt an opponent, or to charge him from behind. Hurleys must not be thrown under any circumstances. There is no offside, apart from the fact that attacking players must not enter the parallelogram marked out near the goal ahead of the slitter. Scoring is by goals—between the posts and under the bar—or points—over the bar but between the posts projected.

Gaelic football, which is also fifteen-aside, is decided by goals and points in exactly the same way. The goals are similar to those used in both Association and Rugby games. They have the uprights and cross-bar with the nets behind them, exactly as in Association, but the uprights extend above the crossbar, as in Rugby. One goal equals three points. The ball used is round, and it may be kicked or caught. It may not be thrown forward, nor may it be carried, though a player may retain possession of it by dribbling, as in basketball, by bouncing it and re-catching it. This, too, is a very fast game, probably simpler in its essentials than any other kind of football. Bodily contact is frequent and violent, and substitutes are permitted in case of injury.

To Irishmen, these games, which attract crowds of 70,000 spectators, are symbols of nationalism and patriotism. Rule 24 of the Gaelic Athletic Association, which is nearly three-quarters-of-a-century old, states: "Any member who plays or encourages Rugby, Association football, Hockey or Cricket by that very fact incurs immediate suspension from membership of the Association." Despite this, quite a number of Irish Gaelic football players have subsequently made their mark in first-class English professional Association football.

#### GOLF.

Golf, a game of great antiquity and of Scottish origin, is widely popular in many countries, and extraordinarily so in Britain and the United States. Briefly, it consists of using certain clubs



with which to play a small, hard, white ball over a cross-country course of eighteen holes. The course will be several miles in length, and each hole will be several hundred yards long. Each hole has its fixed starting point and ends with an actual hole in the ground, the object of the game being to play each hole, and eventually the entire course, in as few strokes as possible.

The playing of each hole will fall into three sections, the initial drive, the approach, and the green. The starting point will be a flat piece of ground, raised slightly above the surrounding earth; and, on this, the player will "tee up" his ball on a small rubber "tee," which he will carry round with him, or, perhaps, on a small mound of sand. He will then hit the ball as far as he can towards the hole, distance being his main object at this stage. The stretch from the "tee" to the hole will consist of fairly smooth ground—the "fairway"—not necessarily devoid of hills and rises and containing, perhaps, a few trees. It will also probably contain a few "bunkers" or sand traps. The "fairway" will not, of course, be of indefinite width, and the ground at each side of it—the "rough"—will probably be just that: rough, consisting, possibly, of long grass, shrubs, or even a wood or a road. The player finds his ball, and plays one or more additional shots towards the hole, his play at this stage being dictated more by a desire to achieve accuracy of direction than by considerations of distance alone. The hole itself will be set on the "green": a rough circle of exceptionally well-tended grass. The hole, which has a tin cup in it, is marked by a flag, and it is this flag which will have been the player's target in the earlier stages of playing the hole. These flags, incidentally, vary in colour, but they are usually white or red, with, perhaps, one colour marking the first nine holes "out" and another for the second nine "home." Once on the "green," the third stage—"putting" for the hole—is played.

There are many different types of golf club, players being limited to fourteen. Those used for the actual drives will probably have wooden striking surfaces, while all the rest will have iron. The shafts of the clubs may be made either of wood or of steel. The latter are increasing in popularity, but they constitute something of a liability should the player be caught in a thunderstorm. These clubs formerly had rather attractive names, in some cases indicative of their functions, for instance, putter, loftier, cleek, niblick, mashie, even blaster—for use in deep sand traps. Nowadays, however, they are simply called the No. 1 iron, No. 2 iron, No. 3 iron, etc. Originally, most golf courses were by the sea, and these were called "links." To-day, this term is loosely applied to any course.

Obviously, the competitive side of the game lies in completing the holes and the course in fewer strokes than the other player; but there are actually two methods of play, match play and medal play. In match play, it is a question of holes. The player completing the first hole in the least number of strokes becomes 1 up. If the next hole costs the two players the same number of strokes—if in fact, it is "halved"—the first player remains 1 up. If the other player wins the third hole, the match is again "square"—and so on. Obviously, such a match will not continue after one player has become more holes "up" than there are still to play. If he becomes the same number of holes "up" as there are still to play, which means, of course, that he only needs to "halve" one hole to win, then he is said to be "dormy" so many. Medal play is stroke play. Regardless of any player's performance at any one hole, the important thing here is the number of strokes taken to complete the whole round. Medal play puts a greater strain on the player and demands a higher level of consistency than match play, for, in the latter, if he takes eight for a hole which he should do in three, he only loses the hole and will have plenty of opportunities to recover his position: while, in medal play, that eight goes down on his card and may be enough to ruin his score for the round. Also, in match play, a player may find his ball in a hopeless position from which it might take him a number of strokes to get out: so he just picks up his ball and gives up the one hole. In medal play, he must get out, counting all the strokes, for, if he picks up, he is out of the

competition from that moment. Incidentally, the player winning each hole, drives first from the next "tee"—in golf terms, he "has the honour." In the case of a "half," the "honour" remains with the player who last had it. While playing out the hole, the player farthest from it plays, even though he may be playing his third or fourth before the other player has played his second. This means that, in match play, "putting" on the "green" is always liable to be complicated by a fortuitously laid "stimpie," i.e., a player may be forced to "putt" with his opponent's ball standing between his own and the hole.

Every course has fixed sets of figures, one known as "bogey" and the other—a higher standard—called "par." These represent the performance that a first-rate player might achieve for a complete round. On them, the members of the particular club will be given handicaps, the handicap figure being the difference between their average round and that of the first-rate player. Possession of these handicaps, which can be altered on application supported by suitable evidence of a change in a player's standard—in either direction—enables golfers who are strangers to each other to arrange an even match. The handicap strokes are awarded, i.e., they are deducted from the actual performance, at certain holes according to the arrangements in force at any particular club.

A player must not receive any advice during a round, except from his "caddie," if he has one. The "caddie" is an attendant, sometimes a boy, but often a grown man, who makes a profession of carrying golfers' clubs round. They are often excellent golfers themselves, and they know their home courses inside out. Their assistance can be most valuable to a player new to the course; and their comments, either spoken or merely to be read in their faces, can be most disturbing to a player off his game. This rule about advice is one of the many laid down for golf by the governing body, the Royal and Ancient Club of St. Andrews. Other rules, called "local rules," apply at particular courses.

Not all golf matches are "singles" between two players. Championships are, of course, players being drawn against each other, and the winners passing on to the next round in match play championships, and going round in pairs in medal play championships: but matches between teams usually consist of both "singles" and "foursomes." In the latter, two players make up a side for the round, each playing his side's shots in turn. Players merely playing for pleasure sometimes play "threesomes," i.e., three players playing all against all, and sometimes "four-ball foursomes," i.e., four players, each playing his own ball. These rounds are bound to be slow, and such quartets should let players playing "singles" pass through them. Another form of match is the "best ball." The four players split up into two partnerships. All four players drive at each "tee," but, thereafter, each partnership carries on with only one ball—the best drive, of course—as in ordinary "foursomes."

Golf has a tremendous number of competitions, championships, and matches. Probably the four most important individual championships in the world are the British Open, the British Amateur, the United States Open, and the United States Amateur. American courses, incidentally, differ from those in Britain in the sense that they are generally more open with wider "fairways" and fewer obstacles. This makes for better scores, but not necessarily for a better game. The American ball is also slightly different, but the players of both countries seem well able to make the necessary adjustment in their play when visiting the other. In addition to a regular British entry for the American championships and vice versa, the two countries meet regularly in team matches for the Ryder Cup (professionals), the Walker Cup (amateurs), and the Curtis Cup (women). Britain also has a regular women's international match against France.

These big matches and tournaments are attracting more and more spectators nowadays; and one of the main problems which the golf authorities are going to have to solve in the near future is the handling of the huge crowds which want to see as much as possible of a game that does not lend itself readily to the convenient accommodating of anything like these numbers.

## HOCKEY.

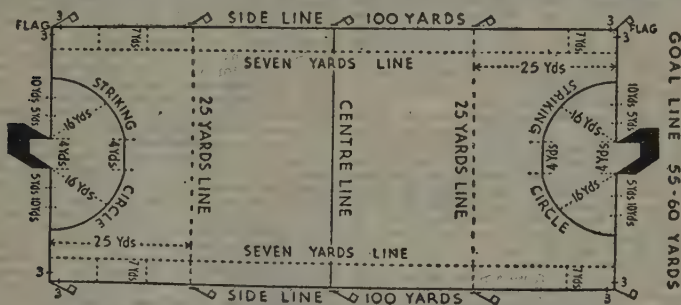
Hockey as an organised game is about three-quarters of a century old. It was originally confined to Britain, but the rules varied slightly in each of the home countries. In 1900, the International Hockey Board was formed as the result of an agreement between the Hockey Association, the Irish Hockey Union, and the Welsh Hockey Association, with a view to the provision of a set of rules that could apply wherever the game was played. Two years later, Scotland joined the founder-members of the Board.

The game spread rapidly in Britain, but it was seldom played elsewhere, apart from India. There, it was taken up with terrific enthusiasm, and there is little doubt that Indian players are the best in the world. In more recent years, it has begun to win some popularity on the Continent of Europe, the Netherlands being amongst the first of these countries to take it up, and certainly the best of them. There is now a Federation Internationale de Hockey, and this has no fewer than twenty-three countries affiliated to it. In 1947, negotiations between this Federation and the British governing bodies resulted in the Federation becoming a constituent body of the International Board. The rules

goal is a net, with a board not more than 18 inches high at the foot of it. The striking circle consists of a line 4 yards long parallel to and 16 yards in front of the part of the goal-line between the goal-posts. This outer line is continued in each direction until it meets the goal-line by marking in quarter-circles with the goal-posts as centres. Flag-posts not less than 4 feet high should be placed at each corner of the ground, and at the centre and 25-yard lines, all those, except the actual corner flags being a yard outside the side line.

The ball used is white, and can either be sewn exactly as is a cricket ball or it can be seamless. It must not weigh less than 5½ ounces nor more than 5½; and its circumference must be not less than 8½ inches nor more than 9½. The rules actually state that a ball not conforming to these specifications may be used if the captains agree, but an official note to the rules mentions that this concession is intended to apply only to club matches.

Sticks have a flat striking surface on the left side only. Sticks with this reversed, which would be ideal for left-handed players, are not permitted. There must be no metal, no sharp edges, and no dangerous splinters on the head of the stick, and the whole stick must weigh not less than 12 ounces



GROUND.—100 yards by 55 to 60 yards. OPENING OF GOAL.—7 feet by 12 feet.

Diagram of Ground as marked out for Hockey.

approved by the Board should now, therefore, be uniform all over the world. Incidentally, the United States, which for long showed little interest in hockey, has now taken up the game.

The recent rapid interchange of various countries' particular games has resulted in, not exactly a change of name, but something approaching that for hockey. It is now often referred to as field hockey, to distinguish it from ice-hockey. Ice-hockey originated, of course, in Canada and it spread to the United States. As hockey on grass was not then played in those countries, the ice version was always referred to simply as hockey. Now that ice-hockey has won such popularity in Britain, there is a tendency even here to drop the word "ice," hence the possibility of confusion and the planting of the word "field" on the older game.

Hockey is played eleven-a-side, the usual composition of a team being goalkeeper, two backs, three half-backs, and five forwards, exactly as in Association football. A game consists of two thirty-five minute halves, unless a shorter time has been agreed upon by the two captains. Ends, decided in the first place by a toss, are changed at the interval, which must not exceed five minutes.

The pitch is a rectangle, 100 yards in length and not less than 55 nor more than 60 yards wide. This rectangle is marked with white lines, the longer ones being the side-lines and the shorter the goal-lines. There is also the centre-line and lines called the 25-yard lines midway between each goal-line and the centre-line. These 25-yard lines are not marked continuously, but in dashes as dotted lines. Parallel to the side-lines and 7 yards inside them are the 7-yard lines, which, like the 25-yard lines, are marked as dotted lines. The only other markings are the striking circles in front of the goals. The goals themselves consist of two perpendicular posts 4 yards apart, joined by a cross-bar 7 feet from the ground. Attached to each

and not more than 28 ounces. The handle must be able to be passed through a ring with an inside diameter of 2 inches.

No spikes and no nails are allowed on a player's boots.

The game is started and restarted after a goal or after half-time by a bully at the centre of the ground. The players bullying stand squarely facing the side-line, each with his own goal on his right. Each player taps the ground between the ball and his own goal-line and then his opponent's stick over the ball three times alternately, after which one of them must play the ball before it is "in play." At any bully, all the other players must stand nearer their own goal-line than is the ball until it is in play. No one apart from the two players bullying must be within 5 yards of the ball.

Only the flat striking surface of the stick may be used to play the ball, and no part of the stick may be raised above the shoulder either at the beginning or the end of a stroke. No ball moving above shoulder-height may be stopped with the stick. Umpires are empowered to penalise any hit which is dangerous, or which may lead to dangerous play. "Scooping" the ball or hitting it when it is in the air are permissible, but either may be penalised if the umpire thinks that the action in any particular instance is dangerous. Deliberate undercutting is not allowed. The ball must only be propelled with the stick, and it must not be stopped intentionally with any part of the body except the hand. If the hand is used, the ball must only be stopped. It cannot be caught and it must not be knocked forward. No hitting, hooking, holding, striking at, or interference with an opponent's stick is allowed; nor may a player obstruct an opponent by running between him and the ball, or by interposing himself or his stick as an obstruction. No charging, shoving, tripping, holding, kicking, or



striking at an opponent is allowed. Players must not tackle from the left unless they can play the ball without touching the opponent or his stick.

Goalkeepers, while in their circle, are exempt from some of these prohibitions. They may stop the ball with any part of their body, and they may kick it.

A goal is scored when the ball has passed over the goal-line between the posts and under the cross-bar, provided it was hit from inside the circle. If it is put through by a defender, it is still a goal to the attacking side.

There is an offside rule, which differs from that now used in Association football in that it is the same as the old offside rule in that game. To start with, no player may be offside in his own half. In his opponents' half, a player is offside when the ball is hit or rolled in by a team-mate unless there are three opponents between him and the goal-line, or unless whichever of his own team-mates is playing the ball is nearer the opponents' goal-line. Players who are offside are not penalised if they do not interfere with the play. A player in an offside position is put onside if an opponent plays the ball, but not, it should be carefully noted, if the ball merely touches or glances off an opponent.

If the ball crosses the side-line, it is rolled—not bounced or thrown—in by a player of the side which did not put it out. Whoever is rolling-in must stand with his hands, feet, and stick outside the field of play, and he must not again play the ball until some other player has done so. All the other players must have their feet and sticks inside the 7-yard line, though they may cross this as soon as the ball has left the roller's hand.

If the ball is sent over the goal-line, wide of the goal, by an attacker or, unintentionally, by a defender who is more than 25 yards from the goal-line, the restart is by a bully on the 25-yard line opposite to where the ball crossed the goal-line. If the ball is hit behind unintentionally by a defender who is within 25 yards of the goal-line, then a corner is awarded to the attacking side. If it is hit behind intentionally by a defender from any part of the ground, then a short or penalty corner is awarded.

A corner is a free hit from a point either on the goal-line or on the side-line within 3 yards of the corner flag. All the defending side must be behind the goal-line, and all the attackers outside the circle. When the corner hit comes into the circle, attacking players are not permitted to take a first time shot at goal. They must first stop the ball, or at least slow it down. A short or penalty corner is taken from a spot on the goal-line not closer to the nearest goal-post than 10 yards.

Penalties for infringements outside the circles usually take the form of a straight-forward free hit. Inside the circles, infringements by attacking players would still result in a free hit, but those by the defenders would be penalised by a short corner, unless the infringement has been an intentional one deliberately committed to prevent a goal, or, though unintentional, has, in fact, prevented a goal. In these cases, a penalty bully is awarded. Penalty corners or even penalty bullies can be awarded in extreme cases for defender's offences committed anywhere behind the 25-yard line, even though outside the circle.

The penalty bully is a two-man duel between the offender and a member of the attacking side. It takes place entirely in the circle, and all players, including the goalkeeper, if he is not the offender, must retire beyond the 25-yard line. The bully takes place 5 yards in front of the centre of the goal-line, and it continues either until the ball has been hit into the goal, in which case a goal is scored, or until it has been hit out of the circle by either player or over the goal-line wide of the goal by the attacker. If the defender hits it over the goal-line wide of the goal, the penalty bully is restarted. If the ball is cleared out of the circle or hit over the goal-line by the attacker, the game is restarted by a bully at the centre of the 25-yard line.

A hockey match should be controlled by two umpires, each of whom takes one half of the field and the whole of one side-line. If there is only one umpire, he should be assisted by two linesmen.

In the event of an injury, the umpire must stop the game. If, however, a goal has been scored before he stops it, it counts if he considers that it would still have been scored had the injury not

occurred. No substitutes for incapacitated players are permitted.

Hockey is entirely an amateur game. There are plenty of representative honours to be won in county, sub-divisional, divisional, and national sides, but there are no league competitions in British hockey—though there are in Northern Ireland—and no Cups, apart from a few special competitions such as the London Hospitals Cup. Almost every match is a friendly, though it is not less keenly contested on that account. Although it is a very fast game, players often continue playing it until quite an advanced age.

## KORFBALL.

As far as Britain is concerned, Korfball is the youngest of all team games. It has several features which have no parallel in any other game, perhaps the most unique being that it is a mixed game; not in the sense that it can be played by mixed teams of men and women, but in that it has to be. Teams consist of twelve players, six being men and six women. The game resembles Basketball in some ways, the goals, which are 11½ feet high, and the scoring of goals being similar. Korfball can be played on grass, asphalt, or any firm surface, and the pitch should measure 300 feet by 133 feet, though a smaller pitch can be used, provided that length and width are reduced in proportion. The playing area is divided into three sections, defence, centre, and attacking zones going forward down the pitch from either goal; and players do not move from one sector to another during the actual course of play. They do, however, have to be all-rounders able to play in any sector because of another unique rule, no parallel to which exists in any other game. This states that the players must change to another zone after every two goals. In addition to encouraging all-round play and preventing specialisation, this rule ensures that, even in a one-sided game, every player gets a fair share of the game. Four players from each team play in each zone, and players always mark opponents of their own sex. Running with the ball is not permitted, and it is advanced purely by passing. Players must not tackle or "check," and the ball can only pass from one team to the other by interception, either in the air or on the ground. Players may not score if there is an opponent within arm's length. A game lasts for 90 minutes, divided into two halves.

Though comparatively new to Britain, Korfball is not a new invention, as it was first played in Holland, the country of its birth, as long ago as 1902. There are now some 400 clubs, most of which run several teams, and a total of about 30,000 players in that country. The game spread to Belgium in 1927, but it did not reach a third country, England, until early 1947. When it did, it was immediately taken up with enthusiasm, and within two years there were about 1,000 players. The first English centres of the game were the Croydon district of Surrey and round Rotherham and Sheffield. Cambridge University soon took it up, and formed, not so much a club, as an Association composed of several clubs. There are over 100 players at the University. A British Korfball Association exists, and there is also an International Board made up of representatives of Holland, Belgium, and Britain. International inter-club games are already a regular feature of the game.

Korfball is really a winter game, and it is then that the various league competitions are played. It does actually continue, however, all the year round, for friendly social games, and the games between clubs from the three Korfball countries take place throughout the summer.

When one considers the many sports which are already firmly established in Britain, it is amazing that a new one should have progressed so rapidly. Its many attractive and original features, however, indicate that Korfball's rapid rise will continue for some time yet.

## LACROSSE.

Lacrosse, which originated from a game played by the Red Indians, was introduced into England from Canada in 1867. It has been played here ever since, the government of the game being in

the hands of the English Lacrosse Union, which works through the North and South of England Associations.

Basically it is, perhaps, the simplest of all field team games. The object is the scoring of goals by propelling the ball through with a crosse. This is made of wood, and it can be of any length, but must not exceed one foot in width at its widest part. The strings must be so woven that the ball cannot catch in the meshes, and there must be no metal on the crosse. The ball is a rubber one from 7½ to 8 inches in circumference, and weighing from 4½ to 5 ounces.

The goals, which consist of two uprights six feet apart with a cross-bar joining them at the top, are six feet in height. There are nets behind the goals, and these must provide a flat roof of netting from 9 inches to a foot in width behind the cross-bar. The distance between the goals is from 90 to 110 yards.

There is no touch-line in lacrosse, the boundaries of the pitch being the natural borders of the field, unless otherwise limited by agreement between the captains. Play can take place behind the goals, on some grounds for a considerable distance. All this makes the marking-out of the field very simple, as the only lines required are the centre circle, the goal-lines, and the goal-creases. The circle has a radius of 7½ yards from the centre point between the goals, and the goal-lines join each pair of uprights. With regard to the goal-crease, the present rules state that this is an oblong space 18 feet by 12 feet in front of, behind, and at each side of the goal-posts. Experiments are now being made, however, with a circular crease with a radius of 9 feet from the centre of the goal-line; and it seems likely that this will officially supersede the oblong within the next few years.

There are twelve players in a team as the game is played in England, though a reduction to ten became effective some years ago in Canada and the United States. The twelve positions from the goal forwards up the field are: goal, point, cover-point, third man, right and left defence, centre, right and left attack, third home, second home, and first home. Some of these terms are not used in Canada, the country of the game's origin. There, third man, left defence, and right defence were always known as first, second, and third defence, respectively; and right attack, left attack, and third home were called third, second, and first attack. It was one of these defence and one of these attack positions that were dropped when the sides were reduced to increase the speed of the game.

At the start, the players are spread right down the field, and are not all on their own side of the centre. There is no offside in lacrosse, except that no attacking player may enter the goal-crease before the ball, although players may run through the crease when chasing a ball which has gone wide. Should any player have to leave the field through injury, the other team must also withdraw a man. If, however, the injury was caused by a foul, for which the referee sends the offender off the field, then his team must withdraw another player during the absence of the injured man.

The game is controlled by a referee, whose decisions are absolutely final. He is assisted by two goal-judges. These are stationed one at each goal, and they do not change ends during a match. Their duty is simply to call "Goal" or "No goal" when the ball has passed through the goal according to whether or not it was scored fairly and legitimately. They give no reasons for their decisions, but they may, if they wish, consult the referee before giving a decision. They can assume an additional function by drawing the referee's attention to any player who may move after "Stand" has been called. The referee is directed to start and stop play by various calls, such as "Play," "Stand," "Face," "Draw," and "Time," but these calls may be replaced by the use of a whistle.

A game normally consists of four twenty-minute periods, but the captains may agree to play two forty-five-minute halves or otherwise to vary the length of the periods. Choice of goals is decided by a toss. Ends are changed at half-time and, if four periods are played, at quarter and three-quarter time as well. Intervals must not exceed ten minutes at half-time nor three minutes

at quarter and three-quarter time, though they may be of shorter duration.

The game is started or restarted after a stoppage by two players "facing." This means that the ball is placed on the ground between the backs of the two crosses, each player's crosse being between the ball and his own goal. On the word "Play," or at the whistle, they draw their crosses apart and towards themselves and the ball is then in play. It may then be advanced by running with it on the crosse, by throwing it from the crosse, or by kicking it. No goal, however, can be scored by a kick, except that, should a player kick it through his own goal, it counts as a goal for the other side. Should a foul be claimed, and then a goal is scored before the referee has stopped play, he may allow the foul and disallow the goal if an attacker is the offender. If a defender has committed the foul, the goal counts. No goal counts, however, if the referee had actually called "Stand" before the ball entered the goal. No player may handle the ball, except the goalkeeper, who, while not allowed to catch or throw it, may deflect it with his hand.

The "face" to start a period or after a goal has been scored takes place at the centre of the field, and no players except the two concerned are allowed into the circle until the ball has left it. With "faces" in other parts of the field, no third player may be within five yards. This method of restarting is used when the ball has crossed any agreed boundary line, the "face" taking place five yards inside the border; and if the game has to be stopped through the ball lodging in a player's clothing or in the goal netting. The ball must not be "faced" within ten yards of the goal if the stoppage has been caused by one of the attackers, nor within five yards of it at any time.

Once the referee has blown his whistle or called "Stand," to stop the game, no player may move until the ball is in play again, unless directed to do so by the referee.

Players are not allowed to charge opponents, apart from pushing them with the shoulder when trying to get the ball off the ground, nor may they push them with either hand or crosse, nor hold or trip them. They may, however, use the "body check," which simply means standing in the way of an opponent to impede him. This may only be done to a player who is actually in possession of the ball, or who is about to receive it, or who has just parted with it. "Crosse checking," which means charging into an opponent with both hands holding the crosse so that it hits the opponent's body, is strictly forbidden. An opponent's crosse may be checked with the crosse, but only if he has the ball or is about to receive it; and this check must not be a "slash" nor in any way unnecessarily violent. A check aimed at an opponent's crosse must be stopped, if possible, once the ball has been thrown. Interference with an opponent who is chasing anyone, or hindrance that takes the form of kneeling, crouching or falling in front of a player is illegal, as is falling on top of the ball to cover it. Players must not, of course, strike an opponent, nor even threaten to do so; and, needless to say, they must not throw their crosses. If a player drops his crosse, he may take no part in the game until he has regained it. Deliberate time-wasting by throwing the ball out of bounds or otherwise; constant appealing to the referee for a foul on trivial grounds; or wearing anything other than rubber-soled footwear are all offences, and are themselves treated as fouls.

There are no "free hits" in lacrosse. Generally speaking the game is restarted after a stoppage by two players "facing"; but, if a palpable foul has occurred and something stronger is required, the referee may send the offender off the field for the rest of the game, or for a shorter period, or he may award a "free position." When he does this, all the players must remain where they were when the game was stopped, except that the goalkeeper, if out of his goal, may return to it, and that no one must remain within five yards of the player to whom the "free position" is awarded. This player then takes the ball on his crosse, and, at the word "Play" or the whistle, the game continues. No "free position" may be given within ten yards of the goal-line, as measured direct from the line, not straight up the field, but to the point where the foul occurred. In an extreme case, the referee is empowered to order any player, including the



goalkeeper, away from any spot between the "free position" and the goal.

Lacrosse demands great speed and stamina, but, although a high level of skill demands much practice, it is not hard for a playing recruit or new spectator to pick up the main objects and to master the comparatively simple rules which govern it.

### RACKET GAMES.

One group of games which, through one or other of its component sports, can claim both great antiquity and great present-day popularity consists of the "Court" games, played with racquets and balls. There are at least eight games with a claim to inclusion in the group, these being Tennis, Lawn Tennis, Rackets, Squash Rackets, Badminton, Table Tennis, Eton Fives, and Rugby Fives.

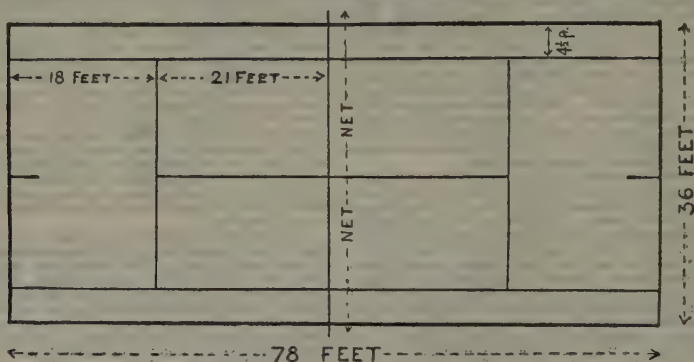
#### Tennis.

Tennis, which is sometimes given a fuller title as either "Real," "Royal," or "Court" Tennis, has been called the King of Games, and it most

implies, it was originally intended to be played on grass, but, though the name "Lawn Tennis" has been retained, it is now played, not only on grass, but also on hard courts of various surfaces as well as indoors on wood.

The court and net are in accordance with the accompanying diagram, the outer long boundary lines being the limitations of the doubles court, and those close to and parallel to them being the boundaries for singles. Both server and receiver score, four points making a game, six games won making a set, and two out of three or three out of five sets making a match. The scoring is taken from Tennis, the points being scored "15," "30," "40," and "Game." The system of "vantage" games and sets is used. This means that if 40-all—called "deuce"—is reached, one player or the other must gain a clear lead of two points before winning the game. Whoever wins the first point after deuce is said to have the advantage. Similarly with sets: once 5-all has been reached, a clear lead of two games is needed to finish the set.

Service is almost invariably over-hand, and the receiver plays the service after one bounce. Thereafter, strokes may be "ground" strokes,



NET:—Height 3 ft. 6 in. at posts, 3 ft. at centre.

Diagram of Ground as marked out for Lawn Tennis.

certainly was the game of kings. It was popular with Henry VIII, and it is mentioned in Shakespeare's *Henry V*; but the first kings to play it were of France, for this is one of the rare instances of a very ancient game that was not invented in England.

Tennis is one of the most complicated of all games, and no description, however vivid, could give anyone who had never seen it played an accurate idea of what it is like. Most of the racquet-and-ball games use either a net over which the ball must be hit or walls against which it is hit, but Tennis uses both. Also, in most of the games in this group, players change ends after so many games, but, in Tennis, they may have to do so during a game. Matches are in games and sets, a player winning six games completing a set towards the two out of three or three out of five which will complete the match.

There are not a great many Tennis players in the country—there are fewer than a dozen courts—and no women play. People who do play, however, most of whom play other games as well, are almost unanimous in voting it the best of all games.

#### Lawn Tennis.

Lawn Tennis can claim none of the antiquity of the parent game, Tennis, but it is far more widely played, being extremely popular in almost every country in the world. Originally called Sphairistike—or "Sticky" by those who opposed its introduction—it really dates only from the seventies of the last century. It is a version of Tennis, designed primarily to be played out of doors and using a net but no walls. As its name

i.e., played after one bounce, or "volleys," i.e., played before any bounce. In doubles, either partner may play the ball, even if this means that one player takes several of his side's shots in succession. Each partner must, however, serve a game in turn.

In addition to being played by thousands of people in clubs and on public courts, Lawn Tennis is a "crowd-attracting" sport. The big annual tournaments, such as Wimbledon, Forest Hills, and Paris, are amongst the major sporting events of the year; as are the Davis Cup matches, open to teams of men from every country in the world, and those for the Wightman Cup, a women's contest between Britain and the United States.

#### Rackets.

Rackets is a very fast, strenuous court game, played exclusively by men, on a court measuring 62 feet by 31 feet. A game consists of 15 points, unless 13-all is reached, when the non-server can set the game to 3 or to 5: or unless 14-all is reached, when the non-server can set the game to 3. Once the game has been so set, the first player to win the prescribed number of points is the winner. Only the server scores, the non-server taking over service when he makes a winning shot. The ball when served must strike the front wall above a line called the "cut" line before striking any other part of the court, but, during the rallies, it may be played either on the volley or after one bounce. Rackets players do not always find it easy to keep out of each other's way, but they must do so as much as possible. If a player is impeded by his opponent, it is a "let," and the point is re-played.

## Squash Rackets.

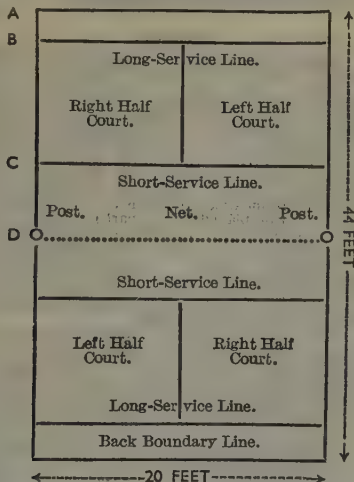
Squash Rackets is a miniature version of Rackets, and was designed as such, being used originally as a useful form of preliminary preparation for the older game. It is played on the same lines as Rackets, but on a smaller court. Most games are singles, though doubles can be played, and, in the United States, there are a few special doubles courts, slightly larger than the normal Squash court.

Squash has far outgrown its original purpose, and is now a popular game in its own right, played by many people who have no intention of proceeding on to Rackets. It is played, in fact, by many women, though Rackets itself,

from that of Lawn Tennis. All the equipment is lighter, particularly the "shuttles" or "birds" which replace the ball. These are half-circles of cork in which feathers are fixed. They do not, of course, bounce, so all shots are volleys. Also, unlike Lawn Tennis, shots are made with the wrist, and not with the whole arm.

Because of these differences, it is frequently said that it is impossible to play both Lawn Tennis and Badminton well, as much play at one will spoil one's technique for the other. This, however, is not quite true. Most racket-game players are adaptable, and the eye for the moving object is the main requisite of both games, even though that object is moving very fast in one game and quite slowly in the other.

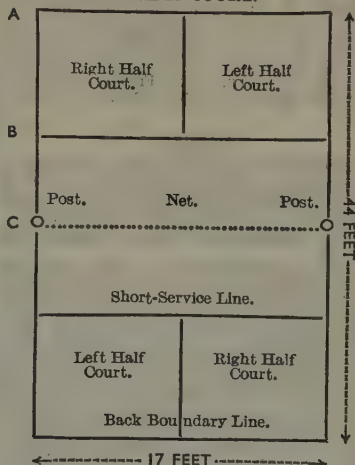
## DOUBLES COURT.



NOTE.—If it is practicable place the posts on the side boundary lines; failing this, place them at any distance not more than 2 ft. outside these lines.

A to B 2 ft. 6 in. A to C 15 ft. 6 in.  
A to D 22 ft.

## SINGLES COURT.



NOTES.—Place the posts on the boundary lines or not more than 2 ft. outside these lines.

The back boundary lines become the long-service lines.

A to B 15 ft. 6 in. B to C 6 ft. 6 in.

Diagram of Ground as marked out for Badminton.

like Tennis, is purely a man's game. Squash now has its own governing body, the Squash Rackets Association, and there are many championships, competitions, and matches every year.

## Badminton.

There are several stories of the origin of Badminton, the most popular being that it was invented by two guests at the Duke of Beaufort's house at Badminton in Gloucestershire, who spent a wet afternoon playing with the children's battledores and shuttlecocks. There seems to be no doubt that the game as we know it to-day did take shape at the estate of Badminton from which it took its name, but it is also likely that its basis was a game originally played in the Orient.

Badminton, which is both extremely popular already and growing still more popular every season, is, in some ways, a kind of indoor version of Lawn Tennis. It is played over a net, and it can take the form of either singles or doubles. In many respects, however, it is quite different from Lawn Tennis and more like some other court games. For one thing, only the serving side actually scores, the receiving side getting its reward for winning shots in that these end opponents' serving runs. Scoring does not follow the Tennis system, but goes up in single points.

The actual technique of playing is very different

At any rate, many players have reached an excellent standard at both games, and regularly play one during the summer and the other during the winter.

## Table Tennis.

Table Tennis was originally introduced—under the name of "Ping-Pong"—simply as an amusing parlour game. From there, it has now grown into a serious competitive sport with a properly constituted governing body; with many international, national, and lesser championships and tournaments; and with the ability to attract crowds of 10,000 spectators.

Resembling a miniature game of Lawn Tennis, the net is set on a table 9 ft. long by 5 ft. wide. The rackets are called bats and are like miniature Tennis rackets in shape, but have a striking surface of rubber. The ball is a small, very light celluloid one. Players serve series of five balls in turn, and a game is 21 points, both server and receiver scoring. Matches are usually the best two out of three or three out of five games. The service has to bounce first on the server's side of the net, and then on the other side, and thereafter all strokes are "ground" strokes, volleying not being permitted. "Vantage" games are played, as, if the score reaches 20-all, each player serves in turn, and the game continues until one has a clear lead of two points.



To prevent purely defensive play in championships, the officials have power to order the players to serve alternately, and to award each point not won by the server within 12 shots to the receiver. Doubles can be played, as well as singles.

Table Tennis is a very fast game, requiring perfect fitness and split-second reactions. It is interesting to note that many Lawn Tennis players have also played Table Tennis, and that several of these have found it desirable to retire from the fast table game long before they retired from the outdoor game.

### Eton Fives and Rugby Fives.

There are two different games of Fives, Eton Fives and Rugby Fives; and neither is strictly a racquet game, as the striking implement in each case is simply the gloved hand. Both, however, are court games, quite definitely belonging in the same category as Rackets and Squash. The two games are similar, involving the use of walls; but an Eton Fives court has the addition of a buttress or "pepper" jutting out from one side wall. Eton Fives is a doubles game, but singles as well are played in Rugby Fives.

### ROWING.

Rowing, meaning simply taking a boat out on the sea or on a river for a short period, can be a pleasant recreation and a healthy exercise: but competitive rowing is one of the most strenuous of all physical activities, requiring a long preliminary training programme to build up strength and stamina.

There are two main types of race rowing, and these should be made clear at the outset. In one, the rower actually does row, which means that he uses only one oar: in the other, he does not row, but sculls, i.e., he uses two oars. Rowing races are arranged to cater for crews of various sizes. The best-known type is eights, the crew consisting of eight men rowing, i.e., with one oar each, and a cox, who steers the boat. Then there are two types of race for fours, one with and one without cox. Here again the crew members have one oar each. There are three kinds of race for crews of two, pairs with cox, pairs without cox, and double sculls. The first two are for two men using one oar each, and the last is for two men with two oars each. Finally, there is single sculls, for one man using, of course, two oars. Crews of fours and pairs without cox and all scullers have, of course, to steer themselves.

Rowing is included in the Olympic Games; and, in Britain, there is a long series of river regattas each season, the most important being Henley, a four-day meeting which attracts entries from all over the world. There are also rowing regattas held on the sea. For these, crews are usually fours with cox, and they use heavier boats than the normal racing "shell." Oarsmen and scullers are graded either as Novices, Juniors, Junior-Seniors, or Seniors, passing from one grade to another as they win a race in each class.

Rowing provides Britain with one of its great traditional free spectacles, this being the annual race for eights between Oxford and Cambridge Universities, which is held in March or April every year on the Thames over a course of just over four miles between Putney and Mortlake.

Oxford and Cambridge are also responsible for one other type of race rowing. This is "Bump" racing; and it came into being because the rivers Isis (Oxford) and Cam (Cambridge) are not wide enough to take several crews racing abreast. The annual inter-College races are, therefore, bump races, the crews starting at intervals, and each trying to catch and bump the crew ahead—except, of course, for the first crew, which can concentrate on keeping ahead. When a bump is made, the two crews concerned pull in to the bank, and change places for the next day's programme. It is the ambition of each crew, of course, to make one bump on each day of the races.

### Canoeing and Punting.

Rowing is not the only form of racing in boats. Both canoeing and punting are organised sports, each with its annual programme of races.

Canoeing, which is an Olympic sport, is divided

into two types, Canadian canoes and kayaks, the latter being very much lighter than the Canadian. All canoe racing in Britain is in kayaks, and the headquarters of the sport is at Teddington, in Middlesex, the governing body being the Royal Canoe Club.

Punting has a unique distinction in that it is confined, not only to one country, Britain, but also to one river, the Thames. It has been rumoured from time to time that a similar sport is, or was, practised in Japan, but the British punting authorities are not satisfied that this has ever been proved to be true. Punting consists of propelling a long, narrow, flat-bottomed boat with a pole, the punter, of course, standing up. Punting headquarters is at Staines, also in Middlesex; and the ruling body is the Thames Punting Club, which organises annual championships for men and women amateurs and for professionals.

### SKATING.

Although the British climate is not one which makes ice-skating a normal, almost inevitable activity in this country, British people have always appeared to possess a natural talent for it, and to have practised it whenever opportunity offered. The history of British skating, particularly, perhaps, in the Fen district, but also in many other areas, goes back far beyond the days when records of these activities were first kept; and, half a century and more ago, dozens of people were making annual visits to Switzerland, where skating played a large part in their Winter Sports programme. In more recent times, the necessity either of going to Switzerland or of waiting for a "freeze-up" has been avoided by the erection of the indoor rinks. There are now about thirty of these, and enthusiastic skaters flock to them evening after evening, not only during the winter, but all the year round.

Not all skaters, however, skate on ice: for, if there are thirty ice rinks in Britain, there are over a hundred halls which are wholly or partly roller-skating rinks. Roller-skating is now such a popular recreation in its own right that it is not easy to remember that it was originally introduced long before the arrival of the indoor ice rinks, purely so that ice-skaters could continue to practise their figures when no natural ice was available. Its subsequent development was by fits and starts. There were terrific "crazes" when almost everybody roller-skated for a time, and there were periods when it seemed that no one did so. Then, roller-skating settled down. It became a regularly practised and popular recreation that went steadily on, often showing an increase in popularity, but no longer the subject of sudden crazes. To-day, both ice- and roller-skating have their huge bands of devotees, but there are also a great many people who practise and enjoy both. Ice-skating is an outdoor activity that has been brought indoors, while roller-skating is primarily an indoor recreation, which can also, however, be practised outdoors on roads, in parks, and on specially laid outdoor rinks.

Many people skate just for recreation, health and amusement, but there are others who, once they start, want to master the art as completely as possible, and welcome opportunities of testing their skill against that of others. There is, therefore, a very full programme of annual competitive skating events, properly organised, exactly as is the case with other competitive sports.

Competitive skating is not so much one sport as eight sports, each practised, in many cases, by people who have little knowledge of or interest in the others. These sports are figure, dance and speed skating and hockey, each of which can be done on either ice- or roller-skates. All these sports in Britain, with the exception of the two games of hockey, are governed by the National Skating Association, which was formed in 1879, originally simply to control the oldest of all skating sports, ice speed skating. It subsequently took control of the other branches of ice-skating, and of roller-skating, and it now governs all these through five special committees, these being the Ice Speed Committee, which is subdivided into a Fen Centre and a General Centre; the Ice Figure Committee; the Ice Dance Committee; the Roller Speed Committee; and the Roller Figure and Dance Committee. All these sports are the subject of

international, as well as national, competitions, and the N.S.A. enters selected British teams for international events, and is in membership with the international governing bodies, the International Skating Union (Ice) and the Federation Internationale de Patinage a Roulettes (rollers). There are World and European ice figure and speed championships, the latter consisting of outdoor races; and World and European roller figure, dance and speed championships, the speed events having separate outdoor and indoor meetings. Ice figure and speed skating are included in the winter section of the Olympic Games, but, despite efforts which have been, and are being, made, roller-skating has not yet achieved Olympic status. The World ice figure championships and the European roller figure and dance championships, as well as the World amateur ice-hockey championships, were all held in London during March and April 1950.

At home, the N.S.A. holds annual championships for amateurs and professionals in all branches of ice- and roller-skating. There are regular indoor speed championships, and outdoor ice speed events are arranged whenever possible. There are no outdoor roller speed events at the moment, though there were formerly. Efforts are now being made to find a suitable surface on which these events could be revived. In addition to these championships and to other competitions, the N.S.A. organises a series of Tests, with medal awards for any skater who reaches the particular standard. These tests give the enthusiast a chance to mark his, or her, progress from novice to expert in figures, dancing or speed skating on ice and rollers. In all, there are nearly fifty of these Tests, each branch being divided into 1st, 2nd, and 3rd class, with some additional intermediate stages, and special Tests for instructors.

Ice-hockey is governed by the British Ice-Hockey Association in England, and by the Scottish Ice-Hockey Association in that country. This sport, which is of Canadian origin, played six-a-side with substitutes permitted, and with a rubber disc called a puck instead of a ball, first began to win popularity in Britain soon after the First World War; and it reached the status of a major sport about 1936. There is a National League, but this is almost entirely dependent on players specially imported from Canada. These men are neither amateurs nor professionals, as ice-hockey recognises a third category, called independents, who receive generous expenses, but who are neither classed as fully fledged professionals nor eligible for amateur international teams or Olympic teams—for ice-hockey is included in the winter section of the Olympic Games. Below the National League is the Intermediate League, which consists of teams using British amateur players. There are also a number of teams composed of boy players, many of whom train under one or other of the various rink schemes to develop British players up to the Canadian standard. Incidentally, it is the view of some Canadian experts that this attempt to raise the British standard to that of Canada is not as hopeless as might appear. They point out that Canadian boys learn outdoors, and have ice for only about four months a year. In this country, the boys can train in the indoor rinks all the year round, so, though they may start later than the Canadians, they should progress three times as fast.

Roller hockey, or, as it is more usually called, rink hockey, is controlled by the National Rink Hockey Association. This game bears a much closer resemblance to ordinary outdoor hockey than does ice-hockey. It is played with a ball, and teams are five-a-side with one substitute permitted. It is purely an amateur game, so popular now that there are summer, as well as winter, league and cup competitions operating. There are World and European championships, the two titles being decided at one tournament. Britain is one of the leading rink hockey countries of the world.

Other games have been played on skates from time to time, but the only other skating game played regularly is Bandy. This is an outdoor ice game, closely resembling field hockey. Bandy originated in England, but it is no longer played here, though it is extremely popular in Sweden and the U.S.S.R. Badminton has been, and is, played on ice skates, but only as a stage show, and not as

a competitive sport. Some countries have tried Basketball on roller-skates, and it is possible that this game might develop and spread.

It is not particularly hard to learn to skate, but it cannot be done from books. The only way is to try it; and it is not necessary to engage an instructor until one can at least "go round." It is possible to practise to some extent, i.e., to get used to standing on skates, at home. Strong ankles, a good sense of balance, and plenty of confidence are needed. Skating is almost certainly more easily mastered if the beginner is a youngster, but plenty of adults have taken it up successfully.

## SWIMMING.

Swimming as a competitive sport, though it is extremely popular, is not, perhaps, generally given the attention usually paid to a major sport: but swimming as a recreation, indulged in purely for fun and without thought of serious competition, is one of the most popular pastimes in Britain. Actually, this accomplishment goes far beyond being merely a sport or recreation. It is a method of progression of which everybody should have at least some knowledge, for ability to swim might at any time enable one to save life. Incidentally, swimming shares with walking the distinction of being a perfect exercise. It exercises the whole body without straining it, and it can be practised as leisurely or as energetically as the swimmer wishes.

There are a number of different strokes used for propelling the body through the water. The one generally taught first, and the one required for all life-saving tests, is the breast-stroke. Other strokes, aiming at more speed, have been introduced from time to time, and these include the side-stroke, the over-arm, the trudgeon, and the crawl. Generally speaking, each of these has almost completely superseded its predecessor, and the crawl is now almost universal. There are two methods of swimming on the back, one, also very useful in life-saving, being something of a back equivalent to the breast-stroke, while the other, used in racing, is a back crawl.

As a sport, swimming has a regular place in the Olympic Games, and there are many other championships and competitions. The standard distances for races range from 100 yards to a mile; and there are also a number of longer annual swimming races, both in the sea and in rivers, ranging from a mile to five miles. In addition, there are in various parts of the world certain stretches of water which seem to act as a permanent challenge to strong swimmers. The most famous of these is, of course, the English Channel; and, although this has been conquered on a number of occasions, the swimming of it remains, and will always remain, a very considerable achievement.

The governing body of swimming is the Amateur Swimming Association; but another very important body is the Royal Life-Saving Society. This organises regular tests ranging from preliminary to very advanced, and concentrates on teaching the best methods of saving life in the water and of resuscitating the apparently drowned. All good swimmers should take the trouble to acquire at least some proficiency in this branch, for even a most powerful swimmer will experience considerable difficulty in attempting to save someone unless he or she has some idea of the best method of setting about it.

## Diving.

Akin to swimming in that it is a water sport, but in actual fact quite a different sport, generally attracting quite different people, is diving—also an Olympic sport. Diving in competitions entails the ability to use boards of various heights, and it is usually necessary to perform certain set dives and a number of voluntary dives, the latter being chosen from an approved list. In addition to the obvious requirement of nerve, the diver needs almost the same physical qualities as the gymnast: the ability to control the body in the air. Good swimmers are generally fairly big physically, but the best divers are usually much smaller and more compactly built.

## Water Polo.

It is not surprising that an actual team game, suitable for playing in the water, should have been



invented. What is surprising is that, up to the present, no one should have been able to work out a set of rules which would be accepted throughout the world: for, in its seventy-odd years' history, water polo has probably been the subject of more codes of rules than almost any other game.

The main object of the game is the scoring of goals. The ball used resembles a soccer ball, and the goals are similar in appearance to soccer goals, but all passes, shots, etc., are, of course, thrown. The chief difficulty confronting those who have tried to work out suitable rules has been the scope for, and the difficulty of detecting, fouls under the water. Players in almost every country that has taken up the game have, it seems, taken full advantage of these opportunities; and, though the game is included in the Olympic Games, it is always likely to cause an international "flare-up."

Fairly recently, however, a new set of rules, known as the South American rules, has been prepared; and it is hoped that these may be adopted internationally. Based on the rules of basketball, these rules ban all bodily contact between opposing players, and aim at a game in which skill, rather than brute force, should be the deciding factor. It also seems that these rules would make things much simpler for officials controlling games.

### WEIGHT-LIFTING.

Weight-lifting is a highly organised competitive sport included in the Olympic Games, and also in the Empire Games. It is tremendously popular on the Continent and in countries like Egypt, but it also has a very large following in Britain, where it is governed by the British Amateur Weight-Lifting Association. There are World, European, and British Championships; and, in this country, there are many inter-club and league contests throughout the season. For competitive purposes, weight-lifting competitions are divided into classes by body-weight, and there is a system, based on what is known as the Austin Formula, by which allowances can be made to compensate the lighter team in inter-club matches. In the event of a tie in actual poundages lifted in major Championships, the lighter man is the winner.

Altogether, there are forty-two recognised lifts, and the B.A.W.L.A. runs a scheme in which lifters somewhat below Championship class can win first-, second-, or third-class Certificates of Merit in any lift, no matter what their body-weight. Championship events are decided on three lifts, each competitor having three attempts at each.

Apart from those who lift weights as a sport, and who enter for Championships, there are many who use weight-lifting as a means of training for health and fitness and to improve their physique. It is without doubt the best means of bringing a physique which is below par up to, and above, standard. When using weight-lifting for physical training, the system is to perform certain lifts, doing a fixed number of repetitions of each with a weight of two-thirds or three-quarters of the known maximum poundage. Anyone taking up this form of training for the first time would be well advised to seek the advice of an experienced trainer or coach as to the schedule of lifts most suitable for the particular case. These coaches are not hard to find, for there are some 750 clubs scattered all over the country, all with experienced men willing to help new-comers.

Many leading exponents of other sports, especially of athletics, regard weight-lifting as an essential part of their training. Contrary to a widespread belief, it does not make one slow. Weight-lifters in competition, in fact, make some of the fastest movements known in sport.

Opinion as to the value of weight-lifting for women varies. There are no competitions for women, but quite a number use this method of training for health and to improve the physique.

### Strand-Pulling.

Closely akin to weight-lifting in that it is primarily, perhaps, a method of keeping fit which has been turned into a competitive sport is strand-pulling, which is the official name for exercises with a steel or rubber expander. A large number of different "pulls" are possible, and the strength and number of the strands on the expander can, of

course, be varied at will. There are now many championships and contests at this sport, the competitive side of which is controlled by the British Amateur Strand-Pulling Association.

### WRESTLING.

Briefly, the sport of wrestling is an individual combat in which the competitor, using only his bare hands, endeavours to throw his opponent down on his back so that both his shoulders are touching the ground. Wrestlers, like boxers, are divided into classes by weight, but generally speaking, the maximum poundages in each class are higher than those in boxing. There are several distinct styles of wrestling, each with its own set of rules; and the sport is practised by both professionals and amateurs.

Probably the most popular style in Britain is Catch-As-Catch-Can. In this, the wrestlers have considerable freedom of movement. They start apart, and they may try to throw their opponent either by grasping with the hands or by various forms of trip. As two evenly matched men might continue for a considerable time without either gaining a fall, most amateur contests are so regulated that a points decision can be given. The bout is limited as to time, the judges giving their decision if no fall has been obtained in that time. Obviously, in this type of wrestling, the bout may proceed with the men either on their feet or down on the mat; and something approaching a stalemate is possible. If, therefore, no fall has occurred after a certain number of minutes, the judges may require the contestants to stop and restart, either standing or on the mat, with one or other in the top position. Certain holds which might lead to serious injury are barred.

Also extremely popular is Cumberland and Westmorland wrestling, which is widely practised in those counties and in Scotland. In this, the wrestlers do not start apart, but each clasps his hands together behind the other's back, and all throws are done by the legs. The breaking of an opponent's hold constitutes a fall. The initial hold, is, therefore, of tremendous importance, and the actual taking of it often takes far longer than the actual bout.

A third form of wrestling found in Britain, though only in a certain part of it, is Cornish wrestling. Here, the contestants wear rough canvas jackets, and all holds must be taken by these.

Græco-Roman wrestling has always been the most popular style on the Continent, but it has never been very popular with British wrestlers. The competitors start apart, as in Catch-As-Catch-Can, but no hold may be taken below the waist. A bout continues until a fall has been won, and this sometimes takes a matter of hours, rather than minutes. As may be imagined, this version of the sport can be rather slow to watch, and, at one time, handicap matches were popular. These consisted of bouts in which one wrestler, supposed to be much better than his opponent, undertook to win a fall, or a certain number of falls, in so many minutes. If he failed to do this, or was himself thrown, then he was the loser. About half a century ago, wrestling was a popular music-hall entertainment in London, wrestlers like Hackenschmidt—known as the "Russian Lion," though he was actually an Estonian—winning tremendous popularity. Græco-Roman was the style generally used in those days.

Most professional wrestling in Britain and America to-day is in what is known as the "Free" or "All-In" style. Few holds are barred, and those that are are frequently employed. The contestants also seem to feel free to punch or kick each other. The same men wrestle night after night in different halls, and the sporting public are disinclined to take it very seriously. Some people go for amusement, as they would go to a music hall, and most of them regard it as a stunt, rather than as sport. In America, promoters have attempted to keep public interest alive by staging bouts in a ring which has been turned into a sea of mud, or which has been filled with fish. Such devices might succeed in attracting the public once or twice, but they also give considerable support to the theory that the whole style is a stunt likely to do a lot of harm to a first-rate sport—as, indeed, it has already done.

Wrestling, like athletics and swimming, is a perfectly natural sport, and it is of great antiquity. It is very popular in Oriental countries, and India, China, and Japan all have their own styles. Japan, in fact, has at least two, one of which is worth some attention.

This is Judo, more often, though less correctly, called Ju-Jitsu. This is practised in England, but, although it is a sport, it is more often taken up as an effective method of defence against a physically stronger or better-armed attacker. Requiring deep study and a thorough knowledge of anatomy, but not calling for a particularly strong physique, it consists partly of defence by knowing how to

sustain nasty falls without injury, and attack by locks which give the opponent a choice between capitulation and a broken bone, and by paralysing nerve centres. So potentially dangerous are the various locks that, when practising, people are warned to release any hold the moment their partner requests this.

Wrestling, particularly in the Catch-As-Catch-Can or Cumberland and Westmorland styles, is a wonderful exercise, whether one desires to go in for competitions or not. The value of it can be gauged from the fact that it can be continued to, or even taken up at, quite an advanced age.

## INDOOR GAMES AND PASTIMES

### BRIDGE.

#### Auction.

Auction Bridge is a game for four, two partnerships of two opposing each other. The partners sit facing each other. Selection of partners is generally decided by cutting cards, the two players drawing the higher cards opposing the other two. Partnerships can also be decided by mutual agreement. The player to draw the highest card is the dealer. The complete pack is dealt, each player receiving thirteen cards.

The cards having been dealt the dealer starts the bidding and it continues in rotation.

The value of the suits is as follows:—

Clubs	6 points per trick
Diamonds	7 points per trick
Hearts	8 points per trick
Spades	9 points per trick
No-trumps	10 points per trick

It will be seen that a contract of three Clubs (18 points) will not overcall a contract of two No-trumps (20 points). When two contracts have the same points value, as, for example, two Spades and three Clubs, the extra trick prevails.

If a contract is doubled the trick score is doubled, and if redoubled the trick score is redoubled.

Any player may pass, but should he make a bid it must be sufficient to overcall the previous bid. A player making an underbid can be penalised—the player on the offender's left having the option of closing the bidding at the previous bid or demanding that the offender make a proper bid, in which case his partner is debarred from further bidding unless the opposing side double or make another bid.

Should a player bid out of turn the player on his left may demand a new deal.

All tricks in excess of six made by the contracting side score towards game, to make which 30 points are required. For example, should the final contract be two Diamonds and nine tricks be made, the score to declarer's side is 21 points below the line. This 21 carries forward and can contribute towards game. If at any time a partnership score a game, any outstanding score below the line automatically ceases to rank towards game.

The first side to score two games wins the rubber and receives a bonus of 250 points above the line.

All scores for honours, penalties, and bonuses are scored above the line and are included in the final score—they cannot, however, contribute towards making a game.

The following bonuses are awarded for honours:—

Holding 3 honours . . . . .	twice the suit value
i.e.,	3 honours in Hearts receive a bonus of 16 points
Holding 4 honours . . . . .	4 times the suit value
Holding 5 honours . . . . .	5 times the suit value
Holding 4 honours in one hand . . . . .	8 times the suit value
Holding 4 honours in one hand and one in partner's . . . . .	9 times the suit value
Holding 5 honours in one hand . . . . .	10 times the suit value.

At No-trumps, the honours count for three Aces is 30 points, for four Aces 40 points and for four Aces in one hand 100 points.

Penalties are awarded for defeating a contract.

For each trick by which the contract fails the penalty is 50 points. If the contract is doubled the penalty is 100 points per undertrick, and if redoubled 200 points per undertrick.

Bonuses are awarded for making a doubled or redoubled contract. For making a doubled contract the declarer receives a bonus of 50 points and a further bonus of 50 points for each trick he makes over and above the nominated contract. If redoubled, the bonus for making the contract is 100 points with a further bonus of 100 points for each overtrick. These bonuses are in addition to the doubled (or redoubled) trick score recorded below the line.

A bonus of 50 points (also recorded above the line) is awarded for making a little slam—twelve tricks—in either a suit or No-trumps. For a grand slam—thirteen tricks—the bonus is 100 points. These bonuses are not affected by doubling or redoubling.

The player who first named the suit for his side in which the contract is to be played becomes the declarer, and the opponent on his left makes the initial lead. When this has been done, declarer's partner (known as dummy) displays his hand on the table.

Dummy may not draw attention to any irregularity or to a revoke, nor may he claim any penalty. If his partner fails to follow suit, he can ask him if he has no cards in the suit led. He can draw attention if too few or too many cards have been played to a trick, or if the trick has been gathered by the wrong side. He may discuss questions of fact and correct any claim made by the opponents to which they are not entitled. He may not warn declarer not to lead from the wrong hand.

The player on the left of the declarer makes the opening lead, and dummy's hand is exposed. Each player must follow suit if he is able to do so. The highest card of the suit wins the trick unless it is trumped. The winner of the trick leads to the next trick.

If a player did not follow suit when he could have done so, he has revoked. The revoke becomes established if the offender or his partner has led or played to the next trick. If the revoke has not been established, the offender may correct it. When established, the penalty for a revoke is two tricks. Subsequent revokes incur a penalty of one trick each.

Such penalty tricks can, however, be claimed only from tricks taken subsequently to the revoke. If no subsequent tricks are taken by the offending side, there is no penalty. "Subsequent" includes the actual trick in which the revoke occurred. A revoke in the twelfth trick cannot be established.

Tricks taken as a result of the application of this penalty count and score as though made in actual play.

If declarer leads out of the wrong hand he may not withdraw the card unless an opponent requests him to do so. Should this happen, the card incorrectly led is restored to the hand and there is no further penalty. If an opponent leads from the wrong hand, declarer may demand that a certain suit be led by the right hand, in which case the exposed card is restored to its owner without further penalty. Alternatively, he may elect to treat the card as a penalty card and allow the right opponent to make any lead he likes. The declarer can "call" the penalty card at any time, and its owner must play it provided that by so doing he does not revoke. Declarer, however,



cannot prevent the holder of the exposed card from playing it at any time should he have a suitable opportunity.

Dummy may not suggest the play of a card by touching it or in any other way. If he does so, either of the opponents can insist that the card shall or shall not be played.

Any player except dummy can claim a revoke penalty, or call his partner's attention to an offence, but only the player entitled to claim can exact a penalty.

### Contract.

At Contract Bridge, only the tricks contracted for are scored below the line, the score for additional tricks being recorded above the line. A declarer contracting to make, say, Two Spades, needs eight tricks to fulfil his contract, while a contract of Four Hearts needs ten tricks. In every case the number of tricks contracted for is over and above six.

The score for tricks in a major suit (i.e., Spades or Hearts) is 30 points; for a minor suit (i.e., Diamonds or Clubs) 20 points; whilst in No-Trumps, the first trick counts 40 points and subsequent tricks 30 points. A game consists of 100 points, so that it is necessary to bid and make Four Hearts or Four Spades, Five Diamonds or Five Clubs, or Three No-Trumps, to produce a game. Should a declarer play a hand in, say, Four Diamonds and make eleven tricks he scores 80 points below the line and 20 points above it. The 80 points below the line carry forward, so that a contract of One in any suit or One No-Trumps would be sufficient to make game next time.

The additional score above the line is included in the final total, but does not contribute towards the making of a game. It is thus desirable that the contract should, whenever possible, be for a sufficient number of tricks to make game. It is galling to play a hand in a contract of One Spade and make eleven tricks, since only 30 points out of the 150 scored are recorded below the line and rank towards a game.

On the other hand it is foolish to overbid the hand in order to reach a game bid that cannot be fulfilled.

The suits rank in the following order: the lowest being given first, Clubs, Diamonds, Hearts, Spades, No-Trumps being the highest. Majority bidding applies, that is to say a bid of a greater number of tricks overcalls the bid of a lesser number, irrespective of suit value. Thus a bid of Five Clubs, although yielding only 100 points, overcalls a bid of Four Spades, which would yield 120 points.

A rubber is completed when one side scores two games. If the opponents have not scored a game (i.e., it is a Two-game rubber) a bonus of 700 points is awarded; if it is a Three-game rubber the bonus is 500 points. When either side has scored a game it becomes vulnerable, the effect of which will be discussed later.

When adding up the score the total points are counted, whether above or below the line. The difference between the totals scored by one side and the other is the margin by which the rubber is won. If the stakes are estimated to the nearest hundred, a difference of 50 is ignored. Thus a difference of 450 counts as 400 for stake computation. In the case of an unfinished rubber, a bonus of 300 points is awarded for a game and 50 points for a part score. If both sides have a part score (even though they differ in size) there is no bonus.

The desirability of arriving at the optimum contract, i.e., to undertake to make as many tricks as the partnership hands are worth, and no more, has led to the introduction of a number of bidding systems, among which the most popular are the Approach-Forcing system introduced by Mr. Ely Culbertson, the Acol system, the Two Club system, the Vienna system, and the CAB system. The object of these systems, as to the respective merits of which there is considerable rivalry, is to provide for the interchange between partners of as much information as possible within the limits of a few bids.

Penalties are incurred for failing to make the contract finally reached. If the declarer is not vulnerable the penalty is 50 points per under-trick, if vulnerable 100 points per under-trick.

If the contract is doubled by an opponent the penalties are as under:—

	Not Vulnerable.
100 for the first under-trick.	
200 for each subsequent under-trick.	
	Vulnerable.
200 for the first under-trick.	
300 for each subsequent under-trick.	

If the declarer redoubles the penalties are twice as severe.

If a doubled contract is successful, the declarer scores twice as much for the tricks he has undertaken to make. Thus a contract of Two Spades doubled and made gives a score below the line of 120 points, giving declarer a game where he had contracted only for a part score.

\* Overtricks score 100 each above the line if declarer is not vulnerable, and 200 each if vulnerable. All of these scores are doubled if the contract is redoubled. In addition, the declarer scores a bonus of 50 points above the line for any successful doubled or redoubled contract.

Bonuses are awarded for making slams, provided that they are bid. If the side making the slam are not vulnerable, the bonus is 500 for a small slam (12 tricks) and 1000 for a grand slam (13 tricks). If vulnerable the bonuses are 750 for a small slam and 1500 for a grand slam. Doubling or redoubling does not affect the slam premiums.

If a player (whether declarer or opponent) holds Four honours in one hand in the suit of the final contract he receives a bonus of 100 points. For holding Five honours in one hand the bonus is 150 points. Four Aces in one hand score 150 points providing that the final contract is in No-Trumps.

Various methods have been devised for computing the value of a hand, the Milton Work count being probably the most popular. In this the player reckons Four for an Ace, Three for a King, Two for a Queen, and One for a Knave.

To open the bidding a player should have 12-13 points, although this figure can be reduced if the hand has compensating distributional strength.

An opening bid of One No-Trumps denotes a balanced hand and a holding of 16-18 points.

An opening bid of 2C, 2D, 2H or 2S indicates a very strong hand, and a partner must respond even though his hand is completely worthless. The conventional response to indicate a worthless hand is Two No-Trumps. An opening bid of Two of a suit must be kept open until a game bid is reached.

An opening bid of Two No-Trumps shows a balanced hand and a count of 20-22 points.

Responses to an opening bid depend on the shape and strength of the responding hand. Over an opening bid of a suit, responder can bid another suit at the range of one on a point count of 7 or more. If it is necessary to bid at the range of two he should hold 9 or more. A responder unable to do either of these things, but having 5-8 points should respond One No-Trumps. This response of One No-Trumps, sometimes called a "courtesy" response, is made to enable the opener, should his hand warrant it, to make a further constructive or forcing bid. For example, the opener's hand might fall just short of the "opening Two" standard, but the knowledge that his partner holds 5-8 points might now enable him to bid game.

A forcing response is made by jumping the bidding in another suit. For example

N.	E.	S.	W.
1D	—	2H	—

Here South, by making a bid at a higher level than necessary, is saying to his partner "There is at least a game here and possibly a slam."

The opener must, of course, respect this force and keep the bidding alive until game is reached.

A double raise in the opener's suit, i.e.,

N.	E.	S.	W.
1D	—	3D	—

has similar implications and shows a good fit in the suit bid.

A bid of Two No-Trumps over an opening bid shows a balanced hand and a count of 9-11. Opener should pass if he opened on a minimum hand and should bid Three No-Trumps if he holds any additional values.

After a one-over-one response a bid of Two No-Trumps by opener shows a holding of 16 points. In the sequence

N.	E.	S.	W.
1D	—	1H	—
2N.T.			

North is showing 16 points. South by his one-over-one response of One Heart has already shown 7 points. If he holds any additional values he should bid Three No-Trumps. Roughly speaking a combined count of 25 is required to produce Three No-Trumps, although 24 is generally sufficient if one of the partners holds a Five-card suit.

A second-round force can be made by a bidding sequence such as the following:—

N.	E.	S.	W.
1S	—	2D	—
3H	—	—	—

Here North was not strong enough to make an opening "forcing two" bid, but now that his partner has shown at least 9 points by his "two-over-one" response he does not want to stop short of game.

A player when making an opening bid guarantees that he will find a rebid over his partner's response, unless it be the "courtesy" response of One No-Trump, which he may pass.

In order that this rebid can be made without raising the bidding too high, use is sometimes made of a "prepared" club bid. This can be made on a three-card suit. Its principal merit is that it gives partner an opportunity of responding at the level of one, should he hold suitable values. Had the opening bid been One Spade or One Heart responder may have held insufficient strength to bid Two of a suit and be compelled to bid One No-Trump which may not be the best contract. The "prepared" club bid should not be used on a hand containing a rebiddable (i.e., Five-card) major suit.

For the successful bidding of slams, it is often essential to have knowledge of partner's Aces and Kings, because the contract frequently depends on first- and second-round controls.

As an aid to procuring this knowledge, various slam conventions have been introduced, the most popular being the Blackwood Convention, the Culbertson 4-5 No-Trump Convention, and the Norman Convention.

In the Blackwood convention a bid of Four No-Trumps after trump agreement has been reached asks partner to say how many Aces he holds. This he does as follows: Five Clubs shows no Aces, Five Diamonds one Ace, Five Hearts two Aces, Five Spades three Aces. A bid of Five No-Trumps now invites the same information about Kings. A response of Six Clubs shows no Kings, Six Diamonds one King, Six Hearts two Kings, and so on.

In the Norman convention the information is obtained in one response. A bid of Four No-Trumps is replied to as follows: Counting one point for Aces and a half for Kings: Counting one point for Aces shows less than 1½, Five Diamonds shows 1½, Five Hearts shows 2, Five Spades shows 2½, Five No-Trumps shows 3, Six Clubs shows 3½ and so on. It is true that a response of, say, Five Hearts shows a count of 2, which may consist of two Aces, one Ace and two Kings, or four Kings, but the player who initiates the slam try can generally place the cards by reference to his own holding.

In the Culbertson 4-5 No-Trump convention, the player who makes the Four No-Trump bid announces that he holds Two Aces and a King of a suit that has been bid, or alternatively Three Aces. Responder signs off in the lowest suit bid by the partnership. Holding one Ace he bids the suit containing it (if it happens to be in the lowest suit bid by the partnership he must make a jump bid). Holding two Aces, or one Ace and the Kings of all the suits bid by the partnership, he responds Five No-Trumps.

Another Ace-showing method is that known as Asking-Bids, which although extremely valuable is somewhat difficult and has not been adopted so widely as it merits.

Many mistakes can occur during the auction, and players are advised to consult the official Laws of Contract Bridge (the last edition was in 1948). These Laws are too comprehensive to be

included fully in this summary, but the following are brief references to some of the more frequent infringements.

If a player during the course of the auction makes an insufficient bid, he is required either to pass or to make a sufficient bid. If he makes the lowest sufficient bid in the same suit there is no penalty, but if he makes any other bid or if he elects to pass, his partner must pass for the remainder of the auction.

If a player makes a call out of rotation it is void, and the auction reverts to the player who was correctly entitled to call. If the call out of rotation was a pass, the offender must pass when it is his turn to call. If it was another bid, his partner must pass throughout the rest of the auction.

A player is entitled to ask for a bid (or a sequence of bids) to be repeated. He has no redress if he mishears or misunderstands a bid.

After the final contract is determined, that is when any bid, double or redouble has been passed by three successive players, the declarer is the partner in the contracting side who first nominated the suit (or No-Trumps) in which the hand is to be played. Thus if the bidding sequence is

S.	W.	N.	E.
1N.T.	—	3H	—
35	—	3N.T.	—

the declarer is South and not North, although North actually bid the final contract.

The opponent on the left of the declarer makes the opening lead and declarer's partner's hand is then placed on the table.

Declarer's partner, known as "dummy," has few rights, and he forfeits these if he looks at any of the cards in any of the other players' hands. If he has not looked at any cards other than his own he is entitled to give or obtain information as to the laws, to point out a revoke, to draw attention to an irregularity and to try to prevent one that is apparently about to be committed. He can, for instance, remind partner from which hand he should lead should declarer apparently propose to lead from the wrong hand.

If a declarer leads out of the wrong hand, either defender can demand that he leads from the correct hand. The card led is replaced, and the declarer, provided that he can do so, must lead a card in the same suit.

If a defender leads when it is the turn of the declarer (or dummy) to lead, the card becomes an exposed or penalty card, and the lead reverts to the correct hand.

If a defender leads when it was his partner's turn to lead, declarer may prohibit the lead of that suit (in which case the exposed card is restored to its owner without further penalty), or may allow the correct defender to lead any card he likes, in which case the card incorrectly led becomes a penalty card.

A penalty card must be played at the first legal opportunity, whether by following suit, by leading, discarding, or trumping. Should a defender have two or more penalty cards, declarer may stipulate which of them is to be played.

## CHESS.

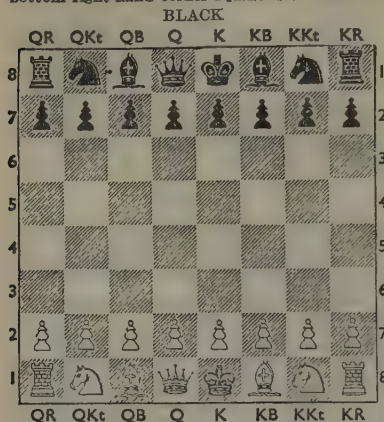
Chess, the greatest of all board games and a game of pure skill, originated in the Orient, and has a known history of some 1500 years. Eastern players had reached a high level of skill, but the greatest advances in the game were made in Italy during the fifteenth and sixteenth centuries. From time to time in the early days, the value of the pieces and their moves were the subject of changes, but the game as we know it to-day dates from the sixteenth century.

The board contains sixty-four squares in eight rows of eight; and each player has sixteen pieces, one set being white and the other black or red—always referred to as black, whether this is actually so or not. A toss decides possession of white, which always starts. The object of the game is the capture of the opponent's King, no matter how many pieces are lost in doing so, nor how many other opposing pieces remain uncaptured. If the King could be captured on the next move, it is in check. It must then immediately move out of check, and, if unable to do so, it is check-mate, and



the game is over. If the King, though not in check, cannot move without moving into check, and the player has no other piece to move, then it is stale-mate, and the game is a draw. Incidentally, there is a school of thought which holds that stale-mate should be considered a win for the attacker. Games may also be drawn if neither player has sufficient pieces left with which to force a victory.

Apart from the King, each player has a Queen, two Bishops, two Rooks—often, quite wrongly, called Castles—two Knights, and eight Pawns; and these can move only in accordance with rigid laws. The following diagram shows the Pieces in the initial position of the game. Notice that the bottom right-hand corner square is a white one.



(The initial position as seen by White)

Each line of squares across the board is called a "rank"; each line of squares up and down the board is known as a "file." The permitted moves are as follows:—

The **KING** can move one square at a time in any direction, always provided that it does not move into check.

The **QUEEN** can move in accordance with the powers described below for both Bishops and Rooks.

The **BISHOPS** move diagonally, as many squares as desired from one to the extent of the board.

The **ROOKS** move straight along the ranks or files, again as far as is desired.

The **KNIGHTS** move, or jump, as shown in the following diagram. Stationed away from the



(The Knight's Move)

side of the board and on a black square, the Knight illustrated may move to any of the white

squares nearest to him but not immediately adjacent. The jump is made one square along a rank or file and one square in an oblique direction.

The **PAWNS** move straight forward, one square at a time, except that a Pawn may advance two squares on its initial move, though it need not do so. Pawns capture by moving one square forward and one either to left or right. Pawns reaching the eighth rank can be replaced by any other piece, a Queen usually being chosen.

Castling is a special move, which a player may make once and once only during a game. It is a double move, serving both to place the King in the comparative safety of the side of the board and to bring a Rook into play. The King is moved two squares towards the Rook, which is placed on the last square passed over by the King. This move cannot be made if the King is in check, nor if any of the squares passed over by the King are in check. The squares between the King and the Rook must be clear, and neither piece must have moved previously during the game.

As games of Chess can be recorded, the aspiring beginner of to-day may play over "Master's" games of past years, may enjoy current games no matter in what part of the world they are played, and can record its own games.

### Draughts.

Draughts—called Checkers in America—is another game played on a chess board. It is much simpler than Chess, but this does not mean that it is devoid of skill. It is extremely popular and extremely old—older, perhaps, than Chess.

Each player has twelve pieces or "men," all of them being alike. Only the thirty-two squares of one colour, say, black, are used; and the starting position of the pieces is on the twelve black squares of the first three rows of the board. The move is one square diagonally forward at a time, except that a man reaching the eighth row becomes a King—usually denoted by "crowning" with a piece previously captured—and it can then move one square diagonally forward or backward. The object of the game is the capture of all the opponent's pieces. A capture can be made when there is an opposing piece on a square to which normal move could be made, and a vacant square behind the opposing piece. The capturing piece then jumps over the opposing piece, which is removed from the board. If the arrangement of pieces and vacant squares permits, a capturing piece can hop over several opposing pieces in one move. Any piece in a position to effect a capture which does not do so is removed from the board, or "huffed."

### DARTS.

There has been no more phenomenal sporting development during the second quarter of the twentieth century than the growth in popularity of Darts. This game has, of course, been played in one form or another for much longer than twenty-five years, but it is only comparatively recently that it has reached the status of one of Britain's most popular pastimes. Originally, it was a casual amusement, confined almost entirely to public-houses and country inns. These are still the scene of hundreds of thrilling matches every year, but they are now far from being the game's only home. Clubs, canteens, factories, offices and private houses all have their boards; and there are numerous leagues and team and individual competitions operating, right up to a National Championship. The prizes and trophies rival those of any other sport for size and value, the matches are widely reported, and the attendance for the bigger contests is limited only by the size of the hall. Nor is all this attention misplaced, for Darts, far from being merely a casual amusement, is a real sport, testing steadiness and co-ordination of hand and eye, and calling for quick thinking. It is a test of sheer skill, and luck plays little part in it.

The board, which is circular and usually made of elm, has a diameter of 18 inches and is 2 inches thick. It is usually marked on both sides, so that a side which has been much used can be treated—by soaking it in water—and rested. It is divided into segments numbered from 1 to 20, but not consecutively, 1 being a long way from 2, and 19 from 20. All dart boards are marked

in the same way, and the first thing a beginner has to do is to get to know the order of the numbers on the board. In the centre, there are two small rings, the "bull" or "dossier" and the "outer". The bull counts 50 and the outer 25. The board is so placed on the wall that the bull is exactly 5 feet 8 inches from the ground. The darts, which are feathered and made of wood or metal, are thrown from a line, called the "hockey," 9 feet away from the board.

The actual marking of the board contains two further, most important complications—the "double" and "treble" rings. These, like the segments, are marked with wire, and they go right round the board. The double ring is at the extremity of the circular board, and consists of two wires, which, as they circle the board, mark off a portion of each segment  $\frac{1}{2}$  inch wide. The treble ring is exactly the same, but is set between the double and the bull, rather nearer the bull. Darts in these rings count double or treble the value of the segment.

Straight-forward matches may be singles between two players, doubles between two pairs, or team contests between sides of four or eight. A "throw" consists of three darts, and, in singles, each player in turn takes a complete throw. In doubles and team matches, each time it is the turn of a side, then the particular player of that side whose turn it is throws. It is not permissible for the best player on a side to throw for one of his team-mates.

Matches are for a certain number of points, always an odd number, usually 101, 201, 301, 501, 801, or 1001, the lower totals being used for individual, and the higher for team contests. Most matches are decided by the best two out of three games or "legs." The right to throw first is decided by each player or one player from each side throwing for the bull, the best throw taking precedence. First throw is valuable, for, in a short game of, say, 101, an expert might run out with his first three darts, without his opponent having a throw, this being possible by use of the doubles and trebles. The score, which is marked in chalk on a slate near the board, is always counted downwards, players being told how many they need, rather than how many they have scored.

Conditions for matches vary, but one of two particular methods is almost always used. These are, first, "straight start and finish on a double," and secondly, "start and finish on a double." In the first case, the first player steps up and immediately starts scoring whatever he throws, while, in the second case, no score counts until one double has been registered. To win, a player or team must get the exact number required. If too many points are scored, the whole of that particular throw counts nothing, and the total remains unaltered. The exact number needed can, of course, be scored with any dart, and it is not necessary to complete a throw by scoring it with the third dart. The rule about finishing in the double ring applies in virtually every competition.

No mention of darts would be complete without reference to at least some of the many popular variations on the straight-forward game.

One of these is "Round the Clock." In this, each player has to throw one dart in each segment in turn, starting with number 1 and ending either in double 20 or in the bull according to previous agreement. A player who advances his position during a throw has another throw, and so on until he throws three darts without scoring in the particular segment he has reached. A variation of this variation is "Shanghai." In this, the players aim each dart of the first throw at number 1, and count whatever they score in that segment, doubles and trebles having their full value. For the next round, the players, including any who have failed to score in number 1, move on to number 2; and so on until number 9, which is the last round. Any player failing to score at least something in number 5 is "shanghaied" and has to drop out.

Other variations take the form of darts versions of other games, "Cricket" being amongst the most popular. In this, the player who is "batting" scores whatever he makes over 40, while the player who is "bowling" throws only at the bull, and counts one "wicket" for every dart in the

outer and two for those in the bull. When the fifth wicket falls, the sides change over. The batting side always throws first in this game.

Shove-Ha'penny also has its darts version, the players having to get three darts in each segment from 1 to 9, and three in the centre. As in proper shove-ha'penny, players can claim for themselves any darts in excess of three placed in any segment by the opponent.

In "Fives," a player scores only if his total for three darts is exactly divisible by 5. If, for instance, he actually gets 40, he scores 8; but if he gets 39, he scores 0. These games are usually 50 up.

### SHOVE-HA'PENNY.

Shove-Ha'penny is one of the old English games, which is still played enthusiastically, especially, perhaps, in inns and public-houses. The equipment consists of a board and the halfpennies. The board is made of wood or slate; and it is divided by parallel lines drawn across it into nine equal spaces or "beds." On some boards, the divisions are marked by metal strips, which can be raised to check the result of a "shove." The edges of the board are cushioned. The halfpennies may be actual halfpennies, preferably those worn smooth by constant use; but they are more often—always in the more important competitions—round metal discs.

The object of the game is to shove the halfpennies into one of the nine beds, the shoving usually being done with the ball of the thumb, though any part of the hand may be used. The winner is usually the player who first succeeds in placing three halfpennies in each of the beds, the players shoving in turn, and each turn consisting of five halfpennies. To decide first turn, each player shoves one halfpenny for the number nine bed, the best effort taking precedence. The score is chalked up, the usual method being to mark straight strokes for the first two halfpennies in a bed, with a cross for the third.

Halfpennies that "cannon" off another halfpenny score, provided that neither has touched the cushion. Discs or halfpennies that touch the cushion do not count, and any knocked off the board cannot be used. Should a player actually place more than three halfpennies in any one bed, his opponent can claim the excess discs, if he needs them, except that the final point of a game cannot be won in this manner.

Touching a halfpenny before all have been shoved, removing one or more before the score has been counted, and playing out of turn, are all fouls. The penalty for the first two is the loss of any points scored in the turn, and for the last, the loss of the next turn.

### WHIST.

Whist could, perhaps, justifiably be called the standard card game. It has never excited quite the furore of Bridge but it is long established and very popular, both with family parties and at Whist Drives. It is probably the first card game, apart, perhaps, from a few simple games depending chiefly on luck, which most people learn, and a thorough knowledge of it is a sound foundation for the embryo card player.

It is played by four people, two partnerships of two opposing each other, and with a normal pack of cards. The partners sit at opposite corners of the table; and, the cards having been shuffled and cut for trumps, are dealt out singly until exhausted. The cards are then taken in hand and played out in 13 tricks of four each, the player on the left of the dealer having first lead; and the winner of each trick leading off in the next. Ace is highest card—except in cutting, when it is reckoned lowest—king, queen, and knave rank next in order, and then from ten downwards. The higher card of any suit takes the lower, unless the trick be trumped by a player unable to follow suit; and the tricks are gathered up by one of the pair winning them, as made.

It is necessary to concentrate, to watch the cards played, and to endeavour to "place" the unplayed cards. This comes with experience, as does a full understanding of such unwritten rules as "Second in hand plays low" and "Third in hand plays high"; and as does a knowledge of when to disregard the unwritten rules.

Three-handed Whist is also possible, one suit being discarded.



### Knock-out Whist.

Knock-Out Whist is a version of the game suitable for more than four players. However many players there are—there should not be more than six—each is dealt eight cards to start with. The dealer—this will have been decided by cutting—then examines his cards, himself selects trumps, and leads. The other players must follow suit if they can, and, if they cannot follow, they may trump. Each player plays as an individual and gathers as many tricks as he can. The player winning the most tricks in the round—ties are settled by cutting—deals for the next round, in which each player receives only seven cards. The dealer then chooses trumps and leads; and so on, the third round consisting of six cards each, and the next five. From the round of four cards downwards, any player failing to win at least one trick drops out. From this it follows that the game finishes as soon as one player wins every trick in a round from the four-card round onwards.

At first glance, it might seem that the dealer having both the right to choose the trumps after he has seen his cards and the lead must sweep the board, but this rarely happens. The full pack is not in use, so luck plays a bigger part than it does in ordinary Whist; and a part which increases as the game progresses and fewer cards are used.

### Solo Whist.

A game in which the four players act independently, unless there be "proposal" and "acceptance," when the two partners play together against the other two. Play is as at Whist. The cards are all dealt in four threes and, the final round singly, dealer facing his last card to

indicate trumps. The player on dealer's left may then "declare." If he, with a fairly strong hand, thinks he and a partner could make eight tricks, he calls "I propose," and may be accepted by any one of the other players in their turns, when the game proceeds, should there be no higher call. He may, however, call "Solo," which is a declaration that he intends to try to win five tricks against the combined efforts of the other three players. He may go higher and call "*Misère*," which means that he undertakes not to win any trick, and in this call there is no trump suit. He may declare still higher and call "*Abundance*," to make which he must win nine tricks, making any suit he chooses to nominate trumps, always providing that a call of Abundance in trumps—Royal Abundance—would take precedence over a call in another suit. It should be noted that a player going Abundance does not lead unless it is his normal turn to do so; and that the first round is played on the previously nominated trumps. Players going Abundance should, therefore, refrain from announcing their trumps until this first round is completed, unless, of course, it is necessary to state Royal Abundance in order to overcall. A very poor hand does not "declare" but "passes"; though the first player to call, having "passed," may accept a proposer, should the other players not do so or make a higher declaration, the declarations ranking from Abundance downwards, the lead going by rotation. *Open Misère* is a higher call than Abundance, its declarer exposing his hand after the first trick; and *Abundance Déclarée* is the highest call of all—in which he who adventures upon it must take every trick. He has, however, the right to nominate the trumps and to lead.

## OLD ENGLISH GAMES

The oldest English games are very old, for games existed before the Norman Conquest, two, Harpastum and Camp-ball, being distinct, if rough-and-ready, ancestors of football.

Cricket, too, had its forerunners, including Creag, Cat and Dog, and Rounders. Creag, which was known at the time of Edward II, used a curved stick called a "cric" as a bat, while a tree-stump served as wicket. Cat and Dog, which came later, was a game for three, two batsmen defending holes dug 13 yards apart, and trying to hit away the piece of wood that the third player aimed at the holes, the bats being the "dogs" and the piece of wood the "cat." It is interesting to note that American baseball's accepted ancestors are games called One Old Cat and Two Old Cat: a clear indication of a common origin for cricket and baseball. Rounders, of course, is well known and still a popular children's game. Though these and other games have places in cricket's ancestry, many of them remained popular even after cricket had arrived.

The beginnings of athletics can also be found in old England. Putting the weight and casting the bar—a forerunner of hammer throwing—were popular with the courtiers in Tudor times, while other events, including javelin throwing, were practised by ordinary people of the same period.

Tournaments and jousts survived from the Middle Ages to Tudor times. These were combats between mounted men, a joust being single combat, while a tournament involved many contestants. Competitors were required to swear an oath stating that they were taking part purely for sport, which has its modern counterpart in the Olympic oath. Somewhat similar to jousting, but not restricted to the nobility, was Tilting at the Quintain, in which a lance was thrust at a wooden target which, if not struck accurately, swung round and struck the tilter. This sport was practised both mounted and on foot.

Other old games, clearly the ancestors of modern ones, included Handball, which became Fives, but which is still Handball in America; Battledore and Shuttlecock, still a children's game, but developed by adults into Badminton; and Shovelboard, an elaborate game for the nobility consisting of sliding weights down a long table marked with lines, which is certainly the forerunner of Shove-Ha'penny.

### Knur and Spell.

Knur and Spell belongs to Lancashire and Yorkshire, and originated in a children's game called Trap and Ball.

The player uses a wooden club, the striking end of which, called the pommel, is shaped something like a bottle, though with a flat hitting surface; and he tries to hit as far as possible a small ball which he himself releases from a trap by means of a trigger. The ball, which is the "knur," was originally wooden, but later porcelain was used. It weighs half an ounce and measures 1 inch in diameter. The trap is the "spell," and consists of a small brass cup and a strong spring, which is kept down by the trigger. The fixing of the "spell" is an elaborate business requiring the use of a spirit level; and, when it is in position, a player is allowed ten minutes to adjust the tension of the spring. Players generally have their own "spells."

In some versions the ground is marked by pins placed 20 yards apart. This avoids the necessity of measuring each hit, as each 20 yards covered counts one point, each player usually having five consecutive hits or "rises." Experts can achieve distances of over 300 yards.

### Marbles.

Marbles is supposed to have been played in ancient Egypt, but its popularity in England, with adults as well as children, during the Middle Ages entitles it to count as an old English game. It is still played by adults as well as by children.

Marbles are often made of clay, but better ones are glass, and the best are pure marble. These are called "alleys" or "alley taws." There are several different games, but the main feature of all of them is the aiming of a marble at a target that is often another marble, but is sometimes an opening, by bowling or shooting it along the ground. In shooting, the marble is held between the thumb and forefinger, with the knuckle of the forefinger on the ground. The marble is then flicked away.

Perhaps the best-known game is Ring Taw, in which players shoot from one circle at marbles placed in another about 6 feet away. Fortifications and Increase Pound are games using con-

centric circles, the players shooting at marbles in each circle in turn: while Three Holes and Handers entail shooting at holes in the ground. Arch Board or Bridge Board involves aiming at arches cut in an upright board; and, in Die Shot, the players shoot at a marble on which a numbered cube-die is balanced.

### Pall-Mall.

Two London thoroughfares, Pall Mall and the Mall, are reminders that Pall-Mall was once popular.

It is often described as a forerunner of croquet, but it was really more like a form of golf, a game that arrived at about the same time, both having a common, if remote, ancestor in Paganica, a game introduced by the Romans.

In Paganica players walked across fields hitting a small leather ball at trees with a curved stick to see who could reach the target in the fewest strokes. It was played by country people, whereas Pall-Mall, which achieved rapid popularity in the seventeenth century, was a game for the nobility, though other people played simplified versions of it.

Pall-Mall was played in special alleys, sometimes half a mile long, and often surrounded by walls. A boxwood ball a foot in circumference had to be played down the alley in as few shots as possible, passing through a number of iron arches on the way. The player drove off as in golf; and, on reaching the arches, not only changed his club for the shorter more careful strokes needed, but

also put down a smaller steel ball instead of the boxwood one.

### Skittles.

An ancient game played in a special alley, level, about 12 yards long and 3 or 4 yards wide, skittles consists of throwing a flat-sided, wooden ball, weighing about 10 lb. and called a "cheese," at nine pins, each weighing 7-9 lb., arranged in a diamond formation 6-8 yards away, the thrower being allowed one forward step while throwing.

Scoring is either by knocking down as many pins as possible in a fixed number of throws or by knocking down thirty-one in the fewest possible throws. Still another method is to try to knock down the full set of nine in three or fewer throws.

Alternative games include one using only four pins, and Dutch skittles, in which a round ball is bowled, not thrown, and in which the centre, or king, pin must be hit first. This resembles the American game, bowling, which uses ten pins, the tenth having been added when "Ninepins" was made illegal because of the gambling on it.

### Stool-ball.

Yet another ancestor of cricket, stool-ball is still a popular girls' game. The wicket is a piece of board a foot square mounted on a pole 4 feet 8 inches high; the bat has a round striking surface; and the ball is rubber. Wickets are 16 yards apart, and ten balls constitute an over.

## EUROPEAN ATHLETIC CHAMPIONSHIPS, 1954, HELD AT BERNE

100 metres, H. Futterer, Western Germany, 10.5 sec.	Putting the Shot, J. Skobla, Czechoslovakia, 56 ft. 5½ in.*
200 metres, H. Futterer, Western Germany, 20.9 sec.*	Throwing the Discus, A. Consolini, Italy, 175 ft. 4 in.
400 metres, A. Ignatjev, U.S.S.R., 46.6 sec.*	Throwing the Javelin, J. Sidlo, Poland, 250 ft. 6 in.
800 metres, L. Szentgali, Hungary, 1 min. 47.1 sec.*	Throwing the Hammer, M. Krivonosov, U.S.S.R., 207 ft. 9½ in.*
1500 metres, R. Bannister, Great Britain, 3 min. 43.8 sec.*	Decathlon, V. Kuznecov, U.S.S.R., 6,752 pts.
5000 metres, V. Kuts, U.S.S.R., 13 min. 56.4 sec.*	100 metres (Women), I. Turova, U.S.S.R., 11.8 sec.
10,000 metres, E. Zatopek, Czechoslovakia, 28 min. 58 sec.*	200 metres (Women), M. Itkina, U.S.S.R., 24.3 sec.
Marathon, V. Karvonen, Finland, 2 hr. 24 min. 51.6 sec.	800 metres (Women), N. Otkalenko, U.S.S.R., 2 min. 8.8 sec.†
4 × 100 metres Relay, Hungary, 40.6 sec.*	4 × 100 metres Relay (Women), U.S.S.R., 45.8 sec.*
4 × 400 metres Relay, France, 3 min. 8.7 sec.*	80 metres Hurdles (Women), M. Golubnichaya, U.S.S.R., 11 sec.*
110 metres Hurdles, Y. Bulanchik, U.S.S.R., 14.4 sec.	High Jump (Women), T. Hopkins, Great Britain, 5 ft. 5½ in.*
400 metres Hurdles, A. Yulin, U.S.S.R., 50.5 sec.*	Long Jump (Women), J. Pickering, Great Britain, 19 ft. 9½ in.*
3000 metres Steeplechase, — Rosznyol, 8 min. 49.6 sec.*	Putting the Shot (Women), G. Zyblina, U.S.S.R., 51 ft. 4 in.*
10,000 metres Walk, J. Dolezal, Czechoslovakia, 45 min. 1.8 sec.*	Throwing the Discus (Women), N. Ponomareva, U.S.S.R., 157 ft. 6½ in.
50 kilometres Walk, W. Ukhov, U.S.S.R., 4 hr. 22 min. 11.2 sec.*	Throwing the Javelin (Women), D. Zatopkova, Czechoslovakia, 173 ft. 7 in.*
High Jump, B. Nilsson, Sweden, 6 ft. 7½ in.*	Pentathlon (Women), A. Chudina, U.S.S.R., 4,526 pts.
Long Jump, Ö. Földessy, Hungary, 24 ft. 7½ in.	
Hop, Step and Jump, L. Shcherbakov, U.S.S.R., 52 ft. 2 in.*	
Pole Vault, E. Landström, Finland, 14 ft. 5½ in.*	

\* New European Championship Record.

† Event held for the first time.

## HISTORIC WORLD RECORDS

Mile Holder	Nation	min.	sec.	Year	Mile Holder	Nation	min.	sec.	Year
J. P. Jones	U.S.A.	4	14.4	1913	J. M. Landy	Australia	3	58.0	1954
N. S. Taber	U.S.A.	4	12.6	1915					
P. Nurmi	Finland	4	10.4	1923					
J. Ladoumègue	France	4	09.2	1931					
J. E. Lovelock	N.Z.	4	07.6	1933					
G. Cunningham	U.S.A.	4	06.8	1934					
S. G. Wooderson	G.B.	4	06.4	1937					
G. Hägg	Sweden	4	06.2	1942					
A. Andersson	Sweden	4	06.2	1942					
G. Hägg	Sweden	4	04.6	1942					
A. Andersson	Sweden	4	02.6	1943					
A. Andersson	Sweden	4	01.6	1944					
G. Hägg	Sweden	4	01.4	1945					
R. G. Bannister	G.B.	3	59.4	1954					

3 Miles				
A. Shrubbs	G.B.	14	17-6	1903
P. Nurmi	Finland	14	11-2	1923
L. Lehtinen	Finland	13	50-6	1932
T. Mäki	Finland	13	42-4	1939
G. Hägg	Sweden	13	35-4	1942
G. Hägg	Sweden	13	32-4	1942
F. Green	G.B.	13	32-2	1954
C. J. Chataway	U.S.S.R.	13	27-4	1954
V. Kutz	G.B.	13	23-2	1955
C. J. Chataway	Hungary	13	14-2	1955
S. Iharos				



## OLYMPIC GAMES, 1952

## RESULTS OF ATHLETICS HELD AT HELSINKI

100 metres, L. Remigino, U.S.A., 10.4 sec.  
 200 metres, A. Stanfield, U.S.A., 20.7 sec.†  
 400 metres, G. Rhoden, Jamaica, 45.9 sec.†  
 800 metres, M. Whitfield, U.S.A., 1 min. 49.2 sec.†  
 1500 metres, J. Barthel, Luxembourg, 3 min. 45.2 sec.\*  
 5000 metres, E. Zatopek, Czechoslovakia, 14 min. 6.6 sec.\*  
 10,000 metres, E. Zatopek, Czechoslovakia, 29 min. 17 sec.\*  
 Marathon, E. Zatopek, Czechoslovakia, 2 hr. 23 min. 3.2 sec.\*  
 4 × 100 metres Relay, U.S.A., 40.1 sec.  
 4 × 400 metres Relay, Jamaica, 3 min. 3.9 sec.\*  
 110 metres Hurdles, H. Dillard, U.S.A., 13.7 sec.\*  
 400 metres Hurdles, C. Moore, U.S.A., 50.8 sec.\*  
 3000 metres Steeplechase, H. Ashenfelter, U.S.A., 8 min. 45.4 sec.\*  
 10,000 metres Walk, J. Mikaelsson, Sweden, 45 min. 2.8 sec.\*  
 50 kilometres Walk, G. Dordoni, Italy, 4 hr. 28 min. 7.8 sec.\*  
 High Jump, W. Davis, U.S.A., 6 ft. 8½ in.\*  
 Long Jump, J. Biffle, U.S.A., 24 ft. 10½ in.  
 Hop, Step and Jump, F. Da Silva, Brazil, 53 ft. 2½ in.\*  
 Pole Vault, R. Richards, U.S.A., 14 ft. 11½ in.\*

\* New Olympic Record.

Putting the Shot, P. O'Brien, U.S.A., 57 ft. 1½ in.\*  
 Throwing the Discus, S. Iness, U.S.A., 180 ft. 6½ in.\*  
 Throwing the Javelin, C. Young, U.S.A., 242 ft. 0½ in.\*  
 Throwing the Hammer, J. Csermak, Hungary, 197 ft. 11½ in.\*  
 Decathlon, R. Mathias, U.S.A., 7887 pts.\*  
 100 metres (Women), M. Jackson, Australia, 11.5 sec.†  
 200 metres (Women), M. Jackson, Australia, 23.7 sec.\*  
 4 × 100 metres Relay (Women), U.S.A., 45.9 sec.\*  
 80 metres Hurdles (Women), S. Delahunty, Australia, 10.9 sec.\*  
 High Jump (Women), E. Brand, South Africa, 5 ft. 5½ in.  
 Long Jump (Women), Y. Williams, New Zealand, 20 ft. 5½ in.\*  
 Putting the Shot (Women), G. Zybina, U.S.S.R., 50 ft. 1½ in.\*  
 Throwing the Discus (Women), N. Romaschkova, U.S.S.R., 168 ft. 8½ in.  
 Throwing the Javelin (Women), D. Zatopkova, Czechoslovakia, 165 ft. 7 in.\*

† Equals Olympic Record.

## UNIVERSITY BOAT RACE

Instituted 1829. Present Course, Putney to Mortlake, 4½ miles.

102 races rowed. Cambridge won 56; Oxford 45. Dead heat, 1 (1877).

	min.	sec.	Lengths won by.
1934 Cambridge	18	3	4½
1935 Cambridge	19	48	4½
1936 Cambridge	21	6	5
1937 Oxford	22	39	8
1938 Oxford	20	30	2
1939 Cambridge	19	3	4
1940-45 No Official Race.			
1946 Oxford	19	54	3
1947 Cambridge	23	1	10

	min.	sec.	Lengths won by.
1948 Cambridge	17	50	5
1949 Cambridge	18	57	½
1950 Cambridge	20	15	3½
1951 Cambridge	20	50	12
1952 Oxford	20	23	canvas
1953 Cambridge	19	54	8
1954 Oxford	20	23	4½
1955 Cambridge	19	10	18
1956 Cambridge	18	36	1½

The first race rowed in outriggers was in 1846.

1875. Sliding seats used for the first time 1873.

First race in present style of boats without keels

Record Time, 17 min. 50 sec. (1948) by Cambridge.

Re-row.

## THE DERBY

Owner.	Horse.	Jockey.
1931 Mr. J. A. Dewar	Cameronian	F. Fox.
1932 Mr. T. Walls	April the Fifth	F. Lane
1933 Lord Derby	Hyperion	T. Weston.
1934 The Maharajah of Rajpipla	Windsor Lad	C. Smirke.
1935 The Aga Khan	Bahram	F. Fox.
1936 The Aga Khan	Mahmoud	C. Smirke.
1937 Mrs. H. B. Miller	Mid-day Sun	M. Beary
1938 Mr. P. Beatty	Bois Roussel	E. C. Elliott.
1939 Lord Rosebery	Blue Peter	E. Smith.
1940 Mr. F. Darling	Pont L'Evêque	S. Wragg.
1941 Mrs. Macdonald-Buchanan	Owen Tudor	W. Nevett.
1942 Lord Derby	Watling Street	H. Wragg.
1943 Miss D. Paget	Straight Deal	T. H. Carey.
1944 Lord Rosebery	Ocean Swell	W. Nevett.

Owner.	Horse.	Jockey.
1945 Sir E. Ohlson	Dante	W. Nevett.
1946 Mr. J. E. Ferguson	Airborne	T. Lowrey.
1947 Baron G. de Waldner	Pearl Diver	G. Bridgland.
1948 The Aga Khan	My Love	W. Johnstone.
M. L. Volterra		
1949 Mrs. M. Glenister	Nimbus	E. C. Elliott.
1950 M. Boussac	Calcedor	W. Johnstone.
1951 J. McGrath	Arctic Prince	C. Spares.
1952 The Aga Khan	Tulyar	C. Smirke.
1953 Sir Victor Sassoon	Pinza	G. Richards.
1954 R. S. Clark	Never Say Die	L. Piggott.
1955 Mme. Volterra	Phil Drake	F. Palmer.

## ASSOCIATION FOOTBALL

## CUP WINNERS.

1939 Portsmouth.	1949 Wolverhampton.	1953 Blackpool.
1946 Derby County.	1950 Arsenal.	1954 West Bromwich Albion.
1947 Charlton Athletic.	1951 Newcastle United.	1955 Newcastle United.
1948 Manchester United.	1952 Newcastle United.	1956 Manchester City.

## WORLD CUP WINNERS.

1930. Uruguay.	1938 Italy.	1954 Western Germany.
1934. Italy.	1950 Uruguay.	

## RUGBY LEAGUE FOOTBALL

## WORLD CUP WINNERS.

1954 Great Britain.

## CRICKET COUNTY CHAMPIONSHIP

1947 Middlesex.	1950 Surrey and Lancashire.	1953 Surrey.
1948 Glamorgan.	1951 Warwickshire.	1954 Surrey.
1949 Middlesex and Yorkshire.	1952 Surrey.	1955 Surrey.

# Poultry and Pigeons



## TABLE OF CONTENTS

Ancestry of the Domestic Hen	968	Incubation	970
Britain's Poultry Industry	968	Mortality	977
Chick Rearing	971	Pigeons	979
Common Poultry Ailments	977	Poultry Feeding and Nutrition	972
Culling Poultry	979	Preventing Feather Pecking and Cannibalism	977
Diseases of Poultry	977	Systems of Poultry Keeping	969
Ducks	975	Table Bird Production	975
Egg Production	974	Turkeys	976
Geese	976		



# Poultry and Pigeons

By Dr. W. P. BLOUNT

## ANCESTRY OF THE DOMESTIC HEN.

Perhaps the best question to ask in order to get an idea as to the place of the hen in nature is the old one about "which came first, the hen or the egg?" This is because a semi-scientific reply immediately puts one into the picture by recalling that birds are very closely related to reptiles; and it would not be too great a stretch of the imagination to suggest that it was probably a reptile's egg which really began the development of the class of animal we now call birds (*Aves*).

There are in fact fossils dating back to an era at least 50 if not 150 million years ago, of reptilian-birds; animals which can be considered intermediate between the true reptile and the true bird. Animals apparently developed from a reptilian framework, yet having "wings" covered by feathers, a very long feathered "tail," and "teeth." Over a period of hundreds of thousands of years there appeared the necessity for the reptile to adapt itself to flight—hence the growth of wings and, of course, the change from a horny type external skin to one consisting of feathers. Egg production is also a common feature to this group of animals, although of course reptiles are divisible into those producing true offspring (viviparous) and those laying eggs (oviparous).

In contrast with the eggs of fishes, those of the reptile and bird are covered by a hard outer shell to give protection against evaporation—a feature unlikely to occur in the case of eggs laid by fishes. One sees therefore a wonderful adaptation by nature—the fish swimming freely in water; the amphibian frog commencing life in water, passing through the tadpole stage to the frog proper, and ending its life on dry land. Thence to the reptile, at home both in the water and out of it, with its adaptation later to tree life involving the appearance of "flying" or perhaps only "gliding" reptiles. Finally, the development of birds as we now know them.

To-day therefore we accept the existence of *Archaeopteryx* the fossilised reptile-bird as being definitely related to the ancestry of birds generally. Amongst living birds we have those which have only a miniature breastbone and are therefore incapable of flight, e.g., the ostrich; and the remainder are the *Carinatae*—birds with a well-marked keel. And chief amongst the many Orders concerned in *Aves* (birds) are: (a) *Galliformes*, e.g., domestic fowl and turkey; and (b) *Anseriformes*, e.g., the duck and goose. It is worth noting that the pheasant and peacock, which belong to the same Order as the hen, may all suffer from certain common diseases, e.g., Black-head. As a contrast the duck tribe appear resistant to this ailment, and for all practical purposes they are also immune to the Fowl Paralysis complex.

## BRITAIN'S POULTRY INDUSTRY.

Poultry were for many years the hobby of the back-yarder, being valued for their brightly coloured feathers and general conformation. Our poultry industry developed through such fanciers, and there are now some millions of hens on general farms, but the fancier still exists, however, his interests being maintained largely by shows.

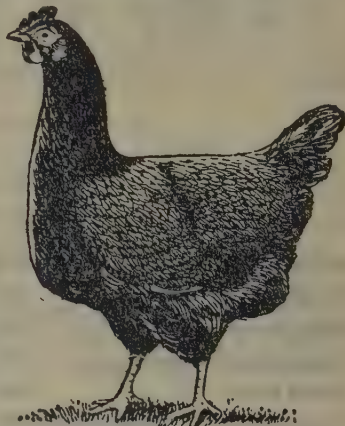
The poultry industry began because of demands by the housewife for eggs and table poultry, and her special requirements must always be given first consideration.

A study of poultry has shown that some are best fitted for egg production, others producing meat more economically, but dual-purpose breeds or crosses are also available. There are, therefore, three main aspects to our present poultry industry: (1) the pedigree breeder; (2) the commercial producer of eggs intended for the housewife and bakery; and (3) the rearer of table poultry intended for family and hotel or restaurant consumption. The fancier has success-

fully maintained the external appearance (conformation) of his different breeds, but it is only as a result of studies based on economics that we have discovered those breeds and strains best fitted for either egg or table poultry production.

The development of the industry to its present state, now comprising over 90 million head of poultry, has been achieved only by means of hatcheries, where thousands of eggs are received each week and incubation carried out in large, mammoth machines. The day of the broody hen has long since disappeared, except when very small numbers of chicks are being hatched. The domestic poultry keeper usually keeps half a dozen or more birds to provide eggs for his household, and a few cockerels may be reared for festive occasions. He is, however, not advised to undertake the breeding or rearing of day-old chicks unless well experienced in these subjects. His household scraps, bread, swill etc., form cheap feeds, but they are unbalanced, and should be supplemented by "High Protein" layers rations for good egg production.

Breeds.—For egg production the R.I.R. is our most outstanding breed, but there are many good strains of Light Sussex, Wyandottes, and Buff Rocks (among the heavier breeds), and Leghorns amongst the light breeds. Many cross-breeds are equally suitable, with certain light-heavy crosses outstanding in this respect, e.g., W.L. x R.I.R. "Hybrids," specially developed by new breeding techniques are also available, e.g., "Thornbers 101-404," "Gold Links, etc."



RHODE ISLAND RED PULLET.

For table poultry production the Light Sussex is ideal, because of its splendid conformation and plentiful supply of both breast and leg meat, also its white skin and legs. The housewife unfortunately has a prejudice against yellow-legged breeds, although the taste and quality of their meat is just as good as that from the white breeds. Lt. Sx. crossed with R.I.R., Br. Leg. or Ind. Game are very popular, also New Hamps. and N. Holl. Blue.

The pedigree breeder maintains his breeds in pure form, and is able to identify his chicks and relate them to their parents. His is an exacting task, for he is particularly concerned with the intricacies of fertility and hatchability. The pedigree breeder is not able to provide sufficient stock for sole use commercially, but as a result of his work pure-bred cockerels can be mated to non-

pedigree pullets and the resultant chicks used for commercial purposes.



LIGHT SUSSEX COCKEREL.

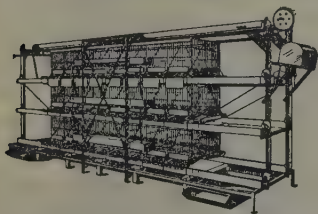
### SYSTEMS OF POULTRY KEEPING.

The tendency to-day is for poultry to be kept *intensively*, that is with no opportunity to get out on to grassland, and the three main systems are: (a) Hen Batteries; (b) Deep Litter; and (c) Hen Yards.

#### Hen Batteries.

Here birds have their own cages, which are arranged in tiers, usually three high, and each pullet has its own individual food and water trough. The birds can be seen separately at all times, and it is, therefore, possible to decide whether or not they are paying for their keep. They are free from attacks by foxes and rats, and do not suffer from those diseases contracted by running over infected ground, *e.g.*, Tuberculosis. Their main disadvantage is the initial cost of the cage which varies from 18s. to 24s. This is compensated for by their better average egg production and the opportunity this system gives to the poultry keeper for culling. (Culled birds are those which do not appear to be profitable.) There is also the fact that after laying for one year in batteries, pullets can be sold at a premium, for laying stock kept intensively in this way are fatter (internally) and their flesh is very tender. Hen batteries are not cruel, because the birds eat well, lay well, "talk" contentedly, and do not suffer from disease. Colds, Fowl Pest, and Laryngo-tracheitis are the chief infectious diseases. Mortality averages 13%. Culling 50-100%.

Twin-bird hen battery cages, each of which holds two birds, are becoming popular because of the considerably reduced capital expenditure. It is important that such birds are fed on dry mash *ad lib.* Bullying may develop in a few cases, but this can be avoided by selection of stock, or by the use of spectacles or de-beaking.



SWIFTS CAFETERIA HEN BATTERY UNIT.

Cafeteria hen battery cages in which the food and water troughs travel up and down or around

the cages are also marketed in this country. They are very labour saving, and one man can look after 2500 to 3000 birds on this system. It is important that the birds are given a minimum of fourteen hours' feeding time.

Special cages for domestic poultry keepers and for the keeping of bantams are sold, and the former can be arranged so that the birds are kept out of doors the whole time, but winter production will not be high unless specially good birds are chosen. Under B.O.C.M. laying-trial conditions at Stoke Mandeville egg production (forty-eight weeks) was as follows:—

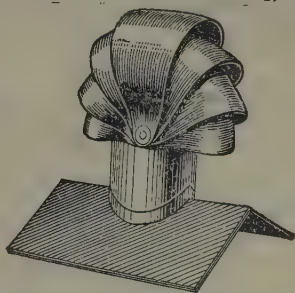
	Average Egg Production: Team.	Highest Egg Production: Bird.
Ducks	191	320
Pullets	184	309
Bantams	108	220
Turkeys (100 days only)	60	77

Food consumption (pellets) per bird per day averages:—

Ducks	6-10 oz.
Pullets	4½-6½ oz.
Bantams	3-4 oz.
Turkeys	6-8 oz.

#### Deep Litter.

The deep-litter system, introduced recently from America, makes use of any intensive type poultry house; but the more insulation provided by the walls and roof of the building the better. The object is to build the litter higher and higher, during which process heat is produced by the decomposition of the droppings from the birds. This gives rise to some ammonia, but the heat also dries out the litter. In other words, the birds are kept dry and warm, but special ventilation is necessary to dispose of the moisture vapour and ammonia which are natural by-products of this system. It is very labour saving, and one



"ASHANCO" TYPE FIXED-EXTRACTOR COWL.

man can look after several thousand pullets, probably twice as many as kept in batteries. To maintain egg production, particularly in the winter months, a generous ration of feeding-stuffs is essential, and there should be from 4 to 6 in. of hopper space per bird. Where large numbers of pullets are kept in one house (*e.g.*, 750) an automatic feeder is economical as well as automatic water devices; and instead of using single nests a communal type nest—one per fifty pullets—is also very labour saving. Unless great attention is paid to the ventilation arrangements, the litter will get wet in the winter-time, and moisture will condense on the roof, iron girders, windows, or other cold surfaces. Egg production will not then be satisfactory, and to keep the birds occupied—so that they do not develop vices from boredom—supplementary feeds of pellets, corn, or greenfood are advisable.

Normally mortality is no greater than that of hen batteries, but should any infectious disease break out it will spread rapidly throughout the majority of the stock, and for every one hundred pullets involved one thousand eggs may be lost, which is of vital importance should such diseases occur during the high-priced winter period.



### Hen Yards.

The hen-yard system is really an adaptation of the deep-litter system to that of the old-fashioned semi-intensive method of keeping poultry. A small house (with a droppings pit and communal type nest) supplemented by a yard twice this size. As a contrast to the semi-intensive system, the yard is covered by straw, which is gradually built up throughout the winter months. Grain feeds can be scattered on top of the litter each day, but continuous dry-mash feeding is essential to help to prevent feather pecking and cannibalism. This is the cheapest system of housing layers, and many old farm buildings can be adapted for this purpose, but egg production is usually somewhat inferior to the other two systems mentioned.

The true *semi-intensive system* of housing birds, in which they have access to both a house and run, has become much less popular because of the incidence of disease; for maladies such as Worms, Coccidiosis, and Fowl Pox are liable to be encountered year after year with this method of keeping poultry.

### Colony Houses.

When poultry are kept on pasture in small (colony) houses this is sometimes termed the *extensive system* of poultry keeping, and in order to avoid any build-up of disease the houses are moved about 25 yd. each week. They are less satisfactory for winter egg production, and much time may be spent washing dirty eggs.

### Fold Units.

Fold units are an improvement over the use of colony houses, the birds being confined to small, portable, combined houses and runs, approximately 5 ft. wide by 18 ft. long. Each fold holds about twenty birds, and is moved its own length every day, and in this way the birds get fresh grass and exercise. Lighted "static" folds are very useful for improving winter egg production. Such portable units can also be used for breeding stock, but feather pecking, cannibalism, and dirty eggs must be avoided if the system is to be successful. Folds are best used on level ground, and the soil should be sand or gravel—not clay.

### Area Requirements.

On the free range (extensive) method of keeping poultry only about 75 to 100 birds are allotted per acre of ground, *i.e.*, about 60-70 sq. ft. per bird; whereas on the semi-intensive system 200 birds per acre is normal (20-25 sq. ft. per bird). In folds each bird has about 5-6 sq. ft., which is the same amount as that allowed for hen yards.

In deep-litter houses 3½-4 sq. ft. for heavy breeds and 2½-3 sq. ft. for pullets of the light breeds is usual, contrasted with 2½ sq. ft. for hen batteries. (In twin-bird batteries, of course, the area is reduced even further.)

These facts show how modern methods of housing have economised on ground (or floor space) without deterioration in health or loss of egg quality—provided that the food given to the birds is "balanced," *i.e.*, complete in vitamins, minerals, trace elements, etc.

## INCUBATION.

If the temperature surrounding fertile eggs is raised to about 100° F. and maintained there for about twenty-one days they will hatch, provided the eggs are "turned" several times daily and the humidity kept within certain levels. This in fact is what happens when a broody hen sits on fertile eggs, but for commercial purposes artificial incubation is preferable if only because mammoth machines have now been manufactured capable of dealing with thousands of eggs instead of a mere ten to fifteen as in nature.

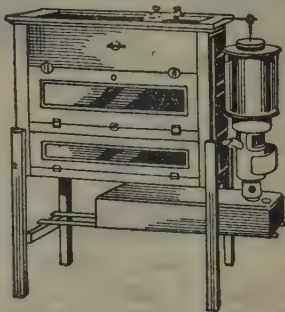
### Broody Hens.

Broody hens, of course, are perfectly satisfactory for incubating small clutches of eggs, but they should be de-loused and de-wormed before use. They should also be tested against B.W.D. and tried out with pot eggs before being given fertile eggs. Heavy breeds are often broody, but non-broody strains are available. Light breeds seldom go broody; crossbreeds vary greatly.

Broodies require to be removed from their eggs only once daily for 15 minutes' exercise,

feeding, and watering. After hatching takes place the hen and her chicks are best kept in a coop for two to three weeks before being transferred to more commodious surroundings.

Incubators can be heated either by hot air, water, or electricity, and they are available in sizes capable of dealing with from 80 to 36,000 eggs. They should be housed in a room where there is good ventilation without draughts, and where the air can preferably be warmed to about 60° F. before circulating into the machines. Instruments for recording temperature and humidity readings are essential, because alteration to either of these factors may retard or



PARAFFIN-OIL-HEATED, HOT-AIR, SMALL-SIZE INCUBATOR.

improve the hatchability of the eggs set. Normally about 75-90 per cent. of all eggs taken from breeding stock are fertile, and an equal percentage of the fertile eggs will hatch. In the end, therefore, about 65 per cent. of all eggs set will hatch, of which about half will be cockerels and the others pullets. It thus takes three eggs to produce one pullet chick.

### Hatchability.

Hatchability is governed by breed factors and also by environment, and in this connection the most important single factor, apart from the actual incubation, is nutrition. It is the foodstuffs given to the breeding stock which must contain vitamins A, B<sub>1</sub>, B<sub>12</sub>, D<sub>3</sub>, and E, and minerals (calcium, phosphorus, manganese), since these are all known to affect the development of the chick embryo. Hatching is, of course, governed by the ability of the chick to emerge safely from the egg in order to live its own independent existence, and this automatically implies that it must have been free from defects such as "crossed beak" and that both the shell and its membranes are sufficiently "softened" to allow the chick to emerge at about the twenty-first day of incubation.

### Factors Affecting Incubation.

**Storage of Eggs.**—Hatching eggs are best stored broad end uppermost at 55° F.; if the temperature exceeds 80° F. incubation will start automatically. Freezing may do little harm but should be avoided whenever possible.

If stored longer than seven days hatching eggs should be turned daily, but hatchability will deteriorate the longer they are kept; in any case it is unwise to keep them longer than 10-14 days.

Humidity should be quite high—between 60 and 90 per cent. Eggs received by train or lorry should be allowed to stand for twenty-four hours before being set, otherwise there is a risk of "tremulous air cell" developing.

**Cleaning Eggs.**—Eggs should *not* be washed except using water at blood heat (105° F.) containing a detergent. Mechanical dry cleaning is generally preferred.

**Incubation.**—Be certain to run the incubator at the temperature recommended by the manufacturers—each make of machine may differ in this respect. In still-air machines the temperature at the top of the eggs is important, and if too high this leads to embryological deformities; low temperatures delay the hatch. In the event of

an electricity cut keep the incubator room warm (90° F.) but open the machine every half hour or so to get fresh air into it.

It is not necessary to cool eggs—this is only actually necessary in small machines for *turning* purposes. Cooling itself delays hatching, and is to be avoided.

Humidity is very important as follows: Papworth machines require 55 per cent. relative humidity; Stephens 55 per cent. in the setter and 75 per cent. in the hatcher (when the eggs are pipping); Western 55-60 per cent.; Mayfair 68 per cent.

If humidity is low it may lead to a parching of the membranes, which then offer a physical barrier to hatching. Too high a humidity is also wrong, because it interferes with embryonic development and can cause death-in-shell.

Correct *turning* of the eggs during incubation is very important, as it imitates a physiological process carried out by the broody hen herself many times each day. It prevents the embryo from "sticking" to the inner shell membrane, and also makes certain in small machines that the temperature of the egg is equally distributed. Improper turning is believed to be one important cause for chicks finishing with their heads at the small end of the egg at hatching time. Hatching eggs should be turned in small machines at least twice and preferably three times in twenty-four hours; in Mammoth machines they may be turned each hour mechanically. It is not advisable to turn eggs during the three to four days immediately prior to hatching.

The Ventilation of the incubator room is vitally important, and as much fresh air as possible should be circulated—to supply oxygen and to remove carbon dioxide and moisture—without creating draughts. This air should also be warmed, if practical, to 60° F. Consideration must also be given to removing the foul air by outlet cowls or vents at the top of the room. Incubators should not be placed in a corner of a room nor up against one of its walls, as this impedes air circulation.

Nutrition of the Breeding Stock.—Unless stock cockerels and pullets or hens used for breeding receive a balanced diet, hatchability will be poor. Firstly, they should not receive large quantities of bulky food such as swill, Tottenham pudding, or steamed potatoes. Secondly, their diet should contain at least 3-4 oz. of "breeder's" pellets or mash, rich in vitamins; together with 1 oz. of whole grain. (Unnecessary if the breeder's ration contains vitamin E.) Recently a new vitamin —B<sub>12</sub>—has been shown to be essential for hatchability, but as it is present in fish-meal and dried skimmed milk, etc., unless a vegetable diet alone is being used it will be present in many diets. Concentrates of B<sub>12</sub> are now marketed, e.g., fish solubles and antibiotic residues.

**Candling.**—The method of testing eggs for fertility is known as "candling," and it can also be used for the determination of egg faults. The eggs are taken to a dark room or cupboard, where they are subjected to the bright rays of an electric lamp. Hatching eggs may be tested in bulk by lifting the trays over a special table with the electric light beneath it; the poultryman then marks the infertiles, which he subsequently removes. In the case of fertile eggs a small dark area can be seen as early as the fourth day, but candling is normally carried out on the seventh, tenth, or eighteenth days. In the case of infertile eggs they remain clear because of the lack of development of the embryo chick. When fertile eggs are tested on the eighteenth day the whole of the egg is dark except for the air space.

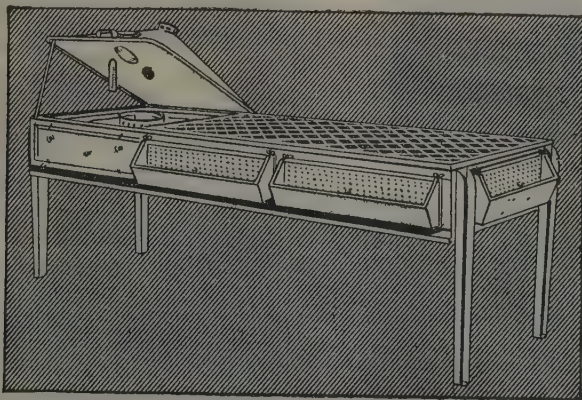
**Fumigation of Incubators.**—Due to the fact that large numbers of disease-producing germs may develop in eggs during incubation, and also because the "fluff" from newly hatched chicks may also be heavily contaminated with germs, it is important that incubators are thoroughly disinfected immediately after each batch of chicks passes through them. The common method is to add 1½ oz. of liquid formalin to ½ oz. of potassium permanganate crystals (for each 100 cu. ft. of air space). A violent chemical reaction takes place, liberating large quantities of formaldehyde gas, which, however, is more effective as a disinfectant if the interior of the incubator is humid and damp. All exits should be sealed for one hour. Poultrymen using this method for hatching eggs soon after they go to the incubators may prefer to use double the dosage.

#### Sexing Day-old Chicks.

The crossing of certain breeds, e.g., R.I.R. cock × Lt.Sx. hen, results in chicks the colouring or pattern of whose down at birth readily separates them into two groups, male and female. This is termed sex-linkage, and the basis for such matings provides an interesting study for students of animal breeding. In general, pure-bred chicks can only be sexed by hand (Japanese system) or by means of an entirely new method, demonstrated in this country for the first time at the 1951 Dairy Show. Older chicks, aged four to ten weeks, can be sexed as soon as they show distinctive sex characters—e.g., by the size of their comb and wattles, the shape of the bird's head and shanks, and also by the appearance of the neck, saddle, or sickle feathers.

#### CHICK REARING.

To-day very few chicks are reared under broody hens, partly because broodies are usually only available during a limited period of the year and also because unless chosen very carefully they



SINGLE-TIER TABLE BROODER FOR CHICKS.



may spread certain diseases to their chicks. More particularly, however, because to rear 100 chicks would require at least half a dozen broody hens, and these would not be easy to find at short notice, nor would they be easy to manage. Modern methods are such that 100 chicks can be reared to eight weeks of age on the floor of a room 15 ft. x 12 ft., but in tier brooders such a room might hold over 1000 chicks.

#### Requirements.

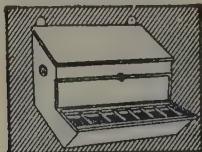
Artificial heat, food, water, bedding, and good ventilation provide the essentials for chick rearing, but the skill of the poultryman is an equally important factor. Day-old chicks can be purchased to-day in large or small numbers, suitably sexed—cockerels for table poultry and pullets for egg production—at a few shillings each, and as soon as they are received they should be put under an artificial foster-mother—a *hoyer*. Electric or infra-red ray lamps are very popular nowadays, because they need so little attention yet provide an adequate reserve of heat. The temperature at the level of the chicks' heads should be about 95° F. during the first week; thereafter it can be reduced gradually until the chicks are free from artificial heat by four weeks of age (five weeks in winter-time). Oil-heated hovers of circular and pyramidal patterns are equally successful, but require rather more attention, both as to the supply of fuel and also for dealing with the foul air.

#### Ventilation.

No matter what system of brooding is adopted, the air in the room or compartment should be kept quite fresh, and if it feels muggy or creates a sensation of headache in the attendant something is wrong. Too often the amateur keeps the atmosphere too hot and also too dry—it is only under the hover that the air needs to be heated, elsewhere it can be quite cool, so long as there are no draughts. Cold air stimulates feathering, and also increases the appetite. The adjustment of windows is very important, and requires constant attention because of climatic differences from day to day; special attention must also be paid to this work at night-time when strong winds or gales may suddenly appear.

#### Equipment.

Young chicks have little initial sense as to their ability to get warmed up under a hover, but they soon learn this by instinct if given assistance. For this purpose a metal or cardboard surround (15 in. high) about 3-4 ft. in diameter is invaluable during the first few days. Its use prevents chicks from straying, and in this way they quickly learn where to find heat, food and water.



FOOD HOPPER FOR CHICKS.

Food Hoppers should be such that chicks do not walk over the food, nor foul it with litter, etc. As soon as possible they should be raised on blocks of wood, or the feed will be constantly covered by litter scratched there by the chicks. Fresh supplies of food should be used daily, and sufficient hopper space allowed so that each chick has ample opportunity to feed. If wet mash is being given wooden food troughs are preferable to those made of metal.

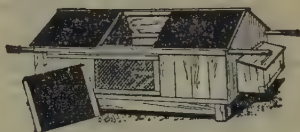
Water Troughs must be large enough to hold a full day's supply of water and also be capable of being cleaned thoroughly. Water troughs should not be so large that day-old chicks can get into them, or they may drown.

For day-old chicks an inverted 2-lb. jam jar over a large saucer can be used in an emergency,

but portable, inter-locking, two-piece water fountains are preferable. If skimmed milk is being used the waterers should be sterilised three times a week—sour milk soon clots, and then does not flow freely.

#### Housing.

Considerable skill is required when chicks are to be reared out of doors, and for this reason they are best brooded under hovers, on solid floors; or in tier brooders. By eight weeks of age, however, when they should be fully feathered, they can be taken outside, and one of the best pieces of equipment for rearing pullets or cockerels is the well-known Sussex Night Ark.



SUSSEX NIGHT ARK (YOUNGS OF HORLEY).

#### Litter.

For bedding purposes a variety of materials are available, but peat moss, chopped straw, or wood shavings are often preferable to chaff, coffee husks, or sawdust. A layer  $\frac{1}{2}$  in. thick should cover the floor, but its renewal will depend upon the risk of Coccidiosis, and unless replaced every day an anti-coccidiosis drug may require to be used in the feed or water. Some poultrymen are successful in building up the litter to a depth of several inches (as the chicks grow older), but considerable skill is required, or it will get damp and soggy and become a source for disease. Musty or mouldy samples of bedding materials should be avoided, because they may lead to an outbreak of Aspergilliosis.

#### Feeding.

The system and method of feeding day-old chicks is vital to their success. The first feed should be given at floor level, below or near to the hover. A sheet of cardboard, or part of a feed bag, can be laid on the floor and the mash, crumbs, grain, wet mash, or whatever feed is being given scattered over it as soon after the chicks have settled down as possible. It is a completely mistaken idea to deprive chicks of their first feed for two to three days, and the earlier they get it the better. A few ounces of food scattered over the floor in this manner will occupy the chicks during their first day or two, until in fact they have learned where to find their ordinary food troughs. (Feeds of wet mash, however, must be given four to five times a day, whereas crumbs can be left on the floor indefinitely—the chicks will soon discover and eat them all up.)

#### Note.

Even in the case of chicks being reared on wire floors it is still a good plan to give them an early feed, on paper, at floor level. After the first day more feed can be given on egg flats for example; this encourages the chicks to forage, during which period they will soon discover the site of their proper feed troughs.

Amongst the feed should be scattered some coarse sand or fine flint or gravel grit, because although this may not be actually necessary for grinding up the food in the gizzard, it will prove invaluable should chicks attempt to eat some of their litter.

Some poultrymen insist that the first feed for their chicks shall be grain—groats, cut wheat, or maize grits—others prefer dry bran, but both practices are wrong. The feed should be "balanced," from both the growth and health standpoints, and this means a properly prepared ration which can be given as crumbs or mash—wet or dry. The greater the palatability of the feed (assuming it to be balanced) and the more food eaten the quicker the growth rate of the chicks. The following data are taken from Stoke Mandeville:—

	Weights.		
	Chicks (Lt.Sx. Cockerels)	Ducklings Aylesbury (mixed sexes)	Turkey Poults (A.M.B.)
Day-old	1½ oz.	1½ oz.	1-8 oz.
1st week	2½ oz.	5 oz.	3-7 oz.
2nd week	4½ oz.	13 oz.	6-1 oz.
3rd week	7 oz.	1 lb. 10 oz.	9-3 oz.
4th week	11 oz.	2 lb. 10 oz.	13-17 oz.
5th week	1 lb.	3 lb. 9 oz.	1 lb. 2-8 oz.
6th week	1 lb. 5 oz.	4 lb. 8 oz.	1 lb. 9-4 oz.
7th week	1 lb. 10 oz.	5 lb. 7 oz.	2 lb. 1-9 oz.
8th week	2 lb.	6 lb. 2 oz.	2½-3½ lbs.

Weighing Scales are necessary to check the progress of one's chicks, because a steady growth rate is essential for the successful rearing of poultry, no matter what the species. They should preferably be capable of weighing between 1 oz. and 10 lb., for they can then be used on any bird between day-old and four months, and they will be equally valuable for weighing food. If weights are known for both growth rates and the amount of food consumed, then a "feed conversion" factor can be obtained.

Feed Conversion is related to the particular strain of bird; the nature of the ration; the construction of the feed hoppers; the weather and housing. At 3-4 lb. body weight the conversion rate will be about 2.9-4.5.

#### Food Consumption.

Assuming that poultry are being fed on meals and not receiving swill, cooked potatoes, or other bulky feeds, their needs can be calculated from the following table:—

	Chicks.	
	(1).	(100).
1-7 days	1½ oz.	9½ lb.
1-14 days	5 oz.	31 lb.
1-28 days	1½ lb.	1 cwt.
To 8 weeks	6 lb.	5½ cwt.
To 16 weeks	27 lb.	1 ton 4 cwt.
To 26 weeks	35 lb.	1 ton 11 cwt.
1st Laying Year	1 cwt.	5 ton
	90-140 lb.	4 tons-6½ tons

In the case of "light" breeds these figures can be reduced by one-fifth to one-eighth, and for the heavy crosses increased similarly. Where grain is being fed this should not replace more than 25 per cent. of the chick, 33 per cent. of growers', or 50 per cent. of the layers' rations.

## POULTRY NUTRITION.

### Rations.

To-day all feeding-stuffs are off-ration, and coupons are now non-existent. Manufacturers of compound animal feeds usually offer the following balanced rations:—

1. "Baby Chick," intended for use from day-old to about four to six weeks of age; complete and balanced in every way, such feeds do not require any grain, fresh greenfood, skimmed milk, or limestone grit. Baby chick rations are often available in two forms, i.e., as mash, and crumbs—the latter is just as palatable as wet mash, but does away with the extra labour involved in preparing it. The continuous *ad lib* method of feeding by which the chicks help themselves is commonly practised, because it satisfies the appetite and saves labour as well.

2. "Growers'" Rations contain less protein and fewer vitamins than those intended for young chicks, and are given to stock aged six to twenty weeks. "Growers'" rations are complete in

themselves, and if grain is to be fed in any quantity, then a poultry "grain balancer" feed should be used instead. This is available as mash or pellets (½ in.), and although the former is often given *ad lib*, pellets are usually restricted to 1-3 oz. per bird per day.

3. "Layers'" Rations are also complete, and it is a mistake to dilute them with grain, because egg production will then fall in proportion to the amount of grain fed. (See next para.)

4. "Poultry Grain Balancer" Rations are necessary because grain itself is unbalanced—being rich in energy, and low in protein and vitamins, therefore, a special balancing ration is desirable. But not more than 40-50% of the layers' ration should comprise grain. For growing stock more can be used to retard maturity. All laying stock require limestone or oyster-shell grit to supplement their ration—about 1 teaspoonful daily. Also flint grit once a month.

5. Hen Battery Mash and Pellets (½ in.) are specially prepared for use by stock kept in hen battery cages, and they, too, are best used liberally and without any addition of grain. Hen Battery Mash can also be recommended for use by stock housed intensively, e.g., on Deep Litter; but pellets are not recommended for continuous feeding. (This is because with pellet feeding a full crop is obtained quickly, and the birds, having little to do, look around and may start pulling out one another's feathers. This leads to unsightliness and also occasionally to actual cannibalism.) De-beaking or the use of spectacles will prevent many cases of feather pecking or cannibalism.

5. "Breeders'" Rations (mashes or pellets) are compounded with a view to supplying the requirements of birds whose eggs are going to be incubated. They supply additional vitamins and minerals which pass over to the day-old chick *via* the yolk sac. If an ordinary layer's ration is used instead, an increased number of "dead-in-shell" may show characteristic defects.

6. "High Protein" Meal is prepared for the exclusive use of domestic poultry keepers. It is richer in proteins than other poultry feeds, because it is intended to "balance" household scraps, swill, and allied feeds. "Balancer Meal," available during the war, did not contain any added salt, but "High Protein" feeds which have replaced it contain 1% salt.

7. Grit.—There are two types of grit. (i) *Insoluble*—flint, granite, gravel, etc.—required by poultry of all ages, at approximately monthly intervals, if they are being given grain, grass, or other feeds which require grinding in the gizzard. (ii) *Soluble*—limestone, oyster, etc.—required by layers only if balanced rations are otherwise being fed. (Mashes, crumbs, and pellets break down in the gizzard satisfactorily without grit.) An excess of grit may pass through the gizzard to cause irritation of the intestines.

### Digestion in the Hen.

Unlike most farm animals, poultry swallow their food whole. It passes through the crop and proventriculus (stomach) to the gizzard, where it undergoes slow disintegration under the powerful contractions of its dark-red muscles coupled with the presence of hard, flint-like pieces of grit or stone. As soon as the gizzard is full all succeeding feed is stored in the crop—at the base of the neck—where it is warmed, softened, and acidified by lactic and other acids formed as a result of bacterial fermentation. The semi-fluid foodstuffs passing from the gizzard to the small intestines are part digested, but intestinal juices and those from the pancreas complete this process prior to its assimilation and transformation into meat and eggs. (Bile assists the emulsification of the intestinal contents, but does not supply any digestive ferments.) The semi-fibrous residues which remain pass quickly through the succeeding portions of the digestive tract and leave the body later as droppings—tinged with a whitish "cap" so well known to the poultryman. This latter consists of compounds of uric acid which are being continuously excreted *via* the kidneys.

A hen passes eight to ten lots of faeces each day, one such mass coming chiefly from the blind guts. It is bright in colour, usually yellowish-brown tinged, and of a semi-liquid consistency. It is free from fibrous material, but very evil smelling.



and sometimes it contains a number of small Heterakis worms ( $\frac{1}{4}$ "– $\frac{1}{2}$ " in. long).

### Feeding Poultry on the General Farm.

**Chicks.**—It is vital to give chicks the best possible start in life, and this means using a special chick ration from day-old. The nutritional requirements of chicks are complex, but their actual food consumption is low and, therefore, for both these reasons it is a really sound plan to use a well-balanced chick feed containing animal and vegetable proteins, vitamins A, B, D, and E. Since chicks eat very little food up to 8 weeks the cost of feeding a special, balanced ration is well worth while.

Do not try to economise by using home-grown grains at this period, because they are somewhat unbalanced and better reserved for the later growing stages. In other words, feed a balanced chick ration as long as possible, and do not dilute it even with skimmed milk, because this upsets the balance of the other ingredients.

**Growers.**—As a contrast, growing stock aged six to twenty weeks can be given a more bulky ration, and grain can then be used freely, also steamed potatoes, Tottenham pudding, etc. Wheat is the best grain, but oats or barley are also quite satisfactory. If home-grown grass-meal is available 5 per cent. can be added to the ration, providing it is of good colour and quality.

As regards special foods a grower's pellet or mash is best if little grain is available, but if there is a lot, then a "grain balancer" ration is better. Broadly speaking, one should give 1 part of grain balancer mash or pellets to 2 parts of grain in the early stages, then half and half when the birds are about four months old, and at point-of-lay pullets should be given two parts of grain balancer to one part of grain.

**Laying-Stock.**—The feeding of layers is simple, but the ration must be balanced for economic egg production. It is not just a question of feeding the birds and hoping for the best, it is important that a layer receives 4–5 oz. dry matter containing not less than 15–16 per cent. of good-quality protein. This can be given in the form of pellets or mash; the latter may be fed dry continuously all day long; or as a wet mash 2–3 times daily. For use in hen batteries the ideal ration consists of 4½–6 oz. of hen battery pellets. To achieve the right proportion of essential ingredients is vital, farmers are advised therefore to consult a nutritional expert if they intend mixing their own meals.

**Table Poultry.**—Special rations are now also available for table poultry production. They contain added proteins and vitamins and special growth factors such as antibiotics like penicillin; also anti-coccidiosis agents like the "sulpha" or "nitro" drugs; they are higher in energy and lower in fibre than ordinary chick rations, and as such have a better feed conversion, i.e., only 3–3½ lb. feed are required per 1 lb. liveweight gain.

**Breeding Stock.**—The feed for breeding stock must support the bird for its maintenance and egg-production requirements, and it must also supply nourishment for the resultant day-old chick. This can be supplied by 4–5 oz. breeders' pellets (or mash) plus 1 oz. grain. Such feeds should commence 3–4 weeks before the hatching season starts. For those poultry breeders keeping their stock intensively (on the deep-litter system) 3 oz. of breeders' mash, ½ oz. of grass-meal, and 2 oz. of wheat is an excellent combination. Fresh greenfood is also useful but not essential.

### EGG PRODUCTION.

Most domestic hens of the improved breeds—R.I.R., Lt.Sx., W.W., Buff Rock, Leghorns, etc.—are capable of laying 150–180 eggs per bird during their pullet year, provided they receive a balanced diet and are managed with common sense. As a fact, many families have been bred to lay from 200 to 250 eggs per year, and just as there are a few cows which can be expected to give 3000 gallons of milk, so there are occasional hens which lay 300 eggs in a year.

Laying stock should receive as few checks as possible during their rearing stages, which implies

that they will have remained free from B.W.D., Coccidiosis, etc., and that they will have received a good, generous diet and will not have been unduly exposed to severe climatic conditions.

Chicks hatched in the spring of the year start laying about twenty to twenty-six weeks later, the light breeds laying earlier than "heavies" by about two to four weeks. The ovary starts to develop actively about one month before production commences, and the associated oviduct becomes equally active, increasing in both length and diameter. Both these functions are governed to a large extent by hormones, formed by certain small glands, e.g., the pituitary gland at the base of the brain, the thyroid gland, etc. In this connection light plays an essential part—see p. 959.

There are no obvious signs that laying is a painful process, but in a few instances slight cloacal haemorrhage occurs at the time the first egg is laid, and sometimes this is known to coincide with the passage of a much larger egg than normal. The first twelve to twenty-four eggs are generally the smallest, weighing on the average about 1½ oz., but once maturity is reached, egg size remains relatively constant, averaging about 2 oz. in most cases. But even larger egg strains of poultry have been developed, by selective breeding, and in such cases their eggs will weight 2½ oz. and over. The production of large eggs is to be discouraged unless a cash premium is available.

Egg size tends to fall in the hotter, summer months when day temperatures exceed 75° F., and shell texture also deteriorates.

When pullets first come into production not infrequently they lay soft-shelled or double-yolked eggs, but neither should be considered seriously, as in most cases normal eggs quickly follow.

**Double-yolked Eggs.**—Should the ovary release two yolks simultaneously or separated by only a very short interval, this will result in the formation of a double-yolked egg; whereas if the yolks are liberated at an interval of several hours, two eggs are likely to be laid during the succeeding twenty-four hours.

**Cracked and Soft-shelled Eggs.**—Cracked eggs may result from: (i) a defective diet, the rations being deficient in calcium (lime), phosphorus, or vitamin D; (ii) a weakness of the oviduct; or (iii) local damage, as from the use of a faulty nest-box or badly constructed hen-battery cage.

When soft-shelled eggs appear this probably represents an over-activity of the muscles of the lower oviduct—the "egg" being expelled before the shell has had time to be laid. If, however, a succession of soft-shelled eggs are laid by the same bird, this probably represents a constitutional weakness, and such birds should be culled.

**Mis-shapen Eggs.**—These are proof that the oviduct is functioning peculiarly, and in a few cases they are associated with the presence of a tumour or other obstruction involving a ligament of the oviduct. Therefore the repeated laying of such eggs indicates that such a bird should be removed from the flock.

**Annual Production.**—Egg production falls as a bird gets older, and the following figures give an indication as to what may be expected from hens as they get older:—

Pullet Year . . . . .	200
Second Year . . . . .	160
Third Year . . . . .	125
Fourth Year . . . . .	100

**Composition of Eggs.**—The increase in albumin which occurs in large eggs can be seen from the following tables:—

Egg Size.	Albumin.	Yolk.	Shell.
1½ oz. . . . .	57%	32%	11%
2½ oz. . . . .	62%	27%	11%

The colour of the yolk is dependent almost entirely upon the diet, and if the latter is devoid of greenfood and maize the resultant yolks will be almost white. In general, the more greenfood the deeper the yellow-golden colour, but in some cases believed to be due to certain weeds, reddish orange colours may occur. Green yolks may be due to feeding an excess of acorns or using certain samples of cottonseed meal, or from too much herbage.

**Egg Production—Strain Variation.**—When a farmer buys a batch of pullets he expects them to lay fairly consistently, but due to the fact that breeders have not been able to standardise their stock by ordinary selective methods, there is a considerable variation in their egg production. The following example is taken from eighteen half-sister (Black Leghorn) pullets over a test period lasting forty-seven weeks:—

142	162	174
178	123	180
211	163	266
200	184	48
217	218	172
121	215	210

Thus, although the average egg production per bird was 177, the variation was from 48 to 266. Hybrid stock (e.g., Thornberrns "101") and incross-breeds may be expected to show a higher average production with less individual variation.

**Value of Daylight for Egg Production.**—Farmers do not always appreciate that there is a minimum amount of daylight required by nature as her normal stimulus to egg production. Experiments at Stoke Mandeville have shown that where daylight is restricted, as by the absence of suitable windows or roof-lights, such pullets will each lay sixteen eggs less during the winter months compared with sister pullets kept in hen-battery cages facing the daylight. At the Poultry Research Centre, Edinburgh, increased egg production has resulted from the provision of standardised light, humidity, and temperature, e.g., 12 hours light, temp. 65° F., humidity 60 per cent. (relative).

**Value of Night Lighting.**—In winter when there are only eight hours of daylight, egg production can be stimulated if electric or other artificial lighting is used to extend the period of daylight to about fourteen hours. Using 60-watt lamps placed one per 100 sq. ft. of floor space, suspended about 6 ft. above the floor, should give the right degree of light. Coloured lights are not superior to incandescent lighting. Recent experiments have shown that the use of 1500-watt lamps for 40–60 seconds daily also acts as an efficient stimulus to the ovary—the light effect being *via* the eyes and pituitary gland at the base of the brain.

### TABLE BIRD PRODUCTION.

Poultry for human consumption readily fall into several classes:—

(i) Poussin (weighing 1½–1¾ lb.) are required for the hotel trade. Double-poussins weigh 2 lb. They are aged six to nine weeks, and should have been fed on Baby Chick mashes or "crumbs," plus antibiotics.

(ii) Roasters (weighing 2½–4½ lb.), for both the housewife and restaurant trade, can be carved into four or six portions. They are aged ten to sixteen weeks, and will reach the required weight all the more quickly if they receive "chick" rations throughout. A special term "Broiler" (not boiler) is used to describe the very youngest of roasting birds weighing 2½–3½ lb. Such birds can be produced in 10 weeks on 10 lb. of feed, if antibiotics are used.

Heavy-weight roasters of 6 lb. or more are occasionally available, usually as *Capons*, but they are less economic to produce, and few housewives can afford such birds except for special occasions. These luxury birds are obtained by caponising—surgically or chemically—and are aged from four-teen to twenty-six weeks.

*Capons* are male birds deprived of their testes in order that they may fatten quickly. The operation is carried out at about eight weeks of age, but "slips" occur, and a few cockerels may even die. Six months later such capons will weigh 2–3 lb. heavier than ordinary cockerels, i.e., about 8–10 lb. apiece.

**Chemical Caponising** by means of implants (15 mgm.) of female sex hormones (stilboestrol, hexoestrol, etc.) is rapidly becoming popular, because it is cheaply and easily carried out, causes no deaths, few slips, and the results are positive in 4–5 weeks' time, when the injected birds will be considerably fatter than normal.

Such birds stop crowing, go pale in the comb, and lose their combative instincts. Internally there are heavy deposits of fat lining the abdomen and also between the muscle fibres. Older cocks aged one to three years can be tenderised by being given two such implants at six-week intervals, the first to be given three months before killing.

(iii) Boiling Fowl are of two classes: (a) specially fat, tender, yearling pullets (5–7 lb.), taken direct from hen batteries, where their special environment will have meant that they will not have been subjected to exercise (which toughens the meat). A premium of about 2d.–4d. per lb. can usually be obtained in favour of such birds at the end of their first laying season. (b) Hens of all other classes and ages—these are less tender and, if taken from free range, are usually lighter (3½–5½ lb.).

(iv) Ducklings for roasting purposes are young, succulent, and tender, and weigh from 4½–8 lb. at eight to ten weeks of age. Older ducks are seldom profitable unless special circumstances demand their retention to about 15 weeks of age.

(v) Turkeys for roasting at home vary in weight from 6–15 lb.; the females weighing about two-thirds that of the male. Older birds are only of use to the hotel trade. The world's heaviest turkey weighed 65 lb.

(vi) Geese, like turkeys, are mainly fattened for the restaurant trade, and weigh at nine months 10–20 lb., but their popularity is not increasing in spite of the fact that they eat large quantities of grass and very little "concentrate."

### DUCKS.

Ducks have many advantages over chicken—they grow faster, weigh heavier, lay more eggs, and suffer from fewer diseases; yet they are not as popular as might be expected—why is this?

Firstly, they may not make a profit, because there is sometimes a consumer prejudice against eating duck eggs, but like eating pork in a month without the letter "r" in it, this prejudice is more fanciful than real. It arose no doubt because there have been occasional deaths or illnesses due to the consumption of *Salmonella*-contaminated eggs; but there are also other and more important sources of this type of infection.

Secondly, the egg production of the table breeds of ducklings—as opposed to the layers—is very low, and therefore there is a very seasonal trade in ducklings, except in the case of *Penines* now being hatched the year round.

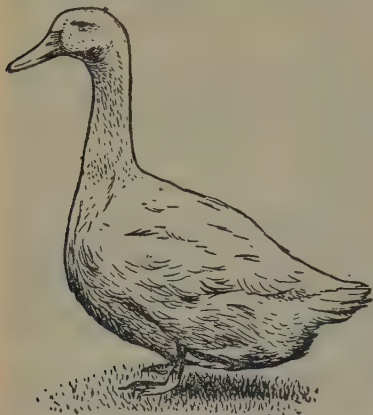
**Breeds.**—As layers the Khaki Campbell breed is supreme, many strains laying upwards of 275 to 300 eggs per year. The *Pekin* is an excellent dual-purpose breed, some strains of which are also good layers; and there is also the *Indian Runner*. But for table work the *Aylesbury* is easily the heaviest and most rapidly growing breed in the country, but its poor egg production is against its expansion. The new *White Penine* breed is nearly as good as the *Aylesbury* for table purposes, and is also an improved layer. Average weights are: Khaki Campbells 4 lb.; *Indian Runner* 4½ lb.; *White Penines* 5–5½ lb.; *Pekins* 5½–5¾ lb.; *Aylesburies* 5½–7 lb. at 8–9 weeks.

**Rearing.**—Ducklings are easy to brood, and where electricity is available infra-red-ray lamps are ideal for the purpose. They can be taken off heat at two-and-a-half to three weeks of age—at least one to two weeks earlier than chicken. Although they need plenty of drinking water, a pond or stream is not a necessity, and puddles should always be avoided, as they may harbour disease parasites. Ducklings grow best on pellets or crumbs given *ad lib*, but wet mash is also popular. By four weeks of age ducklings can be given bulky feeds containing steamed potatoes swill, Tottenham pudding, etc. They will reach their second feathering stage by ten weeks of age, and should be killed off for the table before this period is reached, otherwise plucking and stubbing will be difficult. Wet plucking is not satisfactory for ducks, and even dry plucking machines require to be followed up by very careful hand stubbing—but the feathers are valuable, to-day's price being 7s. per pound. (Hen feathers fetch only about 1s. 8d. per pound.)

As table ducklings reach 6 lb. by eight to nine



weeks of age compared with sixteen to eighteen weeks for cockerels, they should be cheaper to produce, but day-old ducklings at 3s. apiece cost three times that of cockerels. In proportion there



AYLESBURY DUCK.

is less meat on a duck, and for these reasons it falls into the luxury class of table poultry.

**Diseases.**—Ducks do not suffer from Coccidiosis, Gapes, Newcastle Disease, Fowl Pox, or Fowl Paralysis, but they do get Salmonella infections (Keel Disease), diseases of the reproductive and excretory systems, and also tumours.

*S. aertrycke* infection is responsible for very heavy losses in young ducklings aged three to fifteen days; and survivors may lay contaminated eggs for long periods. Eggs from such birds may be the cause of food poisoning, but it would not occur if attention was given to avoiding the consumption of raw eggs, or of boiling them for ten minutes. This will destroy any Salmonella infection present. (Table ducklings are rarely if ever the cause of food poisoning.) Attention should always be given to collecting duck eggs in as clean a state as possible, and if they are dirty they should be cleaned in hot water (110° F.) containing a detergent, e.g., a quaternary ammonium compound; or one containing chlorine.

### TURKEYS.

Whereas an average fowl will weigh from 5 to 7 lb. at maturity, a turkey hen will weigh more than twice as much; male birds ("stags" or "toms") weighing from 20 to 35 lb. apiece.

These large birds were ideal for family parties at Christmas-time thirty to forty years ago, but with money now scarce, smaller families, and small ovens, the day of the really large turkey has passed, except for the restaurant trade. To-day most housewives demand a bird weighing 8-15 lb., and this favours their use of hen turkeys.

**Breeds.**—For breeding pens one stag to seven hens is commonly practised. The most popular turkey in Britain has been the *American Mammoth Bronze* (A.M.B.), females weighing 14-18 lb. and males 18-24 lb. A peculiar sheen to many of the feathers give the bird its "bronze" character.

**Broad Breasted strains** (B.B.B.) carry additional breast meat and weigh 15-30 lb. at seven to eight months of age. These have recently been imported from North America.

The *Norfolk Black* is an excellent bird for the general farmer, being lighter than the A.M.B., but with a particularly nice, plump breast.

The *British White* turkey (also known as the "Austrian White") is almost as heavy as the A.M.B., but its feathers are more valuable. They are very popular in the south-eastern counties. A new white turkey recently imported from America, the *Beltville Small White*, matures two to four weeks earlier, and weighs about 8-15 lb. Its economical qualities are making it very popu-

lar, particularly its good egg production and better hatchability.

The demand for smaller turkeys has led to the production of "Baby" turkeys ("Broilers") aged 10-16 weeks, weighing 4-10 lb. Any breed can be used, but at this age they often lack fat under the skin and are therefore considered by the trade to be "unfinished." Chemical canapising may overcome this objection.

**Rearing.**—Turkeys are not difficult to rear if given: (i) a correctly balanced diet right from hatching; (ii) plenty of heat under the hover (95° F.); they should be (iii) kept away from all other poultry; and (iv) preferably reared intensively for the first eight weeks.



AMERICAN MAMMOTH BRONZE TURKEY.

The first feed should be placed on a piece of coloured paper laid over the floor under the hover; a scattering of flint grit is also necessary, and the drinking-water must be close at hand. Turkey Starter rations must be kept in front of the poults all day long, and no grain or greenfood should be given for the first six to eight weeks. By this time they will weigh from 1½ to 3 lb., and their teething troubles will be over, except for diseases such as Blackhead and Coccidiosis. The new drug "Entramin" is specific for Blackhead, and Coccidiosis can be controlled by the use of sulphadiazine. A separation of turkey poults from domestic hens commonly avoids serious losses from Worms, Gapes, Fowl Pox, and Blackhead.

### GEESE.

Few geese are kept commercially, although many farmers keep half a dozen for their own use at Christmas-time. They eat large quantities of grass, and require little extra feeding beyond that which can be supplied by home-grown grains.

**Breeds.**—In general, the larger the breed, the smaller the number of eggs laid by the females, thus the Chinese may lay 60 or more eggs, compared with only 20 by the Toulouse. The *Grey* and *White Chinese* are, however, less popular because, although of attractive external appearance, their flesh is dark, and they are very noisy. Among white-feathered breeds the *Roman* and *Emden* are favoured, as is the grey *Toulouse*; but many farmers prefer a crossbred, e.g., *Emden* × *Toulouse*; or *Roman* × *Toulouse*. The very rapid growth rate of geese can be seen from the following results at Stoke Mandeville (1954):—

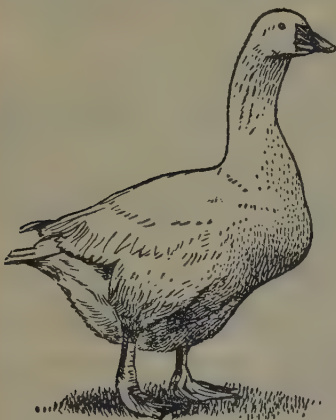
Weeks.	Chinese.	Roman.
1	8-8 oz.	9-9 oz.
4	3 lb. 1 oz.	4 lb. 5 oz.
8	7 lb. 0 oz.	8 lb. 8 oz.
12	8 lb. 15 oz.	10 lb. 6 oz.
14	9 lb. 6 oz.	11 lb. 12 oz.

Although when mature geese weigh from 15-30 lb., they are much less popular than turkeys,

partly because they are lacking in flesh (on the breast), also because the flavour of the meat is less palatable.

Breeding stock are not chosen until they are 2-3 years old, but they may be used for upwards of 5 years. For light breeds one gander to 4-5 females is practised; for heavy breeds one gander to 2-3 females. Geese often mate for life, and it may be difficult to re-mate them if breeding pens are broken up.

Incubation takes twenty-eight to thirty days, and from ten to twelve eggs may be set under a goose, but an ordinary domestic hen can only take about four—which must be turned daily by hand. They should be sprinkled with warm water during the latter half of the incubation period, because they need more moisture than hen's eggs. Newly hatched goslings can be brooded rather like



EMBDEN GOOSE.

ducklings, and can be taken off heat at ten days of age. Chick mash, or pellets fed three times daily, provide their best feed, but by three weeks of age they will be eating grain and grass freely. Rather than give them nothing but grass during the summer months, a daily feed of layers pellets is recommended. About one month before killing they can be fed more pellets plus a feed of wet mash containing groundnut oil (4%).

Goose feathers are valuable, about 1 lb. being obtained from each mature goose, and they may fetch up to 10s. per lb. for the finer down. In Holland geese are plucked twice a year—alive—but this practice has not been adopted in this country.

Diseases.—Geese are comparatively disease resistant, and in this country seldom suffer from any epidemics except when they become heavily infested with gizzard worms or coccidia. Goslings require careful management during their first two to three weeks in case of chilling, impactions of the intestines, etc., but from then on they usually make good progress.

#### MORTALITY.

The degree of mortality experienced during the rearing season often gives an indication as to the efficiency of the poultryman and his methods. Providing that there are no actual outbreaks of disease, the following are average figures:—

		Mortality, %.
Chicks	1-8 weeks	5
	9-26 weeks	5
Pullets	6-18 months	10-15
Hens	19-30 months	8-12

#### PREVENTING FEATHER PECKING AND CANNIBALISM.

Apart from attention to management—keeping birds occupied by continuous dry-mash feeding,

pecking at greenfood, roots, etc.—there are three main methods used for controlling these vices.

**Hen Spectacles.**—These are made of plastic or of light-metal alloys and fit snugly over the upper beak so as to cover the eyes in order to interfere with long vision. Thus, a bird fitted with "Dewdrop" spectacles can be expected to see its food but not its neighbours, and therefore Vent Pecking and Cannibalism are prevented.

**De-beaking.**—This operation is carried out for a similar reason, and although the upper beak can be pared with a sharp scalpel or knife, a special cauterising (electric) instrument is preferable. Considerable skill is necessary in de-beaking, because unless an adequate portion of the beak is removed it will quickly grow again, whereas if too much horn is removed the operation becomes painful.

**Visors.**—Visors made of metal, like hen spectacles, are applied to the bridge of the nose, and are now being popularised for use with turkeys. They are kept in position by means of a split-pin passed through the nostrils. Turkey "bits" are equally successful in preventing feather pecking. These consist of a rustless metal ring (incomplete) which lies between the mandibles but above the tongue: its ends are inserted into the nostrils and clipped into position.

#### DISEASES OF POULTRY.

It should be remembered that, in the case of some diseases, birds which recover remain as carriers of the causal germs; this applies particularly to B.W.D., Infectious Colds, and certain Salmonella infections. For this reason alone it is wise to purchase all one's stock from one source and not go to two or three suppliers, or there will be two or three chances of introducing infection on to one's premises.

When any birds die they should either be incinerated or buried deeply in lime, but in the case of commercial poultry farmers it is a good plan to have such birds examined *post-mortem* by a veterinary surgeon or some other competent person, who will be able to state from what the bird has died and what steps to take in order to prevent other poultry from catching the same complaint.

**Quarantine.**—Whenever birds are purchased or brought back from Laying Trials, Shows, etc., it is a good plan to keep them isolated in quarantine for three or four weeks, during which time if they are going to suffer from any infectious disease it should show itself.

**Disinfection.**—Before attempting to rear chicks always make certain that the brooder house and equipment are thoroughly disinfected. Food and water troughs, hovers, etc., should be scraped and soaked in hot, strong, soda water ( $\frac{1}{2}$  lb. to a gallon); immersed in a disinfectant (Jeyes Fluid 1:100), and finally rinsed in clean, cold water. In this way disease germs and viruses will be destroyed and the equipment rendered quite suitable for future use. In the case of incubators, all removable parts should be similarly treated, the remainder of the machine being fumigated with formaldehyde gas (3 oz. formalin added to 1½ oz. potassium permanganate per 100 cu. ft.).

Feedstuffs are normally quite free from infection, but water supplies are occasionally contaminated. This can be dangerous, and efforts should be made to prevent poultry from drinking from puddles or other infected sources. Spring water, running streams, and tap water are, of course, normally quite safe to use.

#### COMMON POULTRY AILMENTS.

**Aspergillosis**, due to a fungus, causes respiratory symptoms in all species of poultry with gasping as the most prominent symptom; mortality is high. The lungs and air sacs show multiple pale nodules. There is no treatment. Avoid musty hay in chick-boxes; mouldy straw bedding, etc. Sterilise feed and water containers daily. This disease can be transmitted to man.

**B.W.D. (Pullorum Disease)**, due to a specific germ, attacks chicks and poulters during the first few days after hatching, and mortality is high. White diarrhoea may be evident. The new drug *Furazolidone* ("Neflin") is believed to be very valuable for treating B.W.D. in chicks and even



for eliminating a high percentage of "carriers." B.W.D. is egg transmitted, and all breeding stock should be blood tested each season before use. When hens die from this disease they show degenerate, nodular ovaries from which can be cultivated the causal germ *S. Pullorum*.

**Big Liver Disease (Lymphomatosis)** is a form of Fowl Paralysis, the liver appearing four to five times as large as normal; all other organs may appear normal. Affected pullets often show a scanty, green diarrhoea a short time before death. Believed to be caused by a virus, there is no cure or treatment for Big Liver Disease.

**Bumblefoot** represents a local infection of the ball of the foot. Usually only one foot is involved, and the site of entrance of the pus-forming bacteria is seen easily. Occasionally the trouble is tuberculous, but more frequently it is due to cocci which penetrate to the region of the tendons below the foot, where the pus which they form shows as a marked swelling. Surgical treatment is often successful.

**Cloacitis (Vent Gleet)** is an inflammation of the vent, commonly seen in pullets; its origin is not clear, but it is certainly not the venereal disease believed in by many farmers. Some cases respond to local treatment, but in many others a stench develops which indicates clearly the unsuccessful nature of the treatment, and such cases are better killed.

**Coccidiosis** is a specific disease of the intestines affecting chickens, turkeys, and occasionally geese, but ducks are immune. There are two main forms: (i) caecal, and (ii) intestinal. Both are caused by microscopic parasites—coccidia—whose life cycle is completed in the mucous membrane lining the gut. Affected birds appear listless, ruffled in the feathers, and many die. Acute Caecal Coccidiosis is characterised by bloody droppings; in the intestinal form diarrhoea may be prominent. In geese the kidneys are frequently attacked. Treatment using sulpha drugs is highly effective. Sulphamezathine (I.C.I.), Avisol, and Embazin (M. & B.) are all satisfactory and can be given in the feed or water. Nitrofurazone is also effective against Caecal Coccidiosis. Each coccidium gives rise to its own immunity, so that a chick having suffered from Caecal Coccidiosis will not again suffer, but it may be attacked later by one of the other intestinal forms of Coccidiosis. The sulpha drugs mentioned cure the disease and also allow immunity to be developed at the same time. For *duodenal coccidiosis* the new drug nitrophenide is good; for chronic cases the feed should also contain an antibiotic at high level.

Colds may either affect isolated birds or be of a highly infectious nature. Sneezing, coughing, gasping, and a swelling of the face and wattles appear in this disease, which is commonest in growing stock. Sulphathiazole (M. & B. 760) and allied drugs are specific for certain types of infectious colds, and should be given at the earliest opportunity. Pullets at point-of-lay will quickly go out of production for some weeks, but they may lay just as well at a later date. Mortality is not usually high, but stunting occurs in many cases, and severe culling is necessary. Infectious colds are considered by many farmers to be their worst enemy after Coccidiosis and Fowl Paralysis.

**Crooked Breastbones** occur in young stock receiving improper feeds lacking calcium, vitamin D, etc. Some strains and breeds are more susceptible than others. In laying stock too little grit may have been fed.

**Crop Binding** is a stoppage of the crop, generally through eating long grass, straw, etc. It never occurs in hen batteries or on deep litter, but may be seen in hen yards, and it is commonest in birds kept on free range. Good management will avoid most cases, the remainder require surgical treatment.

**Diphtheria** (see Fowl Pox).

**Dropsy** is characterised by an accumulation of fluid in the abdomen. It is often secondary to cancer of the intestines. There is no cure or prevention, and affected stock should be killed and buried.

**Egg Binding** implies an impaction of the oviduct either by yolks or shell-less eggs, etc., or it may refer to cases where a fully shelled egg has failed to be extruded at laying time. The former cases are without treatment, but the latter can be re-

moved by manipulation. Only isolated cases occur, and their prevention is not easy.

**Fowl Cholera** is a specific disease due to a germ—*P. avicida*—affecting all species of poultry and having a high death-rate. Sometimes there is a swelling of the wattles with local abscess formation. Affected stock suddenly become ill, the birds are dejected, and a number will die overnight. Sulphaquinoxaline and sulphamerazine may be used to reduce the death-rate.

**Fowl Paralysis**.—The Fowl Paralysis "complex" comprises cases of leg, wing, neck, and eye paralysis, all due to an infiltration of the parts by an accumulation of abnormal cells. A second form of the disease, characterised by tumour formation, is known as Lymphomatosis, and included in this group is "Big Liver Disease." These diseases are all believed to be due to viruses, but there is no cure or any medicinal treatment of value. Many of them are of an infectious nature, spreading amongst young stock during the first few weeks after hatching, but a few cases may be egg transmitted.

The domestic fowl is chiefly affected, frequently pullets at point-of-lay; turkeys are but rarely involved, whilst ducks and geese never suffer from Fowl Paralysis. Some families and breeds are more resistant or susceptible than others, and pedigree breeders are now trying to establish Fowl Paralysis resistant strains. To minimise the introduction of these diseases, purchase all replacement stock from one source only at day-old. Rear them as far apart as possible from all other poultry, especially adult layers. Keep them so isolated for as long as practical, certainly 8-10 weeks.

**Fowl Pox** is due to a virus, and is characterised by wart-like or cheesy growths on the comb, eyelid, face, and wattles. Chicken, turkeys, pigeons, and canaries can all suffer from pox; ducks and geese appear immune. When the mouth or throat are involved the disease is termed *Avian Diphtheria*.

Treatment is not very satisfactory, but iodine applications daily are worthwhile. Prevention is by the use of vaccines—*Pigeon Pox Vaccine* giving a shorter period of immunity than that following the use of *Fowl Pox Vaccine*. Such vaccines only cost 1d.-2d. per doze, and as immunity is established in fourteen days, their use is well worthwhile.

**Fowl Typhoid** is caused by a germ—*S. gallinarum* (closely allied to that of B.W.D.)—and gives rise to symptoms and losses easily to be confused with those of Fowl Cholera, hence the need for expert advice. Dramatic results have recently been achieved using "Neflin" experimentally as a treatment for typhoid.

**Gapes** is a disease of young chicks aged less than eight weeks, and also of turkeys. Rooks and many other wild birds harbour gapeworms which live in the wind-pipe, where they cause irritation, gasping, and suffocation. Barium antimonyl tartrate is the best treatment used as an inhalant (powder).

**Infectious Laryngo Tracheitis (I.L.T.)** is a specific, highly infectious, fatal disease affecting fowls. The causal virus first induces "colds," gasping, and the coughing up of blood; but numerous deaths follow. Recovered birds are often carriers. There is no treatment.

**Leg Weakness** is a symptom and not a disease. It may be seen in Rickets (chicks); Fowl Paralysis; Layer's Cramp (hens); worms and Coccidiosis; dietetic errors, etc.

**Lice** (see Parasites).

**Liver Disease** is a term used to indicate those diseases characterised by a gross deformity of the liver, e.g., Tuberculosis (nodules of the liver); internal hæmorrhage from rupture; fatty degeneration of the liver—as in phosphorus poisoning; Leukæmia, Big Liver Disease, etc.

**Marble Bone Disease** affects cockerels, revealing enlarged thickened bones, especially in the legs and wings. It is incurable, and there is probably a genetic aspect to the problem, and known parent stock should not be used again for breeding purposes.

**Newcastle Disease (Fowl Pest)** is a notifiable disease causing serious losses to the industry, with respiratory and nervous symptoms, nasal discharges, diarrhoea, gasping, twitching, paralysis, and death. One form in adult birds shows only as an infectious type of mild cold (without serious

losses)—egg production falls dramatically. It is an airborne infection of virus origin for which there is no cure, nor is any preventive vaccine available in this country as yet.

Parasites are divided into: (i) external and (ii) internal. The former comprise lice and mites (common) and fleas (uncommon). Some harm may be caused by their irritation. They can be eliminated by the use of D.D.T., Gammexane, nicotine sulphate perch paint, etc.

Internal parasites consist of coccidia (see Coccidiosis) and worms. The latter are common in stock housed on old pastures, but rarely seen in hen batteries. The Large Round Worm (*Ascaridia*) may do harm, but the common caecal worm ( $\frac{1}{2}$  in. long) rarely causes any trouble; hairworms in the crop, gizzard, and small intestines are also important. Tapeworms require the presence of an intermediate host (slug, snail, etc.), and may be a serious cause of loss. Flukes are rare in waterfowl, but *Acuaria* are more common.

Peritonitis refers to an inflammation of the membrane (peritoneum) which lines the abdominal cavity. The commonest form affects laying stock and follows an infection (ascending) of the oviduct. It is seen, too, in certain cases of blood poisoning and also following perforation of the gizzard or intestines. It is usually fatal and not detected before death.

Pneumonia is common as a terminal feature to congestion of the lungs following chilling. It is seen also in Aspergillosis in chicks (Brooder Pneumonia) and B.W.D.; antibiotics (e.g., penicillin) or sulpha drugs can be used for valuable poultry suffering from pneumonia.

Prolapse of the intestines or oviduct results from an eversion of the cloaca and associated parts. The cause varies, but may be of digestive or reproductive origin. Some cases can be corrected if caught early, the parts being anointed and replaced; preferably being held in position for twenty-four hours by a suture. Feed sparingly for two to three days.

Tuberculosis is a specific disease of germ origin, fortunately rapidly becoming eliminated nowadays by the adoption of modern housing practices. It is never seen in young stock, but chiefly affects hens, which lose condition and die. Post-mortem findings are typical, revealing nodules in the liver, spleen, intestines, lungs, bone marrow, etc. There is no curative treatment, but many infected birds can be detected by a blood test (Tuberculin Test).

Tumours are growths of a cancerous nature. They are commonly found in pullets, involving the ovary, lungs, liver, intestines, and kidneys. Some are due to a virus; many show a familial tendency. Very few are capable of being treated, but *Blood Blisters* may respond to cautery, using a caustic pencil or a piece of bluestone rubbed well into the cyst.

Vitamin and Mineral Deficiencies are less common to-day, due to the use of specially compounded poultry feeds which include synthetic vitamins A, B<sub>2</sub>, D<sub>3</sub>, cod-liver oil, dried yeast, etc. Cases of Rickets, Curled Toe Paralysis, Dermatitis, and Nutritional Roup are, therefore, becoming rare, and "Slipped hock disease"—of manganese deficiency origin—is often recognised early and treated successfully. The ratio between the calcium and phosphorus contents of the diet are important, otherwise leg and bone weaknesses may result.

### CULLING POULTRY.

The object of "culling" poultry is to find those which are not paying their way—the duds, the "passengers"—those birds eating a full ration but giving nothing in return.

Culling should be a continuous process, right from hatching time, for there is obviously no sense in keeping even day-old chicks if they are soon going to be unproductive.

Culling can be considered as both an art and a science, and can be applied for either (a) general health, or (b) egg production.

### Handling Poultry.

Before any accurate examination of birds is possible it is necessary to know how to handle them—how to pick them up so that they remain quiet, as well as the method by which each part is examined in turn. If the poultryman's hand is

placed below the bird's breast (with its head turned towards the operator) with the fingers separated so that the little finger and thumb are controlling the bird's two hooks this will be found useful. The other hand is then free to raise the bird's head, to palpate the abdomen or move the feet, etc.

### Health and Disease.

The following culling points are important:—

Comb covered by scabs occurs in Fowl Pox.

Eyes lose their colour in Iritis and blindness.

The pupil may be "split" or even paralysed.

Face is covered by whitish, powdery scales in Favus.

Nostrils show thick mucus in "Colds."

Mouth contains yellow growths in canker ("Diphtheria").

Wattles swell due to the presence of pus, and also in some cases of Fowl Cholera and Coryza.

Wings should be examined for loss of feathers in moulting.

Skin shows the presence of blood blisters, wounds, etc.

Breast may be crooked, or affected by a blister (cyst).

Vent reveals cases of prolapse, and in Vent Gleet it has a nasty smelling discharge. The vent fluff reveals the presence of lice or their eggs and mites, also diarrhoea and nephritis.

Shanks indicate age, and also the presence of Scaly Leg.

Toes may be crooked, twisted or curled.

Toe Nails are short in birds from range (due to scratching) and long in birds from hen batteries.

Foot may be swollen due to Bumblefoot.

Back may reveal impaction of the preen gland at the root of the tail.

Abdomen may be hard due to tumours, to impacted egg material, liver enlargements, or sometimes full of fluid (dropsy), etc.

### Egg Production.

Pullets in production usually show combinations of the following points:—

Head.—Comb large and full blooded, silky. Wattles close set—if widely separated this indicates the beefy type, and is due to fat beneath the skin. The eye is set high up in the skull, is prominent and visible from both the front and back of the head. The eyebrow is not overhanging, and the eye fills the socket. The neck is swan-like.

Abdomen shows four fingers' width between the point of the breastbone and the pelvic bones.

Pelvic bones are separated by three fingers' width.

In the case of birds out-of-lay the pelvic bones contract, and the breastbone more nearly approaches the vent.

### PIGEONS.

Large numbers of pigeons are kept in this country as a hobby, and only a few are reared as table birds. Pigeon racing is a popular sport, but during war or emergency periods they are also used for message carrying, postal services, etc.

Although pigeons belong to the Order *Galliformes*, they are in a different sub-order from that of poultry, and *Columba livia*, the Asiatic Grey Rock Dove, is believed to be one of their main ancestors.

In all there are upwards of 200 breeds of pigeons, but of these the Fantails, Tumblers, and Pouters always attract most attention. The larger breeds for table purposes are Mondains, Runts, Dragons, and various crossbreeds.

Foods and Feeding.—A pigeon's diet should be mixed and consist of seeds, grains, greenfood, and grit. The chief foods used are: peas, especially Tasmanian maple peas; Tick beans; tares (vetches); millet; canary seed; lentils; linseed; and corn of all varieties. When no greenfood or maize is available, and during the winter months particularly, vitamins A and D should be supplied in synthetic form or alternatively as cod-liver oil. Short-beaked breeds are best given small or cracked peas, tares, canary seed, etc. Regular supplies of gravel, granite, or flint grit are necessary, as well as limestone grit, especially during the egg-laying season.

It is fallacious to supply pigeons with flowers of sulphur in the belief that this provides sulphur



for the growth of feathers; nor is it necessary to give beans for supplying silica or oyster-shell for iodine. Charcoal is another unnecessary ingredient for pigeons.

The average pigeon eats about 1½-2 oz. of grain daily, the lesser quantity being given to racing pigeons, but during the brooding season a much larger appetite is to be expected when pigeon "milk" is being formed in the crop.

**Breeding and Rearing.**—Pigeons will breed in any month of the year, but mating naturally takes place in late February or March, and continues to August or September. A second clutch of eggs is often laid before the first brood is fully fledged. The average hen lays seven to eight days after mating—never earlier than the fifth day. Gliding is often a sign of courtship. The hen may sit on the nest three to four days before laying her first egg in the afternoon; the second egg follows about thirty-six hours later. The hen usually sits on them during the night-time, whilst the cock incubates them during the day. The incubation period is seventeen to eighteen days. For normal purposes pigeons can rear half a dozen broods each year, but in order to conserve their energy only one or two should be taken from racing pigeons; it is then also recommended that only one squab per brood is reared. Squabs usually hatch in the morning, never after 3 p.m.

The parent birds brood their young for a full week after hatching, thereafter they may be left uncovered without harm. It is during this first week that identification rings must be put on to the legs of young pigeons. By the end of the second week the young birds will leave their nest; during the whole of this time they live on food regurgitated from the parent's crop. This food is called "Pigeon's Milk"; it is the direct result of a hormone (produced by the brain), and is caused by an overgrowth of the lining membrane of the crop which sheds itself as "milk." It is a highly digestible, whitish, semi-solid, granular product passed direct (from either parent) to the mouth of the young squab. It is not a glandular secretion, and to the naked eye looks rather like soaked groats. Early during the brooding period the parent birds "vomit" part-digested grain to their offspring as well as "milk." Foster mothers may be required for Croppers, Pouters, and Short Faced Tumblers, etc. Weaning takes place after three to four weeks, in fact, as soon as the squabs can feed themselves and become independent of their parents. The growth rate and physical development of the young pigeon is quite dramatic from day-old onwards. It is then only covered by brightish yellow, hair-like down, and its skin is devoid of pigment matter. It is extremely weak at this stage, and its eyelids may remain closed for four to five days. By the end of the first week, however, its pigmented quills give it a porcupine-like appearance, and by fifteen days of age the whole bird is covered with feathers. For all practical purposes pigeons are mature by twenty-six days of age, being alert, fully feathered, and typical of the species.

An area devoid of feathers circumscribing the eyelids is known as the "cere"; some breeders pay great attention to this character, but it is really unimportant physiologically. The breast muscles are strongly developed and of deep red colour in contrast with those of poultry. The lining, horny membrane of the gizzard is often coloured green, due to bile; it should always contain insoluble grit for grinding the food. No gall bladder is present, and the caecal tubes are diminutive. The small intestines are coiled in a spiral fashion. During the mating season the ovary will show only two well-developed egg yolks which, with the large oviduct, occupies almost half the abdominal cavity. Compared with other birds, the heart and lungs are large, especially in racing pigeons. The body temperature registers 107° F. Moulting usually begins in April or May, and it is at this time that the primary flight feathers are lost.

**Aviaries and Lofts.**—It is usual to build a special pigeon cote for their sleeping, feeding and breeding activities. Such lofts should be white-washed twice a year, and if D.D.T. is added it will help to control flies. A wire-mesh aviary attached to the loft for exercising purposes is

common, a minimum of 3 sq. ft. of floor space per bird is recommended, and for fifty pigeons 15 ft. x 12 ft. is satisfactory. For the loft floors sand or sawdust make good litter, but it should be raked over and sifted frequently to remove the bulk of the droppings. Most lofts, nest-boxes, and perches are made of wood, and where space is restricted the nest-boxes can be attached to an outside wall with their entrance direct into the loft. A nesting-box of two compartments separated by a low partition allows the cock bird to take charge of the first brood whilst the hen sits on the second lot of eggs. Nest-boxes should be 14 in. x 14 in. x 28 in. If the front of the nest-box is protected by a 3-in. wooden board, hinged at the bottom, this will help to confine the squabs. An alighting board 4 in. wide in front of each nest is valuable.

**Racing and Training.**—Young pigeons are generally flying quite satisfactorily by their seventh week, and they should soon be given two exercise flights daily until able to fly for three-quarters of an hour. Before training begins, such young birds must be made to get used to their baskets, followed by "trapping" and learning to recognise their owner's particular call. Consistent light training is better than intensive methods, and should begin when the birds are about four months old, and flights should be extended gradually from three miles to 100 miles as progress is made. Quick trapping to avoid loss of time after races is gained by feeding only inside the loft and by calling the birds through the trap by a whistle or other standard noise. Feeding should always be carried out after exercising.

**Homing.**—Many birds, other than pigeons, have homing instincts, and these are not confined to the brooding season. Homing is an inherited quality of uncertain origin which can be developed by selective methods and directional training. It is now generally considered that the primary sense of orientation is not related to visual landmarks, but navigation as such may be related to the position of the sun. Homing is not affected by radar, and although it has been suggested as due to magnetic influences, the use of Faradic cages has disproved this point.

Homing pigeons may fly at heights up to 6,000 ft., but in poor visibility they will come down to within a few feet of the ground. In thick fog they soon appear to lose their sense of direction and descend until the weather improves, but large numbers of birds are lost annually from this and associated causes.

The method of handling a pigeon is important. It should be held in one hand with the thumb across the back, the fingers and the palm of the hand below the abdomen with the first and second fingers lightly gripping the feet.

**Diseases of Pigeons.**—Diseases of the digestive system account for more losses than any other. A thread worm, *Capillaria*, is a common cause of enteritis with marked loss of condition; but *Coccidiosis* also attacks the small intestines. "Sulpha" drugs are now available for the treatment of this disease. *Trichomoniasis* is another common disease of pigeons, it affects the liver and upper part of the digestive tract. *Salmonella* infections account for a very large number of deaths, especially in young pigeons, one form of the disease being termed "Paratyphoid." Arthritis sometimes occurs in pigeons, and it too may be associated with *Salmonella* infections.

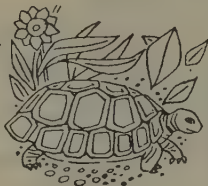
Many young birds suffer from *Coryza* (cold), and fanciers often associate the chronic form of this disease (Roup) with Pox. Pigeon Pox affects mainly the head and eyes, but unlike poultry, many cases do not respond to treatment with tincture of iodine or copper sulphate (1 per cent.). Sudden death (Apoplexy) is sometimes seen in pigeons, but the cause is seldom determined: internal hæmorrhage is associated with many cases. Pigeons can be affected by an important virus disease called *Psittacosis*. Although some cases are transmissible to man, fortunately very few pigeon fanciers suffer from this disease, which is characterised by fever, malaise, and an unusual form of pneumonia. *Aspergillosis* may also be contracted by man from infected pigeons.

Lice and feather mites are common external parasites of pigeons, but their control is easy, due to the use of specific remedies, e.g., D.D.T.

# Domestic Pets



Bruce Roberts



## Feeding, management and diseases of

Aquarium Fish	999	Golden Hamsters	994
Cage Birds	1000-02	Hedgehogs	997
Cats	989-92	Mice	993
Cavies	995	Rabbits	996-97
Dogs	982-89	Rats	992
Ferrets	992	Tortoises	998-99

British Wild Birds and their identification 1003-04



# Domestic Pets

By ALASTAIR N. WORDEN, M.A., B.Sc., M.R.C.V.S., F.R.I.C., formerly Milford Professor and Director of Research in Animal Health, Univ. College of Wales, Aberystwyth.

This section attempts to deal not with all the many hundreds of animals that may be kept as pets, but only with those that are best suited to average homes in Great Britain. The maintenance of monkeys, squirrels, bats, mongooses, and snakes, while quite feasible to those with experience and facilities, requires considerable time and—in some instances—expense. Those who contemplate such exotic pets should consult works of reference, study the methods adopted in zoological gardens, and discuss the matter with experts. Even in the case of the more common animals, the information provided in the following pages is to be regarded only as a beginning, to be supplemented as far as possible by practical experience, discussions with more knowledgeable owners, and the study of more detailed writings.

Certain considerations are basic. Never keep a pet unless you are really interested in it and are prepared to give it due—and regular—care and attention. Don't keep a pet you cannot afford to maintain in health and comfort. Scrupulous attention to cleanliness is essential, and wise feeding is one of the most important factors in avoiding illness and loss of condition.

Since the passing of the Veterinary Surgeons Act of 1948 it is illegal for anyone to practise the diagnosis and treatment of animal diseases unless he or she is: (1) a veterinary surgeon; or (2) a person whose name has been placed on the Supplementary Veterinary Register. (Certain employees of Animal Welfare Societies are specially licensed, but it is intended that in future all animal treatment shall be given by or under the direct supervision of members of the veterinary profession.) Not even a pharmacist may attempt to diagnose or treat an animal. Anyone may, of course, render "first aid," and an owner may—at his or her own risk—apply treatment. It is, of course, a wise precaution to seek veterinary advice for any ailing animal, and the sooner it is sought the more likely it is that good results will follow.

## BREEDS AND VARIETIES OF DOGS.

Of recent years, dog-breeding and showing have become specialised occupations, which average people cannot be expected to take up without having adequate time or resources at their disposal. Any amateur who wishes to breed for profit from pedigree animals should most certainly seek expert advice before attempting to do so.

Dogs which are intended for show or for pedigree breeding must be registered with the Kennel Club, 84 Piccadilly, London, W.1. The requisite forms and regulations may be obtained on application to the Secretary.

The breeds of dogs recognised for the purpose of separate Registration and Stud Book entries by the Kennel Club are:—

### SPORTING BREEDS.

Afghan Hounds	Finnish Spitz
Basenjis	Foxhounds
Basset Hounds	Grayhounds
Beagles	Harriers
Bloodhounds	Irish Wolfhounds
Borzoi	Otterhounds
Dachshunds	Salukis
Deerhounds	Whippets
Elkhounds	

### Gun-dogs.

English Setters	Retrievers
Gordon Setters	Setters (Cross-bred)
Irish Setters	Spaniels
Pointers	

### Terriers.

Airedale Terriers	Lakeland Terriers
Australian Terriers	Manchester Terriers
Bedlington Terriers	Norwich Terriers
Border Terriers	Scottish Terriers
Bull Terriers	Sealyham Terriers
Cairn Terriers	Skye Terriers
Dandie Dinmont Terriers	Staffordshire Bull Terriers
Fox Terriers	Welsh Terriers
Irish Terriers	West Highland White Terriers
Kerry Blue Terriers	

### NON-SPORTING BREEDS.

Alsatisans (German Shepherd Dogs)	Chow Chows
Boston Terriers	Collies
Boxers	Dalmatians
Bulldogs	Dobermann Pinschers
Bull-mastiffs	French Bulldogs
	Great Danes

Keeshonds	Schipperkes
Mastiffs	Schnauzers
Newfoundlands	Miniature Schnauzers
Old English Sheepdogs	Shetland Sheepdogs
Poodles	Shih Tzus
Pyrenean Mountain Dogs	Tibetan Terriers
St. Bernards	Welsh Corgis (Cardigan)
Samoyeds	Welsh Corgis (Pembroke)

### Toys.

Black-and-Tan Terriers (Miniature)	Maltese
Griffons Bruxellois	Papillons
Italian Greyhounds	Pekingese
Japanese	Pomeranians
King Charles Spaniels	Pugs
	Yorkshire Terriers

A separate register, called the Breed Register, is kept by the Kennel Club for each breed, except in the cases of the following breeds, for which a separate register is kept for each of the varieties of the breed specified.

### DACHSHUNDS.

Long-haired	
Smooth-haired	
Wire-haired	
Miniature (Smooth-haired) (not exceeding 11 lb. for exhibition.)	
Miniature (Long-haired) (not exceeding 11 lb. for exhibition.)	

### IRISH SETTERS.

Red	
White and Red (A.O.V.)	

### RETRIEVERS.

Curly-coated	
Flat-coated	
Golden	
Labrador	
Interbred	
Crossbred	

### COLLIES.

Rough	
Smooth	

### SPANIELS.

Clumber	
Cocker	
Field	
Irish Water	
Springer, English	
Springer, Welsh	
Sussex	
Interbred	
Crossbred	

### BULL TERRIERS.

Bull Terriers	
Bull Terriers (Miniature).	

### FOX TERRIERS.

Smooth	
Wire	

### POODLES.

Not under 15 in.	
Miniature, under 15 in.	

### TOY SPANIELS.

Cavalier King Charles Spaniels.	
King Charles Spaniels	

The Committee of the Kennel Club has decided to classify those breeds which at present have no separate register, but are included under the

heading "Any Other Variety." The classification is as follows:—

HOUNDS.	NON-SPORTING.
Dachsbracke	Bearded Collies
Dachshund Miniature (Wire-haired)	Bouvier de Flandres
Rhodesian Ridgeback	Groenendael
Lion Dog	Hudky
	Leonberger
	Lhasa Apso
GUN-DOGS.	Maremma Italian Sheep-dog.
Chesapeake Bay Retriever	Norwegian Buhund
Kleine Munsterlander	Polish Sheepdog
Pointer German Short-haired	Reisenschнауzer
Pointer German Long-haired.	Tibetan Mastiff
Pointer German Wire-haired	Tibetan Spaniel
Pointing Griffon Wire-haired	Volpino
Setter German Long-haired	Wolf Spitz
Weimaraner	

#### TERRIERS.

Soft-coated Wheaten Terrier  
Sydney Silkie

#### TOYS.

Chihuahua  
Penscher Miniature

In the limited space available it is impossible to describe the special characteristics of the different breeds. The breeds recognised in Great Britain are subject to constant review by the Kennel Club, and it is probable that the number will continue to be added to from time to time.

The dog was probably the first animal to be domesticated in the true sense of the word, and the uses to which he has been put by man are almost legion. Throughout the world dogs are employed to help protect herds and flocks, and indeed the dog trained for herding plays an integral part in sheep management. The names Foxhound, Deerhound, and Otterhound all indicate the specific uses to which dogs have been put in the Chase. Greyhounds and Whippets are used in coursing, and work singly or in pairs, rather than in packs. As their names indicate, the various Setters and Pointers are employed to indicate the exact whereabouts of game, and Spaniels also are widely used as gun-dogs. The other uses to which dogs have been put in field sports include hunting over rough and difficult country by small terriers, and going to earth to kill or hold badgers, foxes, and otters. Fox Terriers, Dachshunds, Dandie Dinmonts, and Scottish Terriers are among the types which have been so employed. Dogs have played their part also in entertainment: thus there are performing dogs, notably the Poodle, and racing Whippets and Greyhounds, while in former times various types of fighting, including the baiting of bulls by Bull-dogs, were to be seen. The use of sledge-dogs is well known, while in Belgium and elsewhere dogs were at one time widely used as traction animals. In coaching days, the Dalmatian was a carriage dog, and modern scientists have recently suggested, as a result of experiments, that the position under or behind a coach which a Dalmatian automatically takes is determined by heredity! Perhaps the most exacting use to which man has ever put dog was in China, where the Chow-Chow was once maintained as a source of meat and fur! In Portugal, fishermen employ a race of dog to accompany their fleets. The dogs in question (Portuguese Water Dogs) will dive into the sea to retrieve a broken net or an escaped fish, and will even swim from one smack to another to convey messages! In New Guinea native dogs act as scavengers, while in various countries on the Continent of Europe "truffle dogs" are employed to locate the fungi known as truffes, relished as a table delicacy.

The above paragraph is far from exhaustive, and for those who wish to know more of the characteristics of the different varieties of dogs, reference should be made to such volumes as *Book of the Dog* by Brian Vesey-Fitzgerald (2 guineas) or *Working Dogs of the World* by C. L. B. Hubbard (16s.). For general guidance on dog management, see *The Right Way to Keep Dogs* by R. C. G. Hancock (6s.).

For present purposes it is, however, as a pet or companion that we are considering the dog, and it must be agreed that many of the most successful animals for this purpose are cross-breeds or "mongrels." There are many fallacies or unsubstantiated generalisations regarding the relative merits of pure-breeds and mongrels. This is in fact an intricate scientific problem, and probably the simplest way of summarising the true position would be to say that, from the point of view of health and temperament, there are good, bad, and indifferent specimens among pure-bred and cross-bred animals. It is true that within a breed (or within a local community of mongrels for that matter) certain weaknesses or undesirable traits may arise from hereditary defects.

It may be noted that the word "dog" is applied to the whole species, although it is used also to denote the male as opposed to the female, for which the correct term is "bitch." Young animals are referred to as "dog puppies" or "bitch puppies" respectively. A male animal employed regularly for breeding is known as a "stud dog," and the corresponding female as a "brood bitch." In hunting circles the Foxhound is referred to as a "hound," and the term dog and bitch are employed only as prefixes to denote the sex.

#### CHOICE OF DOG.

However attractive the idea of keeping a dog may be, it is unwise and unkind to purchase or to accept one without very careful consideration. Dogs require regular feeding, grooming, and exercise and, if they are to be allowed to show their full capabilities, constant companionship and attention. Nothing is more pathetic than the unwanted dog, which may have been purchased because of a passing whim, and with which no one appears to have the courage to part. If, on the other hand, one is prepared to give all the necessary time and trouble to the proper care of the dog, the reward will be ample.

The size of the choice is important. Many people keep dogs which are far too large for their houses and for their purses. The smaller the dog, the less food, exercise, and house-room will be needed, and the many varieties of terrier provide a range from which suitable choices for most households may be made. In any event, a very large dog should not be chosen unless expert advice has been taken about his feeding and other requirements.

Household dogs of six months of age or over must be licensed. Licences may be obtained from any post office.

#### MANAGEMENT OF THE DOG.

**Accommodation.**—Up till comparatively recently, most dogs were kennelled down out of doors, but to-day the majority of pet dogs are allowed more or less the run of the house. A warm sleeping-place, such as a box or basket, should be provided, and should contain removable bedding. Newspaper is an excellent non-conductor of heat. It is a very useful material to place at the bottom of a dog's box; and on two or three thicknesses may be placed a rug or blanket on which the animal may lie. It is astonishing the amount of grit and dust a dog can bring into a house on his limbs and the lower part of his body. His bedding will require frequent shaking out and renewal, and paper is easily changed. The box or basket in which the dog lies should be allowed a place free from draughts, and requires airing daily when the dog leaves its bed in the morning. Wood-wool makes excellent bedding in outhouses or where a special structure is provided by way of dog-kennel, but is inclined to be messy about the house, as a dog will draw portions of it about the room as he leaves his bed. If straw is used, it is best stuffed into a sack and made into a kind of mattress. An odd piece of linoleum forms an excellent foundation to the dog's sleeping-box or kennel; it does not strike cold to the skin, is a slow conductor of heat, and has the advantage of being easily kept clean, particularly during illness, when there may be discharges and messes to be frequently cleaned up, until the animal can once more go out of doors.



**Exercise.**—Every dog should be exercised regularly, but there is no need to over-exercise, and the practice of allowing a dog (other than a large and athletic animal) to run behind a bicycle for mile after mile cannot be too strongly deprecated. Two or three fairly short walks a day are sufficient for a small terrier, always providing there is a garden in which he can play on fine days and some open space where he can run freely for a short time. While still in the puppyhood stages, a dog should be trained to walk to heel and to beware of traffic. Even so, it is usually safer to put him on a lead in busy thoroughfares. One point which, to the annoyance of the public, many dog-owners fail to realise, is that their animals would show much less tendency to fight if allowed to investigate one another off the lead. A dog naturally feels aggressive if put on the lead immediately a rival hails in sight. There are, of course, certain dogs which attack others at sight; these are a public nuisance, and should never be allowed loose on the streets.

The practice of allowing a dog to take his own exercise is to be deprecated, especially in towns and suburbs. The animal will be tempted to sniff into dustbins, and, if a male, will tend to follow a bitch in season or to take part in the unsavoury "dog parties" which are so often to be seen. Furthermore, such an animal is usually responsible for the disgusting habit of fouling the pavements and gateways. In this connection, it should be emphasised that dogs may quite easily be trained to defæcate in the gutter, or on the grass verge, and so avoid contamination of the pavement or carriage-way. In some districts owners are liable to a fine if their dogs foul the pavement.

**Training.**—Patience combined with the gift of putting yourself in the dog's place is the chief requisite for successful education. It is most important to encourage regularity of habit, as an animal will obviously learn very much more quickly if his daily walks, meals, and grooming take place at fairly constant times. A quiet firmness is the ideal method, and a puppy should learn early that a command is a command, and must be obeyed. There is no need to shout and make an exhibition of oneself, or to race in circles after a disobedient puppy; if these things are done, the animal will never become so well trained as it otherwise would. Again, it is rather ridiculous to chastise a puppy *after* he has somewhat belatedly decided to come to heel: quite obviously, he will then be liable to think that he has done wrong in actually coming to heel. Whatever happens, it must never be that the dog becomes master; there is no more unbecoming sight than that of a person with a frankly disobedient dog, and if the animal be large and powerful it may prove a menace to its owner and to the public.

Puppies should be house-trained at an early stage. If care and thought are given to the matter, the animal will soon learn not to make messes in the house. However, it is very stupid to forget all about a puppy or dog for many hours, and then, out of sheer vexation, chastise it for having made a mess. If puppies are let out every two hours or so at first, they will soon learn not to make a mess. Encourage them for performing in the right place rather than scold them for doing so in the wrong one.

**Grooming and Washing.**—Whilst short-haired breeds need little or no attention to the coat, bar an occasional brisk rub down with a brush or rough towel (which incidentally puts a pleasant gloss on the smooth-haired breeds), yet with the long-haired breeds grooming should be carried out regularly, and if the habit is made a daily one it will not be forgotten so readily. Nearly all dogs love this procedure, and most dogs will actually ask for their daily groom by jumping on the table or bench on which it is carried out. Steel combs and brushes are sold by many shops, principally corn chandlers, though some store chemists also provide a suitable range of grooming kit for all breeds. There is a curious fetish current among many breeders that dogs should not be washed. There is no reason why, with a few simple precautions, a dog should not be washed whenever it is socially necessary. The first precaution is to use a soap that does not contain an excess of soda. The strong washing-up soaps, excellent as they are for certain purposes, are too irritant for a dog's skin. While some

of the toilet soaps suitable for human use may be employed for dogs, the special dog soaps and shampoos are much better for the purpose. They are more suited to the dog's skin and coat, and have better detergent properties. It is important not to have water that is too hot—as with a baby's bath, it should be possible to dip the point of one's elbow into the water and find that it gives a pleasantly warm sensation but is easily bearable, *i.e.*, it should not be above 95–100° F. On emerging from a bath a dog will shake himself thoroughly, and then, if not curbed, will roll on the floor or ground and speedily cover himself with dust or dirt! It is therefore necessary to give him a brisk rub down with old (but clean) towelling, whereupon he may be allowed to dry off in a warm place free from draughts or, in good weather, put on a lead and taken for a brisk walk. In the case of many of the long-coated breeds it is customary to have them trimmed at the beginning of summer, and this is a sensible precaution that may avoid a good deal of distress during hot weather. The smaller long-haired dogs, in particular, such as Scottish Terriers, suffer unduly from the heat if their coats are grown too long.

### FEEDING OF THE DOG.

Meat, usually beef, is generally regarded as the staple article of the dog's diet. It must be pointed out, however, that although the dog is naturally a carnivore (flesh-eater), ordinary meat (muscle or "flesh") is not a completely adequate diet, and lacks certain factors which the wild dog would find in the blood, bones, liver, and other organs of his prey. Furthermore, it has been proved scientifically that dogs can thrive on a meatless diet. In spite of these reservations, however, meat must be regarded as an excellent article of food, and if properly supplemented will prove very satisfactory. In recommendations which have recently been made in America (Dr. S. R. Speelman, of the U.S. Department of Agriculture), it is suggested that meat (beef, lamb, mutton, or horseflesh, providing that the last is fed regularly and not spasmodically) or meat substitutes (fish, milk, eggs, etc.) should constitute one-half of the daily ration, and that the remainder should comprise approximately equal parts of cereal substances (bread, biscuits) and of vegetables (carrots, spinach, onion, beet, etc.). It is pointed out that many dogs do not accept the vegetable material readily. On this basis, the approximate quantities of food required by adult dogs have been calculated as follows:—

Weight of dog.	Total food per day.
1 lb.	2 oz.
10 lb.	12 oz.
25 lb.	1½ lb.
50 lb.	2 lb.
75 lb.	3½ lb.
100 lb.	4½ lb.
150 lb.	5½ lb.
225 lb.	7 lb.

(Weights of up to 10 lb. would include the toy breeds, 25 lb. would correspond to a Fox Terrier; Airedale Terriers and Retrievers would fall into the 50–75-lb. class, and the larger weights would be those of the very big breeds, such as the St. Bernard.) The quantities given are, of course, an approximation and no more. Dogs which lead a very active life will require more, while those which take little exercise, or which tend to put on fat easily, will require less. Common sense is necessary, and great care must be taken not to over-feed or to under-nourish.

Meat is probably best fed raw, or lightly cooked, but many animals appear to have a preference (probably through habit) for well-cooked meat. In any event, the meat should not be "over-done," as there is substantial evidence that prolonged heating destroys much of the food value of the meat protein. Fish is an excellent substitute. There need be no anxiety about the greed with which a dog swallows lumps of meat and also neglects to masticate them. The teeth of the dog are for tearing meat, he is not concerned with biting his food up small; indeed, his salivary glands contain no digestive ferments, as is the case with some other animals.

Milk is almost essential during pregnancy and lactation (see below), and may well be included

in normal dietaries. Whether or not bones should be fed is a matter which has been hotly debated, but for mature household dogs the evidence suggests that they are unnecessary. (The teeth of racing greyhounds, which receive a "sloppy" diet, are quite as good as those of the average household dog.) Bone-feeding is responsible for much trouble, including constipation, actual impaction of the rectum, and lodgement of pieces of bone in the mouth or throat. The value of bones is, of course, that they contain large quantities of essential mineral substances, and for this reason the inclusion in the diet of bone-meal, or of steamed *bone-flour*, or, preferably, a mineral supplement, is recommended. Only very small quantities of these substances are required.

Bread is an article of food which is often overlooked in the case of the dog, but there is no doubt that wholemeal bread is very suitable indeed, provided it is not fed to excess.

The answer to the question whether a dog requires vegetables is, in the main, no. From the Vitamin C standpoint they are quite unnecessary, since it has been shown that a dog manufactures this vitamin for itself, but the fact remains that many dogs, particularly of the toy variety, enjoy a few slices of banana or apple, and there is no harm in letting them pander to their taste.

Clean fresh water must be provided at all times.

In addition to the diets recommended above, there are on the market several tinned dog foods which claim to be complete, or almost complete, diets for the dog. It must be said that many dogs (including those of the writer) have remained in excellent health when receiving one of these foods as a large part of the diet over long periods. There is, therefore, little that may be said against the widespread use of the better varieties of such products. Again, it is a matter for common sense; if an owner finds that his animal is thriving on such a diet, he is wise to continue to use it.

It is customary to give dogs two meals a day. There is no need to give more than two to healthy adults, for the dog's stomach is exceedingly capacious and adapted to long gaps between meals. Many dogs thrive on only one meal in twenty-four hours. Whatever plan is decided on, regularity should be adhered to, and a meal or meals given at the same times every day. Dogs require vitamins A and D and B complex. There are several ways of administering these, but the special commercial preparations, including the modern form of condition-powder tablet, are the most convenient.

The pregnant and lactating bitch require special consideration. The food requirements are very much increased in a bitch which is carrying puppies, especially towards the end of the period. Normally, appetite is not a complete guide to a dog's food requirements, but in pregnancy and lactation the bitch must not be allowed to go hungry. It is quite normal for a heavily pregnant bitch to require over one and a half times her normal amount of food, and in lactation her requirements will increase still further. Milk is a most excellent article of diet at this time; indeed, there is no better way (apart from commercial preparations) of replacing the milk which the bitch is giving to her own puppies.

Up to the age of three weeks or so, puppies need have mother's milk only, but at any time after this it is a sound policy to give them additional food, and so spare the mother and also render weaning (at from six to eight weeks) a gradual process. At first a little cow's milk or one of the commercial "dog-milk" preparations may be given, and gradually the puppies should be encouraged to eat solid food. Eggs (if they can be spared), wholemeal bread in milk, or even finely minced meat may be given, at first in very small amounts but later in larger quantities. If this process is carefully carried out, there will be far less trouble at and after weaning time. After weaning, puppies should receive five or six meals a day, and this number may be cut down gradually until two or three only are given to the fully grown dog. (The smaller breeds are fully grown at about a year.) More meat or meat substitutes and milk, and less cereal or vegetable matter, should be fed to the growing dog as compared with the adult. This fact is very important, as the substances present in meat and milk are

required for laying down the growing tissues. It is possible to rear puppies by hand from birth if the bitch for any reason should die. It requires great patience for the first two or three weeks, as naturally the puppies will require feeding once or twice during the night. Special milks for puppies, unavailable for many years, are now obtainable again. Cow's milk requires enriching with fat and sugar to approximate to the composition of bitch's milk. Feeding will have to be done at every two or three hours, and a very useful gadget is a fountain-pen filler attached to cycle-valve tubing. Very small quantities are required for the first two or three days, and a level teaspoonful of milk is more than sufficient for the average terrier at first. Even with the best care in the world hand-fed puppies tend to be weaklings and do not grow as fast as those naturally fed. A foster bitch, if obtainable, is much to be preferred.

### BREEDING OF DOGS.

It is natural for adult dogs of both sexes to wish to breed, and in the case of the female especially it is an excellent thing if one can arrange for a suitable mating to take place. Bitches come "into season" or "on heat" (lay terms for oestrus) at approximately six-monthly intervals, but it is not advisable to breed from the first season, which occurs usually at about eight to nine months of age. The periods of season generally occur between January and March and in early Autumn, but there is no fixed rule. Each season lasts for three weeks. For the first seven days, approximately (pro-oestrus), a bitch does not permit mating, though during this time she is a source of strong attraction to all males in the neighbourhood. At about the seventh to the tenth day the blood-stained discharge, which ushers in the heat, stops; this is usually taken by the breeder as an indication that the bitch will stand to service. If possible, it is always better when puppies are wanted to allow mating to occur more than once. Under natural conditions a dog and bitch are usually strictly monogamous and mate for life, and during the period of oestrus will mate many times. A dog and bitch that are kept together all the time will probably behave naturally, but under domestication both dogs and bitches usually become promiscuous. Many bitches will in fact, once they have accepted service for the first time during oestrus, accept almost any dog on the succeeding days, and the phenomenon of superfecundation, i.e., the production of a litter that is fathered by two males, may occur. It is therefore wise to retain strict control of the bitch throughout the whole of the three weeks or so she is in season. At the end of season the bitch passes into a state of "metoestrus" if she has not conceived.

If a bitch conceives, she carries her puppies for a period of about nine weeks. There is, however, a normal variation of fifty-eight to seventy days, and puppies born before the fifty-eighth day sometimes live. The number of puppies born varies with breed; in the smaller terriers it is usually from four to six, but in Alredales and Alsations the number may be eight to ten, and the larger breeds tend to have even more offspring at a time. Birth usually takes place fairly easily in the larger breeds, but there is often much difficulty in the case of the short-legged breeds, such as Scottish and Sealyham Terriers, Pekingese and Dachshunds.

A short while before her puppies are due, a bitch will "make her bed." Owners are often amazed at the destruction of soft furnishings, or even of wall-paper, that a previously well-behaved bitch may carry out at this time; it is therefore by far the best to provide a suitable box (if the animal has not one already). A smooth flooring such as a strip of linoleum serves for the bitch to give birth to her puppies. Her instinct to tear up everything given to her for bedding may lead to suffocation of the puppies by pieces of bedding. Provided labour occurs in a warm room, it is better to remove each puppy as it is born, placing a warm bottle underneath, and bring it back to the mother when the last birth has occurred. At this time the bitch should be watched carefully for any discharge from the vulva or for any evidence of straining. If either of these occurs without



results, it is advisable to send for help as early as possible, especially in the case of the smaller breeds. Many hundreds of bitches are lost through neglect at this time, and usually because it was not suspected that anything was wrong. If the discharge becomes bloody, or green, help should be obtained *at once* if no puppy is delivered. Similarly, any great delay between births is a matter for concern. The afterbirth usually follows the puppy within a few minutes, but puppies are sometimes delivered in their foetal membranes, and in this case the latter should be gently but quickly removed. It is quite normal for the umbilical cord to remain attached to the puppy, but the bitch will normally break it by biting through it.

The mother will wash and attend to the newborn puppies, and after the last is born it is a good idea to burn all the mess and to provide clean newspaper, but do not worry or frighten the bitch more than is necessary. For the care and feeding of the bitch and her puppies see the sections on Management and Feeding. Puppies, like kittens, are born with their eyes closed, but open them after about nine days.

The phenomenon of pseudopregnancy is common in bitches, and indeed to a minor degree it is probably present in most bitches following an oestrus without conception. In some bitches, however, presumably those with strong maternal drives, the changes in the ovary may be accompanied by external signs of "phantom" or "ghost" pregnancy. These may include not only enlargement but actual functioning of the mammary glands, and the making of a "nest" by the bitch just as if her puppies were really due. The average duration of pseudopregnancy is usually given as about two months, and although variable, it is often sufficiently near to the correct time after oestrus that everyone suspects the bitch to be truly pregnant. The condition may be suppressed with the aid of modern drugs, but in some instances it is not realised that the condition is not real. In many cases only professional advice can solve the mystery, and X-rays have often proved necessary to ascertain the truth, particularly in fat bitches of the heavier breeds. It might be well to note, at this point, that there is another condition of the older bitch that is known as *Pyometra*. This condition usually reveals itself at the same time as the ghost pregnancy, but is accompanied by considerable disturbance of health, coupled in many instances with purulent discharge from the vagina. A bitch which is off-colour in the weeks following pregnancy, or which develops a discharge from the vulva (especially one which is dark in colour), may well be a pyometra subject. The disease is most serious, and usually requires surgical intervention. As the best chance of success is to operate early, a veterinary surgeon should be consulted immediately.

#### DISEASES AND INJURIES OF THE DOG.

**Canine Distemper and "Para-distemper"** (Including so-called "Hard-pad").—It has long been recognised that the commonest and most serious disease of dogs throughout the world is canine distemper. Dogs of all ages and breeds are susceptible, and no dog is free from the risk of infection unless it has recovered from the disease or has acquired an immunity for other reasons. (For a definition of "immunity," see Medical Dictionary.) The disease is caused primarily by a minute agent known as a filterable virus (see definition of "viruses" in Medical Dictionary), which may be of varying type in that it will attack the body in different ways. Thus some strains of the virus are known as "neurotropic" because they show an affinity for the nervous system. Sometimes a dog will apparently recover from an attack of distemper, only to succumb later to "fits" or other nervous manifestations due to permanent damage to the central nervous system by the virus. Often, however, the virus is not fatal in itself, but will lower the dog's resistance and permit the entry or the activity of bacteria that may lead to pneumonia or other serious effects. These so-called "secondary invaders" as the bacteria are

work it is too late to expect the best results from the use of serum, and whether or not the dog will live through will depend upon the severity of the attack, the dog's powers of resistance, and good nursing. It is therefore most important either to prevent the disease by vaccination or to be able to send for veterinary attention (and hence for an injection of serum) *immediately* an attack is suspected. Any puppy which is listless or off its food, or which may throw a fit, or which is obviously unwell with other symptoms (*e.g.*, cough or diarrhoea) may well be in the early stages of distemper, and it is *then* (not the next day) that help should be sought. Many thousands of puppies (and older dogs) that have been injected with serum in the early stages of the disease have become perfectly normal within forty-eight hours. On the other hand, the number of dogs that die in Great Britain alone from distemper and distemper-like infections must assume enormous proportions. Distemper is a highly infectious disease, and it is important that the owner of an infected animal should do his best to avoid contact with other dogs, ferrets, or mink. Ferrets and mink are very susceptible to canine distemper. On the other hand, human beings and cats are *not* susceptible to canine distemper, and the so-called distemper of cats is quite a distinct disease.

A highly satisfactory means of vaccinating puppies against distemper was worked out about 1926-30, and this—named the "Laidlaw-Dunkin" after its two inventors—has since afforded protection to thousands of animals. Vaccination consists either of the "vaccine-virus" method, in which a vaccine (see Medical Dictionary) is injected first, followed usually after about fourteen days by an injection of the virus, or of the "serum-simultaneous" or "serum-virus" method, in which a puppy receives two injections on the same day, one of virus and one of serum. Other means of conferring immunity have since been developed, including the injection of modified virus, *i.e.*, virus that has lost its power to produce disease but has not lost its power to call forth the antibodies that protect against the infection. A suitable modified virus is now grown on developing egg embryos.

There have, from time to time, been reports of "breakdowns" in dogs vaccinated against distemper. Sometimes these may have been due to the fact that the organisms that act as "secondary invaders" in distemper may sometimes set up disease on their own account should resistance be lowered from other causes. It has become increasingly realised, however, that many such breakdowns were due to an infection which, while closely similar to canine distemper—and in all probability a variant of it—was sufficiently different not to be controlled by the antibodies to ordinary canine distemper. From the fact that one of the features often seen in such cases was the presence of corn-like lesions on the pads of the feet, this infection has been termed "*hard-pad*." The term is not really very suitable, for hard pads are not a constant feature and do not appear until the disease has been active for some days. The earliest symptoms are often nervous in character. "Hard-pad" can, of course, attack unvaccinated as well as vaccinated dogs of almost all ages and since the war it has probably been more common in Great Britain than "ordinary" forms of distemper. A suitable method of vaccinating puppies is now available for use against both the forms of distemper, *i.e.*, protection is afforded against the "hard-pad" as well as the other type. This vaccine, prepared from virus grown on the developing egg embryo, is now widely employed in place of the Laidlaw-Dunkin methods described above.

**Rubarth's Disease.**—Another virus disease of dogs (and foxes) is known as Rubarth's disease, after one of its discoverers, or sometimes as infectious hepatitis. This disease has been recognised in Sweden ever since the 1930s, but in Great Britain only since the end of the war. The condition is extremely sudden in onset, and an affected dog may be found dead. Many cases are, however, mild, and in some instances only one or two out of a large group of dogs have been affected. The changes seen after death vary, but the findings in the liver cells are usually character-

Medical Dictionary) may prevent the effects of secondary infection.

Canine Hysteria (called "fright disease" or "running fits" in the U.S.A.) is an alarming but not necessarily serious condition (in that it can often be cured very readily) which appears to arise from a variety of exciting causes. The affected animal rushes around wildly, often screaming and howling, and obviously loses all sense of whereabouts or ability to recognise people. After a more severe attack (and there are all degrees up to a full epileptiform fit) the dog may appear quite exhausted, but returns to normal. Sometimes there are many attacks in one day. The dog will not wilfully attack people during a bout of hysteria—at least, that has been the experience of the writer—but is very difficult to control. Apart from ensuring that the dog does itself no grievous bodily harm, there is little that can be done until the attack has subsided. Then the animal should be kept as quiet as possible and given a sedative such as potassium bromide, of from 10 to 60 gm. (i.e., from two to twelve 5-grain tablets), pending veterinary attention.

Hysteria may be an hereditary taint, derived from one or other parent. In certain circumstances, however, it may arise in apparently normal animals. There are several possible causes (including parasites), but a definite one is the bleaching agent—nitrogen trichloride or "agene"—employed for some years in the manufacture of flour, and hence present in white bread and certain dog biscuits. Indeed, the clear demonstration that agene could set up hysteria in dogs, and subsequent scientific work, has led to the introduction of regulations that will lead to its abandonment as a bleaching agent in favour of other methods which have been found not to cause hysteria. There has already been a marked decline in the incidence of hysteria due to dietary factors.

Rabies is a fatal disease of dogs, and is also due to a "filterable virus." It is transmissible to the human being and to many other species, but has fortunately been absent from Great Britain for many years. Stringent precautions are taken to prevent its entry, and dogs which are brought into Great Britain must spend a long period in quarantine.

Tonsillitis appears quite frequently in dogs, and seems in many cases to be part of a more generalised infection. It demands expert treatment, but although it may persist for a long time, it usually yields to treatment.

Nephritis.—Inflammation of the kidneys is unfortunately all too common in dogs, and in adult males in particular there is a high incidence of chronic kidney damage. One of the symptoms is a marked thirst. Sometimes this condition is a sequel to an infection known as *leptospirosis*, which calls for prompt veterinary treatment if death or permanent damage is not to follow. It is always worth while seeking professional advice for a dog that drinks excessively.

Anal Glands, which are found in the dog and in other carnivora, often give rise to trouble. Animals which "rub themselves along the ground" are not necessarily affected with "worms," but with impaction of these two little glands, which are situated one on each side of the anus. They secrete a peculiar, dark-coloured, very offensive fluid, which sometimes is not discharged properly and causes the animal great discomfort. The glands in such cases should be relieved periodically. Those who do not mind this somewhat dirty task may perhaps learn how to do it themselves. Occasionally, segments of tapeworm are responsible for the impaction, but usually the trouble has nothing to do with worms. Whenever a dog pays considerable attention to his anus, this impaction should be suspected. Actual infection of the glands is also fairly common, and demands expert attention.

Diseases of the Ear, especially of the outer ear, are very common in dogs. The dog's outer ear is somewhat more complicated than is our own, and the drum is set more deeply. Hence it is easy for wax and dirt to accumulate, for various parasites to establish themselves, and for inflammatory conditions to result. The word "canker" (which has no precise meaning in

more serious or chronic forms of inflammation of the outer ear canal. It is not difficult to diagnose "ear trouble," as the affected animal usually shakes its head or worries or scratches its ear and rubs it along the ground. The ears should be inspected regularly to see that there is no great accumulation of wax or dirt. Cotton-wool twisted on to the end of a match-stick or orange-stick is quite satisfactory for cleaning out the ear, providing care is taken. A dog which is continually worrying its ear, or which has ears which are obviously diseased, should not be neglected, as the sooner expert treatment is begun the more readily will the condition be cured. Even if the lining of the ear is greatly thickened through inflammatory reaction, and the lumen nearly occluded, it is still possible for a plastic operation to be performed. Many hundreds of such cases have been successfully treated in this way. A considerable percentage of inflammatory conditions of the outer ear is associated with ear mange mites. Possibly 50 per cent. of cases in dogs in Great Britain have a parasitic origin. In such an event treatment with modern anti-mange preparations should be carried out.

Deafness in certain white dogs (e.g., in some Bull Terriers) appears to be hereditary, and is quite incurable. Old dogs often become deaf, and deafness has been produced experimentally in young puppies by feeding them on a deficient diet.

Diseases of the Eye are very common in dogs, and are often the result of injury. Except for minor discharges from the corners of their eyes (and in younger dogs especially it must be ascertained that these are not a symptom of distemper or secondary infection) any eye disease is sufficiently serious to merit professional advice. Boracic lotion is not suitable for the eyes of dogs. It is slightly irritant, and dogs are apt to scratch and make the eyes raw after application. Colloidal silver eye lotions and ointments are far more suitable pending the advice of a veterinary surgeon. In eye inflammation avoid sunlight and wind. For some days in the early stages of inflamed eyes, the light in the room should be subdued. Pekingese seem to be especially prone to eye disease, but the remarkably unwholesome appearance of some affected eyes in this breed is not necessarily evidence that recovery is unlikely. Steps should be taken to ensure that the dog does not inflict further injury on an already diseased eye. Cat scratches are a frequent source of inflammatory conditions of the dog's eye. Eyes must never be neglected, for the consequences are serious.

Skin Diseases are common in dogs, and may be contagious—as they are in the majority of instances—or non-contagious. Apart from the inflammation of the skin that occurs in spring and autumn, during the shedding of the winter and summer coats respectively, by far the commonest cause of diseases are the skin parasites: fleas, lice, and mange mites. Owners are often horrified to learn that their dogs are infested with these creatures, and in a few cases filthy home surroundings will lead to the dog being infested with the human kind of flea. Far more often he has his own particular variety of flea, and there need be no shame on the part of the owner. Moreover, many fleas, such as those of the rabbit, the rat, and the hedgehog, will transfer themselves to the domestic dog during his peregrinations. Treatment of these parasitic diseases has been revolutionised in these last few years by the use of modern preparations such as D.D.T. and benzene hexachloride (Gammexane); the latter after one or two applications at about a week's interval, has proved effective for fleas, lice, and mange mites. Apart from those obvious infestations of fleas and lice, skin complaints of a persistent nature, of which the cause is not obvious, should be placed in the hands of a veterinary surgeon.

Diseases of the Teeth are very common in household dogs. A serious systemic disease, such as distemper, may leave the enamel of the teeth permanently pitted, hence "distemper teeth." More serious than this, however, is a form of pyorrhea, which is really a disease of the gums rather than a primary disease of the teeth them-



dition progresses the teeth may become loosened. Particles of food become lodged between the teeth or between teeth and gums, and add to the inflammation and to the smell of the breath.

This disease may, if unchecked, become very serious. In many cases extraction of one or more teeth is indicated, but unfortunately it is not always possible to do this. The condition demands expert attention.

Another common condition of dogs' teeth is the deposition around them of "tartar." This should be removed by scaling or by special use of dental forceps. Some breeders and others may themselves have learnt how to carry out these operations with the requisite skill and care, but they are not easy to the amateur, and it is essential that no harm be done to the animal's soft tissues by injudicious use of the instruments. Ordinary dog-owners are strongly advised to take their dogs to a veterinary surgeon in order to have the "tartar" removed.

Most puppies lose their first or "milk" teeth quite regularly between the ages of three and five months, but sometimes there is difficulty and the primary teeth are not shed properly. These cases should be treated by a veterinary surgeon before the permanent teeth are thrown out of their proper alignment.

One hears very much about "teething fits" in puppies, and while these occur, owners should be very careful to ensure that a "teething fit" is not a sign of distemper, which often starts with a fit. As puppies of this age are so susceptible to distemper, it is advisable to seek professional advice should any form of fit occur. It may save much time, money, and trouble, and even the animal's life.

**Internal Parasites: "Worms."**—It is probable that more nonsense has been talked and written about "worms" in dogs than about any other canine subject. According to some people, "worms" are the root of nearly all doggy evil, and so long as a dog is regularly "wormed" all will go well with him. These beliefs are frankly absurd. The real facts are very different, and are stated in as brief a fashion as possible in the following sentences. In this country dogs are infested by a species of "roundworm" (a creature which is a dirty-white colour and in shape somewhat resembles the common earthworm) and by several species of "tapeworm," which are also whitish but which are flat and are made up of many small segments joined to a little "head" which is attached to the lining of the gut. In spite of all that is said, tapeworms as such are rarely responsible for much harm to the dog. They are a nuisance, and attempts to remove them should be made by administration of the appropriate drug. Occasionally, segments of worm are responsible for impaction of the ducts of the *anal glands* (see above).

The roundworms are much more dangerous to young puppies, although once over the danger period of four to eight months of age, a dog will rarely suffer much from them. It seems probable that puppies are sometimes infected before birth from their mother. From all that has been said above owners will realise the necessity of taking professional advice about young dogs which are ill, and any signs of "worms" in young puppies—either in the stools or by some obvious intestinal upset or bloated appearance of the belly—should be acted upon. One last word about this aspect of worms—do not assume that your adult dog has "tapeworms" unless you see some evidence in his stools. There are so many "signs of worms" that veterinary surgeons must at times get a little tired of being assured that "My dog has worms" because of some trivial habit connected with appetite.

There is, however, another side to the study of tapeworms, and one which is not generally realised. The tapeworm which is found in the dog represents one stage in the life-cycle. The eggs, which are present in the ripe segment passed by the dog, develop, not in the outside world, but in another animal altogether. Thus one of the commonest tapeworms in this country has an intermediate stage, as it is called, in the flea, and it is when the flea is eaten by the dog that this intermediate stage develops further to become a tapeworm. Another tapeworm has an intermediate stage which develops in the sheep, and

a third has one which develops in the ox. There is a fourth tapeworm which has an intermediate stage which may develop in man; to set up serious diseases in certain cases. Children may become infected through handling the dog, and so picking up the eggs, which may then be eaten through putting the hands in the mouth. The dogs which are most likely to be infested are those which have the opportunity to eat freshly killed sheep and other food-animals. An ordinary household dog is not likely to be infested, and people should not worry unduly in this connection, providing they do not allow their dogs to stray into the wrong places. It is illegal to allow dogs to enter a slaughter-house, but unfortunately one has often seen dogs in such places.

**Tumours, including malignant tumours ("cancers")** are relatively very common in the dog—probably as common as in the human subject. Space does not permit of a detailed account, but the following examples of growths may be mentioned: a proliferation of warts on the skin of puppies (usually disappear spontaneously); a true cancer of the tonsil in middle-aged and older dogs of both sexes; cancer of the mammary glands in bitches (both incurable); fatty growths of the vagina of bitches (amenable to operation).

Space does not allow of the discussion of other diseases, but it should be pointed out that dogs are susceptible to human and bovine forms of *tuberculosis*, especially the former. In a household which contains a tubercular person, the dog should be watched for any signs of illness, and the thought entertained that he might be responsible for the further spread of the disease. For a discussion on ringworm see the appropriate heading in the section on the cat (p. 959).

**Accidents and Injuries.**—In these days of swiftly moving motor transport, street accidents to dogs are extremely common. Many could be prevented by training the animal to walk to heel, by the use of a lead in busy thoroughfares, and by not allowing dogs to roam the streets unaccompanied—a thoroughly bad habit. Sometimes the victim escapes with a scare and a few bruises, and at others death is mercifully swift. In the vast majority of accidents, however, a more or less serious injury is incurred, and if the animal is unable to move, the police should be notified immediately. The dog is best left quiet, and it is not recommended that attempts be made to administer brandy or other supposed "stimulants" unless help is markedly delayed. Excessive hæmorrhage may in some instances be prevented by common-sense application of principles learnt in first-aid courses.

One of the commonest accidents to dogs, especially to young dogs, is a fracture involving the head of the femur, or thigh-bone. Inability to put one of the hind legs to the ground, or to bear any weight on this limb, is an indication of such an injury. (This injury may occur also from falling off a chair or wall.) Professional help is, of course, required in such cases.

**Cuts and Bruises**, if not serious, may be treated at home as in the case of human beings. The indiscriminate use of tincture of iodine is not to be recommended, and spirit alone makes a more satisfactory dressing in most cases. Simple washing and removal of dirt are usually sufficient. The dog (and also the cat) are very liable to sepsis, and it is best in such cases to send for proper assistance early, or there may be grave trouble. It is probable that in nature many of the flesh-eating animals end their lives as victims of the sepsis following wounds.

Injuries from cat-scratches are exceedingly common, as are bites from other dogs. These are serious, as they more readily result in septic places. The scratch or bite sometimes penetrates quite deeply, leaving a pocket which fills up with pus. This pus may spread under the skin to form sinuses. Never neglect such places.

There are a few concluding remarks on the treatment of the diseases of the dog:—

(1) It is not correct that "water should be withheld from a sick dog." It is true that an animal which is using water only to vomit, or which is drinking excessively, should have its water intake restricted, but it is wrong to deprive a dog altogether.

(2) There have been such wonderful advances

in the field of veterinary anaesthetics that there is nowadays little to fear in this connection from operations to dogs and cats. The records over the past few years at the Royal Veterinary College, London, have been most encouraging, and the anaesthetic risk is now small indeed.

(3) When a dog's life is a burden to him, it is unfair to keep him alive, and he should be put to sleep. It must be realised, however, that putting a dog to sleep is a very skilled task. It is made much easier if an owner will allow his veterinary surgeon to administer an anaesthetic and not allow the animal "to come round," and shooting is also straightforward and painless if *skillfully* carried out. There are no "magical ways" of destroying human or animal life, and an owner must not expect his veterinary surgeon to be able to bring about death merely by holding a pad to the dog's face. It is far better that the task be carried out at a veterinary surgeon's own premises, where there is skilled assistance.

## CATS.

Many of the general remarks in the preceding section apply equally to cats, and will not be repeated unnecessarily in the following paragraphs.

### BREEDS AND VARIETIES OF CAT.

The following breeds and varieties are recognised for registration purposes by the Governing Council of the Cat Fancy:—

#### Long-haired Cats.

Black	Tortoiseshell
White (Blue-eyed)	Tortoiseshell-and-White
White (Orange-eyed)	Blue Cream
Blue	Brown Tabby
Red Tabby	Chinchilla
Red Self	Smoke
Cream	Silver Tabby

#### Short-haired Cats.

Black	Spotted
White	Russian Blue
British Blue	Manx
Cream	Abyssinian
Tortoiseshell	Siamese (Seal-pointed)
Tortoiseshell-and-White	Siamese (Blue-pointed)
Silver Tabby	Siamese (Chocolate-pointed)
Brown Tabby	Burmese
Red Tabby	
Mackerel-striped Tabby	

Pedigree breeding and showing are practised with a very small fraction of the total cat population of Great Britain, and the majority of these remarks will be concerned with the ordinary household cat. Nevertheless, in recent years there appears to have been a considerable increase in pedigree cat breeding. Registration—which is essential for showing and pedigree purposes—is controlled by the Governing Council of the Cat Fancy, of which the secretary (1952) is W. A. Hazeldine, 1 Roundwood Way, Banstead, Surrey. Many of the breeds listed above have their own societies, which are affiliated to the Governing Council. The addresses and particulars of these and other cat societies and clubs may be had on application to the secretary of the Governing Council. The two most popular varieties of cat are the Blue Persian and the Siamese, and in peace-time an exclusive show is held for each of them. In addition to these shows there are five big Championship Shows open to every variety of long- and short-haired cat, while there are classes for cats and kittens at some of the Agricultural Shows.

### CHOICE OF CAT.

Although there are, as noted above, many varieties of cat, most people are content to accept an ordinary kitten, and for them the chief points to consider will be: (a) whether to have a long-haired or a short-haired animal, (b) whether to have a male or female, (c) whether or not to have the kitten "doctored" (i.e., castrated or spayed). As a general rule, short-haired cats are probably more suitable for the average household, since their fur does not become shed so noticeably and they probably suffer less from "fur-balling." Nevertheless, many long-haired cats are so

attractive that they will obviously be preferred, and there is no reason why they should not be chosen. Sex is a rather more important question, although, as may be seen in the section on management, it is possible to have both males and females "doctored." Male cats which are kept as entires are often a nuisance in that they make abominable smells in the house and spend much of their time in fighting. These characteristics are by no means invariable; but they are so common as to justify the castration of the majority of males. Females are generally credited with a greater attachment to the home (although they wander when "in season") and with being better mousers. The principal objection to females is that they seem to be bearing kittens almost continuously. In normal circumstances it is, of course, quite impossible to prevent cats from mating by keeping the female in confinement during her season, a practice which is frequently adopted in the case of the dog. For one thing, most people are never aware when their female cats are in season.

Whatever animal is chosen, it is essential to pick a healthy and preferably a fairly young—but not too young—kitten. It is best not to accept a kitten under eight weeks of age.

For those who wish for something a little out of the ordinary, Siamese cats make excellent and highly intelligent pets. Siamese kittens are born white, but gradually develop their even pale fawn colour, with cream on belly and chest and with "seal brown" mask, ears, legs, feet, and tail. The coat is very short, and the eyes are blue. There has long been a popular belief that Siamese cats are delicate creatures, but the present writer has seen healthy specimens, kept under ordinary household conditions, living to a mature age. It is not wise to keep a male Siamese as a household pet. The male is a fierce fighter, and is generally a worse offender in the house than the males of other breeds.

Many people find Manx cats attractive. Instead of the normal large number of tail bones, they have but three, and hence appear almost tailless. One should beware against fraudulent amputation of the tail of ordinary cats, which are then described as "Manx."

### MANAGEMENT OF THE CAT.

The cat is an independent creature, so much so that one may say that to a large extent it manages its own affairs. This, however, is not true of all cats, and every reasonable attempt should be made to provide the cat with a comfortable and friendly home. Cats are highly intelligent, and if sufficient patience is exercised they will respond to a very great degree to human attention. Kittens should not be neglected, but should be talked to and played with just as are puppies. Many cats, especially young cats, make excellent playmates for children.

In order to prevent to a large extent their nocturnal wanderings, many cats of both sexes are castrated or spayed (the popular lay expression for this is "doctored"). In the male cat the testicles are removed by an operation which is almost always safe and simple if carried out skillfully. From three to four months is a good age at which to have this done. Female cats may also be "doctored." As the female glands or ovaries lie within the body cavity, this operation is a major one, but it is nevertheless quite a straightforward, though a more expensive, procedure if conducted at the right age (about five months). Many thousands of female cats have been so operated upon at the Royal Veterinary College, London, and the subsequent health of these cats is believed to have been excellent. Indeed, it has been said that a spayed female makes one of the best of all household cats.

Cats may choose to sleep in a variety of places, and will often lie on beds, chairs, mats, and other warm places. It is a sound policy to provide them with a box or basket, and to encourage them to use newspaper as a bedding. Most cats will take well to newspaper. The bed should be placed in a warm site—it is of little use putting it in a cold corner of a room and expecting the cat to lie in it.

Owing to the fact that, even in play, a cat's claws may inflict serious injury, dogs and cats do not always make the best of house companions.



Nevertheless, the traditional enmity of cat and dog is often overcome, and if the two are brought up together they often make firm friends, sharing the same basket or hearth-rug and feeding together without serious consequences.

A cat normally attends to its own toilet, and everyone must be aware that a cat devotes long periods each day to cleaning and washing itself. Except in special cases, therefore, bathing is quite unnecessary, while in short-haired cats especially, grooming, too, is superfluous (this does not apply to show-cats). For some reason (and sometimes, apparently, because an owner attempts to assist in the daily grooming) a cat may cease to wash or care for itself. Such an animal is a dejected sight, and should be taken to a veterinary surgeon to have its matted fur cut or combed, and its dirt removed. Such animals (unless they completely re-acquire their self-respect) must be groomed regularly if they are to be kept at all.

All household cats are accustomed to take their own exercise, and it is advisable (except in any special circumstances) to allow them free access to and from the outer world. Do not shut your cat in the house for a long period and then blame it for making a mess. Cats are clean creatures; they normally dig small holes in which to defecate or urinate, and subsequently cover the deposit with earth. If, therefore, they are for some reason debarred temporarily or permanently from access to a garden, they should be provided with a box or tray containing soil or cinders. Indeed, in many types of houses it is a good plan to encourage kittens to use such a device. (Note the corresponding remarks about puppies.)

It is generally stated that "cats never forget a blow," and for that reason it is recommended that cats are not chastised. It may be said that, if a cat (or dog) be brought up conscientiously and well, it should never, or very rarely, require such punishment. An animal which has been brought up properly knows what is right and what is wrong.

For pedigree cats, or those kept in confinement for other reasons, see the relevant remarks in the section on breeding.

#### FEEDING THE CAT.

Although most cats are capable of supplementing their diet by catching small rodents or birds, it is unwise to rely on this as a regular source of food. The idea that hungry cats make the best mousers is by no means always correct. Indeed, animals that are in poor condition are less likely to be successful hunters. Moreover, while the riddance of pests is an excellent matter from the human point of view—and one of the reasons why the keeping of cats is economically justified—the "cruel" fashion in which most cats tackle their prey is repulsive to most of us.

It is therefore necessary and desirable to provide regular daily feeding. Kittens should receive several meals a day, but by the time they are six months old the number of daily feeds should be reduced to one, or at most two. Most cats (many Siamese are exceptions) are extremely fond of milk, especially if it is creamy, and the cat's love of fish is well known. Many meats, especially rabbit meat, are relished, and a diet high in "animal protein" is indeed the aim, always provided that it contains sufficient "dietary energy." It is significant that cat's milk has a higher content of fat and sugar than cow's milk, i.e., it is a richer source of energy. Some of the proprietary bitch-milk substitutes are nearer to cat's milk in composition than is cow's milk.

Cats are also extremely fond of liver. Some of the proprietary cat foods—the better ones of which are excellent—and vitamin tablets contain liver, which is a rich source of the vitamin B complex.

Within reason a healthy kitten should be fed to appetite, always provided good-quality foods are available. The amount should be restricted when they are adult, however, except for pregnant and lactating cats, which are sometimes referred to as "queens" as opposed to the male "toms." An average daily allowance of solid food for a healthy non-pregnant adult cat should be of the order of  $\frac{1}{2}$  oz. per 1 lb. body-weight.

Cats are fastidious eaters; they usually sniff and examine carefully any strange or doubtful food. At the same time they are often greedy,

especially with relished food to which they are accustomed, but fortunately they can, like dogs, vomit very readily. Here, incidentally, is one very good tip—an excellent emetic for both cat and dog is a small crystal of washing-soda, given as a pill. People are usually amazed at the way this simple device results in a dog's or a cat's bringing up undesirable food.

It is important not to overfeed cats, and it is almost equally important to prepare all food in a clean manner, and to make it as attractive as possible. Cats will greatly appreciate this care. While milk is an excellent food for kittens (see under breeding), and is relished by most adult cats, it must be supplemented by solid food.

Clean fresh water should be provided at all times, even if the cat appears to drink it but little.

#### BREEDING OF CATS.

Pedigree animals are normally confined, and their breeding is strictly controlled. Ordinary household cats are at the opposite extreme, and there is little that can be done to prevent their mating. The length and scope of this article does not permit of a discussion of controlled mating.

Scientifically, there is as yet a good deal to learn about the reproductive behaviour of the cat. As an American physiologist has succinctly put it in a description of the reproductive cycle of the female cat, "No two authors agree." In Northern Europe there are two main heat periods a year, in spring and early autumn, but some animals may appear in heat at any time from January to July, and those who keep female cats in confinement describe their charges as "calling" quite frequently if not mated. A cat which is "in season" or "on heat" is often observed to be behaving in a quite characteristic fashion, rolling about on the floor and making peculiar sounds. The periods of heat, which commence usually at about eight months of age, may last for several days, and during this time the female will make every attempt to find a mate.

Gestation lasts about nine weeks, as in the case of the bitch, but here again there is a considerable variation. As most owners are quite unaware of the time at which their cats were mated, it is difficult to talk of "going overtime," but if there is any evidence of trouble during pregnancy, or at birth, veterinary advice should be obtained. As soon as a cat is obviously pregnant, her food allowance should be increased, and she should be allowed plenty of milk. It is highly important to increase her food and milk ration still further after the kittens are born, as lactation is a great drain on the mother.

Cats sometimes choose strange, out-of-the-way places in which to litter, and many healthy litters are born and reared out of doors. Cats are a source of danger, and will often destroy very young kittens during the mother's absence. For this and other reasons it is better in town and suburban areas to have the litter comfortably housed indoors. A wooden box containing newspaper is ideal, provided it is kept in a fairly warm place and out of the way of draughts. An average litter consists of three to six kittens, which are born blind, but which normally open their eyes after eight or nine days. There is no need to be alarmed if the eyes remain closed for a few days longer. Kittens which are born dead should be removed and buried or burnt. If the whole litter is born dead, the mother's food supply should be cut down considerably, and little milk given for a few days. If the mammary glands become inflamed, they may be bathed in a cold solution of alum. The glands normally return to their former size within a short space of time if they are not milked, but if there is persistent trouble veterinary advice should be sought.

While many pedigree owners wean kittens at four to five weeks of age, it is strongly advised that the household cat be allowed to continue to feed her family for a longer period, and eight weeks is not too long if the mother is still in good bodily condition. She must, however, be well fed and be allowed plenty of milk. As in the case of puppies, it is an excellent idea to provide the kittens with a little solid food as from a few weeks of age. It is very wrong to remove a kitten from its mother too early, and such an

animal is often weakly, develops an intestinal infection, and dies as a miserable bedraggled creature. Moreover, during the period following weaning the mother educates her offspring in the art of living, particularly rattling and mousing.

As many litters are unwanted, some people get rid of all the kittens as soon as possible after birth. Drowning is frequently practised, but it is not recommended as a merciful death. Indeed, a hard blow on the back of the head is more humane if given accurately. It is much better to take the kittens to a veterinary surgeon or clinic.

#### DISEASES AND INJURIES OF THE CAT.

The principal infectious diseases of cats are still in need of much scientific study. It is now clear, however, that there are at least two major cat plagues. Both have been given many names, and there is much confusion between them.

**Feline Enteritis or Panleucopenia.**—This is a highly infectious disease, due to a filterable virus, in which enteritis is sometimes (but by no means invariably) a feature. Cases that do not die abruptly show obvious signs with a typical cry of pain when handled, due probably to peritonitis. There is a characteristic fall in the numbers of granular white-cells in the blood—hence “panleucopenia” or “agranulocytosis.” The mortality rate is very high, and unfortunately a serum is not available commercially, although a protective vaccine may be obtained. This is the complaint that is so frequently responsible for a paragraph in the newspapers to the effect that nearly all the cats in a certain locality have died and that poisoning is suspected. On some farms, where, of course, cats are needed as defence against vermin, it has proved impossible to keep them owing to complete extermination of all introduced stock from this infection. More recently attempts have been made to stock such farms with vaccinated kittens. A rather typical symptom, which should be a strong warning to the owner to secure veterinary attention immediately, is that the animal is sitting crouched over a bowl of water or milk without attempting to partake of anything. While specific treatment is unavailable, skilful nursing under veterinary direction may result in certain cats “pulling through.” Great care must be taken to avoid dehydration, *i.e.*, loss of body fluids without replacement. Liquids must therefore be provided.

**Feline Pneumonitis.**—This disease is sometimes termed “cat distemper”—as indeed is feline enteritis—but neither condition is the same as canine distemper or transmissible to dogs or to human beings. Feline pneumonitis affects principally the respiratory tract, and is characterised by a copious discharge from the eyes and nose. It is due to another filterable virus, which paves the way for “secondary invaders,” but provided good nursing, warmth, and light nourishment (including liquids) are given, the death-rate is low. Neglect or lowered powers of resistance may, however, result in a fatal pneumonia.

**Tuberculosis.**—The cat, like the dog, can contract tuberculosis, but so far as is known only the bovine form has been known to infect it. The infection usually comes, of course, from milk, and the increase in pasteurisation will tend to reduce the incidence of the disease in cats. The disease commences in the abdomen, but may spread to the lungs. There is general wasting.

**Skin Diseases.**—As in the case of the dog, skin disease in the cat is usually of parasitic origin, and fleas and mange mites are again the chief source of trouble in Great Britain. Cats do so much of their own toilet that the average household cat has probably a cleaner skin than its canine counterpart. When skin disease does develop, it is strongly advised that the animal be taken to a veterinary surgeon for appropriate treatment. As a rule cats greatly resent the interference which must accompany any attempt to bathe or dress an affected place, and for this reason it is usually unwise for an owner to attempt to do other than make an inspection. Very small patches of skin eruption may clear satisfactorily if the surrounding hair is clipped away with curved scissors, but generally speaking skin disease calls for professional attention.

**Diseases of the Ear.**—The outer ear of the cat is frequently affected, and in a great many cases a

form of mange mite is responsible. The animal provides evidence of the trouble by scratching and shaking its ear and generally showing its discomfort. It will not always be possible for an owner to make a thorough examination, as in many cases the cat objects, but if it is possible to look inside the ear it will be seen that there is a dirty and usually brownish mess of tissue, sometimes mixed with dried blood or pus. Not all cases are as bad as this, of course, but if a cat persistently worries its ear it should be taken to a veterinary surgeon. There are satisfactory dressings for this condition, and owners will be able to dress their cats if the latter are docile. Otherwise it is necessary to have the ears dressed by a veterinary surgeon or by one of his staff.

A cat's ear is frequently the site of a blood blister, or hematoma. This is usually the sequel to a blow, such as a slamming door, and shows itself as a large, tense swelling, which when opened by the surgeon proves to be an accumulation of serum usually tinged with blood. Some cases become infected at the time of injury, some after with the patient's rubbing. With the greatest surgical skill in the world one must expect a slight deformity, and the cat develops a puckered ear, much the same as the human boxer.

**Disease of the Bladder.**—The bladder is a common seat of disease in cats, and is frequently affected through the blocking of the natural water-passage by small sand-like calculi. Naturally, male cats are more often affected, as the terminal end of the urinary tracts is wider and more dilatable in females. The urine is unable to escape, and the bladder becomes filled with a mixture of urine and the sandy calculi matter. The condition may be diagnosed quite readily, as the cat usually collapses, or partially collapses, and one may easily feel the distended bladder through the walls of the abdomen (belly). It is necessary to send for professional help immediately, and, while no relief can be guaranteed, it is often possible to relieve the condition by judicious manipulation. Owners should not attempt to do this themselves (unless help cannot be obtained), as they may easily burst the bladder. As the animal is usually in a state of collapse when the condition is discovered, it makes a bad risk for actual operation, and relief by skilled pressure is usually to be recommended.

**Ringworm.**—There are two common kinds of ringworm in the cat (a third, which may also infect the dog, is more rare; it is the trichophyton which is usually found on cattle). The first kind is acquired from rats and mice, and is most commonly to be found at the bases of the claws, from where it may spread to the ears and face. The individual lesions are circular and yellow in colour, and consist largely of a scabby material. This kind of ringworm is known as “favus.”

The second type of ringworm (microsporon) is more important, because it is more readily transmissible to human beings. Whereas this form usually sets up circular scaly lesions in the dog, it often infects cats without there being much naked-eye evidence of its presence. Indeed, in the cat the condition is often unsuspected until the owner himself becomes infected and consults his doctor.

Ringworm should be treated or dealt with by a veterinary surgeon, who will also confirm or refute by special methods the presence of microsporon in cats.

**Intestinal Parasites**—“Worms.”—The cat also is subject to both roundworms and tapeworms. The roundworm which parasitises cats in this country is similar to that of the dog (although a different species) and is also much more harmful to the young than to the adult animal. In kittens the symptoms are a general unthriftiness, staring coat, and in some cases diarrhoea and a “pot-bellied” appearance.

The commonest cat tapeworm in this country is one which passes its intermediate stage in the rat or mouse, or sometimes in other rodents. The tapeworm, which, as mentioned under the section on dogs, is dangerous to man, is sometimes found in the cat also.

**Accidents and Injuries.**—Despite their sagacity and alertness in many ways, cats seem curiously unable, in many instances, to acquire road-sense. They are dazed by a car's head-lights, while if a



motorist sounds his horn they tend to stop still in their tracks.

Injuries from traps, *e.g.*, gin-traps, are very common, and it is probable that many thousands of cats annually are maimed in this fashion. Cats suffer injury from shooting, from stoning, and from blows with sticks. Since they are predatory animals, they have often to pay the penalty inflicted on them by wrathful people. Needless to say, cats which survive to return home usually require expert treatment.

Poisoning may be included under this heading. Although there are doubtless many deliberate attempts to poison marauding cats, alleged "poisoning" is often no more than a case of feline enteritis, and owners should not claim glibly that their cats have been poisoned until they have expert evidence to back their judgment.

Fur-balling, as it has been termed, may be mentioned here. Cats, especially the long-haired varieties, must often ingest hair during their toilet, and occasionally serious trouble (a stoppage of the bowels) is brought about by a mass of such hair which has collected in a part of the bowel. There is constipation, loss of condition, and often evidence of considerable pain. Such cats should be taken to a veterinary surgeon.

Bites and scratches are even more common in the cat than they are in the dog, and subsequent sepsis is equally likely.

## FERRETS.

**Description.**—The ferret is probably a domesticated form of the pole-cat (*Mustela putorius*), and is known sometimes by that name and sometimes as *Mustela furo*. Most tame ferrets have pink eyes and yellowish-white fur, but there are darker forms believed to have resulted from crossing in previous generations with wild pole-cats. Indeed, these darker forms are popularly termed "pole-cat ferrets." They are of two main kinds, the first having creamy under fur and black guard hairs, and the second being a chocolate-brown colour, with brown upper parts and black under parts, and a few scattered light hairs on the face.

Ferrets are long creatures in relation to their body weight, and when fully-grown may have a body 14 in. long or more and a tail of 5 in. Some strains grow appreciably larger. The main use of the ferret is, of course, in rabbiting, for which purpose they have been employed for many centuries. Although they can become fierce if not accustomed to regular handling or kind treatment, and are capable of inflicting a nasty bite, they may nevertheless be made into docile and highly intelligent pets. It is most important to win their confidence from the beginning and to accustom them to regular handling from the time they are young "kittens."

**Accommodation.**—Ferrets must have dry, clean accommodation in a room free from draughts but well ventilated. Wood is warmer than metal, but more difficult to clean, and is best lined with hard asbestos sheeting, which is resistant to water. The most suitable accommodation comprises a sleeping compartment of similar proportions to a small kennel, leading by a small doorway or "pop-hole" to a wire-netting exercising run, which should be as large as possible compatible with cleanliness. It is a good idea to have a means of closing the doorway so that the ferret or ferrets may be confined within the sleeping-compartment if necessary. Wood-wool makes an excellent bedding, but if difficult to obtain newspaper may be provided for the ferrets to lie on. The floor of the run may have a false bottom or may be sprinkled with sawdust. It is imperative to keep the whole of the accommodation clean and dry, not only to avoid smell but also to prevent the ferrets from developing a very serious necrotic infection of the feet known as "foot-rot."

**Feeding.**—Many ferrets are unfortunately not fed adequately. It must be appreciated that basically they are carnivorous animals, and that their food requirements are more similar to those of the dog and cat than to those of rodents. Indeed, many of the general remarks made about the principles of feeding dogs and cats apply to ferrets also.

Most ferrets like bread-and-milk, and while this is an excellent article of diet, it is in itself inadequate. Up to about 4 oz. of raw meat (minced for younger animals) daily is an excellent basis, and this may be replaced by fish. Liver, especially raw liver, is an excellent source of many factors, and there is good reason to provide some at least weekly if it can be obtained. Failing this, it is advisable to add 1-2 per cent. of whole dry liver to the diet. Once ferrets are grown, one feeding daily—at a fixed time—is sufficient. The female (jill) should have ample supplies of milk just prior to the birth of her young and while she is suckling them.

**Breeding.**—In the northern hemisphere the female ferret usually comes into oestrus (season) in early March of the year following that in which it is born. If the jill does not conceive during this oestrus she will have a further oestrus period in July or August. The desire of the jill to mate is very strong, and if not allowed to do so, some animals sometimes have been found to waste and pine. The act of mating is prefaced by very vigorous behaviour on the part of the male (hob), and anyone not appreciating the performance might think that he was out to kill his mate! The mating act itself is usually prolonged, and may take up to three hours. If left together the hob and jill will probably mate from two to four times during the course of a couple of days. As in the cat and rabbit, ovulation or the shedding of the egg from the ovary takes place as a result of mating, and not spontaneously. The period of gestation is forty-two days, and the number of young born usually varies from five to thirteen, the average litter being six to eight. Pseudo-pregnancy occurs if the jill is not mated, and may become outwardly obvious as in the case of certain bitches.

Males also have a seasonal rhythm, their capacity to fertilise being greatest from early March to August. Young hobs seem to be active about a month earlier than older ones. The length of daylight or, rather, the incrementation in light from day to day, has an important bearing on breeding capacity in both sexes, and by the use of artificial light it has proved possible to induce either oestrus or male activity at different times of the year.

The young are hairless and blind, and weigh on the average under  $\frac{1}{2}$  oz. at birth. Their eyes open at about four weeks, and they can then commence to eat small pieces of solid food to supplement their mother's milk. They may be weaned at from six to eight weeks.

**Diseases.**—The most serious disease of ferrets is *canine distemper*, and the variant known as "hard pad" (see under dog) is equally capable of infecting ferrets. Such infections can wipe out entire stocks, and every care should be taken to prevent their spread from dogs to ferrets—and vice versa. A veterinary surgeon should be consulted immediately when a ferret becomes ill or out of sorts. Ferrets are also susceptible to some strains of human influenza, and should not be tended by persons with colds or with any indications of "flu." The feeding of infected milk may give rise to *tuberculosis*, and as a safety measure it is better to give only tuberculin-tested or pasteurised milk, or milk that has been boiled to destroy infection. *Foot-rot* has already been mentioned, and must on no account be neglected. *Mange* or "scabies" of the back and tail region should be dealt with promptly, employing modern preparations. Abscesses of the neck region are often encountered, and should receive professional treatment if they do not clear up rapidly, for they may spread with dire consequences.

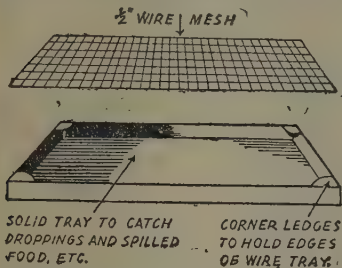
## RATS.

**Description.**—Tame rats are domesticated varieties of the wild Norway or "brown" rat (*Rattus norvegicus*). Such rats are usually albinos or black-and-white, although other colours have been bred. The hooded varieties are those in which the head and foreparts are mainly black or chocolate and the remainder of the body, apart from small patches the same colours as the hood, is white. Tame rats differ materially from wild ones in disposition, and properly managed are

extremely tractable. Healthy specimens accustomed to handling bite only when frightened, e.g., when a sudden movement is made in front of them. Males appear to live longer than females, but three years is a good age.

"Black" rats, i.e., the species (*Rattus rattus*) sometimes known as the ship or Alexandrine rat, have been bred in captivity, but tame strains are not generally available.

**Housing.**—Tame rats require a warm, even temperature—65–70° F. all the year round—and draughts or lowered temperature may precipitate lung disease or other disorders. It is best to have a complete spare set of boxes or cages, and to change to fresh quarters weekly except when the females have unweaned young with them. Empty cages should be cleaned and disinfected thoroughly before being used again. Provided the temperature conditions are suitable, metal cages of the types employed in scientific laboratories are best, with wire-mesh false bottoms and trays containing sawdust to catch the droppings.



Accommodation should be ample, and even for a pair of pet rats the cage should measure about 30 in. × 18 in. × 18 in. If wooden boxes are employed it may be desirable to line them with hard asbestos sheeting or galvanised metal to prevent damage from gnawing.

Small, dark "shelters" and exercising devices, e.g., wheels or ladders, are appreciated by the rats, but must be kept clean. Wood-wool makes the best bedding.

**Feeding.**—Rats may take a wide variety of foods, including many of our own, and there are several successful ways of feeding them, including the provision of specially formulated "rat cubes." A good daily diet is wholemeal bread, mixed cereals (e.g., oats, wheat, hempseed), with about



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WITH LABORATORY RODENTS

5 per cent. dried brewers' yeast and milk either fed separately or mixed with the rest of the food. Twice weekly each rat should be given up to  $\frac{1}{2}$  oz. or more of meat, liver, fish, or other "animal protein." A little fresh greenfood (even grass) is appreciated occasionally, and in winter especially some supplement containing vitamins A and D is desirable. Expectant and nursing mothers should have as much milk as they require. Never overfeed or allow uneaten food residues to

remain in the cage. Fresh water (preferably in bulbs) should be available at all times.

**Breeding.**—Rats can breed at quite a young age (usually being capable of mating when fifty to sixty days old), but it is better to separate the sexes within a fortnight or so of weaning (weaning being usually at twenty-one days of age) and to mate at about 100 to 120 days of age onwards. The female rat has an oestrous cycle lasting just over four days. One male (buck) may be mated to one female (doe)—this is probably best in the case of pet rats—or with two or three females if preferred, but it is unwise to keep more than one adult male in the presence of females. The gestation period is twenty-one to twenty-two days, or occasionally a few days longer. The number born varies considerably, but often it is best to try to rear only six to eight young. The young have their ears open at  $2\frac{1}{2}$  to  $3\frac{1}{2}$  days, cut their incisor teeth at eight to ten days, can find their way to their mother at about the same time, open their eyes at fourteen to seventeen days, and may leave the nest at twenty-one days. In the case of pet rats it is probably best to leave the young with the mother for up to a week or so longer. Breeding can occur all the year round, but takes place less readily in winter.

**Handling.**—Rats should not be "tailed," or the skin may slough off. Regular handling after weaning is excellent and promotes docility. The weight of the body should be supported.

**Diseases.**—On the whole rats are much less liable to disease than mice, provided temperature conditions are suitable. The commonest infection is *broncho-pneumonia*, often precipitated through draughts or cold. *Mange* (especially of the ear) and infestation with *lice* may occur, and should be dealt with promptly by means of modern insecticides. Avoid contact with wild rodents, or the use of food or bedding that may have been contaminated by wild rats and mice.

## MICE.

**Description.**—Tame mice are descended from the common house mouse (*Mus musculus*), and it is believed that mice have been domesticated for over 3,000 years. Apart from albino or "white mice," there are many varieties that have been bred by the extensive "mouse fancy," and there is a wide range of coat colour and also different types of coat, e.g., long-haired, short-haired, and rex. "Waltzing mice" have an abnormality of that part of the inner ear concerned with balance. Mice may live up to thirty months, and in exceptional cases attain the age of three years or more.

**Housing.**—Although strains vary, most tame mice require a warm even temperature and the same general remarks concerning temperature range, bedding, and wooden or metal cages apply as in the case of rats. If a solid floor is used, this should be covered with clean sawdust. It is a good plan to change to a clean cage regularly, except when the female (doe) is nursing her young. If the cage is large (as in the case of pet mice it should be, with a floor space of say 24 in. × 12 in. × 12 in. for a group of mice), inner nest-boxes should be provided—one for each doe if breeding is taking place, although two does will often share the same nest-box. (In changing to fresh cages the nest-box, with mother and young inside, may, of course, be moved over.) A "two-storey" cage, with a ladder or "staircase" to the upper part, is an attractive variation, although difficult to keep clean. Mice should be kept well out of reach of wild rodents, from which they may all too readily contract disease.

**Feeding.**—Mice have not quite such a wide dietary range as rats, but there are several different ways of feeding them, including the provision of special "mouse cubes." These mouse cubes are of varying composition. One of the most successful, devised by workers in the Medical Research Council's laboratories, is known as "Diet 41," and is made up of the following parts by weight: wholemeal flour, 45; Sussex ground oats, 40; fish meal, 8; dried yeast, 1; dried skimmed milk, 3; cod-liver oil, 1; and common salt, 1. Diet 41 has also been employed for rats



and monkeys, although for the latter particularly it requires supplementing. It is perhaps worth emphasising that cod-liver oil must not be fed in excess, or it may prevent breeding and possibly have other harmful effects. Cubed diets are best fed from a wire basket through which the mice enjoy gnawing and eventually pulling out the pieces. Wholemeal bread is excellent if not allowed to become stale, but it should not form the sole article of diet, and it is a good idea to feed it alternately with a grain mixture (made up of rolled oats, wheat and other cereal grains, or mixed bird seed). Up to about 5 per cent. dried brewers' yeast is excellent, and so is fresh or dried milk, especially for mothers that are carrying or nursing young. Cheese is relished, but may smell if not fed carefully. Mice also like an occasional pinch of marmalade, and it is a good idea to provide lettuce or other greenfood every week or so. There should be a constant supply of fresh water, preferably from bulbs.

**Breeding.**—Young mice may be weaned at twenty-one days, although it is usually preferable to leave them with their mother for a further week. The age at which mice are capable of mating varies considerably from one strain or individual to another, and while the average is six to eight weeks, it may be much younger. It is therefore desirable to separate the males from the females at or shortly after weaning. Mice may be mated up at two to three months of age, and the best arrangements are one male (buck) to one or two females. A pair of mice or a "bigynous trio" makes a successful combination. The estrus cycle is similar to that of the rat, but its length appears to vary with coat colour, being longest in the brown mice and shortest in blacks and albinos. The gestation period is usually from eighteen to twenty days, but may be prolonged if the female was still suckling her previous litter when she conceived. There may be up to twelve or more young in a litter, but the average litter size is from five to seven. The second litter is usually the largest, and subsequent litters tend to decrease in numbers, so that the sixth is usually smaller than the first. Breeding may take place all the year round, although, as with rats, fertility is higher during the summer months.

**Handling.**—Any rapid or rough movement may frighten mice and cause them to bite through fear. Mice should be lifted by the tail—not too near the tip—and may be held in the palm of the hand, where they may be suitably restrained by keeping the tail between two fingers.

**Diseases.**—Mice are unfortunately prone to many diseases, although the risks will be much lower if they are kept in suitable surroundings, great care is taken to avoid infection, scrupulous cleanliness is observed, and the standard of feeding is good. One common source of infection is the presence of the excreta of wild rodents on bedding or foodstuffs. A common disease is that sometimes called "mouse typhoid," caused by organisms of the *Salmonella* group. Although some mice recover, they may remain carriers of infection, and once this disease is diagnosed it is best to destroy the affected mice and those in contact with them, and not to employ any of the cages or utensils for fresh mice without adequate sterilisation. There are other septicaemia diseases of mice, and also virus diseases, including certain types of *pneumonia* and a condition known as *infectious ectromelia*. The accurate diagnosis of these calls for expert opinion and often for special bacteriological or other examinations. The mouse-owner should, however, be able to recognise signs of ill-health or departure from normal, one of the commonest being loss of appetite. In young mice the coat should be smooth and glossy. As mice get older there may be loss of pigmentation (in coloured mice) or even loss of fur. A sick mouse usually sits hunched up and has a ruffed coat, while the eyes may be partially closed or have some discharge. A healthy mouse will usually catch on to suitable objects when held by its tail and is capable of pulling quite hard, whereas the pull of a sick mouse is much weaker. If one or more mice die it is best to destroy at once any cage-mates that appear sappy. As in the case of rats, external parasites should be dealt with promptly with the aid of modern insecticidal preparations.

## GOLDEN HAMSTERS.

**Description.**—There are many species of hamsters in the world, and more than one kind can now be bred in captivity. The one referred to, however, is the Golden Hamster (*Mesocricetus auratus*), a delightful little creature of which a full-grown female (females are larger than males) rarely exceeds 7 in. in length. The history of the domestication of the golden hamster is quite remarkable, for prior to 1930 only museum specimens were known. In that year a mother and her twelve young were dug up in a field near Aleppo and were taken to the Hebrew University, Jerusalem, and from that one family have been bred the hundreds of thousands of golden hamsters now employed as pets or as laboratory animals in many parts of the world. The species has taken well to captivity and, although capable of inflicting a nasty little bite if frightened or handled roughly, becomes docile and friendly when properly cared for. Characteristic features are the soft, smooth fur, the large black eyes, the "cheek pouches" in which food is stored and which may become enormously distended after a meal, the short, stumpy tail, and the extremely loose skin, inside which the hamster can turn round to a considerable degree.

**Housing.**—The same remarks about accommodation, environmental temperature, freedom from draughts, fittings, and other general considerations (including cleanliness) apply as in the case of rats and mice. For breeding purposes a dark inner chamber or nest-box is desirable. Several hamsters may be kept together, but the introduction of a stranger (or even the re-introduction of a former cage-mate that has been removed for some time) may lead to fighting.

**Feeding.**—Satisfactory diets include the following: (1) rat cubes (e.g., "Diet 41"), carrots, greenfood, and milk; (2) cereal grains and/or wholemeal bread, carrots, greenfood, and milk; (3) steamed Rangoon beans, wheat, maize meal bread, a little Marmite, and milk. Care must be taken not to allow storage of excess food, which will deteriorate and cause a smell. Grass is a suitable source of greenfood during its growing season. Apples and other fruits are often relished. Water, preferably in bulbs, should always be available.

**Breeding.**—Golden Hamsters attain puberty at from ten to fifteen weeks of age, or even younger, males being usually earlier. Generally speaking, it is best to defer breeding until after fifteen weeks of age. There is an estrus cycle of about four days, and the gestation period is very short, averaging sixteen days, although sometimes up to nineteen days. Mating not followed by conception results in phantom or pseudopregnancy. Litter size varies from one to fifteen, but the average is six to seven. Not many females have more than four litters, and although both sexes may live up to two years, breeding by the female is rare after nine months. The young are naked and blind at birth. Hair first appears at five days, and covers the whole body at eight days. The eyes open at about eleven days, and soon after this the young begin to take food for themselves and may be weaned at three to four weeks. Care must be taken that the female does not injure the male, and for safety's sake it is probably better to keep only one female and one male together and to remove the male before the young are born.

**Handling.**—Gentleness is essential, and sudden movements should be avoided. The tail is much too short to use, and the easiest way is to lift them by the loose skin over the back and shoulders. As already noted, they can twist easily within their skins, unless a substantial amount is taken in the hand. After picking up they may be allowed to sit on the palm of the hand.

**Diseases.**—Several diseases of hamsters are now known, and, like most rodents, they are susceptible to *Salmonellosis* (see notes under "mouse typhoid" and "paratyphoid" in guinea-pigs). The main trouble is, however, from *ear mange*, in severe cases of which the condition spreads from the ears to other parts of the body. Modern anti-mange preparations are highly effective.

## CAVIES (GUINEA-PIGS).

**Description.**—Cavies or guinea-pigs (*Cavia porcellus*) are rodents, and are descended from one or more of the several kinds of wild cavy found in South America. They are believed to have been domesticated by the Incas long before Europeans "discovered" that part of the world. They make excellent pets, but are easily frightened, and should be treated gently and quietly. They usually behave quietly, although there may be fighting between adult males ("boars"), and the arrival of food—or the entry of a person into a room, which fact is obviously connected with feeding-time—usually sets up a chorus of chirruping squeaks. There is to-day a considerable cavy "fancy" in Great Britain and other countries, and many varieties are recognised, including rough-coated and smooth-coated types. Among recognised colours are the agouti (banded hairs), brindle, cinnamon, tortoiseshell (tricoloured), and Himalayan (white with attractive black points). The long-haired Peruvian and rosette-haired Abyssinian breeds are popular. Guinea-pigs may live up to two to three years. There is a small tail (composed of from five to seven caudal vertebrae), but usually this is so short that it does not project outside the body. There are four toes on each of the fore-feet and three on each hind foot. An adult guinea-pig may measure up to 10 in. or more in length, and sometimes its weight is well over 2 lb.

**Housing.**—Guinea-pigs may be kept outside or inside. If outside conditions are favoured, great care must be taken to protect them from dogs, cats, and rats. The last-named may be a danger also in conveying disease. The run should be in a sheltered position away from wind and direct summer sunlight. Tent-shaped waterproof shelters, with wooden floors covered by cleaning trays, have been found satisfactory. Another method is to keep them in hutches of the same type employed for rabbits and when conditions are suitable to let them out into a temporary run on the lawn surrounded by  $\frac{1}{2}$  in.-mesh wire-netting that is at least 12 in. high. (N.B. This will keep dogs or cats out.) Guinea-pigs will crop the grass and help to keep the lawn smooth. Great care should be taken not to allow the ground or floor to become so contaminated by guinea-pig excreta that it conveys disease from one animal to another.

If indoor methods are selected, an even, preferably warm temperature is desirable, and there should be freedom from draughts. Guinea-pigs have been found to thrive best at about 65° F. with a humidity range of 45–55 per cent. Provided warm conditions are available, metal cages are easier to keep clean than wooden ones, while a false bottom of wire mesh, above the cleaning tray, is helpful. Wood-wool is again the best bedding. Cages must not be too small, and a pair of pet guinea-pigs should have about 14 sq. ft. of floor space. It is a sound principle, as with rats and mice, to change frequently to a clean cage, the used one being cleaned and disinfected thoroughly before being used again.

**Feeding.**—Guinea-pigs, like human beings, apes, and monkeys, require a source of vitamin C (ascorbic acid). Normally they obtain this from greenfood, but in winter especially they may not secure enough in this way. The daily requirement of an adult guinea-pig is about 2 milligrammes, and supplies can be obtained from a chemist's shop.

There are many different methods of feeding guinea-pigs. Among cubed or pelleted diets is that known as "Diet 18," which is employed also for rabbits. It contains the following parts by weight: wheat feed, 15; grass meal, 30; decorated groundnut meal, 15; linseed cake, 10; barley meal, 20; common salt, 1; and chalk, 1. This is fed together with fresh greenfood to supply vitamin C. For feeding without the use of compressed diets a good plan is to provide a daily "concentrate ration" of about 1 oz. per head of a mixture of 2 parts bran and 1 part crushed oats, and to feed in addition ample amounts of cabbage, lettuce or other greenfood, meadow hay of good quality, grass, and raw vegetables. Although guinea-pigs normally derive moisture from fresh greenfood, and may

appear to take little or no water for long periods, it is a mistake not to provide a fresh supply, preferably from water bulbs, or from inverted bottles fitted with a stopper and drinking-spout. A little dried brewers' yeast makes an excellent addition to the diet, while for pregnant and lactating females ("sows") milk is excellent. Dead foliage should be removed from greenfood, and soil and dirt cleaned off. Frosted greenfood should be soaked in warm water before it is given to guinea-pigs. Unfortunately, hay may be contaminated by wild rodents, but it forms an excellent article of diet. Never allow food residues to remain in the cage.

**Breeding.**—The lactation period of the guinea-pig is a short one. The gestation period averages sixty-three to seventy-five days, although variations of fifty-eight to seventy-two days are known, and the young are born in an advanced state, with their eyes already open. They can run freely with their mother shortly after birth. They are able to nibble a little food as early as the second day, and by the time they are two to three weeks old they are completely independent and are neglected by their mother. A sow will often mate again the day the young are born, or shortly after, so that a rapid succession of litters often occurs.

Guinea-pigs are capable of mating from about fifty-five to seventy days of age, or even younger in certain circumstances, including the provision of a high plane of nutrition. The oestrous cycle averages fifteen to seventeen days, although it may vary from thirteen to twenty-five days. The actual period during which mating may occur usually lasts only from about six to eleven hours. One boar may run with as many as twenty sows if so desired, but in the case of pets it is much more interesting to run a boar with only one sow, in which case she need not usually be removed to a separate cage before the young are born. The young guinea-pigs should be separated from the older ones shortly after weaning, and the sexes separated at four to five weeks of age if they are not to breed prematurely. It is better to wait until the animals are approaching six months of age or so before they are mated, for they do not become fully grown and "filled out" until they are between six and nine months.

**Handling.**—Guinea-pigs are timid creatures, and should be handled gently. They are best picked up with both hands. If a guinea-pig is to be held in order to examine it for any purpose, a good method is to place one hand over the animal's shoulders, with the fingers and thumb around its neck, and to extend its hind limbs with the other hand.

**Diseases.**—The most important infectious disease of guinea-pigs is, like "mouse typhoid," caused by organisms of the *Salmonella* group, and it may be contracted from wild rodents or from food or bedding contaminated by them. In guinea-pigs the disease is known usually as "paratyphoid" (or sometimes as "salmonellosis"), and it may take an acute form, causing death within a few days, or a more chronic form in which many animals recover to become symptomless carriers of disease. Outwardly healthy, they may infect susceptible guinea-pigs with which they are placed. Cold or other environmental variations, and faulty feeding, can help to set off an outbreak, for there are few stocks in which the organisms are not lurking in some "latent carriers." *Coccidiosis* is common, but is a much less serious threat than in the case of rabbits. It has been set up in infected stocks by feeding inadequate diets, and provided that nutrition and hygiene are adequate there is rarely serious trouble from this disease. *Infections of the respiratory tract* may occur, but are uncommon except when there is overcrowding, high humidity, or damp bedding. Sometimes organisms of the *Pneumococcus* group cause not only disease of the respiratory tract but also a generalised infection of the serious membranes of the body. When this disease occurs it may produce death without much warning. It is possible that the infection sometimes comes from human beings. The disease known as *pseudotuberculosis*, and described under rabbits, occurs in guinea-pigs also. Again, environmental conditions and faulty feeding may predispose towards active infection.

With good fortune and sound management,



trouble from these serious infections may never occur. *External parasites* should be dealt with promptly by modern methods. Sometimes *non-parasitic skin disorders* occur when the diet is faulty, e.g., too dry or lacking in sufficient fresh greenfood of good quality.

## RABBITS.

**Description.**—Domesticated varieties of the wild European rabbit (*Oryctolagus cuniculus*) are now kept in many countries of the world. The wild rabbit is believed to have been introduced into Great Britain about the twelfth century A.D., and to-day it is a serious pest of agricultural land and forestry schemes. Tame rabbits have been bred for centuries, and some of the breeds and strains that have been produced differ appreciably in size, colour, and habits from the common wild form. Some breeds have been specially bred for table purposes, while others (e.g., the Angora, Sitka, and Argente de Champagne) have been developed for their fur. In addition, many varieties are produced for show purposes by the extensive rabbit "fancy." The small hardy Dutch rabbit (usually black and white) is one of the kinds suitable for beginners. Among well-known categories are the English, Japanese, Himalayan, Belgian Hare (really a rabbit), Flemish Giant, Beveren, Blue Imperial, Polish, Havana, Lop, Half-Lop, Chinchilla, and New Zealand White. The Copenhagen rabbit appears to be identical with the New Zealand White. The smaller breeds weigh only 4-6 lb. when fully grown, whereas some specimens of some of the giant breeds attain a weight of 20 lb. or more.

Rabbits and hares were formerly classified with the rodents, but to-day they are placed in a separate Order of mammals, known as the Lagomorphs. Young rabbits (in contrast to leverets or young hares) are blind and helpless for some time after birth. Tame specimens may live for four to five years, and individuals have lived for up to thirteen years.

Since rabbits are employed for commercial purposes, various systems of management have been devised, including the use of movable ark-huts, with covered runs, that can be moved regularly to fresh ground. If kept indoors rabbits do not need special heating, but freedom from draughts, damp, excessive cold, and access by wild rodents is most desirable. A garage is regarded as an unsuitable place, owing to the susceptibility of rabbits to exhaust or engine fumes. One of the great difficulties of rabbit-keeping is coccidiosis, which is a serious disease in rabbits and hares. (European hares could never be bred successfully in captivity until means of overcoming coccidiosis were discovered.) With young rabbits especially (i.e., those that have left the nest and are able to run about freely) it is a sound principle to move them to a clean floor or fresh ground every two days, so as to "break" the life-cycle of the coccidial parasite. One way of doing this is to have "back-to-back" cages or hutches, from one to the other of which the rabbits may be transferred easily. The empty cage or hutch may then be cleaned and disinfected thoroughly and allowed to dry out before the rabbits are returned to it. Wood-wool makes a suitable bedding material, although the female (doe) will pluck her own fur to line the nest when her litter is due to be born. Wire-mesh floors with a tray beneath are convenient, but if solid floors are used these should be sprinkled with fresh sawdust daily or every other day. Provided the standard of hygiene can be maintained, cages or hutches and their runs should be large. The absolute minimum is "1 sq. ft. of floor space for each 1 lb. weight of adult rabbit," i.e., if there are two rabbits totally 12 lb. in weight there must be at least 12 sq. ft. of floor space. If cages or hutches are stacked one on top of the other the lowest should be well clear of the ground, and if there is only one hutch this, for convenience and safety from wild rodents, should be 2-3 ft. off the floor.

**Feeding.**—The wild rabbit grazes at dusk and dawn, and it is preferable to feed tame rabbits twice daily, while pregnant or lactating does and young rabbits benefit from three meals a day. As in the case of guinea-pigs, the ration may be thought

of as consisting of two parts, a concentrate portion and a portion consisting of greenfood and other succulent material. The concentrate portion consists usually of a mixture of cereal grains or of some other form of mash. Successful mashes, of which there are many, include: (1) a mixture of 4 parts cereal grains and 1 part dairy cake; (2) equal parts of bran, weatings, flaked maize—or barley meal—and fish meal. This second is useful for breeding. If materials for the mash are in short supply they may in part be replaced by cooked potatoes. An average daily food allowance for a resting (non-breeding) adult of medium size would be: greenfood (grass, clover, weeds, lettuce, etc.) and/or roots, 12-16 oz.; hay (good quality), 2-3 oz.; and concentrates (cereal grain or meal mash), 2 oz. If cooked potatoes are used they should be fed at the rate of 4 parts to each 1 part of cereal that they replace. For a doe nursing her litter a suitable diet would comprise: greenfood to appetite, hay (good quality and preferably containing clover or other legume), 2-4 oz.; concentrates (preferably with fish meal or some other suitable source of "animal protein"), 4-6 oz.; and common salt at the level of up to 1 per cent. of the ration. A mineral mixture is preferable to salt alone. Excessive greenfood, especially in the form of cabbage and other Brassica plants, may cause polyuria, i.e., the passage of excessive quantities of urine. No matter how much fresh greenfood rabbits may have available, a supply of fresh water should always be provided. The daily water requirement of the rabbit is quite high, and certain bad habits such as urine drinking or even cannibalism may result from an inadequate intake of water. Pots that cannot be overturned or, preferably, water bulbs or bottles as described for guinea-pigs, are the most suitable means of providing water.

"Diet 18," described under guinea-pigs, is one of several types of compressed diet successfully employed for rabbits. Fresh greenfood is preferably fed in addition, while the water requirement with diets of this kind is considerable.

**Breeding.**—The age of puberty varies with the breed, and also with the time of year at which the individual rabbit was born. Rabbits born in spring are usually capable of breeding at a younger age than those born in the autumn. In Great Britain the wild rabbit has a fairly sharply defined main breeding season, lasting from January to June, but some degree of "out-of-season" breeding may take place at almost all other times. Tame rabbits may not breed freely during the winter months, especially if environmental conditions are cold. Mating may take place as early as four months of age, and although this does not often result in pregnancy, it is accompanied by competition and fighting between individuals of the same sex. Males (bucks) and females should therefore be separated at weaning, or at least before they are four months old. Fertile matings may occur at from about 5½ months of age onwards, but it is wise to defer breeding until later—say seven to eight months for most breeds. The female does not ovulate or shed her eggs from the ovary spontaneously as do most domestic mammals, but, like the cat and ferret, does so in response to the act of mating or some other strong stimulus. Even playing between two does may precipitate ovulation, in which case a so-called "phantom pregnancy" (pseudopregnancy) may result, the doe that has ovulated appearing pregnant and even developing lactating mammary glands. There is not therefore an obvious regularly recurring oestrus cycle as in the domestic rat, mouse, and guinea-pig, and in summer at least the doe may be ready to mate at almost any time. Observation suggests, however, that there are fluctuations in the desire to mate. The act of mating in rabbits sometimes causes alarm that all is not well to those that have not hitherto witnessed it, for the buck usually emits a peculiar cry and loses his balance to fall over sideways. It is usually best to separate the buck from the doe before the young are born. The gestation period is usually thirty to thirty-two days. In wild rabbits a high percentage of embryos die and are "resorbed," and are therefore never born. In some populations it appears that about two-thirds of all rabbits conceived (including about 60 per cent. of total litters) are lost before birth in this way. Losses from this cause are probably

much less common in domesticated rabbits, especially when the standards of feeding and management are high. Litter size is variable, and depends in part on the breed or strain. In some strains mean litter sizes up to eight or nine have been obtained, but a mean of four or so is more common. Does that do not prepare the nest or rear their young properly should not be selected for further breeding. The doe with her new-born litter should not be disturbed unduly, or she may desert her young, which are blind and helpless at birth and are entirely dependent on her for at least three weeks, after which they begin to nibble food to supplement the milk that they receive from her. The eyes open at about fourteen days. Weaning should be carried out at between six and eight weeks of age, by which time the young should be able to fend for themselves completely.

**Handling.**—Rabbits should never be lifted by the ears alone. One good way of lifting them is to grip the ears firmly but gently with one hand and to place the other hand under the rump to take the weight of the rabbit's body. Alternatively, one hand may be placed flat under the rabbit's belly, but this requires more care, and may be a risky procedure with pregnant does. Another convenient way to handle rabbits, especially young ones, is to lift them by the loose skin over the shoulders. Rabbits can inflict quite nasty scratches with the nails of the hind feet. It is incidentally a good plan to examine the nails of all four feet and to trim them if they are too long. A stout pair of scissors, or preferably a pair of clippers, is used, and care should be taken not to cut back as far as the "quick," i.e., the bluish portion at the base of the nail that contains blood vessels and will bleed freely if damaged.

**Diseases.**—As already indicated, *coccidiosis* is a highly important disease of young rabbits. It may be either of the "hepatic type," affecting principally the liver, or the "intestinal type," affecting principally the gut. Even in the case of the hepatic type, however, the coccidial parasites are picked up by mouth and after penetrating the intestinal walls make their way via the blood-stream to the liver. Hygienic measures are the best means of preventing the disease (see under Housing), but should it break out, prompt treatment with certain sulphonamides or other anti-coccidial drugs may prove effective. In certain rabbitries in which coccidiosis is a constant problem, protection has been obtained by feeding a dilute solution of one of the soluble sulphonamides in place of drinking-water. There are certain types of digestive disturbance that may resemble coccidiosis, and one of these, the cause of which has not yet been established with certainty, is known as *mucoid enteritis*. Some such cases are probably variations of "bloat" ("the blows"), a condition the cause of which is again not fully established, although there may in fact be several factors. A rabbit may, of course, "bloat" after eating fermentative food, but cases of "bloat" can occur independently of this, and some may be due to a virus. "Snuffles" is characterised by a nasal discharge, and is not always associated with the same organism. In its milder forms it is not a severe disease, but with the more chronic forms the nasal discharge becomes marked and gives rise to a typical snuffing noise. Severe chronic cases become progressively worse and die of a terminal pneumonia. There is also a severe acute form, in which the rabbit dies so rapidly that the condition is sometimes not recognised. Acute cases that are treated in time with certain sulphonamides may respond well, but chronic snuffles are difficult to treat and go on spreading the infection, and hence are better destroyed. Correct environmental conditions are a great help in preventing this disease. A chronic type of infection is known as *pseudotuberculosis*, which is usually acquired from eating material contaminated by wild rodents or by other infected rabbits. It is caused by quite a different organism from that of true tuberculosis, which is much rarer in rabbits. Clinical cases should be killed, and prevention lies in hygienic measures. Infected wounds or skin abscesses may lead to a disease caused by the "necrosis bacillus" (*Fusiformis necrophorus*) and known sometimes as *necrobacillosis*. It is usually characterised by

subcutaneous swellings distributed irregularly over the head and body. Although in the early stages the affected rabbit may remain in apparently good health, the spread of the disease is insidious and usually fatal, and in most instances it is kinder and safer to destroy a case before it progresses too far. There are unfortunately several other infectious conditions occurring in rabbits, but all call for expert help in diagnosis and treatment. Generally speaking, it is a bad policy not to cull an ailing rabbit immediately, and one that is ill should certainly be isolated at once and not fed or tended before the person looking after it touches the healthy rabbits.

Among non-infectious conditions *pregnancy toxemia* is not uncommon in does during the very late pregnancy, and usually proves fatal within two to three days. It is a "metabolic disorder," i.e., it is associated with some functional derangement of the endocrine or ductless glands or with the inability to control properly the utilisation of its food. Faulty feeding is probably a contributory cause. Diseases of the heart and blood may arise occasionally, and can be aggravated by faulty feeding.

Among external parasites, *ringworm* is not common, but may be acquired from rodents. Affected rabbits that are to be treated must be isolated. *Ear mange* (known usually as *ear canker*) is common, and may be treated by strict attention to hygiene, with thorough disinfection of the hut or cage, and by dressing with a modern anti-mange preparation. *Body mange* is much less common but far more difficult to treat.

Among internal parasites, so-called "*bladder worms*," i.e., the larval stages of two dog tapeworms (*Taenia pisiformis* and *Taenia serialis*) are quite common, although rarely fatal. The feeding of grass or other greenstuff to which dogs have had access should be avoided, as well as the contamination of the drinking-water with dog faeces.

Domestic rabbits are susceptible to myxomatosis (See "General Information," p. 648), and it is a wise precaution to have them vaccinated. The vaccine is inexpensive, and may be obtained through veterinary surgeons and pharmacists.

## HEDGEHOGS.

**Description.**—The European hedgehog (*Erinaceus europaeus*), found throughout Great Britain, belongs to the Order Insectivora, of which moles and shrews are also members. Its diet is, however, by no means restricted to insects, although in nature a considerable portion is probably made up of small invertebrates. There is a good deal of prejudice against them as pets, owing to the fact that freshly caught specimens are usually infested with fleas or other external parasites. The spines of the hedgehog, being well-spaced, make the presence of external parasites more obvious than is the case in animals with a coat of close fur. The hedgehog's spines form its defence, and its capacity to roll up into a prickly ball at the threat of danger is well known. This defence reaction is unfortunately of no avail to it when the danger is an oncoming car or lorry, and thousands of hedgehogs die every year as a result of being killed by vehicles on the roads. Many other species of mammals wander on to the roads, but most attempt to flee when they sense the approach of a vehicle. The capacity to roll up is not secure defence even against animal enemies. There are some foxes, dogs, and cats that have learned to "uncurl" a hedgehog, and subsequently eat it.

Provided that care is taken, a hedgehog makes an excellent pet, especially if given a suitable enclosure in the garden. For a variable time during winter hedgehogs hibernate, and during this time they must not be disturbed. Should they emerge at any time, however, food must be provided. Some specimens have lived for five years or more in captivity.

**Accommodation.**—The most satisfactory way to maintain a pet hedgehog is to provide it with a large "run" in part of the garden. If wire-netting is employed it should be sunk under the ground to a depth of several inches, or the hedgehog will burrow underneath and escape. The top of the run must be wired in, or alternatively



there must be a "baffle board" or wire-frame (at least 9 in. wide) near the top of the sides to prevent escape that way, for hedgehogs can scale wire-netting—and some other types of fence—with ease. There should be a warm, dry box for shelter, containing wood-wool or other bedding material. A simple but suitable shelter may be made out of a soap-box, preferably lined with asbestos sheeting or some other material impervious to water. A shallow sunken bath in the enclosure may be of interest, for hedgehogs take well to water, but the edges should be such that the hedgehog can get out easily.

If it is decided to keep a hedgehog indoors, then the best accommodation is probably similar to that described for ferrets.

**Feeding.**—The simplest diet consists of milk, some bread, and minced lean meat. Cooked meat is preferred to raw, but raw liver should be given occasionally. Another satisfactory diet comprises meat offals, "root" vegetables (e.g., carrot, potato, and swede), and wheaten wholemeal biscuit, steamed together until cooked, and then mixed and minced with a small proportion of raw liver. A small quantity (say 1-2 per cent.) of mineral mixture is also desirable, and milk should be given freely. Although hedgehogs appear to drink but little water, a fresh supply should always be provided.

**Breeding.**—During the breeding season marked changes occur in both males and females, and the structures associated with reproduction increase enormously in size from about March onwards. The female is capable of having two litters a year, the first in May or June and the second in August or September. The period of gestation has not been determined exactly, but is believed to be thirty-five days, possibly with variations of up to well over forty days. During the breeding season the males are very pugnacious towards each other if females are with them, and may do each other considerable damage. (The mixing of strange hedgehogs is often a difficult procedure anyway, for they often fight and inflict nasty bites on one another's feet.)

The litter size is usually four to six, and the young, which have "soft" spines, are suckled by their mother for nearly six weeks. The young can partake of some solid food at about three weeks, and there is some evidence that if left with their mother for longer than six weeks she may compete unfairly with them for food!

**Diseases.**—Hedgehogs in captivity are susceptible to *respiratory infections*, and can sometimes contract certain strains of *human influenza*. They are susceptible also to *Salmonellosis* (see under mice and guinea-pigs). Fleas and other external parasites have been mentioned; these often disappear spontaneously as the hedgehog begins to thrive in captivity, but if not they should be dealt with by modern methods.

## LAND TORTOISES.

Tortoises are popular pets, but although many are kept with great success in Great Britain, the majority of those that are imported each year are never looked after adequately, or fail to thrive for other reasons.

Most land tortoises that are imported into Great Britain for sale through the dealers are: (1) the Spur-thighed Mediterranean Land Tortoise (*Testudo graeca*), commonly known as the "Moroccan tortoise" and sometimes as the "Iberian" or "Algerian"; or (2) Hermann's Tortoise (*Testudo hermanni*). The second is distributed in Southern France, Southern Italy, the larger islands of the Western Mediterranean, and parts of Yugoslavia, Albania, and Greece. There is a species found in Greece, the Margined Tortoise (*Testudo marginata*), but while adaptable to life in Great Britain, it is more difficult to acquire. The two common species differ in several ways, the "Moroccan tortoise" having a small bony spur on the back of the thigh. (The upper part of the shell is termed the carapace and the ventral portion the plastron.)

In selecting a tortoise one should ensure that the animal appears healthy. It should be active and withdraw quickly into its shell on being dis-

turbed. Its legs should be firm and not limp, and there should be no abnormal discharge from the eyes or nostrils. The shell and limbs should be uninjured. Females are generally larger and have a shorter tail than the male. The shield above the tail is flat in the former and curved in the male. It is a good idea to obtain a pair or more of tortoises, but not more than can be looked after with care. On being purchased they should be washed in tepid water.

Many tortoises are given free range in gardens, but this is not advised with all, as they eat a wide variety of vegetables and young plants, and being wandering animals are liable to get lost if the garden is not completely fenced or walled. They should be provided with as large a "pen" or "run" as possible, the walls or wire netting of which should be high enough to prevent their climbing over. The practice of tethering tortoises by a hole in the shell should be discouraged. They should always be provided with a box or shelter, the cheapest form being a wooden soap box turned on one side and with a sufficiently wide entrance, the wood being creosoted and covered with roofing felt. It can be lined with asbestos sheeting if desired, and have its floor covered with dry leaves or other bedding material. Some other shelter should also be provided in the run. The tortoises should be bathed during the hot weather. The occasional application of olive oil will keep the shell polished.

Land tortoises must be fed daily, and it is important to allow them to build up good reserves to enable them to hibernate through the winter successfully. Suitable foods include lettuce, young cabbage, peas, clover, dandelions, and a wide variety of green plants and ripe, sweet fruits. Generally bread and milk should be avoided. For young tortoises especially, it is recommended that once weekly or so the food should be sprinkled with powdered cuttlefish bone, or better still a small quantity of powdered calcium gluconate or cod-liver oil. Fresh water in a shallow tray, or even a saucer, should always be provided.

One of the most difficult problems in tortoise keeping is hibernation. Some persons avoid allowing their pets to hibernate by transferring them to a warm place, such as a heated greenhouse; if this is done they must be kept well fed and their place maintained at a summer temperature. It is imperative to do one thing or the other—the half-torpid tortoise that is neither hibernating nor kept at summer temperature will die. Moreover, a tortoise that is allowed to hibernate must not be disturbed.

Signs of pending hibernation, including sluggishness and lowered appetite, are usually evident late in September or early in October. Tortoises living in the garden may commence to bury themselves. If this is allowed they must be well covered, else they may be killed by the ensuing frost. It is, though, more convenient and perhaps provides a greater chance of survival, due to the changeable winter conditions in Britain, to place the animal in a large box, which should be packed with straw, leaves, or hay. The box should be stored in a cool but frostproof place, such as out-building, cellar, or attic. It is important not to create conditions that will awaken the tortoise or tempt it to emerge before the following spring. Rats have been known to attack hibernating tortoises, and so due precautions should be taken.

On emerging from hibernation the eyes and nostrils are somewhat sealed, and should be released by bathing with a 4 per cent. boric acid solution and warm water.

Recently imported female tortoises frequently lay eggs, but it is not a common occurrence for pairs to breed freely in Britain. During the early part of the summer the male is sometimes seen butting the shell of the female, this being a courtship action. If eggs are laid it is unlikely that they will be fertile, and less likely that they can be hatched. They have been hatched by placing them on damp sand and storing them in a warm place—a heated greenhouse or airing cupboard. The eggs should not be disturbed or "turned" once incubation has commenced.

Tortoise ticks are often present on freshly imported specimens, and may best be removed by damping the tick first with paraffin or methylated spirits and then removing it gently with tweezers. Round worms are very numerous in tortoises, and

should they be seen in the faecal matter the remainder may be best eliminated by sprinkling up to one grain of powdered santonin on the food once a week for six weeks. Eye infections are common, and are usually remedied by bathing the eye well with a 4 per cent. boric acid solution or warm cod-liver oil. Continuous discharge from the nose indicates lung infection, and as a primary measure the animal should be kept warm. Bleeding can be stopped by using Friar's Balsam, and care should be taken to prevent insects settling on open wounds.

## WATER TORTOISES (TERRAPINS).

In Great Britain the tortoises that have become adapted to life in ponds and rivers are usually termed "terrapins," the name turtle being applied to marine forms. In the U.S.A. and Canada, however, not only the marine species but also terrapins and tortoises are all termed "turtles."

Several kinds of terrapin are available and capable of thriving in Great Britain. These include several American species, the European Pond Tortoise (*Emys orbicularis*), the Spanish Terrapin (*Emys lepida*), the Caspian Terrapin (*Emys caspica*), and the Reeves' Terrapin (*Chinemys reevesii*), which hails from China and Japan.

The ideal place in which to keep terrapins is a garden pond within an enclosure. The pond should contain an "island" of dry ground on to which the animals can climb easily. The water should vary in depth, and at one point be at least 2 ft. deep. Provided that there is a suitable "island" the boundary walls of the pond can be upright to prevent escape. The final coat of cement should be smooth and mixed with a waterproofing agent. Shade should be available, not only on the island but also in some parts of the water. This may be provided by suitable plants.

Terrapins are almost entirely carnivorous, although the young of some species may take a little lettuce or other vegetable food. Suitable foods include small pieces of raw meat, raw liver (this should certainly be given from time to time), fish, and earthworms. Terrapins prefer to take their food in the water, and it is best to feed them individually if there are several, to ensure that each receives his proper share.

Water tortoises also hibernate. Some bury themselves in mud or sand at the bottom of their ponds, others will dig themselves into the earth in the island or banks of their pond, while others again may go to sleep in the box that, as in the case of land tortoises, should preferably be provided for them on part of their "land." Should they sleep at the bottom of the pond, it is as well to prevent freezing of the water. One means of doing this is to leave a log or logs floating on the surface. Moving these logs on cold mornings will help to break any ice formed and to prevent total freezing.

## AQUARIUM FISH.

There are two types of aquaria—the cold-water, for fish from this and other temperate countries, and the heated, for tropical varieties of fish. Apart from the fact that a suitable heating mechanism—usually electric, with thermostat control—has to be maintained for tropical aquaria, the general principles governing the two types are much the same. There is a certain amount of additional initial expense in setting up a heated aquarium—the running costs are not high—but in some respects tropical fish are easier to maintain than many of the cold-water varieties.

It should be emphasised at the outset that those who want to keep fish should invest in a proper aquarium and not in a "goldfish bowl," unless the latter be very large in relation to the fish to be kept. Far too many fish suffer from overcrowding or from lack of sufficient water surface. In the case of cold-water fish, it has

been calculated that every "1 in. of body" requires 1 sq. ft. of water surface in order to obtain sufficient oxygen for respiration. Thus a fish the body of which (i.e., the length minus the tail fins) is 4 in. will require at least 4 sq. ft. of water surface, i.e., an area of 2 ft. × 2 ft. Two such fish will require twice this area, and so on. In *The Right Way to Keep Pet Fish* by R. Dutta (6s.), it is pointed out that a goldfish should normally live for twenty-five years in a suitable pond, and grow to its full length of over 14 in. There are few indoor aquaria capable of supporting many full-grown goldfish in adequate conditions, and indeed it is recommended that fish such as shubunkins, fantails, veiltails, and orandas, which grow more slowly, are far better adapted to cold-water aquaria than goldfish. Tropical fish of the varieties kept in aquaria are usually much smaller. Many have an average body length of only about 1½ in., and eighteen such fish may be maintained in a suitably heated tank with an area of water surface of 18 in. × 12 in.

A beginner should not only read good books on the subject (including *Water Life* publications) but also consult experts and his local aquarist or dealer. Whatever aquarium is chosen, the conditions should be correct before any fish are introduced. Should fish be suddenly acquired, before a proper aquarium has been fitted up for them, they should be kept in some temporary (but sufficiently capacious) quarters until the aquarium is ready.

The instructions for installing and fitting up an aquarium are usually supplied, and should be followed carefully. The sand that is usually placed on the bottom should be thoroughly washed, and is best put in a little at a time. Make sure that the inside of the aquarium is thoroughly clean before anything at all is put into it. Ornamental rocks may next be introduced, and great care should be taken to ensure that these are of the correct type, unlikely to harm the fish physically or chemically. Water is then added very gently indeed, and suitable plants set. In the case of large tanks the planting is best done when the tank is only partly filled with water, but in any event the plants themselves should be kept wet all the time, or they may quickly shrivel up. In the case of cold-water aquaria everything may now be left for a few days—preferably a week or more—to ensure that all is well, and to allow certain micro-organisms that help form the food of the fish to develop. In the case of heated aquaria it is necessary also to ensure that the thermostat is working correctly and that the temperature is remaining constant or within very narrow limits. Here again it is advisable to wait at least a week before introducing any fish. Should conditions "go wrong" before or after the fish are introduced, it is best to start filling the tank all over again.

Fish should not be overfed, although regular feeding is essential. Attention must be paid to the feeding instructions issued with prepared fish foods, and to details given by the supplier of "live" foods. Provided fish are neither overcrowded nor overfed, the amount of sediment that accumulates in the tank will not be excessive, but it should be siphoned away gently every month, or more often if necessary. Water lost by evaporation should be replaced, and in the case of heated tanks especially, it is most desirable that the added water be of the same temperature as that already in the tank.

Certain species of water snail are often placed in aquaria to act as scavengers. It is necessary to ensure that, if snails are kept, they are of the right type, and it is important to consult experts on this matter.

Breeding is an interesting topic, there being both egg-laying and viviparous or "live-bearing" fish. The beginner is well advised to learn first how to keep fish in healthy condition in his aquarium before indulging in any planned breeding, and he should study the relevant information in books on the subject.

An aeration plant is often recommended on the grounds that it will increase the fish-carrying capacity of the aquarium. This is true up to a point, but overcrowding may bring other troubles besides those connected with lack of sufficient oxygen, and the golden rule is never to keep too many fish for the size of aquarium in question.

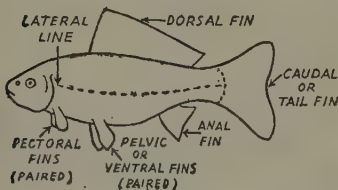


Another factor to be remembered is that should the aerator break down it may leave the fish with less oxygen than their proper requirement. It has been recommended that an aerator is best thought of as a stand-by, to be employed only in emergencies, *e.g.*, when for some reason extra fish have to be added to a tank already holding all or almost all its proper capacity.

There are unfortunately many diseases of fish, and as yet scientific knowledge concerning many of them is far less detailed than it should be. It is clear, however, that environmental factors are responsible for many deaths or cases of unthriftiness, and among the factors concerned may be listed: overcrowding, overfeeding, the provision of a diet that is qualitatively inadequate, lack of "balance" in the aquarium leading to unsuitable conditions, dirt, too strong light, lead paint and noxious substances, that may somehow have come into contact with the water (*e.g.*, from the hands of the person tending them) or been absorbed from the atmosphere. One must be careful of such things as disinfectants, soaps, petrol, etc. In the case of tropical fish the temperature of the water may be incorrect. Should fish troubles occur, therefore, it is as well to consider these various possibilities, although one should not hesitate to seek professional advice where there appears to be a case of infectious disease. An illing fish should certainly be removed from the tank (assuming that there are other fish present) and given separate quarters of its own if such a course is feasible.

It is not intended to provide a description of the separate diseases, although it may be mentioned that such signs as the appearance of material resembling cotton-wool (actual fungal growths) and "rotting" of the tail or fins, are among those that should lead the owner to isolate affected fish and to seek help immediately.

No attempt is made here to describe any of the many different species and varieties of fish suitable for private aquaria. Some of the "points"



of a fish are shown in the accompanying illustration. Great care must be taken in mixing species, *e.g.*, "hard mouthed" and "soft mouthed" kinds should not be kept together. The temptation to put other species (*e.g.*, newts) with aquarium fish must likewise be avoided.

### CAGE BIRDS.

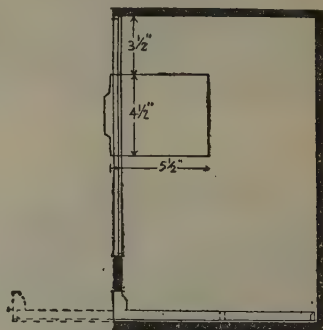
Very many species and varieties of birds are now maintained successfully in captivity, and there exists in Great Britain a large and expanding "cage-bird fancy," that caters for a considerable proportion of the smaller birds adapted to cage or aviary life.

The different types and sizes of birds have different requirements, and in the space available it is not possible to do more than cover the general principles and to deal briefly with the special characteristics of the management of the more easily maintained species. The beginner is advised to restrict his attention to one of the better-known species, *e.g.*, canaries or budgerigars, and not to attempt to maintain exotic varieties until he has acquired considerable experience.

Most species thrive best in aviaries, which may be indoor, outdoor, or of the combined "outdoor-indoor" type. An indoor aviary is usually all-wire and portable. The criticism of many such aviaries is that they tend to be high and narrow, whereas a fairly large floor-space is desirable.

They should not be placed in cold or draughty places, nor too near a fire. If sited so as to receive much direct sunlight they must have adequate shelter. The wires must be close together, especially if smaller species are kept, a distance between them of about  $\frac{1}{4}$  in. being generally suitable. An outdoor aviary—suitable only for some species or at certain times in the case of others—should occupy a sunny position, although it too must include shade, and must be protected from winds. There ought in fact to be a sheltered portion, dry and well protected from the elements. The aviary must be strongly made and safe from all predators, including rats. While it is often considered desirable to allow herbage to protrude through the wire-mesh floor, it is essential that the birds are never in close contact with wild rodents or their droppings. Most birds are highly susceptible to some forms of *salmonellosis* (see under mice and guinea-pigs), and can contract them in this way. It is advisable also that the roof of the aviary is solid: corrugated asbestos sheeting, projected well clear of the edges of the uprights so as to prevent water and other matter from entering the interior, is excellent. The droppings of wild birds may be a potent source of bacterial infection or of internal parasites. To prevent close contact otherwise with wild birds, the wire or wire-netting "walls" of the aviary may be double. If an "outdoor-indoor" aviary is employed, there is usually an indoor flight cage, separated from the external portion either by a very light hanging door of suitable size, through which the birds can easily push their way, or by a sliding partition that the owner can operate as required.

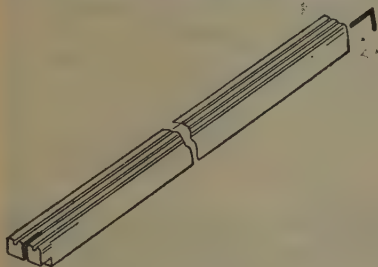
If an aviary is out of the question, then a suitable cage should be purchased or constructed. The cage need not be ornate—indeed simplicity of design usually facilitates the highly important task of keeping everything clean—but it must be large enough. A cross-section through a breeding-cage suitable for canaries, and for many other species, is shown in the accompanying illustration. Such a cage should measure about 40 in. in length  $\times$  12 in. wide  $\times$  18 in. high. It is constructed of wood or some suitable sheeting except for the front, which consists of vertical wires with horizontal stays, and can be divided into two parts by means of a suitable partition containing a removable section made of wire. By this means the cock and hen canaries can be introduced into the separate sections and develop a courtship before being allowed to be together for actual mating. The cross-section indicates the site and size of the removable portion of the partition, and it shows also the removable tray that is such an excellent fitting for almost any type of cage, and which greatly facilitates cleaning.



SECTION THROUGH CAGE.

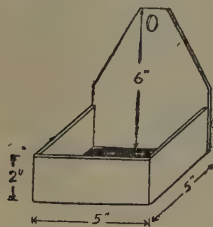
Whether an aviary or a cage is employed, it is essential to have proper fittings, including conveniently placed drinking-troughs, feeding-trays and bird-baths, and good perches. Much unnecessary discomfort is brought about through the use of unsuitable perches, or ones that are incorrectly situated or not sufficiently "firm."

A suitable type of perch, of which there should be several in the cage or aviary, is shown in the accompanying illustration, and it should be of the appropriate dimensions for the size of bird. In the case of the larger canaries (Norwich and



PERCH.

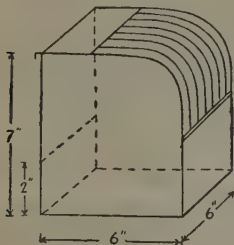
Yorkshire), e.g., the sectional measurements should be  $\frac{3}{4}$  in.  $\times$   $\frac{1}{2}$  in., whereas for a smaller canary (Border) they should be  $\frac{1}{2}$  in.  $\times$   $\frac{1}{4}$  in. The type of perch shown is easy to clean and does not possess awkward corners in which parasites may be harboured. The dimensions of a nesting-



NESTING-BOX WITH PLAIN WOOD BOTTOM.

box, a bird-bath, and a feeding-tray suitable for canaries are also given in the accompanying illustrations.

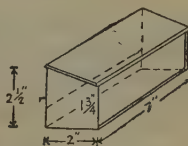
While wood is a convenient material for aviary and cage construction, it has, of course, several disadvantages. Out of doors it is best creosoted



BIRD BATH.

(lead paints must never be used for places in which birds or other small animals are kept), and indoors it is better lined with hard asbestos sheeting. Metal is suitable—provided that it does not rust or corrode and that the environmental conditions are warm enough.

In all cases a supply of clean, fresh water should be available. Strict cleanliness should be observed, and professional advice taken immediately if a bird is not thriving.



SEED TROUGH.

**CANARIES** (*Serinus canarius*).—These are domesticated forms of the race of wild serin found in the Canary Islands, and may live up to twenty-five years. Many varieties are known, and although most individuals are "canary yellow," other colours have been developed by fanciers. Many books have been written about the canary, although there is still much to be learned concerning its feeding and diseases—as is indeed the case with almost all cage-birds. The system of feeding generally recommended is based upon a mixture of 2 or 3 parts of canary seed (which is rich in energy, and which is sometimes mixed with a little millet seed) to 1 part of summer rape seed, which is high in fat and protein. There seems to have been some difficulty in obtaining suitable rape seed in some areas since the war. The best is German summer rape or Rübsen rape. Other seeds are employed as substitutes, or for special purposes, e.g., niger is usually added at breeding time, and linseed if there is any indication of premature or soft (out-of-season) moult. A little greenfood should be provided twice weekly, and a piece of cuttlefish bone placed between the wires is a suitable source of calcium. Soft-bill food (containing boiled egg, dried egg yolk, dried flies, and ants' pupae) is also recommended by many breeders, while others give chopped egg alone. Others again favour milk, especially for young birds.

Breeding is usually started late in March or early in April, but not unless the daily shade temperature is at least 50° F. The pairs should be selected earlier than this and transferred to breeding-cages, with the partition in position. By the middle of February the wire partition may be installed so that the two birds can see one another. A little niger seed is usually added to the diet, while finely ground oystershell or eggshell may be sprinkled on the floor. (Otherwise the floor may be covered with washed sand that is not too fine and is free from dust.) When the birds begin to feed one another through the wire they are ready for mating, and the partition may be removed. The nest-box can then be inserted and suitable nesting materials, e.g., cow hair and moss, placed in the cage. The incubation period is thirteen to fourteen days. After the eggs are laid it is customary to separate the cock and the hen again, but to allow him to rejoin her after the young are all about eight to nine days old and have opened their eyes. If it is desired that all the chicks be hatched together, then one can remove the first three eggs that are laid—usually one egg is laid daily—and keep them in a box at room temperature, substituting dummy eggs for them in the nest-box. On the afternoon of the third day of laying they are returned to the nest-box in place of the dummies.

When the young chicks are able to feed for themselves they should be provided with special food, such as egg and bread crumbs and a little cracked canary seed. If the cock bird interferes with them, or causes the hen to neglect them, he must be returned to his own section. Usually, however, all goes well, and the hen will go to the nest again when the first chicks are almost sixteen days old. Some three or four broods may be raised in a season.

**WEAVER BIRDS.** In all the more tropical parts of the Old World and Australia there are found one or more kinds of weaver bird—so-called because of the complicated type of nest that is "woven" out of suitable material. Many species have been adapted successfully to captivity. The



term "weaver birds" is somewhat loosely applied to more than one group of birds. So far as aviculturists are concerned, African Weavers or Weaving Finches are grouped apart from other birds. They vary in size from that of a Tit to that of a Starling, and belong to the very large Ploceidae family. African Weavers include:

(a) Viduline Weavers (genus *Pyromelana*), which are the prettiest and are closely related to the Whydahs. Among them are the *Orange*, *Crimson-crowned*, *Black-bellied*, *Grenadier*, *Napoleon*, *Taha*, *Yellow-backed*, *Red-billed*, *Russ's*, *Red-headed*, *Mahali*, and certain others which are not often imported into Great Britain.

(b) Poiceine Weavers, among them the *Abyssinian*, *Rufous-necked*, *Spotted-backed*, *Cabanis*, *Black-headed*, *Black-fronted*, *Half-masked*, *Golden*, *Little-masked*, *Harilaubs*, *Madagascar*, *Yellow*, *Scaly-crowned*, *Blue-billed*, *Thick-billed*, *Dinemellis*, and *Buffalo*.

Closely related are the Indian Weavers, of which there are four species recognised aviculturally. Only one of these, the *Bayo*, is normally imported into Great Britain. The *Java weaver* and the *Nelicourvi* (from Madagascar) are also closely related. All these weaving birds are grain-eaters, and in captivity their staple diet is millet seed. When housed with insectivorous birds, however, they often sample soft food. The basic treatment is on the whole similar to that of canaries, although the male and female are usually left together at all times, and that special provision may have to be made for nest-building in those species that breed well in captivity. For individual details the reader should consult *Animals as Pets* by Margaret Ward and James Fisher (16s.), which is a mine of information on pet animals in general. *Foreign Birds for Beginners* by D. H. S. Risdon (10s. 6d.) and *Foreign Birds for Garden Aviaries* by Alec Brooksbank (10s. 6d.) are also excellent sources of reference for those interested in these and other species of foreign birds.

**BUDGERIGARS.** The Budgerigar (*Melopsittacus undulatus*) has been bred seriously in captivity only during the past half-century or so, and yet it already has a large "fancy" and a wide range of colour varieties, e.g., greens, blues, whites, yellow, grey-wings, cinnamon-wings, greys, and a "slate." All are domesticated forms of the wild budgerigar, which is green, with yellow head, blue on the face, wings and tail, and grey streaks. The wild budgerigar belongs to the parrot family, but is a small social bird that is found in the grasslands of Australia.

Adult budgerigars show a fairly wide range of body weight, variations being of the order of 18 to over 40 gm., i.e., from just over  $\frac{1}{2}$  oz. to about  $1\frac{1}{2}$  oz. Males may be distinguished by the fact that the "cere" or skin covering the base of the beak is blue, whereas in females it is brown.

Budgerigars are normally sociable birds, and should be kept in pairs or groups unless one intends to teach an individual (which should be a male) to talk, in which case it has to be kept alone. While "outdoor-indoor" aviaries are best, they will thrive in cages of adequate size, and that suggested for canaries, but without the partition, is suitable for one pair. For breeding purposes a covered nest-box is desirable, but while budgerigars will breed all the year round, it is preferable to take the nesting-boxes down in Autumn and not to put them up again until the following April. The incubation period averages eighteen days, but begins when the first egg is laid, so that the young are of different ages. The first will leave the nest at about four weeks of age.

The feeding of budgerigars may be based on a mixture containing approximately equal parts of canary seed and millet. Flowering grass, chickweed, lettuce, or spray millet should be given in addition, and it is a good idea to place a grass turf in the aviary. On the average, a budgerigar will consume about an eggcupful of seed daily. More

food is usually taken by birds which can take ample exercise in outside flights. A cuttlefish bone should be placed between the wires, and fresh water provided at all times.

Budgerigars may contract many of the bird diseases, and it is wise to seek professional advice at once should a bird seem off colour. One particular form of disease found in captive budgerigars is so-called "French moult," which usually afflicts young birds that are beginning to fledge, and prevents their flying, hence the term "runners." Although some authorities believe the trouble to be due to a mite, there is still controversy over its exact cause. In any event, however, standards of feeding should be high, and every attempt made to deal with external parasites.

An authoritative work on many aspects of the subject is *The Cult of the Budgerigar* by W. Watmough (21s.).

**PARROTS, PARRAKEETS, LOVEBIRDS, PARROTLETS, AND COCKATOOS.** Parrots and parakeets (the name given to small varieties of parrot, usually with long tails) are found in all the tropical regions of the world, and many have been kept successfully in captivity. Lovebirds (species of *Agapornis*, from Africa) and parrotlets (such as the Guiana Parrotlet, *Forpus passerinus*, from Central and South America) are small birds well suited to captivity and becoming more popular in Great Britain as the recent work *Lovebirds and Parrotlets* by L. P. Luke (8s. 6d.) indicates. Cockatoos are found wild in Australia, and several types (including species of *Kakatoe* and also the Cockatiel (*Leptolophus hollandicus*)) do well in captivity.

Several years prior to the last war a ban was imposed on the importation of parrots. This was on account of the fact that they were often found to be infected with a virus disease, termed "psittacosis," that was infectious for human beings, in which it caused a severe pneumonia. It has since been discovered that psittacosis, known popularly as "parrot disease," is by no means confined to the parrot family, but may occur in various other species, including some sea-birds and also pigeons. It has indeed been found in stocks of pigeons in the U.S.A. and in Great Britain. The name "ornithosis" is now often used in place of psittacosis, while the ban on parrots has been lifted.

Parrots are mainly birds of the forest, and in the wild make nests in holes in trees.

Aviaries of the outdoor-indoor type are suitable for most parrots, but they all need sufficient warmth, and must not be exposed to draughts or cold. Some form of heating may be desirable in colder weather. (Many parrot ills seem to respond to keeping the bird at quite a high environmental temperature.) If a cage is employed it should be of sufficient size. It is best to cover the cage at night with a dark cloth or open covering which should, however, be cleaned regularly and not serve as a reservoir of dirt or infection.

For all the larger parrots the basal diet found to be satisfactory in Zoological Gardens and elsewhere comprises hemp, sunflower seed, canary seed, oats, and apple. This is supplemented in various ways for different species, and details may be obtained from dealers or from the book by Margaret Ward and James Fisher. The smaller types (lovebirds and parrotlets) are fed in much the same way as budgerigars, although sunflower seed is recommended, especially at colder times of the year. For most cockatoos it has been found that a diet of wheat mixture, hemp, sunflower seed, ground-nuts, apples, and lettuce is satisfactory. Cockatiels are fed on canary seed, sunflower seed, apples, lettuce, millet, hemp, bread, and oats.

Everyone is interested in talking parrots, but it is necessary to secure a young bird, preferably a cock, and to isolate it from the others if it is to be taught successfully. It should preferably be in the charge of one person only.

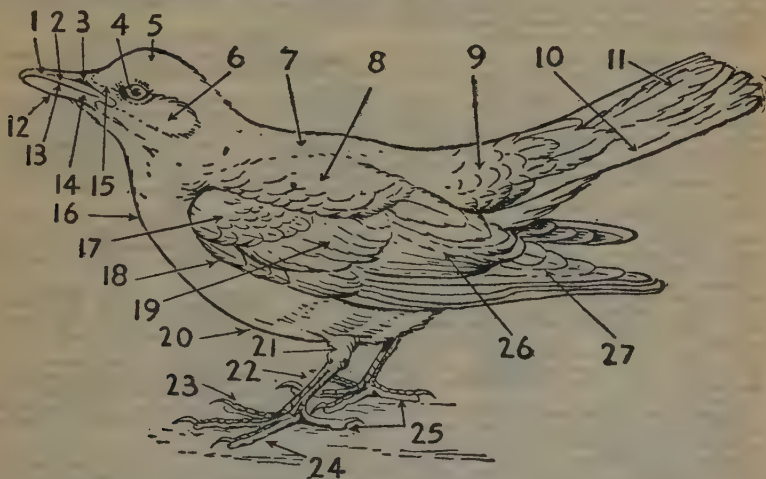
# BRITISH WILD BIRDS AND THEIR IDENTIFICATION.

Wild birds attract the attention of many people—their activity by day, their plumage, and their song render them far more conspicuous than the largely nocturnal mammals—and in Great Britain alone there are several thousand bird-watchers. Merely to learn to identify birds in the hope of seeing or "spotting" rarities is, however, of little value in itself, and has been dubbed "stamp-collecting" by more serious students of ornithology, who would rather have the help of bird-watchers in other directions. Accurate recognition of different species and varieties is, of course, indispensable, but anyone really interested in birds should regard it as a means to an end and not as an end in itself. There is still much to learn concerning the habits, food, breeding, and fluctuation in numbers of many of the species in Great Britain. Indeed, there are serious gaps in our knowledge of even the commonest birds. Anyone who is prepared to take up ornithology seriously, and who is content to undertake painstaking and often somewhat mundane tasks,

"keel" (*L. carina*) to their breastbone, hence the name Carinatae.

The numbers in the illustration correspond to the following "points":—

1. Culmen, i.e., the ridge along the top of the upper "beak" or mandible.
2. Upper beak or mandible (the upper and lower beaks form the "bill").
3. Nostril.
4. Iris of the eye.
5. Crown.
6. Ear coverts.
7. Mantle.
8. Scapulars.
9. Upper tail coverts.
10. Tail-feathers or retrices.
11. Outer tail-feathers.
12. Gonyes, i.e., the ridge formed by the two parts of the under mandible.
13. Cutting edge.
14. Under-beak or mandible.
15. Lores.



THE "POINTS" OF A FLYING BIRD. (SEE TEXT)

can help materially to add to the collection of necessary facts.

In the space available it is, of course, impossible to do more than introduce the subject, but fortunately there are available many works of reference. Two in particular, are *Bird Recognition* by James Fisher (to appear eventually in four volumes at 2s. 6d. each), and *Pocket Guide to British Birds* by R. S. R. Fitter and R. A. Richardson (21s.), while for the absolute beginner *Bird Watching for Beginners* by Bruce Campbell (2s. 6d.) is excellent. The person who has taken up ornithology really seriously will find the *Handbook of British Birds* by H. F. Witherby, F. C. R. Jourdain, N. F. Ticehurst, and B. W. Tucker (in 5 volumes, each 25s.) indispensable. This is the standard work dealing in detail with all the many species of birds (over 500) that appear on "the British list." Fortunately there has recently appeared a condensed version, *The Popular Handbook of British Birds* by P. A. D. Hollom (45s.).

The accompanying illustration indicates the "points" of a typical flying bird. Actually all our birds are members of the great subdivision of *Carinatae*, or flying-bird. The other great subdivision, the *Ratitae*, or running-birds, contains such species as the ostrich, rhea, emu, and cassowary. The flying-birds all have a well-developed

16. Breast.
17. Lesser wing coverts (the row of feathers appearing just below forms the median wing-coverts).
18. Ala spuria or bastard-wing.
19. greater wing coverts.
20. Belly.
21. Tibia.
22. Tarsus.
23. Inner toe.
24. Outer toe.
25. Hind toe.
26. Secondaries.
27. Primaries.

A knowledge of these points will help the reader to understand descriptions in books of different species of birds.

The flying birds are divided into "Orders," some eighteen of which are represented on the British list. By far the largest of these Orders is (1) that containing the passerine birds (*L. passer*, a sparrow). The others are those containing: (2) swifts; (3) nightjars; (4) kingfishers, rollers, hoopoes, and bee-eaters; (5) woodpeckers and wrynecks; (6) cuckoos; (7) owls; (8) birds of prey; (9) storks, herons, bitterns, and related birds; (10) swans, geese, and ducks; (11) gannets and cormorants; (12) petrels; (13) grebes; (14) divers; (15) pigeons, doves, and sand-grouse;



(16) waders, gulls, terns, skuas, and auks; (17) bustards, cranes, and rails; and (18) game-birds.

Each of these Orders is divided into "Families," and the passerine birds are comprised of twenty such families, viz.: (i) crows and related birds; (ii) starlings; (iii) orioles; (iv) finches and buntings; (v) sparrows; (vi) larks; (vii) pipits and wagtails; (viii) creepers; (ix) nuthatches; (x) tits; (xi) shrikes; (xii) waxwings; (xiii) flycatchers; (xiv) goldcrests; (xv) warblers; (xvi) thrushes and chats; (xvii) accentors; (xviii) wrens; (xix) dippers; and (xx) swallow and martins.

These lists are formidable, but the beginner is advised to concentrate on the common species until he can identify them with ease. There are few parts of Great Britain where some bird life is not to be seen, and even London and other cities have large bird populations. Size is, of course, an important factor in recognition, and most people can learn to recognise the difference between the larger passerine birds the size of the crow (18½ in.) or jackdaw (13 in.), the intermediate ones the size of the blackbird (10 in.) or starling (8½ in.), and the smaller ones the size of the house-sparrow (5½ in.).

The following notes may help to emphasise key points in recognising some of the commoner species among three families of British passerine birds, and indicate the characters that are of help in distinguishing one bird from another.

#### CORVIDÆ (Crow family).

These are all large birds, with a length of from about 13–25 in., according to species:—

**Raven** (*Corvus corax*).—The largest British passerine (about 25 in. long), which is found mainly in mountainous and wild hilly districts and near cliffs. Has a much stouter bill than the crow, a more graduated tail, and its note in flight is a repeated "pruk, pruk" sound. It has a powerful-looking, regular wing-beat during flight, and glides and soars freely. It is capable of "aerobatics." Has a varied diet, including carrion, small animals, sometimes helpless sheep, eggs of other birds, and some vegetable matter.

**Carrion crow** (*Corvus corone*).—Uniformly black plumage. The base of the bill is fully feathered, and the bill itself is usually stouter and more curved than that of the rook. Length about 13½ in. Flight rather slow, with somewhat slower and more "deliberate" wing beats than those of rook. Usual note a hoarse croaking "kraah" or "krarr." Nests usually in forks of trees. May often be seen eating dead rabbits or other carrion on the roads.

**Hooded Crow** (*Corvus cornix*).—The "hoodie" may not really be a distinct species from the carrion-crow, for although it looks quite different, having a grey mantle, and under-parts, it interbreeds freely with the carrion-crow, and the "hybrid" young of such a mating can also breed. The hoodie is the more common species in Scotland, and predominates on most of the Scottish islands, the Isle of Man, and Ireland. Length about 18½ in.

**Rook** (*Corvus frugilegus*).—When seen on the ground the thighs appear "baggy" due to presence of loose flank feathers. Length about 18 in. The voice, usually a "caw," is distinct from the crows, while the face in the adult is described as a bare greyish white, which cause the bill to look longer and the head more peaked than those of the crow. Nests in colonies (rookeries), usually in large trees.

**Jackdaw** (*Corvus monedula*).—Often seen in company with rooks. Easily recognised by grey nape and ear-coverts. Length about 13 in. Walks with a quick, jaunty action; and altogether seems more alert than rooks or crows. Usually nests in holes, but sometimes in trees.

**Magpie** (*Pica pica*).—"Pied" plumage and a long wedge-shaped tail make recognition easy. Usually found in grassland near to thicket or other cover. Diet varied, but not uncommonly seen tackling carrion on the road. The total length is about 18 in., the tail being about 8–10 in.

**Jay** (*Garrulus glandarius*).—When seen clearly is quite unmistakable, having brownish-pink body, with whitish cream streaked with black, and wing coverts bright blue, barred with black. Length about 13 in. Is a very wary bird, and often the only view one gets of it is its white rump. It

eats many acorns, and nests mainly in woods and plantations containing oak-trees.

**Chough** (*Pyrrhocorax pyrrhocorax*).—This species is confined mainly to sea-cliffs or crags close to the coast in Cornwall, parts of Wales, the Isle of Man, one of the Scottish islands, and Western Ireland. Rather like a jackdaw in form, but without grey nape and with a characteristic long (1½–2 in.) curved red bill and red legs. Total length about 15 in.

#### STURNIDÆ (Starling family).

**Starling** (*Sturnus vulgaris*).—The starling, which originally nested in cliffs and the holes of trees—and still does in appropriate areas—has invaded man's haunts to such an extent that it now nests mainly in masonry. In London and other cities they may roost by the thousand on tall buildings, their twittering chorus being most marked. Starlings are capable, adaptable birds, whose diet may be either animal or vegetable. They have spread rapidly in the U.S.A. since they were introduced there. Although young starlings are a "mousey" brown, the adult has a characteristic "iridescent" plumage, blackish with a metallic sheen. In winter this becomes spangled. The body is plumpish and the tail short, and the beak pointed and fairly long. The walk is quick and jerky, and the bird "bustles with activity." Length about 8½ in.

#### FRINGILLIDÆ (Finch family).

This family comprises all the finch-like or seed-eating birds in Great Britain except the house-sparrow.

**Hawfinch** (*Coccothraustes coccothraustes*).—Stout "bull-necked" appearance with a relatively large bill and short tail. Length about 6½ in.

**Greenfinch** (*Chloris chloris*).—Olive-green plumage, with brighter yellow-green rump, and bright yellow patches on the primaries and at the sides of the tail. The bill is stout. Length about 5½ in.

**Goldfinch** (*Carduelis carduelis*).—Black wings, with a broad band of yellow, and black tail. Red, white, and black pattern on head. Quills of wings and tail have white terminal spot. Length about 4½ in.

**Siskin** (*Carduelis spinus*).—The male has predominantly yellow-green plumage, with black crown and chin and a yellow rump. The female is duller and greyer, without any black on the head. Length about 4½ in.

**Lesser Redpoll** (*Carduelis flammea cabaret*).—In breeding season its favourite haunts include birch copses. Crimson forehead and black chin. The note during flight is distinctive, and is described as a twittering "chuch-uch-uch-uch." Length about 4½ in.

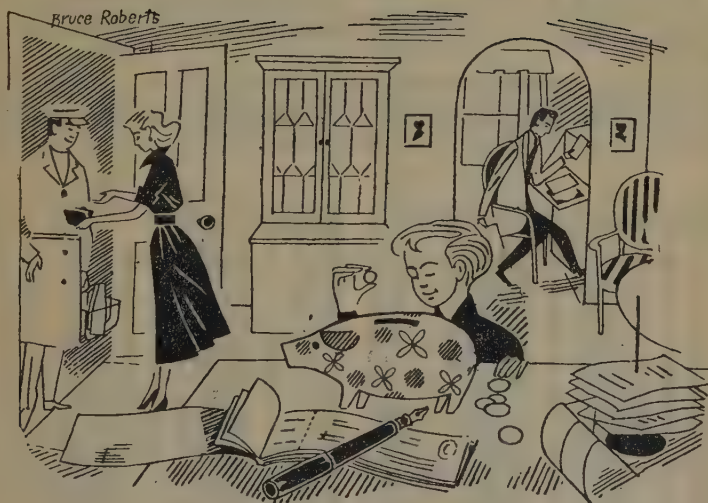
**British Bullfinch** (*Pyrrhula pyrrhula nesae*).—This bird is quite unmistakable at close quarters. Stout bill, grey back, black cap, wings and tail, and rose-red underparts in male, pinkish-grey underparts in female. The bird is secretive in habits, however, and often only the pure-white rump is seen. Length about 5½ in. The call-note is a long piping "deu" sound.

**British Chaffinch** (*Fringilla coelebs gentleri*).—This bird is widely distributed over almost the whole of Great Britain, and frequents gardens, hedgerows, and woods. During flight a broad white shoulder patch is evident, especially in the male, while the white on the outer tail feathers is conspicuous also. The rump is yellowish green. On the ground the species is quite distinctive, the male having a beautiful slate-blue crown and nape, chestnut mantle, pinkish-brown sides of head and underparts, and blackish wings and tail with the white marks that show up so well during flight. The female is a rather pale yellowish brown, lighter below. Length about 6 in.

**Brambling** (*Fringilla montifringilla*).—The shape of this bird is similar to that of the chaffinch, but the white rump is conspicuous during flight. On the ground the breast of both sexes is seen to be orange-buff, while there is a shoulder patch of similar colour on the male. Head brown or blackish. In England and Wales is a winter-visitor or migrant. Length about 5½ in.

This family comprises also the many species of buntings that occur, and for the individual recognition of which the reader is advised to study coloured plates or original specimens in a museum.

# Ready Reckoner





# Ready Reckoner

## From One-sixteenth of a Penny to Twenty-one Shillings

In the following tables any number of articles, separate weights or measures, days, weeks, months or years—from 1 to 5,000—are reckoned, at amounts from a sixteenth of one penny to one guinea. Up to 20 each number is worked through progressively in the shorter tables on this page; then follows 25—as a quarter of a hundred—and every multiple of ten next in order, with 52—as the number standing for the weeks in a year—interpolated in its proper place.

In the longer tables—from the next page to the end—every number from 1 to 100 is reckoned out. Beyond the number 100, the figures standing for multiples of dozens up to the gross (144) have a line each, as has also 112, the number of pounds in a cwt.; with an entry for 365, the number of days in the year, breaking the even hundred progression; and one at 2,240—for the purpose of showing at a glance what the cost per ton comes to of anything priced at the amount per pound shown by the table—inserted between the 2,000 and 3,000.

The reckoning for every possible combination of whole numbers can thus be readily arrived at, where not expressly given, by adding together the items indicating the values attached to composing numbers. Thus 3,366 articles at one-twelfth of a penny each would come to the total of 3,000 + 300 + 60 + 6, or, as will be seen, £1 0s. 10d. + 2s. 1d. + 5d. + 0½d., an aggregate equalling £1 3s. 4½d.

$\frac{1}{16}$  d.

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
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2	0	0	0½	30	0	0	1¾	600	0	3	1½
3	0	0	0¾	40	0	0	2½	700	0	3	7½
4	0	0	0½	50	0	0	3½	800	0	4	2
5	0	0	0¾	52	0	0	3½	900	0	4	8½
6	0	0	0¾	60	0	0	3½	1000	0	5	2½
7	0	0	0¾	70	0	0	4½	1100	0	5	8½
8	0	0	0¾	80	0	0	5	1200	0	6	3
9	0	0	0¾	90	0	0	5½	1300	0	6	9½
10	0	0	0¾	100	0	0	6½	1400	0	7	3½
11	0	0	0¾	108	0	0	6½	1500	0	7	9½
12	0	0	0¾	112	0	0	7	1600	0	8	4
13	0	0	0¾	120	0	0	7½	1700	0	8	10½
14	0	0	0¾	132	0	0	8½	1800	0	9	4½
15	0	0	1	144	0	0	9	1900	0	9	10½
16	0	0	1	150	0	0	9½	2000	0	10	5
17	0	0	1	200	0	1	0½	2240	0	11	8
18	0	0	1½	300	0	1	6½	3000	0	15	7½
19	0	0	1½	365	0	1	10½	4000	1	0	10
20	0	0	1½	400	0	2	1	5000	1	6	0½

$\frac{1}{8}$  d.

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3	0	0	0½	40	0	0	8	700	0	11	8
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7	0	0	1½	70	0	1	2	1100	0	18	4
8	0	0	1½	80	0	1	4	1200	1	0	0
9	0	0	1½	90	0	1	6	1300	1	1	8
10	0	0	2	100	0	1	8	1400	1	3	4
11	0	0	2½	108	0	1	9½	1500	1	5	0
12	0	0	2½	112	0	1	10½	1600	1	6	8
13	0	0	2½	120	0	2	0	1700	1	8	4
14	0	0	2½	132	0	2	2½	1800	1	10	0
15	0	0	3	144	0	2	4½	1900	1	11	8
16	0	0	3½	150	0	2	6	2000	1	13	4
17	0	0	3½	200	0	3	4	2240	1	17	4
18	0	0	3½	300	0	5	0	3000	2	10	0
19	0	0	3½	365	0	6	1	4000	3	6	8
20	0	0	4	400	0	6	8	5000	4	3	4

$\frac{1}{12}$  d.

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4	0	0	0¾	50	0	0	4½	800	0	5	6½
5	0	0	0¾	52	0	0	4½	900	0	6	3
6	0	0	0¾	60	0	0	5	1000	0	6	11½
7	0	0	0¾	70	0	0	5½	1100	0	7	7½
8	0	0	0¾	80	0	0	6½	1200	0	8	4
9	0	0	0¾	90	0	0	7½	1300	0	9	0½
10	0	0	0¾	100	0	0	8½	1400	0	9	8½
11	0	0	1	108	0	0	9	1500	0	10	5
12	0	0	1	112	0	0	9½	1600	0	11	1½
13	0	0	1	120	0	0	10	1700	0	11	9½
14	0	0	1½	132	0	0	11	1800	0	12	6
15	0	0	1½	144	0	1	0	1900	0	13	2½
16	0	0	1½	150	0	1	0½	2000	0	13	10½
17	0	0	1½	200	0	1	4½	2240	0	15	6½
18	0	0	1½	300	0	2	1	3000	1	0	10
19	0	0	1½	365	0	2	6½	4000	1	7	9½
20	0	0	1½	400	0	2	9½	5000	1	14	8½

$\frac{1}{3}$  d.

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3	0	0	1	40	0	1	1½	700	0	19	5½
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6	0	0	2	60	0	1	8	1000	1	7	9½
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10	0	0	3½	100	0	2	9½	1400	1	18	10½
11	0	0	3½	108	0	3	0	1500	2	1	8
12	0	0	4	112	0	3	1½	1600	2	4	5½
13	0	0	4½	120	0	3	4	1700	2	7	2½
14	0	0	4½	132	0	3	8	1800	2	10	0
15	0	0	5	144	0	4	0	1900	2	12	9½
16	0	0	5½	150	0	4	2	2000	2	15	6½
17	0	0	5½	200	0	5	6½	2240	3	2	2½
18	0	0	6	300	0	8	4	3000	4	3	4
19	0	0	6½	365	0	10	1½	4000	5	11	1½
20	0	0	6½	400	0	11	1½	5000	6	18	10½

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
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5	0	0	1	48	0	1	0	91	0	1	10
6	0	0	1	49	0	1	0	92	0	1	11
7	0	0	1	50	0	1	0	93	0	1	11
8	0	0	2	51	0	1	0	94	0	1	11
9	0	0	2	52	0	1	1	95	0	1	11
10	0	0	2	53	0	1	1	96	0	2	0
11	0	0	2	54	0	1	1	97	0	2	0
12	0	0	3	55	0	1	1	98	0	2	0
13	0	0	3	56	0	1	2	99	0	2	0
14	0	0	3	57	0	1	2	100	0	2	1
15	0	0	3	58	0	1	2	108	0	2	3
16	0	0	4	59	0	1	2	110	0	2	3
17	0	0	4	60	0	1	3	112	0	2	4
18	0	0	4	61	0	1	3	120	0	2	6
19	0	0	4	62	0	1	3	130	0	2	8
20	0	0	5	63	0	1	3	132	0	2	9
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27	0	0	6	70	0	1	5	300	0	6	3
28	0	0	7	71	0	1	5	365	0	7	7
29	0	0	7	72	0	1	6	400	0	8	4
30	0	0	7	73	0	1	6	500	0	10	5
31	0	0	7	74	0	1	6	600	0	12	6
32	0	0	8	75	0	1	6	700	0	14	7
33	0	0	8	76	0	1	7	750	0	15	7
34	0	0	8	77	0	1	7	800	0	16	8
35	0	0	8	78	0	1	7	900	0	18	9
36	0	0	9	79	0	1	7	1000	1	0	10
37	0	0	9	80	0	1	8	1250	1	6	0
38	0	0	9	81	0	1	8	1500	1	11	3
39	0	0	9	82	0	1	8	1750	1	16	5
40	0	0	10	83	0	1	8	2000	2	1	8
41	0	0	10	84	0	1	9	2240	2	6	8
42	0	0	10	85	0	1	9	3000	3	2	6
43	0	0	10	86	0	1	9	5000	5	4	2

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	0	44	0	2	9	87	0	5	5
2	0	0	1	45	0	2	9	88	0	5	6
3	0	0	2	46	0	2	10	89	0	5	6
4	0	0	3	47	0	2	11	90	0	5	7
5	0	0	3	48	0	3	0	91	0	5	8
6	0	0	4	49	0	3	0	92	0	5	9
7	0	0	5	50	0	3	1	93	0	5	9
8	0	0	6	51	0	3	2	94	0	5	10
9	0	0	6	52	0	3	3	95	0	5	11
10	0	0	7	53	0	3	3	96	0	6	0
11	0	0	8	54	0	3	4	97	0	6	0
12	0	0	9	55	0	3	5	98	0	6	1
13	0	0	9	56	0	3	6	99	0	6	2
14	0	0	10	57	0	3	6	100	0	6	3
15	0	0	11	58	0	3	7	108	0	6	9
16	0	1	0	59	0	3	8	110	0	6	10
17	0	1	0	60	0	3	9	112	0	7	0
18	0	1	1	61	0	3	9	120	0	7	6
19	0	1	2	62	0	3	10	130	0	8	1
20	0	1	3	63	0	3	11	132	0	8	3
21	0	1	3	64	0	4	0	140	0	8	9
22	0	1	4	65	0	4	0	144	0	9	0
23	0	1	5	66	0	4	1	150	0	9	4
24	0	1	6	67	0	4	2	175	0	10	11
25	0	1	6	68	0	4	3	200	0	12	6
26	0	1	7	69	0	4	3	250	0	15	7
27	0	1	8	70	0	4	4	300	0	18	9
28	0	1	9	71	0	4	5	365	1	2	9
29	0	1	9	72	0	4	6	400	1	5	0
30	0	1	10	73	0	4	6	500	1	11	3
31	0	1	11	74	0	4	7	600	1	17	6
32	0	2	0	75	0	4	8	700	2	3	9
33	0	2	0	76	0	4	9	750	2	6	10
34	0	2	1	77	0	4	9	800	2	10	0
35	0	2	2	78	0	4	10	900	2	16	3
36	0	2	3	79	0	4	11	1000	3	2	6
37	0	2	3	80	0	5	0	1250	3	18	1
38	0	2	4	81	0	5	0	1500	4	13	9
39	0	2	5	82	0	5	1	1750	5	9	4
40	0	2	6	83	0	5	2	2000	6	5	0
41	0	2	6	84	0	5	3	2240	7	0	0
42	0	2	7	85	0	5	3	3000	9	7	6
43	0	2	8	86	0	5	4	5000	15	12	6

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	0	44	0	1	10	87	0	3	7
2	0	0	1	45	0	1	10	88	0	3	8
3	0	0	1	46	0	1	11	89	0	3	8
4	0	0	2	47	0	1	11	90	0	3	9
5	0	0	2	48	0	2	0	91	0	3	9
6	0	0	3	49	0	2	0	92	0	3	10
7	0	0	3	50	0	2	1	93	0	3	10
8	0	0	4	51	0	2	1	94	0	3	11
9	0	0	4	52	0	2	2	95	0	3	11
10	0	0	5	53	0	2	2	96	0	4	0
11	0	0	5	54	0	2	3	97	0	4	0
12	0	0	6	55	0	2	3	98	0	4	1
13	0	0	6	56	0	2	4	99	0	4	1
14	0	0	7	57	0	2	4	100	0	4	2
15	0	0	7	58	0	2	5	108	0	4	6
16	0	0	8	59	0	2	5	110	0	4	7
17	0	0	8	60	0	2	6	112	0	4	8
18	0	0	9	61	0	2	6	120	0	5	0
19	0	0	9	62	0	2	7	130	0	5	5
20	0	0	10	63	0	2	7	132	0	5	6
21	0	0	10	64	0	2	8	140	0	5	10
22	0	0	11	65	0	2	8	144	0	6	0
23	0	0	11	66	0	2	9	150	0	6	3
24	0	1	0	67	0	2	9	175	0	7	3
25	0	1	0	68	0	2	10	200	0	8	4
26	0	1	1	69	0	2	10	250	0	10	5
27	0	1	1	70	0	2	11	300	0	12	6
28	0	1	2	71	0	2	11	365	0	15	2
29	0	1	2	72	0	3	0	400	0	16	8
30	0	1	3	73	0	3	0	500	1	0	10
31	0	1	3	74	0	3	1	600	1	5	0
32	0	1	4	75	0	3	1	700	1	9	2
33	0	1	4	76	0	3	2	750	1	11	3
34	0	1	5	77	0	3	2	800	1	13	4
35	0	1	5	78	0	3	3	900	1	17	6
36	0	1	6	79	0	3	3	1000	2	1	8
37	0	1	6	80	0	3	4	1250	2	12	1
38	0	1	7	81	0	3	4	1500	3	2	6
39	0	1	7	82	0	3	5	1750	3	12	11
40	0	1	8	83	0	3	5	2000	4	3	4
41	0	1	8	84	0	3	6	2240	4	13	4
42	0	1	9	85	0	3	6	3000	6	5	0
43	0	1	9	86	0	3	7	5000	10	8	4

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	0	44	0	3	8	87	0	7	3
2	0	0	1	45	0	3	9	88	0	7	4
3	0	0	2	46	0	3	10	89	0	7	5
4	0	0	3	47	0	3	11	90	0	7	6
5	0	0	4	48	0	4	0	91	0	7	7
6	0	0	5	49	0	4	1	92	0	7	8
7	0	0	6	50	0	4	2	93	0	7	9
8	0	0	7	51	0	4	3	94	0	7	10
9	0	0	8	52	0	4	4	95	0	7	11
10	0	0	9	53	0	4	5	96	0	8	0
11	0	0	10	54	0	4	6	97	0	8	1
12	0	1	0	55	0	4	7	98	0	8	2
13	0	1	1	56	0	4	8	99	0	8	3
14	0	1	2	57	0	4	9	100	0	8	4
15	0	1	3	58	0	4	10	108	0	9	0
16	0	1	4	59	0	4	11	110	0	9	2
17	0	1	5	60	0	5	0	112	0	9	4
18	0	1	6	61	0	5	1	120	0	10	0
19	0	1	7	62	0	5	2	130	0	10	10
20	0	1	8	63	0	5	3	132	0	11	0
21	0	1	9	64	0	5	4	140	0	11	8
22	0	1	10	65	0	5	5	144	0	12	0
23	0	1	11	66	0	5	6	150	0	12	6
24	0	2	0	67	0	5	7	175	0	14	7
25	0	2	1	68	0	5	8	200	0	16	8
26	0	2	2	69	0	5	9	250	1	0	10
27	0	2	3	70	0	5	10	300	1	5	0
28	0	2	4	71	0	5	11	365	1	10	5
29	0	2	5	72	0	6	0	400	1	13	4
30	0	2	6	73	0	6	1	500	2	1	8
31	0	2	7	74	0	6	2	600	2	10	0
32	0	2	8	75	0	6	3	700	2	18	4
33	0	2	9	76	0	6	4	750	3	2	6
34	0	2	10	77	0	6	5	800	3	6	8
35	0	2	11	78	0	6	6	900	3	15	0
36	0	3	0	79	0	6	7	1000	4	3	4
37	0	3	1	80	0	6	8	1250	5	4	2
38	0	3	2	81	0	6	9	1500	6	5	0
39	0	3	3	82	0	6	10	1750	7	5	10
40	0	3	4	83	0	6	11	2000	8	6	8
41	0	3	5	84	0	7	0	2240	9	6	8
42	0	3	6	85	0	7	1	3000	12	10	0
43	0	3	7	86	0	7	2	5000	20	16	8



No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	1½	44	0	4	7½	87	0	9	0½
2	0	0	2½	45	0	4	8½	88	0	9	2
3	0	0	3½	46	0	4	9½	89	0	9	3½
4	0	0	5	47	0	4	10½	90	0	9	4½
5	0	0	6½	48	0	5	0	91	0	9	5½
6	0	0	7½	49	0	5	1½	92	0	9	7
7	0	0	8½	50	0	5	2½	93	0	9	8½
8	0	0	10	51	0	5	3½	94	0	9	9½
9	0	0	11½	52	0	5	5	95	0	9	10½
10	0	1	0½	53	0	5	6½	96	0	10	0
11	0	1	1½	54	0	5	7½	97	0	10	1½
12	0	1	3	55	0	5	8½	98	0	10	2½
13	0	1	4½	56	0	5	10	99	0	10	3½
14	0	1	5½	57	0	5	11½	100	0	10	5
15	0	1	6½	58	0	6	0½	108	0	11	3
16	0	1	8	59	0	6	1½	110	0	11	5½
17	0	1	9½	60	0	6	3	112	0	11	8
18	0	1	10½	61	0	6	4½	120	0	12	6
19	0	1	11½	62	0	6	5½	130	0	13	6½
20	0	2	1	63	0	6	6½	132	0	13	9
21	0	2	2½	64	0	6	8	140	0	14	7
22	0	2	3½	65	0	6	9½	144	0	15	0
23	0	2	4½	66	0	6	10½	150	0	15	7½
24	0	2	6	67	0	6	11½	175	0	18	2½
25	0	2	7½	68	0	7	1	200	1	0	10
26	0	2	8½	69	0	7	2½	250	1	6	0½
27	0	2	9½	70	0	7	3½	300	1	11	3
28	0	2	11	71	0	7	4½	365	1	18	0½
29	0	3	0½	72	0	7	6	400	2	1	8
30	0	3	1½	73	0	7	7½	500	2	12	1
31	0	3	2½	74	0	7	8½	600	3	2	6
32	0	3	4	75	0	7	9½	700	3	12	11
33	0	3	5½	76	0	7	11½	750	3	18	1½
34	0	3	6½	77	0	8	0½	800	4	3	4
35	0	3	7½	78	0	8	1½	900	4	13	9
36	0	3	9	79	0	8	2½	1000	5	4	2
37	0	3	10½	80	0	8	4	1250	6	10	2½
38	0	3	11½	81	0	8	5½	1500	7	16	3
39	0	4	0½	82	0	8	6½	1750	9	2	3½
40	0	4	2	83	0	8	7½	2000	10	8	4
41	0	4	3½	84	0	8	9	2240	11	13	4
42	0	4	4½	85	0	8	10½	3000	15	12	6
43	0	4	5½	86	0	8	11½	5000	26	0	10

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	1½	44	0	6	5	87	0	12	8½
2	0	0	3½	45	0	6	6½	88	0	12	10
3	0	0	5½	46	0	6	8½	89	0	12	11½
4	0	0	7	47	0	6	10½	90	0	13	1½
5	0	0	8½	48	0	7	0	91	0	13	3½
6	0	0	10½	49	0	7	1½	92	0	13	5
7	0	1	0½	50	0	7	3½	93	0	13	6½
8	0	1	2	51	0	7	5½	94	0	13	8½
9	0	1	3½	52	0	7	7	95	0	13	10½
10	0	1	5½	53	0	7	8½	96	0	14	0
11	0	1	7½	54	0	7	10½	97	0	14	1½
12	0	1	9	55	0	8	0	98	0	14	3½
13	0	1	10½	56	0	8	2	99	0	14	5½
14	0	2	0½	57	0	8	3½	100	0	14	7
15	0	2	2½	58	0	8	5½	108	0	15	9
16	0	2	4	59	0	8	7½	110	0	16	0½
17	0	2	5½	60	0	8	9	112	0	16	4
18	0	2	7½	61	0	8	10½	120	0	17	6
19	0	2	9½	62	0	9	0½	130	0	18	11½
20	0	2	11	63	0	9	2½	132	0	19	3
21	0	3	0½	64	0	9	4	140	1	0	5
22	0	3	2½	65	0	9	5½	144	1	1	0
23	0	3	4½	66	0	9	7½	150	1	1	10½
24	0	3	6	67	0	9	9½	175	1	5	6½
25	0	3	7½	68	0	9	11	200	1	9	2
26	0	3	9½	69	0	10	0½	250	1	16	5½
27	0	3	11½	70	0	10	2½	300	2	3	9
28	0	4	1	71	0	10	4½	365	2	13	2½
29	0	4	2½	72	0	10	6	400	2	18	4
30	0	4	4½	73	0	10	7½	500	3	12	11
31	0	4	6½	74	0	10	9½	600	4	7	6
32	0	4	8½	75	0	10	11½	700	5	2	2
33	0	4	9½	76	0	11	1	750	5	9	4½
34	0	4	11½	77	0	11	2½	800	5	16	8
35	0	5	1	78	0	11	4½	900	6	11	3
36	0	5	3	79	0	11	6½	1000	7	5	10
37	0	5	4½	80	0	11	8	1250	9	2	3½
38	0	5	6½	81	0	11	9½	1500	10	18	9
39	0	5	8½	82	0	11	11½	1750	12	15	2½
40	0	5	10	83	0	12	1	2000	14	11	8
41	0	5	11½	84	0	12	3	2240	16	6	8
42	0	6	1½	85	0	12	4½	3000	21	17	6
43	0	6	3½	86	0	12	6½	5000	36	9	2

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	1½	44	0	5	6	87	0	10	10½
2	0	0	3	45	0	5	7½	88	0	11	0
3	0	0	4½	46	0	5	9	89	0	11	1½
4	0	0	6	47	0	5	10½	90	0	11	3
5	0	0	7½	48	0	6	0	91	0	11	4½
6	0	0	9	49	0	6	1½	92	0	11	6
7	0	0	10½	50	0	6	3	93	0	11	7½
8	0	1	0	51	0	6	4½	94	0	11	9
9	0	1	1½	52	0	6	6	95	0	11	10½
10	0	1	3	53	0	6	7½	96	0	12	0
11	0	1	4½	54	0	6	9	97	0	12	1½
12	0	1	6	55	0	6	10½	98	0	12	3
13	0	1	7½	56	0	7	0	99	0	12	4½
14	0	1	9	57	0	7	1½	100	0	12	6
15	0	1	10½	58	0	7	3	108	0	13	6
16	0	2	0	59	0	7	4½	110	0	13	9
17	0	2	1½	60	0	7	6	112	0	14	0
18	0	2	3	61	0	7	7½	120	0	15	0
19	0	2	4½	62	0	7	9	130	0	16	3
20	0	2	6	63	0	7	10½	132	0	16	6
21	0	2	7½	64	0	8	0	140	0	17	6
22	0	2	9	65	0	8	1½	144	0	18	0
23	0	2	10½	66	0	8	3	150	0	18	9
24	0	3	0	67	0	8	4½	175	1	1	10½
25	0	3	1½	68	0	8	6	200	1	5	0
26	0	3	3	69	0	8	7½	250	1	11	3
27	0	3	4½	70	0	8	9	300	1	17	6
28	0	3	6	71	0	8	10½	365	2	5	7½
29	0	3	7½	72	0	9	0	400	2	10	0
30	0	3	9	73	0	9	1½	500	3	2	6
31	0	3	10½	74	0	9	3	600	3	15	0
32	0	4	0	75	0	9	4½	700	4	7	6
33	0	4	1½	76	0	9	6	750	4	13	9
34	0	4	3	77	0	9	7½	800	5	0	0
35	0	4	4½	78	0	9	9	900	5	12	6
36	0	4	6	79	0	9	10½	1000	6	5	0
37	0	4	7½	80	0	10	0	1250	7	16	3
38	0	4	9	81	0	10	1½	1500	9	7	6
39	0	4	10½	82	0	10	3	1750	10	13	9
40	0	5	0	83	0	10	4½	2000	12	10	0
41	0	5	1½	84	0	10	6	2240	14	0	0
42	0	5	3	85	0	10	7½	3000	18	15	0
43	0	5	4½	86	0	10	9	5000	31	5	0

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	2	44	0	7	4	87	0	14	6
2	0	0	4	45	0	7	6	88	0	14	8
3	0	0	6	46	0	7	8	89	0	14	10
4	0	0	8	47	0	7	10	90	0	15	0
5	0	0	10	48	0	8	0	91	0	15	2
6	0	1	0	49	0	8	2	92	0	15	4
7	0	1	2	50	0	8	4	93	0	15	6
8	0	1	4	51	0	8	6	94	0	15	8
9	0	1	6	52	0	8	8	95	0	15	10
10	0	1	8	53	0	8	10	96	0	16	0
11	0	1	10	54	0	9	0	97	0	16	2
12	0	2	0	55	0	9	2	98	0	16	4
13	0	2	2	56	0	9	4	99	0	16	6
14	0	2	4	57	0	9	6	100	0	16	8
15	0	2	6	58	0	9	8	108	0	18	0
16	0	2	8	59	0	9	10	110	0	18	4
17	0	2	10	60	0	10	0	112	0	18	8
18	0	3	0	61	0	10	2	120	1	0	0
19	0	3	2	62	0	10	4	130	1	1	8
20	0	3	4	63	0	10	6	132	1	2	0
21	0	3	6	64	0	10	8	140	1	3	4
22	0	3	8	65	0	10	10	144	1	4	0
23	0	3	10	66	0	11	0	150	1	5	0
24	0	4	0	67	0	11	2	175	1	9	2
25	0	4	2	68	0	11	4	200	1	13	4
26	0	4	4	69	0	11	6	250	2	1	8
27	0	4	6	70	0	11	8	300	2	10	0
28	0	4	8	71	0	11	10	365	3	0	10
29	0	4	10	72	0	12	0	400	3	6	8
30	0	5	0	73	0	12	2	500	4	3	4
31	0	5	2	74	0	12	4	600	5	0	0
32	0	5	4	75	0	12	6	700	5	16	8
33	0	5	6	76	0	12	8	750	6	5	0
34	0	5	8	77	0	12	10	800	6	13	4
35	0	5	10	78	0	13	0	900	7	10	0
36	0	6	0	79	0	13	2	1000	8	6	8
37	0	6	2	80	0	13	4	1250	10	8	4
38	0	6	4	81	0	13	6	1500	12	10	0
39	0	6	6	82	0	13	8	1750	14	11	8
40	0	6	8	83	0	13	10	2000	16	13	4
41	0	6	10	84	0	14	0	2240	18	13	4
42	0	7	0	85	0	14	2	3000	25	0	0
43	0	7	2	86	0	14	4	5000	41	13	4

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	2½	44	0	8	3	87	0	16	3½
2	0	0	4½	45	0	8	5½	88	0	16	6
3	0	0	6½	46	0	8	7½	89	0	16	8½
4	0	0	8½	47	0	8	9½	90	0	16	10½
5	0	0	11½	48	0	9	0	91	0	17	0½
6	0	1	1½	49	0	9	2½	92	0	17	3
7	0	1	3½	50	0	9	4½	93	0	17	5½
8	0	1	6	51	0	9	6½	94	0	17	7½
9	0	1	8½	52	0	9	9	95	0	17	9½
10	0	1	10½	53	0	9	11½	96	0	18	0
11	0	2	0½	54	0	10	1½	97	0	18	2½
12	0	2	3	55	0	10	3½	98	0	18	4½
13	0	2	5½	56	0	10	6	99	0	18	6½
14	0	2	7½	57	0	10	8½	100	0	18	9
15	0	2	9½	58	0	10	10½	108	1	0	3
16	0	3	0	59	0	11	0½	110	1	0	7½
17	0	3	2½	60	0	11	3	112	1	1	0
18	0	3	4½	61	0	11	5½	120	1	2	6
19	0	3	6½	62	0	11	7½	130	1	4	4½
20	0	3	9	63	0	11	9½	132	1	4	9
21	0	3	11½	64	0	12	0	140	1	6	3
22	0	4	1½	65	0	12	2½	144	1	7	0
23	0	4	3½	66	0	12	4½	150	1	8	1½
24	0	4	6	67	0	12	6½	175	1	12	9½
25	0	4	8½	68	0	12	9	200	1	17	6
26	0	4	10½	69	0	12	11½	250	2	6	10½
27	0	5	0½	70	0	13	1½	300	2	16	3
28	0	5	3	71	0	13	3½	365	3	8	5½
29	0	5	5½	72	0	13	6	400	3	15	0
30	0	5	7½	73	0	13	8½	500	4	13	9
31	0	5	9½	74	0	13	10½	600	5	12	6
32	0	6	0	75	0	14	0½	700	6	11	3
33	0	6	2½	76	0	14	3	750	7	0	7½
34	0	6	4½	77	0	14	5½	800	7	10	0
35	0	6	6½	78	0	14	7½	900	8	8	9
36	0	6	9	79	0	14	9½	1000	9	7	6
37	0	6	11½	80	0	15	0	1250	11	14	4½
38	0	7	1½	81	0	15	2½	1500	14	1	3
39	0	7	3½	82	0	15	4½	1750	16	8	1½
40	0	7	6	83	0	15	6½	2000	18	15	0
41	0	7	8½	84	0	15	9	2240	21	0	0
42	0	7	10½	85	0	15	11½	3000	28	2	6
43	0	8	0½	86	0	16	1½	5000	46	17	6

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	2½	44	0	10	1	87	0	17	11½
2	0	0	5½	45	0	10	3½	88	0	17	14
3	0	0	8½	46	0	10	6½	89	0	17	17
4	0	0	11½	47	0	10	9½	90	0	17	20
5	0	1	1½	48	0	11	0	91	0	17	23
6	0	1	4½	49	0	11	2½	92	0	17	26
7	0	1	7½	50	0	11	5½	93	0	17	29
8	0	1	10½	51	0	11	8½	94	0	17	32
9	0	2	0½	52	0	11	11	95	0	17	35
10	0	2	3½	53	0	12	1½	96	0	17	38
11	0	2	6½	54	0	12	4½	97	0	17	41
12	0	2	9½	55	0	12	7½	98	0	17	44
13	0	2	11½	56	0	12	10	99	0	17	47
14	0	3	2½	57	0	13	0½	100	1	2	11
15	0	3	5½	58	0	13	3½	108	1	4	9
16	0	3	8½	59	0	13	6½	110	1	5	2½
17	0	3	10½	60	0	13	9	112	1	5	8
18	0	4	1½	61	0	13	11½	120	1	7	6
19	0	4	4½	62	0	14	2½	130	1	9	9½
20	0	4	7½	63	0	14	5½	132	1	10	3
21	0	4	9½	64	0	14	8	140	1	12	1
22	0	5	0½	65	0	14	10½	144	1	13	0
23	0	5	3½	66	0	15	1½	150	1	14	4½
24	0	5	6½	67	0	15	4½	175	2	0	1½
25	0	5	9½	68	0	15	7	200	2	5	10
26	0	5	11½	69	0	15	9½	250	2	17	3½
27	0	6	2½	70	0	16	0	300	3	8	9
28	0	6	5½	71	0	16	3	365	4	3	7½
29	0	6	7½	72	0	16	6	400	4	11	8
30	0	6	10½	73	0	16	8½	500	5	14	7
31	0	7	1½	74	0	16	11½	600	6	17	6
32	0	7	4½	75	0	17	2½	700	8	0	5
33	0	7	7½	76	0	17	5½	750	8	11	10½
34	0	7	9½	77	0	17	7½	800	9	3	4
35	0	8	0½	78	0	17	10½	900	10	6	3
36	0	8	3½	79	0	18	1½	1000	11	9	2
37	0	8	5½	80	0	18	4	1250	14	6	5½
38	0	8	8½	81	0	18	6½	1500	17	3	9
39	0	8	11½	82	0	18	9	1750	20	1	0½
40	0	9	2½	83	0	19	0½	2000	22	18	4
41	0	9	4½	84	0	19	3	2240	25	13	4
42	0	9	7½	85	0	19	5½	3000	34	7	6
43	0	9	10½	86	0	19	8½	5000	57	5	10

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	2½	44	0	9	2	87	0	18	1½
2	0	0	5	45	0	9	4½	88	0	18	4
3	0	0	7½	46	0	9	7	89	0	18	6½
4	0	0	10	47	0	9	9½	90	0	18	9
5	0	1	0½	48	0	10	0	91	0	18	11½
6	0	1	3	49	0	10	2½	92	0	19	2
7	0	1	5½	50	0	10	5	93	0	19	4½
8	0	1	8	51	0	10	7½	94	0	19	7
9	0	1	10½	52	0	10	10	95	0	19	9½
10	0	2	1	53	0	11	0½	96	1	0	0
11	0	2	3½	54	0	11	3	97	1	0	2½
12	0	2	6	55	0	11	5½	98	1	0	5
13	0	2	8½	56	0	11	8	99	1	0	7½
14	0	2	11½	57	0	11	10½	100	1	0	10
15	0	3	1½	58	0	12	1	108	1	2	6
16	0	3	4	59	0	12	3½	110	1	2	11
17	0	3	6½	60	0	12	6	112	1	3	4
18	0	3	9	61	0	12	8½	120	1	5	0
19	0	3	11½	62	0	12	11	130	1	7	1
20	0	4	2	63	0	13	1½	132	1	7	6
21	0	4	4½	64	0	13	4	140	1	9	2
22	0	4	7	65	0	13	6½	144	1	10	0
23	0	4	9½	66	0	13	9	150	1	11	3
24	0	5	0	67	0	13	11½	175	1	16	5½
25	0	5	2½	68	0	14	2	200	2	1	8
26	0	5	5	69	0	14	4½	250	2	12	1
27	0	5	7½	70	0	14	7	300	3	2	6
28	0	5	10	71	0	14	9½	365	3	16	0½
29	0	6	0½	72	0	15	0	400	4	3	4
30	0	6	3	73	0	15	2½	500	5	4	2
31	0	6	5½	74	0	15	5	600	6	5	0
32	0	6	8	75	0	15	7½	700	7	5	10
33	0	6	10½	76	0	15	10	750	7	16	3
34	0	7	1	77	0	16	0½	800	8	6	8
35	0	7	3½	78	0	16	3	900	9	7	6
36	0	7	6	79	0	16	5½	1000	10	8	4
37	0	7	8½	80	0	16	8	1250	13	0	5
38	0	7	11	81	0	16	10½	1500	15	12	6
39	0	8	1½	82	0	17	1	1750	18	15	0
40	0	8	4	83	0	17	3½	2000	20	16	8
41	0	8	6½	84	0	17	6	2240	23	6	8
42	0	8	9	85	0	17	8½	3000	31	5	0
43	0	8	11½	86	0	17	11	5000	52	1	8

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	3	44	0	11	0	87	0	11	9
2	0	0	6	45	0	11	3	88	0	11	12
3	0	0	9	46	0	11	6	89	0	11	15
4	0	1	0	47	0	11	9	90	0	11	18
5	0	1	3	48	0	12	0	91	0	11	21
6	0	1	6	49	0	12	3	92	0	11	24
7	0	1	9	50	0	12	6	93	0	11	27
8	0	2	0	51	0	12	9	94	0	11	30
9	0	2	3	52	0	13	0	95	0	11	33
10	0	2	6	53	0	13	3	96	0	11	36
11	0	2	9	54	0	13	6	97	0	11	39



No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	3½	44	0	12	11	87	1	3	6½
2	0	0	6	45	0	12	2½	88	1	3	10
3	0	0	9½	46	0	12	5½	89	1	4	1½
4	0	1	1	47	0	12	8½	90	1	4	4½
5	0	1	4½	48	0	13	0	91	1	4	7½
6	0	1	7½	49	0	13	3½	92	1	4	11
7	0	1	10½	50	0	13	6½	93	1	5	2½
8	0	2	2	51	0	13	9½	94	1	5	5½
9	0	2	5½	52	0	14	1	95	1	5	8½
10	0	2	8½	53	0	14	4½	96	1	6	0
11	0	2	11½	54	0	14	7½	97	1	6	3½
12	0	3	3	55	0	14	10½	98	1	6	6½
13	0	3	6½	56	0	15	2	99	1	6	9½
14	0	3	9½	57	0	15	5½	100	1	7	1
15	0	4	0½	58	0	15	8½	108	1	9	3
16	0	4	4	59	0	15	11½	110	1	9	9½
17	0	4	7½	60	0	16	3	112	1	10	4
18	0	4	10½	61	0	16	6½	120	1	12	6
19	0	5	1½	62	0	16	9½	130	1	15	2½
20	0	5	5	63	0	17	0½	132	1	15	9
21	0	5	8½	64	0	17	4	140	1	17	11
22	0	5	11½	65	0	17	7½	144	1	19	0
23	0	6	2½	66	0	17	10½	150	2	0	7½
24	0	6	6	67	0	18	1½	175	2	7	4½
25	0	6	9½	68	0	18	5	200	2	14	2
26	0	7	0½	69	0	18	8½	250	3	7	8½
27	0	7	3½	70	0	18	11½	300	4	1	3
28	0	7	7	71	0	19	2½	365	4	18	10½
29	0	7	10½	72	0	19	6	400	5	8	4
30	0	8	1½	73	0	19	9½	500	6	15	5
31	0	8	4½	74	1	0	0½	600	8	2	6
32	0	8	8	75	1	0	3½	700	9	9	7
33	0	8	11½	76	1	0	7	750	10	3	1½
34	0	9	2½	77	1	0	10½	800	10	16	8
35	0	9	5½	78	1	1	1½	900	12	3	9
36	0	9	9	79	1	1	4½	1000	13	10	10
37	0	10	0½	80	1	1	8	1250	16	18	6½
38	0	10	3½	81	1	1	11½	1500	20	6	3
39	0	10	6½	82	1	2	2½	1750	23	13	11½
40	0	10	10	83	1	2	5½	2000	27	1	8
41	0	11	1½	84	1	2	9	2240	30	6	8
42	0	11	4½	85	1	3	0½	3000	40	12	6
43	0	11	7½	86	1	3	3½	5000	67	14	2

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	3½	44	0	13	9	87	1	7	2½
2	0	0	7½	45	0	14	0½	88	1	7	6
3	0	0	11½	46	0	14	4½	89	1	7	9½
4	0	1	3	47	0	14	8½	90	1	8	1½
5	0	1	6½	48	0	15	0	91	1	8	5½
6	0	1	10½	49	0	15	3½	92	1	8	9
7	0	2	2½	50	0	15	7½	93	1	9	0½
8	0	2	6	51	0	15	11½	94	1	9	4½
9	0	2	9½	52	0	16	3	95	1	9	8½
10	0	3	1½	53	0	16	6½	96	1	10	0
11	0	3	5½	54	0	16	10½	97	1	10	3½
12	0	3	9	55	0	17	2½	98	1	10	7½
13	0	4	0½	56	0	17	6	99	1	10	11½
14	0	4	4½	57	0	17	9½	100	1	11	3
15	0	4	8½	58	0	18	1½	108	1	13	9
16	0	5	0	59	0	18	5½	110	1	14	4½
17	0	5	3½	60	0	18	9	112	1	15	0
18	0	5	7½	61	0	19	0½	120	1	17	6
19	0	5	11½	62	0	19	4½	130	2	0	7½
20	0	6	3	63	0	19	8½	132	2	1	3
21	0	6	6½	64	1	0	0	140	2	3	9
22	0	6	10½	65	1	0	3½	144	2	5	0
23	0	7	2½	66	1	0	7½	150	2	6	10½
24	0	7	6	67	1	0	11½	175	2	14	8½
25	0	7	9½	68	1	1	3	200	3	2	6
26	0	8	1½	69	1	1	6½	250	3	18	1½
27	0	8	5½	70	1	1	10½	300	4	13	9
28	0	8	9	71	1	2	2½	365	5	14	0½
29	0	9	0½	72	1	2	6	400	6	5	0
30	0	9	4½	73	1	2	9½	500	7	16	3
31	0	9	8½	74	1	3	1½	600	9	7	6
32	0	10	0	75	1	3	5½	700	10	18	9
33	0	10	3½	76	1	3	9	750	11	14	4½
34	0	10	7½	77	1	4	0½	800	12	10	0
35	0	10	11½	78	1	4	4½	900	14	1	3
36	0	11	3	79	1	4	8½	1000	15	12	6
37	0	11	6½	80	1	5	0	1250	19	10	7½
38	0	11	10½	81	1	5	3½	1500	23	8	9
39	0	12	2½	82	1	5	7½	1750	27	6	10½
40	0	12	6	83	1	5	11½	2000	31	5	0
41	0	12	9½	84	1	6	3	2240	35	0	0
42	0	13	1½	85	1	6	6½	3000	46	17	6
43	0	13	5½	86	1	6	10½	5000	78	2	6

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	3½	44	0	12	10	87	1	5	4½
2	0	0	7	45	0	13	1½	88	1	5	8
3	0	0	10½	46	0	13	5	89	1	5	11½
4	0	1	2	47	0	13	8½	90	1	6	3
5	0	1	5½	48	0	14	0	91	1	6	6½
6	0	1	9	49	0	14	3½	92	1	6	10
7	0	2	0½	50	0	14	7	93	1	6	13½
8	0	2	4	51	0	14	10½	94	1	7	5½
9	0	2	7½	52	0	15	2	95	1	7	8½
10	0	2	11	53	0	15	5½	96	1	8	0
11	0	3	2½	54	0	15	9	97	1	8	3½
12	0	3	6	55	0	16	0½	98	1	8	7
13	0	3	9½	56	0	16	4	99	1	8	10½
14	0	4	1	57	0	16	7½	100	1	9	2
15	0	4	4½	58	0	16	11	108	1	11	6
16	0	4	8	59	0	17	2½	110	1	12	1
17	0	4	11½	60	0	17	6	112	1	12	8
18	0	5	3	61	0	17	9½	120	1	15	0
19	0	5	6½	62	0	18	1	130	1	17	11
20	0	5	10	63	0	18	4½	132	1	18	6
21	0	6	1½	64	0	18	8	140	2	0	10
22	0	6	5	65	0	18	11½	144	2	2	0
23	0	6	8½	66	0	19	3	150	2	3	0
24	0	7	0	67	0	19	6½	175	2	11	0½
25	0	7	3½	68	0	19	10	200	2	18	4
26	0	7	7	69	1	0	1½	250	3	12	11
27	0	7	10½	70	1	0	5	300	4	7	6
28	0	8	2	71	1	0	8½	365	5	6	5½
29	0	8	5½	72	1	1	0	400	5	16	8
30	0	8	9	73	1	1	3½	500	7	5	10
31	0	9	0½	74	1	1	7	600	8	15	0
32	0	9	4	75	1	1	10½	700	10	4	2
33	0	9	7½	76	1	2	2	750	10	18	9
34	0	9	11	77	1	2	5½	800	11	13	4
35	0	10	2½	78	1	2	9	900	13	2	6
36	0	10	6	79	1	3	0½	1000	14	11	8
37	0	10	9½	80	1	3	4	1250	18	4	7
38	0	11	1	81	1	3	7½	1500	21	17	6
39	0	11	4½	82	1	3	11	1750	25	10	5
40	0	11	8	83	1	4	2½	2000	29	3	4
41	0	11	11½	84	1	4	6	2240	32	13	4
42	0	12	3	85	1	4	9½	3000	43	15	0
43	0	12	6½	86	1	5	1	5000	72	18	4

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	4	44	0	14	8	87	1	9	0
2	0	0	8	45	0	15	0	88	1	9	4
3	0	1	0	46	0	15	4	89	1	9	8
4	0	1	4	47	0	15	8	90	1	10	0
5	0	1	8	48	0	16	0	91	1	10	4
6	0	2	0	49	0	16	4	92	1	10	8
7	0	2	4	50	0	16	8	93	1	11	0
8	0	2	8	51	0	17	0	94	1	11	4
9	0	3	0	52	0	17	4	95	1	11	8
10	0	3	4	53	0	17	8	96	1	12	0
11	0	3	8	54	0	18	0	97	1	12	4
12	0	4	0	55	0	18	4	98	1	12	8
13	0	4	4	56	0	18	8	99	1	13	0
14	0	4	8	57	0	19	0	100	1	13	4
15	0	5	0	58	0	19	4	108	1	16	0
16	0	5	4	59	0	19	8	110	1	16	8
17	0	5	8	60	1	0	0	112	1	17	4
18	0	6	0	61	1	0	4	120	2	0	0
19	0	6	4	62	1	0	8	130	2	3	4
20	0	6	8	63	1	1	0	132	2	4	0
21	0	7	0	64	1	1	4	140	2	6	8
22	0	7	4	65	1	1	8	144	2	8	0
23	0	7	8	66	1	2	0	150	2	10	0
24	0	8	0	67	1	2	4	175	2	18	4
25	0	8	4	68	1	2	8	200	3	6	8
26	0	8	8	69	1	3	0	250	4	3	4
27	0	9	0	70	1	3	4	300	5	0	0
28	0	9	4	71	1	3	8	365	6	1	8
29	0	9	8	72	1	4	0	400	6	13	4
30	0	10	0	73	1	4	4	500	8	6	8
31	0	10	4	74	1	4	8	600	10	0	0
32	0	10	8	75	1	5	0	700	11	13	4
33	0	11	0	76	1	5	4	750	12	10	0
34	0	11	4	77	1	5	8	800	13	6	8
35	0	11	8	78	1	6	0	900	15	0	0
36	0	12	0	79	1	6	4	1000	16	13	4
37	0	12	4	80	1	6	8	1250	20	16	8
38	0	12	8	81	1	7	0	1500	25	0	0
39	0	13	0	82	1	7	4	1750	29	3	4
40	0	13	4	83	1	7	8	2000	33	6	8
41	0	13	8	84	1	8	0	2240	37	6	8
42	0	14	0	85	1	8	4	3000	50	0	0
43	0	14	4	86	1	8	8	5000	83	6	8

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	4½	44	0	15	7	87	1	10	9½
2	0	0	0	45	0	16	11½	88	1	11	2
3	0	0	8½	46	0	17	3½	89	1	11	6½
4	0	1	5	47	0	16	7½	90	1	11	10½
5	0	1	9½	48	0	17	0	91	1	12	2
6	0	2	1	49	0	17	4½	92	1	12	2½
7	0	2	5	50	0	17	8½	93	1	12	11½
8	0	2	10	51	0	18	0½	94	1	13	3½
9	0	3	2½	52	0	18	5	95	1	13	7½
10	0	3	6½	53	0	19	9½	96	1	14	0
11	0	3	10½	54	0	19	1½	97	1	14	4½
12	0	4	3	55	0	19	5½	98	1	14	8½
13	0	4	7½	56	0	19	10	99	1	15	0½
14	0	4	11½	57	1	0	2½	100	1	15	5
15	0	5	3½	58	1	0	6½	108	1	18	3
16	0	5	8	59	1	0	10½	110	1	18	11½
17	0	6	0½	60	1	1	3	112	1	19	8
18	0	6	4½	61	1	1	7½	120	2	2	6
19	0	6	8½	62	1	1	11	130	2	6	0½
20	0	7	1	63	1	2	3½	132	2	6	9
21	0	7	5½	64	1	2	8	140	2	9	7
22	0	7	9½	65	1	3	0½	144	2	11	0
23	0	8	1½	66	1	3	4½	150	2	13	1½
24	0	8	6	67	1	3	8½	175	3	1	11½
25	0	8	10½	68	1	4	1	200	3	10	10
26	0	9	2½	69	1	4	5½	250	4	8	6½
27	0	9	6½	70	1	4	9½	300	5	6	3
28	0	9	11	71	1	5	1½	365	6	9	3½
29	0	10	3½	72	1	5	6	400	7	1	8
30	0	10	7½	73	1	5	10½	500	8	17	1
31	0	10	11½	74	1	6	2½	600	10	12	6
32	0	11	4	75	1	6	6½	700	12	7	11
33	0	11	8½	76	1	6	11	750	13	5	7½
34	0	12	0½	77	1	7	3½	800	14	3	4
35	0	12	4½	78	1	7	7½	900	15	18	9
36	0	12	9	79	1	7	11½	1000	17	14	2
37	0	13	1½	80	1	8	4	1250	22	2	8½
38	0	13	5½	81	1	8	8½	1500	26	11	3
39	0	13	9½	82	1	9	0½	1750	30	19	9½
40	0	14	2	83	1	9	4½	2000	35	8	4
41	0	14	6½	84	1	9	9	2240	39	13	4
42	0	14	10½	85	1	10	1½	3000	53	2	6
43	0	15	2½	86	1	10	5½	5000	88	10	10

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	4½	44	0	17	5	87	1	14	5½
2	0	0	9½	45	0	17	9½	88	1	14	10
3	0	1	2	46	0	18	2	89	1	15	2½
4	0	1	7	47	0	18	7½	90	1	15	7½
5	0	1	11½	48	0	19	0	91	1	16	0½
6	0	2	4½	49	0	19	4½	92	1	16	5
7	0	2	9	50	0	19	9½	93	1	16	9½
8	0	3	2	51	1	0	2½	94	1	17	2½
9	0	3	6½	52	1	0	7	95	1	17	7½
10	0	3	11½	53	1	0	11½	96	1	18	0
11	0	4	4½	54	1	1	4½	97	1	18	4½
12	0	4	9	55	1	1	9½	98	1	18	9
13	0	5	1½	56	1	2	2	99	1	19	2½
14	0	5	6½	57	1	2	6½	100	1	19	7
15	0	5	11½	58	1	2	11½	108	2	2	9
16	0	6	4	59	1	3	4½	110	2	3	6½
17	0	6	8½	60	1	3	9	112	2	4	4
18	0	7	1½	61	1	4	1½	120	2	7	6
19	0	7	6½	62	1	4	6½	130	2	11	5½
20	0	7	11½	63	1	4	11½	132	2	12	3
21	0	8	3	64	1	5	4	140	2	15	5
22	0	8	8½	65	1	5	8½	144	2	17	0
23	0	9	1½	66	1	6	1	150	2	19	4½
24	0	9	6	67	1	6	6½	175	3	9	3½
25	0	9	10½	68	1	6	11	200	3	19	2
26	0	10	3	69	1	7	3½	250	4	18	11½
27	0	10	8½	70	1	7	8½	300	5	18	9
28	0	11	1	71	1	8	1½	365	7	4	5½
29	0	11	5½	72	1	8	6	400	7	18	4
30	0	11	10½	73	1	8	10½	500	9	17	11
31	0	12	3	74	1	9	3	600	11	17	6
32	0	12	8	75	1	9	8½	700	13	17	1
33	0	13	0½	76	1	10	1	750	14	16	10½
34	0	13	5½	77	1	10	5½	800	15	16	8
35	0	13	10½	78	1	10	10½	900	17	16	3
36	0	14	3	79	1	11	3	1000	19	15	10
37	0	14	7½	80	1	11	8	1250	24	14	9½
38	0	15	0	81	1	12	0½	1500	29	13	9
39	0	15	5½	82	1	12	5½	1750	34	12	8½
40	0	15	10	83	1	12	10½	2000	39	11	8
41	0	16	2½	84	1	13	3	2240	44	6	8
42	0	16	7½	85	1	13	7½	3000	59	7	6
43	0	17	0½	86	1	14	0½	5000	98	19	2

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	4½	44	0	16	6	87	1	12	7½
2	0	0	9	45	0	16	10½	88	1	13	0
3	0	1	1½	46	0	17	3	89	1	13	4½
4	0	1	6	47	0	17	7½	90	1	13	9
5	0	1	10½	48	0	18	0	91	1	14	1½
6	0	2	3	49	0	18	4½	92	1	14	6
7	0	2	7½	50	0	18	9	93	1	14	10½
8	0	3	0	51	0	19	1½	94	1	15	3
9	0	3	4½	52	0	19	6	95	1	15	7½
10	0	3	9	53	0	19	10½	96	1	16	0
11	0	4	1½	54	1	0	3	97	1	16	4½
12	0	4	6	55	1	0	7½	98	1	16	9
13	0	4	10½	56	1	1	0	99	1	17	1½
14	0	5	3	57	1	1	4½	100	1	17	6
15	0	5	7½	58	1	1	9	108	2	0	6
16	0	6	0	59	1	2	1½	110	2	1	3
17	0	6	4½	60	1	2	6	112	2	2	0
18	0	6	9	61	1	2	10½	120	2	5	0
19	0	7	1½	62	1	3	3	130	2	8	9
20	0	7	6	63	1	3	7½	132	2	9	6
21	0	8	3	64	1	4	0	140	2	12	6
22	0	8	8	65	1	4	4½	144	2	14	0
23	0	8	7½	66	1	4	9	150	2	16	3
24	0	9	0	67	1	5	1½	175	3	5	7½
25	0	9	4½	68	1	5	6	200	3	15	0
26	0	9	9	69	1	5	10½	250	4	13	9
27	0	10	1½	70	1	6	3	300	5	12	6
28	0	10	6	71	1	6	7½	365	6	16	10½
29	0	10	10½	72	1	7	0	400	7	10	0
30	0	11	3	73	1	7	4½	500	9	7	6
31	0	11	7½	74	1	7	9	600	11	5	0
32	0	12	0	75	1	8	1½	700	13	2	6
33	0	12	4½	76	1	8	6	750	14	1	3
34	0	12	9	77	1	8	10½	800	15	12	6
35	0	13	1½	78	1	9	3	900	16	17	6
36	0	13	6	79	1	9	7½	1000	18	15	0
37	0	13	10½	80	1	10	0	1250	20	16	8
38	0	14	3	81	1	10	4½	1500	28	2	6
39	0	14	7½	82	1	10	9	1750	32	16	3
40	0	15	0	83	1	11	1½	2000	37	10	0
41	0	15	4½	84	1	11	6	2240	42	0	0
42	0	15	9	85	1	11	10½	3000	56	5	0
43	0	16	1½	86	1	12	3	5000	93	15	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	5	44	0	18	4	87	1	16	3
2	0	0	10	45	0	18	9	88	1	16	8
3	0	1	3	46	0	19	2	89	1	17	1
4	0	1	8	47	0	19	7	90	1	17	6
5	0	2	1	48	1	0	0	91	1	17	11
6	0	2	6	49	1	0	5	92	1	18	4
7	0	2	11	50	1	0	10	93	1	18	9
8	0	3	4	51	1	1	3	94	1	19	2
9	0	3	9	52	1	1	8	95	1	19	7
10	0	4	2	53	1	2	1	96	2	0	0
11	0	4	7	54	1	2	6	97	2	0	5
12	0	5	0	55	1	2	11	98	2	0	10
13	0	5	5	56	1	3	4	99	2	1	3
14	0	5	10	57	1	3	9	100	2	1	8
15	0	6	3	58	1	4	2	108	2	5	0
16	0	6	8	59	1	4	7	110	2	5	10
17	0	7	1	60	1	5	0	112	2	6	8
18	0	7	6	61	1	5	5	120	2	10	0
19	0	7	11	62	1	5	10	130	2	14	2
20	0	8	4	63	1	6	3	132	2	15	0
21	0	8	9	64	1	6	8	140	2	18	4
22	0	9	2	65	1	7	1	144	3	0	0
23	0	9	7	66	1	7	6	150	3	2	6
24	0	10	0	67	1	7	11	175	3	12	11
25	0	10	5	68	1	8	4	200	4	3	4
26	0	10	10	69	1	8	9	250	5	4	2
27	0	11	3	70	1	9	2	300	6	5	0
28	0	11	8	71	1	9	7	365	7	12	1
29	0	12	1	72	1	10	0	400	8	6	8
30	0	12	6	73	1	10	5	500	10	8	4
31	0	12	11	74	1	10	10	600	12	10	0
32	0	13	4	75	1	11	3	700	14	11	8
33	0	13	9	76	1	11	8	750	15	12	6
34	0	14	2	77	1	12	1	800	16	13	4
35	0	14	7	78	1	12	6	900	18	15	0
36	0	15	0	79	1	12	11	1000	20	16	8
37	0	15	5	80	1	13	4	1250	26	0	10
38	0	15	10	81	1	13	9	1500	31	5	0
39	0	16	3	82	1	14	2	1750	36	9	2
40	0	16	8	83	1	14	7	2000	41	13	4
41	0	17	1	84	1	15	0	2240	46	13	4
42	0	17	6	85	1	15	5	3000	62	10	0
43	0	17	11	86	1	15	10	5000	104	2	4



No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	5½	44	0	19	3	87	1	18	0
2	0	0	10½	45	0	19	3	88	1	18	6
3	0	1	3½	46	1	0	1½	89	1	18	11½
4	0	1	9	47	1	0	6½	90	1	19	4½
5	0	2	2½	48	1	1	0	91	1	19	9½
6	0	2	7½	49	1	1	5½	92	2	0	3
7	0	3	0½	50	1	1	10½	93	2	0	8½
8	0	3	6	51	1	2	3½	94	2	1	1½
9	0	3	11½	52	1	2	9	95	2	1	6½
10	0	4	4½	53	1	3	2½	96	2	2	0
11	0	4	9½	54	1	3	7½	97	2	2	5½
12	0	5	3	55	1	4	0½	98	2	2	10½
13	0	5	8½	56	1	4	6	99	2	3	3½
14	0	6	1½	57	1	4	11½	100	2	3	9
15	0	6	6½	58	1	5	4½	108	2	7	3
16	0	7	0	59	1	5	9½	110	2	8	1½
17	0	7	5½	60	1	6	3	112	2	9	0
18	0	7	10½	61	1	6	8½	120	2	12	6
19	0	8	3½	62	1	7	1½	130	2	16	10½
20	0	8	9	63	1	7	6½	132	2	17	9
21	0	9	2½	64	1	8	0	140	3	1	3
22	0	9	7½	65	1	8	5½	144	3	3	0
23	0	10	0½	66	1	8	10½	150	3	5	7½
24	0	10	6	67	1	9	3½	175	3	16	6½
25	0	10	11½	68	1	9	9	200	4	7	6
26	0	11	4½	69	1	10	2½	250	5	9	4½
27	0	11	9½	70	1	10	7½	300	6	11	3
28	0	12	3	71	1	11	0½	365	7	19	8½
29	0	12	8½	72	1	11	6	400	8	15	0
30	0	13	1½	73	1	11	11½	500	10	18	9
31	0	13	6½	74	1	12	4½	600	13	6	3
32	0	14	0	75	1	12	9½	700	15	6	3
33	0	14	5½	76	1	13	3	750	16	8	1½
34	0	14	10½	77	1	13	8½	800	17	10	0
35	0	15	3	78	1	14	1½	900	19	13	9
36	0	15	9	79	1	14	6½	1000	21	17	6
37	0	16	2½	80	1	15	0	1250	27	6	10½
38	0	16	7½	81	1	15	5½	1500	32	16	3
39	0	17	0½	82	1	15	10½	1750	38	5	7½
40	0	17	6	83	1	16	3½	2000	43	15	0
41	0	17	11½	84	1	16	9	2240	49	0	0
42	0	18	4½	85	1	17	2½	3000	65	12	6
43	0	18	9½	86	1	17	7½	5000	109	7	6

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	5½	44	1	1	1	87	2	1	8½
2	0	0	11½	45	1	1	6½	88	2	2	2½
3	0	1	5½	46	1	2	0½	89	2	2	7½
4	0	1	11½	47	1	2	6½	90	2	3	1½
5	0	2	4½	48	1	3	0	91	2	3	7½
6	0	2	10½	49	1	3	5½	92	2	4	1
7	0	3	4½	50	1	3	11½	93	2	4	6½
8	0	3	10	51	1	4	5½	94	2	5	0½
9	0	4	3½	52	1	4	11	95	2	5	6½
10	0	4	9½	53	1	5	4½	96	2	6	0
11	0	5	3½	54	1	5	10½	97	2	6	5½
12	0	5	9	55	1	6	4½	98	2	6	11½
13	0	6	2½	56	1	6	10	99	2	7	5½
14	0	6	8½	57	1	7	3½	100	2	7	11
15	0	6	14½	58	1	7	9½	108	2	11	9
16	0	7	8	59	1	8	3½	110	2	12	8½
17	0	8	1½	60	1	8	9	112	2	13	8
18	0	8	7½	61	1	9	2½	120	2	17	6
19	0	9	1½	62	1	9	8½	130	3	2	3½
20	0	9	7	63	1	10	2½	132	3	3	3
21	0	10	0½	64	1	10	8	140	3	7	1
22	0	10	6½	65	1	11	1½	144	3	9	0
23	0	11	0½	66	1	11	7½	150	3	11	10½
24	0	11	6	67	1	12	1½	175	4	3	10½
25	0	11	11½	68	1	12	7	200	4	15	10
26	0	12	5½	69	1	13	0½	250	5	19	9½
27	0	12	11½	70	1	13	6½	300	7	13	9
28	0	13	5	71	1	14	0½	365	8	14	10½
29	0	13	10½	72	1	14	6	400	9	11	8
30	0	14	4½	73	1	14	11½	500	11	19	7
31	0	14	10½	74	1	15	5½	600	14	7	6
32	0	15	4	75	1	15	11½	700	16	15	5
33	0	15	9½	76	1	16	5	750	17	19	4½
34	0	16	3½	77	1	16	10½	800	19	3	4
35	0	16	9½	78	1	17	4½	900	21	11	3
36	0	17	3	79	1	17	10½	1000	23	19	2
37	0	17	8½	80	1	18	4	1250	29	18	11½
38	0	18	2½	81	1	18	9½	1500	35	18	9
39	0	18	8½	82	1	19	3½	1750	41	18	6½
40	0	19	2	83	1	19	9½	2000	47	18	4
41	0	19	7½	84	2	0	3	2240	53	13	4
42	1	0	1½	85	2	0	8½	3000	71	17	6
43	1	0	7½	86	2	1	2½	5000	119	15	10

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	5½	44	1	0	2½	87	1	19	10½
2	0	0	11½	45	1	0	7½	88	2	0	4
3	0	1	4½	46	1	1	1	89	2	0	9½
4	0	1	10	47	1	1	6½	90	2	1	3
5	0	2	3½	48	1	2	0	91	2	1	8½
6	0	2	9	49	1	2	5½	92	2	2	2
7	0	3	2½	50	1	2	11	93	2	2	7½
8	0	3	8	51	1	3	4½	94	2	3	1
9	0	4	1½	52	1	3	10	95	2	3	6½
10	0	4	7	53	1	4	3½	96	2	4	0
11	0	5	0½	54	1	4	9	97	2	4	5½
12	0	5	6	55	1	5	2½	98	2	4	11
13	0	5	11½	56	1	5	8	99	2	5	4½
14	0	6	5	57	1	6	1½	100	2	5	10
15	0	6	10½	58	1	6	7	108	2	9	6
16	0	7	4	59	1	7	0½	110	2	10	5
17	0	7	9½	60	1	7	6	112	2	11	4
18	0	8	3	61	1	7	11½	120	2	15	0
19	0	8	8½	62	1	8	5	130	2	19	7
20	0	9	2	63	1	8	10½	132	3	0	6
21	0	9	7½	64	1	9	4	140	3	4	2
22	0	10	1	65	1	9	9½	144	3	6	0
23	0	10	6½	66	1	10	3	150	3	8	9
24	0	11	0	67	1	10	8½	175	4	0	2½
25	0	11	5½	68	1	11	2	200	4	11	8
26	0	11	11	69	1	11	7	250	5	14	7
27	0	12	4½	70	1	12	1	300	6	17	6
28	0	12	10	71	1	12	6½	365	8	7	3½
29	0	13	3½	72	1	13	0	400	9	3	4
30	0	13	9	73	1	13	5½	500	11	9	2
31	0	14	2½	74	1	13	11	600	13	15	0
32	0	14	8	75	1	14	4½	700	16	0	10
33	0	15	1½	76	1	14	10	750	17	3	9
34	0	15	7	77	1	15	3½	800	18	6	8
35	0	16	0½	78	1	15	9	900	20	12	6
36	0	16	6	79	1	16	2½	1000	22	18	4
37	0	16	11½	80	1	16	8	1250	28	12	11
38	0	17	5	81	1	17	1	1500	34	7	6
39	0	17	10½	82	1	17	7	1750	40	2	1
40	0	18	4	83	1	18	0½	2000	45	16	8
41	0	18	9½	84	1	18	6	2240	51	6	8
42	0	19	3	85	1	18	11½	3000	68	15	0
43	0	19	8½	86	1	19	5	5000	114	11	8

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	0	44	1	2	0	87	2	3	6
2	0	0	0	45	1	2	6	88	2	4	0
3	0	1	0	46	1	3	0	89	2	4	6
4	0	2	0	47	1	3	6	90	2	5	0
5	0	2	6	48	1	4	0	91	2	5	6
6	0	3	0	49	1	4	6	92	2	6	0
7	0	3	6	50	1	5	0	93	2	6	6
8	0	4	0	51	1	5	6	94	2	7	0
9	0	4	6	52	1	6	0	95	2	7	6
10	0	5	0	53	1	6	6	96	2	8	0
11	0	5	6	54	1	7	0	97	2	8	6
12	0	6	0	55	1	7	6	98	2	9	0
13	0	6	6	56	1	8	0	99	2	9	6
14	0	7	0	57	1	8	6	100	2	10	0
15	0	7	6	58	1	9	0	108	2	14	0
16	0	8	0	59	1	9	6	110	2	15	0
17	0	8	6	60	1	10	0	112	2	16	0
18	0	9	0	61	1	10	6	120	3	0	0
19	0	9	6	62	1	11	0	130	3	5	0
20	0	10	0	63	1	11	6	132	3	6	0
21	0	10	6	64	1	12	0	140	3	10	0
22	0	11	0	65	1	12	6	144	3	12	0
23	0	11	6	66	1	13	0	150	3	15	0
24	0	12	0	67	1	13	6	175	4	7	6
25	0	12	6	68	1	14	0	200	5	0	0
26	0	13	0	69	1	14	6	250	6	5	0
27	0	13	6	70	1	15	0	300	7	10	0
28	0	14	0	71	1	15	6	365	9	2	6
29	0	14	6	72	1	16	0	400	10	0	0
30	0	15	0	73	1	16	6	500	12	10	0
31	0	15	6	74	1	17	0	600	15	0	0
32	0	16	0	75	1	17	6	700	17	10	0
33	0	16	6	76	1	18	0	750	18	15	0
34	0	17	0	77	1	18	6	800	20	0	0
35	0	17	6	78	1	19	0	900	22	10	0
36	0	18	0	79	1	19	6	1000	25	0	0
37	0	18	6	80	2	0	0	1250	31	5	0
38	0	19	0	81	2	0	6	1500	37	10	0
39	0	19	6	82	2	1	0	1750	43	15	0
40	1	0	0	83	2	1	6	2000	50	0	0
41	1	0	6	84	2	2	0	2240	56	0	0
42	1	1	0	85	2	2	6	3000	75	0	0
43	1	1	6	86	2	3	0	5000	125	0	0

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	6½	44	1	2	11	87	2	5	3½
2	0	1	0	45	1	3	5½	88	2	5	10
3	0	1	6½	46	1	3	11½	89	2	6	4½
4	0	2	1	47	1	4	5½	90	2	6	10½
5	0	2	7½	48	1	5	0	91	2	7	4½
6	0	3	1½	49	1	5	6½	92	2	7	11½
7	0	3	7½	50	1	6	0½	93	2	8	5½
8	0	4	2	51	1	6	6½	94	2	8	11½
9	0	4	8½	52	1	7	1	95	2	9	5½
10	0	5	2½	53	1	7	7½	96	2	10	0
11	0	5	8½	54	1	8	1½	97	2	10	6
12	0	6	3	55	1	8	7½	98	2	11	0½
13	0	6	9½	56	1	9	2	99	2	11	6½
14	0	7	3½	57	1	9	8½	100	2	12	1
15	0	7	9½	58	1	10	2½	108	2	16	3
16	0	8	4	59	1	10	8½	110	2	17	3½
17	0	8	10½	60	1	11	3	112	2	18	4
18	0	9	4½	61	1	11	9½	120	3	2	6
19	0	9	10½	62	1	12	3½	130	3	7	8½
20	0	10	5	63	1	12	9½	132	3	8	9
21	0	10	11½	64	1	13	4	140	3	12	11
22	0	11	5½	65	1	13	10½	144	3	15	0
23	0	11	11½	66	1	14	4	150	3	18	1½
24	0	12	6	67	1	14	10½	175	4	11	1½
25	0	13	0½	68	1	15	5	200	5	4	2
26	0	13	6½	69	1	15	11½	250	6	10	2½
27	0	14	0½	70	1	16	5½	300	7	16	3
28	0	14	7	71	1	16	11½	365	9	10	1½
29	0	15	1½	72	1	17	6	400	10	8	4
30	0	15	7½	73	1	18	0½	500	13	0	5
31	0	16	1½	74	1	18	6½	600	15	12	6
32	0	16	8	75	1	19	0½	700	18	4	7
33	0	17	2½	76	1	19	7	750	19	10	7½
34	0	17	8½	77	2	0	1½	800	20	16	8
35	0	18	2½	78	2	0	7½	900	23	8	9
36	0	18	9	79	2	1	1½	1000	26	0	10
37	0	19	3½	80	2	1	8	1250	32	11	0½
38	0	19	9½	81	2	2	2½	1500	39	1	3
39	1	0	3½	82	2	2	8½	1750	45	11	5½
40	1	0	10	83	2	3	2½	2000	52	1	8
41	1	1	4½	84	2	3	9	2240	58	6	8
42	1	1	10½	85	2	4	3½	3000	78	2	6
43	1	2	4½	86	2	4	9½	5000	130	4	2

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	6½	44	1	4	9	87	2	8	11½
2	0	1	1½	45	1	5	3½	88	2	9	6
3	0	1	8½	46	1	5	10½	89	2	10	0½
4	0	2	3	47	1	6	5½	90	2	10	7½
5	0	2	9½	48	1	7	0	91	2	11	2½
6	0	3	4½	49	1	7	6½	92	2	11	9
7	0	3	11½	50	1	8	1½	93	2	12	3½
8	0	4	6	51	1	8	8½	94	2	12	10½
9	0	5	0½	52	1	9	3	95	2	13	5½
10	0	5	7½	53	1	9	9½	96	2	14	0
11	0	6	2½	54	1	10	4½	97	2	14	6½
12	0	6	9	55	1	10	11½	98	2	15	1½
13	0	7	3½	56	1	11	6	99	2	15	8½
14	0	7	10½	57	1	12	0½	100	2	16	3
15	0	8	5½	58	1	12	7½	108	3	0	9
16	0	9	0	59	1	13	2½	110	3	1	10½
17	0	9	6½	60	1	13	9	112	3	3	0
18	0	10	1½	61	1	14	3½	120	3	7	6
19	0	10	8½	62	1	14	10½	130	3	13	1½
20	0	11	3	63	1	15	5½	132	3	14	3
21	0	11	9½	64	1	16	0	140	3	18	9
22	0	12	4½	65	1	16	6½	144	4	1	0
23	0	12	11½	66	1	17	1½	150	4	4	4½
24	0	13	6	67	1	17	8½	175	4	18	5½
25	0	14	0½	68	1	18	3	200	5	12	6
26	0	14	7½	69	1	18	9½	250	7	0	7½
27	0	15	2½	70	1	19	4½	300	8	8	9
28	0	15	9	71	1	19	11½	365	10	5	3½
29	0	16	3½	72	2	0	6	400	11	5	0
30	0	16	10½	73	2	1	0½	500	14	1	3
31	0	17	5½	74	2	1	7½	600	16	17	6
32	0	18	0	75	2	2	2½	700	19	13	9
33	0	18	6½	76	2	2	9	750	21	1	10½
34	0	19	1½	77	2	3	3½	800	22	10	0
35	0	19	8½	78	2	3	10½	900	25	6	3
36	1	0	3	79	2	4	5½	1000	28	2	6
37	1	0	9½	80	2	5	0	1250	35	3	1½
38	1	1	4½	81	2	5	6½	1500	42	3	9
39	1	1	11½	82	2	6	1½	1750	49	4	4½
40	1	2	6	83	2	6	8½	2000	56	5	0
41	1	3	0½	84	2	7	3	2240	63	0	0
42	1	3	7½	85	2	7	9½	3000	84	7	6
43	1	4	2½	86	2	8	4½	5000	140	12	6

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	6½	44	1	3	10	87	2	7	1½
2	0	1	1	45	1	4	4½	88	2	7	8
3	0	1	7½	46	1	4	11	89	2	8	2½
4	0	2	2	47	1	5	5½	90	2	8	9
5	0	2	8½	48	1	6	0	91	2	9	3½
6	0	3	3	49	1	6	6½	92	2	9	10
7	0	3	9½	50	1	7	1	93	2	10	4½
8	0	4	4	51	1	7	7½	94	2	10	11
9	0	4	10½	52	1	8	2	95	2	11	5½
10	0	5	5	53	1	8	8½	96	2	12	0
11	0	5	11½	54	1	9	3	97	2	12	6½
12	0	6	6	55	1	9	9½	98	2	13	1
13	0	7	0½	56	1	10	4	99	2	13	7½
14	0	7	7	57	1	10	10½	100	2	14	2
15	0	8	1½	58	1	11	5	108	2	18	6
16	0	8	8	59	1	11	11½	110	2	19	7
17	0	9	2½	60	1	12	6	112	3	0	8
18	0	9	9	61	1	13	0½	120	3	5	0
19	0	10	3½	62	1	13	7	130	3	10	5
20	0	10	10	63	1	14	1½	132	3	11	6
21	0	11	4½	64	1	14	8	140	3	15	10
22	0	11	11	65	1	15	2½	144	3	18	0
23	0	12	5½	66	1	15	9	150	4	1	3
24	0	13	0	67	1	16	3½	175	4	14	9½
25	0	13	6½	68	1	16	10	200	5	8	4
26	0	14	1	69	1	17	4½	250	6	15	5
27	0	14	7½	70	1	17	11	300	8	2	6
28	0	15	2	71	1	18	5½	365	9	17	8½
29	0	15	8½	72	1	19	0	400	10	16	8
30	0	16	3	73	1	19	6½	500	13	10	10
31	0	16	9½	74	2	0	1	600	16	5	0
32	0	17	4	75	2	0	7½	700	18	19	2
33	0	17	10½	76	2	1	2	750	20	6	3
34	0	18	5	77	2	1	8½	800	21	13	4
35	0	18	11½	78	2	2	3	900	24	7	6
36	0	19	6	79	2	2	9½	1000	27	1	8
37	1	0	0½	80	2	3	4	1250	33	17	1
38	1	0	7	81	2	3	10½	1500	40	12	6
39	1	1	1½	82	2	4	5	1750	47	7	11
40	1	1	8	83	2	4	11½	2000	54	3	4
41	1	2	2½	84	2	5	6	2240	65	6	8
42	1	2	9	85	2	6	0½	3000	87	10	0
43	1	3	3½	86	2	6	7	5000	135	8	4

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	7	44	1	5	8	87	2	10	9
2	0	1	2	45	1	6	3	88	2	11	4
3	0	1	9	46	1	6	10	89	2	11	11
4	0	2	4	47	1	7	5	90	2	12	6
5	0	2	11	48	1	8	0	91	2	13	1
6	0	3	6	49	1	8	7	92	2	13	8
7	0	4	1	50	1	9	2	93	2	14	3
8	0	4	8	51	1	9	9	94	2	14	10
9	0	5	3	52	1	10	4	95	2	15	5
10	0	5	10	53	1	10	11	96	2	16	0
11	0	6	5	54	1	11	6	97	2	16	7
12	0	7	0	55	1	12	1	98	2	17	2
13	0	7	7	56	1	12	8	99	2	17	9
14	0	8	2	57	1	13	3	100	2	18	4
15	0	8	9	58	1	13	10	108	3	3	0
16	0	9	4	59	1	14	5	110	3	4	2
17	0	9	11	60	1	15	0	112	3	5	4
18	0	10	6	61	1	15	7	120	3	10	0
19	0	11	1	62	1	16	2	130	3	15	10
20	0	11	8	63	1	16	9	132	3	17	0
21	0	12	3	64	1	17	4	140	4	1	8
22	0	12	10	65	1	17	11	144	4	4	0
23	0	13	5	66	1	18	6	150	4	7	6
24	0	14	0	67	1	19	1	175	5	2	1
25	0	14	7	68	1	19	8	200	5	16	8
26	0	15	2	69	2	0	3	250	7	5	10
27	0	15	9	70	2	0	10	300	8	15	0
28	0	16	4	71	2	1	5	365	10	12	11
29	0	16	11	72	2	2	0	400	11	13	4
30	0	17	6	73	2	2	7	500	14	11	8
31	0	18	1	74	2	3	2	600	17	10	0
32	0	18	8	75	2	3	9	700	20	8	4
33	0	19	3	76	2	4	4	750	21	17	6
34	0	19	10	77	2	4	11	800	23	6	8
35	1	0	5	78	2	5	6	900	26	5	0
36	1	1	0	79	2	6	1	1000	29	3	4
37	1	1	7	80	2	6	8	1250	36	9	2
38	1	2	2	81	2	7	3	1500	43	15	0
39	1	2	9	82	2	7	10	1750	51	0	10
40	1	3	4	83	2	8	5	2000	58	6	8
41	1	3	11	84	2	9	0	2240	65	6	8
42	1	4	6	85	2	9	7	3000	87	10	0
43	1	5	1	86	2	10	2	5000	171	10	0



No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	7 <sup>1</sup> / <sub>4</sub>	44	1	6	7	87	2	12	6 <sup>1</sup> / <sub>2</sub>
2	0	1	2 <sup>1</sup> / <sub>2</sub>	45	1	7	2 <sup>1</sup> / <sub>2</sub>	88	2	13	2
3	0	1	9 <sup>1</sup> / <sub>2</sub>	46	1	7	9 <sup>1</sup> / <sub>2</sub>	89	2	13	9 <sup>1</sup> / <sub>2</sub>
4	0	2	5	47	1	8	4 <sup>1</sup> / <sub>2</sub>	90	2	14	4 <sup>1</sup> / <sub>2</sub>
5	0	3	0 <sup>1</sup> / <sub>2</sub>	48	1	9	0	91	2	14	11 <sup>1</sup> / <sub>2</sub>
6	0	3	7 <sup>1</sup> / <sub>2</sub>	49	1	9	7 <sup>1</sup> / <sub>2</sub>	92	2	15	7
7	0	4	2 <sup>1</sup> / <sub>2</sub>	50	1	10	2 <sup>1</sup> / <sub>2</sub>	93	2	16	2 <sup>1</sup> / <sub>2</sub>
8	0	4	10	51	1	10	9 <sup>1</sup> / <sub>2</sub>	94	2	16	9 <sup>1</sup> / <sub>2</sub>
9	0	5	5 <sup>1</sup> / <sub>2</sub>	52	1	11	5	95	2	17	4 <sup>1</sup> / <sub>2</sub>
10	0	6	0 <sup>1</sup> / <sub>2</sub>	53	1	12	0	96	2	18	0
11	0	6	7 <sup>1</sup> / <sub>2</sub>	54	1	12	7 <sup>1</sup> / <sub>2</sub>	97	2	18	7 <sup>1</sup> / <sub>2</sub>
12	0	7	3	55	1	12	2 <sup>1</sup> / <sub>2</sub>	98	2	19	2 <sup>1</sup> / <sub>2</sub>
13	0	7	10 <sup>1</sup> / <sub>2</sub>	56	1	13	10	99	2	19	9 <sup>1</sup> / <sub>2</sub>
14	0	8	5 <sup>1</sup> / <sub>2</sub>	57	1	14	5 <sup>1</sup> / <sub>2</sub>	100	3	0	5
15	0	9	0 <sup>1</sup> / <sub>2</sub>	58	1	15	0 <sup>1</sup> / <sub>2</sub>	108	3	5	3
16	0	9	8	59	1	15	7 <sup>1</sup> / <sub>2</sub>	110	3	6	5 <sup>1</sup> / <sub>2</sub>
17	0	10	3 <sup>1</sup> / <sub>2</sub>	60	1	16	3	112	3	7	8
18	0	10	10 <sup>1</sup> / <sub>2</sub>	61	1	16	10 <sup>1</sup> / <sub>2</sub>	120	3	12	6
19	0	11	5 <sup>1</sup> / <sub>2</sub>	62	1	17	5 <sup>1</sup> / <sub>2</sub>	130	3	18	6 <sup>1</sup> / <sub>2</sub>
20	0	12	1	63	1	18	0	132	3	19	9
21	0	12	8 <sup>1</sup> / <sub>2</sub>	64	1	18	8 <sup>1</sup> / <sub>2</sub>	140	4	4	7
22	0	13	3 <sup>1</sup> / <sub>2</sub>	65	1	19	3 <sup>1</sup> / <sub>2</sub>	144	4	7	0
23	0	13	10 <sup>1</sup> / <sub>2</sub>	66	1	19	10 <sup>1</sup> / <sub>2</sub>	150	4	10	7 <sup>1</sup> / <sub>2</sub>
24	0	14	6	67	2	0	5 <sup>1</sup> / <sub>2</sub>	175	6	5	8 <sup>1</sup> / <sub>2</sub>
25	0	15	1 <sup>1</sup> / <sub>2</sub>	68	2	1	1	200	6	0	10
26	0	15	8 <sup>1</sup> / <sub>2</sub>	69	2	1	8 <sup>1</sup> / <sub>2</sub>	250	7	11	0 <sup>1</sup> / <sub>2</sub>
27	0	16	3 <sup>1</sup> / <sub>2</sub>	70	2	2	3 <sup>1</sup> / <sub>2</sub>	300	9	1	3
28	0	16	11	71	2	2	10 <sup>1</sup> / <sub>2</sub>	365	11	0	6 <sup>1</sup> / <sub>2</sub>
29	0	17	6 <sup>1</sup> / <sub>2</sub>	72	2	3	6	400	12	1	8
30	0	18	1 <sup>1</sup> / <sub>2</sub>	73	2	4	1 <sup>1</sup> / <sub>2</sub>	500	15	2	1
31	0	18	8 <sup>1</sup> / <sub>2</sub>	74	2	4	8 <sup>1</sup> / <sub>2</sub>	600	18	2	6
32	0	19	4	75	2	5	3 <sup>1</sup> / <sub>2</sub>	700	21	2	11
33	0	19	11 <sup>1</sup> / <sub>2</sub>	76	2	5	11	750	22	13	1 <sup>1</sup> / <sub>2</sub>
34	1	0	6 <sup>1</sup> / <sub>2</sub>	77	2	6	6 <sup>1</sup> / <sub>2</sub>	800	24	3	4
35	1	1	1 <sup>1</sup> / <sub>2</sub>	78	2	7	1 <sup>1</sup> / <sub>2</sub>	900	27	3	9
36	1	1	9	79	2	7	8 <sup>1</sup> / <sub>2</sub>	1000	30	4	2
37	1	2	4 <sup>1</sup> / <sub>2</sub>	80	2	8	4	1250	37	15	2 <sup>1</sup> / <sub>2</sub>
38	1	2	11 <sup>1</sup> / <sub>2</sub>	81	2	8	11 <sup>1</sup> / <sub>2</sub>	1500	45	6	3
39	1	3	6 <sup>1</sup> / <sub>2</sub>	82	2	9	6 <sup>1</sup> / <sub>2</sub>	1750	52	17	3 <sup>1</sup> / <sub>2</sub>
40	1	4	2	83	2	10	1 <sup>1</sup> / <sub>2</sub>	2000	60	8	4
41	1	4	9 <sup>1</sup> / <sub>2</sub>	84	2	10	9	2240	67	13	4
42	1	5	4 <sup>1</sup> / <sub>2</sub>	85	2	11	4 <sup>1</sup> / <sub>2</sub>	3000	90	12	6
43	1	5	11 <sup>1</sup> / <sub>2</sub>	86	2	11	11 <sup>1</sup> / <sub>2</sub>	5000	151	0	10

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	7 <sup>1</sup> / <sub>4</sub>	44	1	8	5	87	2	16	2 <sup>1</sup> / <sub>2</sub>	87	2	16	2 <sup>1</sup> / <sub>2</sub>
2	0	1	3 <sup>1</sup> / <sub>2</sub>	45	1	9	0 <sup>1</sup> / <sub>2</sub>	88	2	17	10	88	2	17	10
3	0	1	11 <sup>1</sup> / <sub>2</sub>	46	1	9	8 <sup>1</sup> / <sub>2</sub>	89	2	17	5 <sup>1</sup> / <sub>2</sub>	89	2	17	5 <sup>1</sup> / <sub>2</sub>
4	0	2	7	47	1	10	4 <sup>1</sup> / <sub>2</sub>	90	2	18	1 <sup>1</sup> / <sub>2</sub>	90	2	18	1 <sup>1</sup> / <sub>2</sub>
5	0	3	2 <sup>1</sup> / <sub>2</sub>	48	1	11	0	91	2	18	9 <sup>1</sup> / <sub>2</sub>	91	2	18	9 <sup>1</sup> / <sub>2</sub>
6	0	3	10 <sup>1</sup> / <sub>2</sub>	49	1	11	7 <sup>1</sup> / <sub>2</sub>	92	2	19	5	92	2	19	5
7	0	4	6 <sup>1</sup> / <sub>2</sub>	50	1	12	3 <sup>1</sup> / <sub>2</sub>	93	3	0	8 <sup>1</sup> / <sub>2</sub>	93	3	0	8 <sup>1</sup> / <sub>2</sub>
8	0	5	2	51	1	12	11 <sup>1</sup> / <sub>2</sub>	94	3	0	8 <sup>1</sup> / <sub>2</sub>	94	3	0	8 <sup>1</sup> / <sub>2</sub>
9	0	5	9 <sup>1</sup> / <sub>2</sub>	52	1	13	7	95	3	1	4 <sup>1</sup> / <sub>2</sub>	95	3	1	4 <sup>1</sup> / <sub>2</sub>
10	0	6	5 <sup>1</sup> / <sub>2</sub>	53	1	14	2 <sup>1</sup> / <sub>2</sub>	96	3	2	0	96	3	2	0
11	0	7	1 <sup>1</sup> / <sub>2</sub>	54	1	14	10 <sup>1</sup> / <sub>2</sub>	97	3	2	7 <sup>1</sup> / <sub>2</sub>	97	3	2	7 <sup>1</sup> / <sub>2</sub>
12	0	7	9 <sup>1</sup> / <sub>2</sub>	55	1	15	6 <sup>1</sup> / <sub>2</sub>	98	3	3	3 <sup>1</sup> / <sub>2</sub>	98	3	3	3 <sup>1</sup> / <sub>2</sub>
13	0	8	4 <sup>1</sup> / <sub>2</sub>	56	1	16	2	99	3	3	11 <sup>1</sup> / <sub>2</sub>	99	3	3	11 <sup>1</sup> / <sub>2</sub>
14	0	9	0 <sup>1</sup> / <sub>2</sub>	57	1	16	9 <sup>1</sup> / <sub>2</sub>	100	3	4	7	100	3	4	7
15	0	9	8 <sup>1</sup> / <sub>2</sub>	58	1	17	5 <sup>1</sup> / <sub>2</sub>	108	3	9	9	108	3	9	9
16	0	10	4	59	1	18	1 <sup>1</sup> / <sub>2</sub>	110	3	11	0 <sup>1</sup> / <sub>2</sub>	110	3	11	0 <sup>1</sup> / <sub>2</sub>
17	0	10	11 <sup>1</sup> / <sub>2</sub>	60	1	18	9	112	3	12	4	112	3	12	4
18	0	11	7 <sup>1</sup> / <sub>2</sub>	61	1	19	4 <sup>1</sup> / <sub>2</sub>	120	3	17	6	120	3	17	6
19	0	12	3 <sup>1</sup> / <sub>2</sub>	62	2	0	0 <sup>1</sup> / <sub>2</sub>	130	4	3	11 <sup>1</sup> / <sub>2</sub>	130	4	3	11 <sup>1</sup> / <sub>2</sub>
20	0	12	11	63	2	0	8 <sup>1</sup> / <sub>2</sub>	132	4	5	3	132	4	5	3
21	0	13	6 <sup>1</sup> / <sub>2</sub>	64	2	1	4	140	4	10	5	140	4	10	5
22	0	14	2 <sup>1</sup> / <sub>2</sub>	65	2	1	11 <sup>1</sup> / <sub>2</sub>	144	4	13	0	144	4	13	0
23	0	14	10 <sup>1</sup> / <sub>2</sub>	66	2	2	7 <sup>1</sup> / <sub>2</sub>	150	4	16	10 <sup>1</sup> / <sub>2</sub>	150	4	16	10 <sup>1</sup> / <sub>2</sub>
24	0	15	6	67	2	3	3 <sup>1</sup> / <sub>2</sub>	175	5	13	0 <sup>1</sup> / <sub>2</sub>	175	5	13	0 <sup>1</sup> / <sub>2</sub>
25	0	16	1 <sup>1</sup> / <sub>2</sub>	68	2	3	11	200	6	9	2	200	6	9	2
26	0	16	9 <sup>1</sup> / <sub>2</sub>	69	2	4	6 <sup>1</sup> / <sub>2</sub>	250	8	1	5 <sup>1</sup> / <sub>2</sub>	250	8	1	5 <sup>1</sup> / <sub>2</sub>
27	0	17	5 <sup>1</sup> / <sub>2</sub>	70	2	5	2 <sup>1</sup> / <sub>2</sub>	300	9	13	9	300	9	13	9
28	0	18	1	71	2	5	10 <sup>1</sup> / <sub>2</sub>	365	11	15	8 <sup>1</sup> / <sub>2</sub>	365	11	15	8 <sup>1</sup> / <sub>2</sub>
29	0	18	8 <sup>1</sup> / <sub>2</sub>	72	2	6	6	400	12	18	4	400	12	18	4
30	0	19	4	73	2	6	1 <sup>1</sup> / <sub>2</sub>	500	16	2	11 <sup>1</sup> / <sub>2</sub>	500	16	2	11 <sup>1</sup> / <sub>2</sub>
31	0	19	11 <sup>1</sup> / <sub>2</sub>	74	2	7	9 <sup>1</sup> / <sub>2</sub>	600	19	7	6	600	19	7	6
32	1	0	6 <sup>1</sup> / <sub>2</sub>	75	2	8	5 <sup>1</sup> / <sub>2</sub>	700	22	12	1	700	22	12	1
33	1	1	1 <sup>1</sup> / <sub>2</sub>	76	2	9	1 <sup>1</sup> / <sub>2</sub>	750	24	4	4 <sup>1</sup> / <sub>2</sub>	750	24	4	4 <sup>1</sup> / <sub>2</sub>
34	1	1	9	77	2	10	7 <sup>1</sup> / <sub>2</sub>	800	25	16	8	800	25	16	8
35	1	2	4 <sup>1</sup> / <sub>2</sub>	78	2	11	3 <sup>1</sup> / <sub>2</sub>	900	29	1	3	900	29	1	3
36	1	2	11 <sup>1</sup> / <sub>2</sub>	79	2	12	0	1000	32	5	10	1000	32	5	10
37	1	3	6 <sup>1</sup> / <sub>2</sub>	80	2	13	6 <sup>1</sup> / <sub>2</sub>	1250	40	7	3 <sup>1</sup> / <sub>2</sub>	1250	40	7	3 <sup>1</sup> / <sub>2</sub>
38	1	3	13 <sup>1</sup> / <sub>2</sub>	81	2	14	2 <sup>1</sup> / <sub>2</sub>	1500	48	8	9	1500	48	8	9
39	1	4	8 <sup>1</sup> / <sub>2</sub>	82	2	15	8 <sup>1</sup> / <sub>2</sub>	1750	56	10	2 <sup>1</sup> / <sub>2</sub>	1750	56	10	2 <sup>1</sup> / <sub>2</sub>
40	1	4	15 <sup>1</sup> / <sub>2</sub>	83	2	16	4	2000	64	11	8	2000	64	11	8
41	1	5	10 <sup>1</sup> / <sub>2</sub>	84	2	17	0	2240	72	6	8	2240	72	6	8
42	1	5	17 <sup>1</sup> / <sub>2</sub>	85	2	18	6	3000	96	17	6	3000	96	17	6
43	1	6	12 <sup>1</sup> / <sub>2</sub>	86	2	19	12 <sup>1</sup> / <sub>2</sub>	5000	161	9	2	5000	161	9	2

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	7 $\frac{1}{4}$	44	1	7	6	87	2	14	4 $\frac{1}{2}$	87	2	14	4 $\frac{1}{2}$
2	0	1	3	45	1	8	1 $\frac{1}{2}$	88	2	15	0	88	2	15	0
3	0	1	10 $\frac{1}{2}$	46	1	8	9	89	2	15	7 $\frac{1}{2}$	89	2	15	7 $\frac{1}{2}$
4	0	2	6	47	1	9	4 $\frac{1}{2}$	90	2	16	3	90	2	16	3
5	0	3	1 $\frac{1}{2}$	48	1	10	0	91	2	16	10 $\frac{1}{2}$	91	2	16	10 $\frac{1}{2}$
6	0	3	9	49	1	10	7 $\frac{1}{2}$	92	2	17	6	92	2	17	6
7	0	4	4 $\frac{1}{2}$	50	1	11	3	93	2	18	1 $\frac{1}{2}$	93	2	18	1 $\frac{1}{2}$
8	0	5	0	51	1	11	10 $\frac{1}{2}$	94	2	18	9 $\frac{1}{2}$	94	2	18	9 $\frac{1}{2}$
9	0	5	7 $\frac{1}{2}$	52	1	12	6	95	2	19	4 $\frac{1}{2}$	95	2	19	4 $\frac{1}{2}$
10	0	6	3	53	1	13	1 $\frac{1}{2}$	96	3	0	0	96	3	0	0
11	0	6	10 $\frac{1}{2}$	54	1	13	9	97	3	0	7 $\frac{1}{2}$	97	3	0	7 $\frac{1}{2}$
12	0	7	6	55	1	14	4 $\frac{1}{2}$	98	3	1	3	98	3	1	3
13	0	8	1 $\frac{1}{2}$	56	1	15	0	99	3	1	10 $\frac{1}{2}$	99	3	1	10 $\frac{1}{2}$
14	0	8	9	57	1	15	7 $\frac{1}{2}$	100	3	2	6	100	3	2	6
15	0	9	4 $\frac{1}{2}$	58	1	16	3	108	3	7	6	108	3	7	6
16	0	10	0	59	1	16	10 $\frac{1}{2}$	110	3	8	9	110	3	8	9
17	0	10	7 $\frac{1}{2}$	60	1	17	6	112	3	10	0	112	3	10	0
18	0	11	3	61	1	18	1 $\frac{1}{2}$	120	3	15	0	120	3	15	0
19	0	11	10 $\frac{1}{2}$	62	1	18	9	130	4	1	3	130	4	1	3
20	0	12	6	63	1	19	4 $\frac{1}{2}$	132	4	2	6	132	4	2	6
21	0	13	1 $\frac{1}{2}$	64	2	0	0	140	4	7	6	140	4	7	6
22	0	13	9	65	2	0	7 $\frac{1}{2}$	144	4	10	0	144	4	10	0
23	0	14	4 $\frac{1}{2}$	66	2	1	3	150	4	13	9	150	4	13	9
24	0	15	0	67	2	1	10 $\frac{1}{2}$	175	5	9	4 $\frac{1}{2}$	175	5	9	4 $\frac{1}{2}$
25	0	15	7 $\frac{1}{2}$	68	2	2	6	200	6	5	0	200	6	5	0
26	0	16	3	69	2	3	1 $\frac{1}{2}$	250	7	16	3	250	7	16	3
27	0	16	10 $\frac{1}{2}$	70	2	3	9	300	9	7	6	300	9	7	6
28	0	17	6	71	2	4	4 $\frac{1}{2}$	365	11	8	1 $\frac{1}{2}$	365	11	8	1 $\frac{1}{2}$
29	0	18	1 $\frac{1}{2}$	72	2	5	0	400	12	10	0	400	12	10	0
30	0	18	9	73	2	5	7 $\frac{1}{2}$	500	15	12	6	500	15	12	6
31	0	19	4 $\frac{1}{2}$	74	2	6	3	600	18	15	0	600	18	15	0
32	1	0	0	75	2	6	10 $\frac{1}{2}$	700	21	17	6	700	21	17	6
33	1	0	7 $\frac{1}{2}$	76	2	7	6	750	23	8	9	750	23	8	9
34	1	1	3	77	2	8	1 $\frac{1}{2}$	800	25	0	0	800	25	0	0
35	1	1	10 $\frac{1}{2}$	78	2	8	9	900	28	2	6	900	28	2	6
36	1	2	6	79	2	9	4 $\frac{1}{2}$	1000	31	5	0	1000	31	5	0
37	1	3	1 $\frac{1}{2}$	80	2	10	0	1250	39	1	3	1250	39	1	3
38	1	3	9	81	2	10	7 $\frac{1}{2}$	1500	46	17	6	1500	46	17	6
39	1	4	4 $\frac{1}{2}$	82	2	11	3	1750	54	13	9	1750	54	13	9
40	1	5	0	83	2	11	10 $\frac{1}{2}$	2000	62	10	0	2000	62	10	0
41	1	5	7 $\frac{1}{2}$	84	2	12	6	2240	70	0	0	2240	70	0	0
42	1	6	3	85	2	13	1 $\frac{1}{2}$	3000	93	15	0	3000	93	15	0
43	1	6	10 $\frac{1}{2}$	86	2	13	9	5000	156	5	0	5000	156	5	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	8½	44	1	10	3	87	2	19	9½
2	0	1	4½	45	1	10	11½	88	3	0	6
3	0	2	0½	46	1	11	7½	89	3	1	2½
4	0	2	9	47	1	12	3½	90	3	1	10½
5	0	3	5½	48	1	13	0	91	3	2	6½
6	0	4	1½	49	1	13	8½	92	3	3	3
7	0	4	9½	50	1	14	4½	93	3	3	11½
8	0	5	2	51	1	15	0½	94	3	4	7½
9	0	6	6½	52	1	15	9	95	3	5	3½
10	0	6	10½	53	1	16	5½	96	3	6	0
11	0	7	6½	54	1	17	1½	97	3	6	8½
12	0	8	3	55	1	17	9½	98	3	7	4½
13	0	8	11½	56	1	18	6	99	3	8	0½
14	0	9	7½	57	1	19	2½	100	3	8	9
15	0	10	3½	58	1	19	10½	108	3	14	3
16	0	11	0	59	2	0	6½	110	3	15	7½
17	0	11	8½	60	2	1	3	112	3	17	0
18	0	12	4½	61	2	1	11½	120	4	2	6
19	0	13	0½	62	2	2	7½	130	4	9	4½
20	0	13	9	63	2	3	3½	132	4	10	9
21	0	14	5½	64	2	4	0	140	4	16	3
22	0	15	1½	65	2	4	8½	144	4	19	0
23	0	15	9½	66	2	5	4½	150	5	3	1½
24	0	16	6	67	2	6	0½	175	6	0	3½
25	0	17	2½	68	2	6	9	200	6	17	6
26	0	17	10½	69	2	7	5½	250	8	11	10½
27	0	18	6½	70	2	8	1½	300	10	6	3
28	0	19	3	71	2	8	9	365	12	10	11½
29	0	10	11½	72	2	9	6	400	13	15	0
30	1	0	7½	73	2	10	2½	500	17	3	9
31	1	1	3½	74	2	10	10½	600	20	12	6
32	1	2	0	75	2	11	6½	700	24	1	3
33	1	2	8½	76	2	12	3	750	25	15	7½
34	1	3	4½	77	2	12	11½	800	27	10	0
35	1	4	0½	78	2	13	7½	900	30	18	9
36	1	4	9	79	2	14	3½	1000	34	7	6
37	1	5	5½	80	2	15	0	1250	42	19	4½
38	1	6	1½	81	2	15	8½	1500	51	11	3
39	1	6	9½	82	2	16	4½	1750	60	3	1½
40	1	7	6	83	2	17	0½	2000	68	15	0
41	1	8	2½	84	2	17	9	2240	77	0	0
42	1	8	10½	85	2	18	5½	3000	103	2	6
43	1	9	6½	86	2	19	1½	5000	171	17	6

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	8½	44	1	12	1	87	3	3	5½
2	0	1	5½	45	1	12	9½	88	3	4	2
3	0	2	2½	46	1	13	6½	89	3	4	10½
4	0	2	11	47	1	14	3½	90	3	5	7½
5	0	3	7½	48	1	15	0	91	3	6	4½
6	0	4	4½	49	1	15	8½	92	3	7	1
7	0	5	10	50	1	16	5½	93	3	7	9½
8	0	6	6½	51	1	17	2½	94	3	8	6½
9	0	6	10½	52	1	17	11	95	3	9	3½
10	0	7	3½	53	1	18	7½	96	3	10	0
11	0	8	0	54	1	19	4½	97	3	10	8½
12	0	8	9	55	2	0	1½	98	3	11	5½
13	0	9	5½	56	2	0	10	99	3	12	2½
14	0	10	2½	57	2	1	6½	100	3	12	11
15	0	10	11½	58	2	2	3½	108	3	18	9
16	0	11	8	59	2	3	0½	110	4	0	2½
17	0	12	4½	60	2	3	9	112	4	1	8
18	0	13	1½	61	2	4	5½	120	4	7	6
19	0	13	10½	62	2	5	2½	130	4	14	9½
20	0	14	7	63	2	5	11½	132	4	16	3
21	0	15	3½	64	2	6	8	140	5	2	1
22	0	16	0½	65	2	7	4½	144	5	5	0
23	0	16	9	66	2	8	1	150	5	9	4½
24	0	17	6	67	2	8	10½	175	6	7	7½
25	0	18	2½	68	2	9	7	200	7	5	10
26	0	18	11½	69	2	10	3½	250	9	2	3½
27	0	19	8	70	2	11	0½	300	10	18	9
28	1	0	5	71	2	11	9	365	13	6	1½
29	1	1	1½	72	2	12	6	400	14	11	8
30	1	1	10½	73	2	13	2½	500	18	4	7
31	1	2	7½	74	2	13	11½	600	21	17	6
32	1	3	4	75	2	14	8½	700	25	10	5
33	1	4	0½	76	2	15	5	750	27	6	10½
34	1	4	9½	77	2	16	1½	800	29	3	4
35	1	5	6½	78	2	16	10½	900	32	16	3
36	1	6	3	79	2	17	7½	1000	36	9	2
37	1	6	11½	80	2	18	4	1250	45	11	5½
38	1	7	8½	81	2	19	0½	1500	54	13	9
39	1	8	5½	82	2	19	9½	1750	63	16	0½
40	1	9	2	83	3	0	6½	2000	72	18	4
41	1	9	10½	84	3	1	3	2240	81	13	4
42	1	10	7½	85	3	1	11½	3000	109	7	6
43	1	11	4½	86	3	2	8½	5000	182	5	10

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	8½	44	1	11	2	87	3	1	7½
2	0	1	5	45	1	11	10½	88	3	2	4
3	0	2	1½	46	1	12	7	89	3	3	0½
4	0	2	10	47	1	13	3½	90	3	3	9
5	0	3	6½	48	1	14	0	91	3	4	5½
6	0	4	3	49	1	14	8½	92	3	5	2½
7	0	4	11½	50	1	15	5	93	3	5	10½
8	0	5	8	51	1	16	1½	94	3	6	7
9	0	6	4½	52	1	16	10	95	3	7	3½
10	0	7	1	53	1	17	6½	96	3	8	0
11	0	7	9½	54	1	18	3	97	3	8	8½
12	0	8	6	55	1	18	11½	98	3	9	5
13	0	9	2½	56	1	19	8	99	3	10	1½
14	0	9	11	57	2	0	4½	100	3	10	10
15	0	10	7½	58	2	1	1	108	3	18	6
16	0	11	4	59	2	1	9½	110	3	17	11
17	0	12	0½	60	2	2	6	112	3	19	4
18	0	12	9	61	2	3	2½	120	4	5	0
19	0	13	5½	62	2	3	11	130	4	12	1
20	0	14	2	63	2	4	7½	132	4	13	6
21	0	14	10½	64	2	5	4	140	4	19	2
22	0	15	7	65	2	6	0½	144	5	2	0
23	0	16	3½	66	2	6	9	150	5	6	3
24	0	17	0	67	2	7	5½	175	6	3	11½
25	0	17	8½	68	2	8	2	200	7	1	8
26	0	18	5	69	2	8	10½	250	8	17	1
27	0	19	1½	70	2	9	7	300	10	12	6
28	0	19	10	71	2	10	3½	365	12	18	6½
29	1	0	6½	72	2	11	0	400	14	3	4
30	1	1	3	73	2	11	8½	500	17	14	2
31	1	1	11½	74	2	12	5	600	21	5	0
32	1	2	8	75	2	13	1½	700	24	15	10
33	1	3	4½	76	2	13	10	750	26	11	3
34	1	4	1	77	2	14	6½	800	28	6	8
35	1	4	9½	78	2	15	3	900	31	17	6
36	1	5	6	79	2	15	11½	1000	35	8	4
37	1	6	2½	80	2	16	8	1250	44	5	5
38	1	6	11	81	2	17	4½	1500	53	2	6
39	1	7	7	82	2	18	1	1750	61	19	7
40	1	8	4	83	2	18	9½	2000	70	16	8
41	1	9	0½	84	2	19	6	2240	79	6	8
42	1	9	9	85	3	0	2½	3000	106	5	0
43	1	10	5½	86	3	0	11	5000	177	1	8

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	9	44	1	13	0	87	3	5	3
2	0	1	6	45	1	13	9	88	3	6	0
3	0	2	3	46	1	14	6	89	3	6	9
4	0	3	0	47	1	15	3	90	3	7	6
5	0	3	9	48	1	16	0	91	3	8	3
6	0	4	6	49	1	16	9	92	3	9	0
7	0	5	3	50	1	17	6	93	3	9	9
8	0	6	0	51	1	18	3	94	3	10	6
9	0	6	9	52	1	19	0	95	3	11	3
10	0	7	6	53	1	19	9	96	3	12	0
11	0	8	3	54	2	0	6	97	3	12	9
12	0	9	0	55	2	1	3	98	3	13	6
13	0	9	9	56	2	2	0	99	3	14	3
14	0	10	6	57	2	2	9	100	3	15	0
15	0	11	3	58	2	3	6	108	4	1	0
16	0	12	0	59	2	4	3	110	4	2	6
17	0	12	9	60	2	5	0	112	4	4	0
18	0	13	6	61	2	5	9	120	4	10	0
19	0	14	3	62	2	6	6	130	4	17	6
20	0	15	0	63	2	7	3	132	4	19	0
21	0	15	9	64	2	8	0	140	5	5	0
22	0	16	6	65	2	8	9	144	5	8	0
23	0	17	3	66	2	9	6	150	5	12	6
24	0	18	0	67	2	10	3	175	6	11	3
25	0	18	9	68	2	11	0	200	7	10	0
26	0	19	6	69	2	11	9	250	9	7	6
27	1	0	3	70	2	12	6	300	11	5	0
28	1	1	0	71	2	13	3	365	13	13	9
29	1	1	9	72	2	14	0	400	15	0	0
30	1	2	6	73	2	14	9	500	18	15	0
31	1	3	3	74	2	15	6	600	22	10	0
32	1	4	0	75	2	16	3	700	26	5	0
33	1	4	9	76	2	17	0	750	28	2	6
34	1	5	6	77	2	17	9	800	30	0	0
35	1	6	3	78	2	18	6	900	33	15	0
36	1	7	0	79	2	19	3	1000	37	10	0
37	1	7	9	80	3	0	0	1250	46	17	6
38	1	8	6	81	3	0	9	1500	56	5	0
39	1	9	3	82	3	1	6	1750	65	12	6
40	1	10	0	83	3	2	3	2000	75	0	0
41	1	10	9	84	3	3	0	2240	84	0	0
42	1	11	6	85	3	3	9	3000	112	10	0
43	1	12	3	86	3	4	6	5000	137	10	0



No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	9½	44	1	13	11	87	3	7	0½
2	0	1	7½	45	1	15	8½	88	3	7	10
3	0	2	3½	46	1	15	5½	89	3	8	7½
4	0	3	1	47	1	16	2½	90	3	9	4½
5	0	3	10½	48	1	17	0	91	3	10	1½
6	0	4	7½	49	1	17	9½	92	3	10	11
7	0	5	4½	50	1	18	6½	93	3	11	8½
8	0	6	2	51	2	19	3½	94	3	12	5½
9	0	6	11½	52	2	0	1	95	3	13	2½
10	0	7	8½	53	2	0	10½	96	3	14	0
11	0	8	5½	54	2	1	7½	97	3	14	9½
12	0	9	3	55	2	2	4½	98	3	15	6½
13	0	10	0½	56	2	3	2	99	3	16	3½
14	0	10	9½	57	2	3	11½	100	3	17	1
15	0	11	6½	58	2	4	8½	108	4	3	3
16	0	12	4	59	2	5	5½	110	4	4	9½
17	0	13	1½	60	2	6	3	112	4	6	4
18	0	13	10½	61	2	7	0½	120	4	12	6
19	0	14	7½	62	2	7	9½	130	5	0	2½
20	0	15	5	63	2	8	6½	132	5	1	9
21	0	16	2½	64	2	9	4	140	5	7	11
22	0	16	11½	65	2	10	1½	144	5	11	0
23	0	17	8½	66	2	10	10½	150	5	15	7½
24	0	18	6	67	2	11	7½	175	6	14	10½
25	0	19	3½	68	2	12	5	200	7	14	2
26	1	0	0½	69	2	13	2½	250	9	12	8½
27	1	0	9½	70	2	13	11½	300	11	11	3
28	1	1	7	71	2	14	8½	365	14	1	4½
29	1	2	4½	72	2	15	6	400	15	8	4
30	1	3	1½	73	2	16	3½	500	19	5	5
31	1	3	10½	74	2	17	0½	600	23	2	6
32	1	4	8	75	2	17	9½	700	26	19	1½
33	1	5	5½	76	2	18	7	750	28	18	1½
34	1	6	2½	77	2	19	4½	800	30	16	8
35	1	6	11½	78	3	0	1½	900	34	13	9
36	1	7	9	79	3	0	10½	1000	38	10	10
37	1	8	6½	80	3	1	8	1250	48	3	6½
38	1	9	3½	81	3	2	5½	1500	57	16	3
39	1	10	0½	82	3	3	2½	1750	67	8	11½
40	1	10	10	83	3	3	11½	2000	77	1	8
41	1	11	7½	84	3	4	9	2240	86	6	8
42	1	12	4½	85	3	5	6½	3000	115	12	6
43	1	13	1½	86	3	6	3½	5000	192	14	2

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	9½	44	1	14	10	87	3	8	10½
2	0	1	7½	45	1	15	7½	88	3	9	8
3	0	2	4½	46	1	16	5	89	3	10	5½
4	0	3	2	47	1	17	2½	90	3	11	3
5	0	3	11½	48	1	18	0	91	3	12	0½
6	0	4	9	49	1	18	9½	92	3	12	10
7	0	5	6½	50	1	19	7	93	3	13	7½
8	0	6	4	51	2	0	4½	94	3	14	5
9	0	7	1½	52	2	1	2	95	3	15	2½
10	0	7	11	53	2	1	11½	96	3	16	0
11	0	8	8½	54	2	2	9	97	3	16	9½
12	0	9	6	55	2	3	6½	98	3	17	7
13	0	10	3½	56	2	4	4	99	3	18	4½
14	0	11	1	57	2	5	1½	100	3	19	2
15	0	11	10½	58	2	5	11	108	4	5	6
16	0	12	8	59	2	6	8½	110	4	7	1
17	0	13	5½	60	2	7	6	112	4	8	8
18	0	14	3	61	2	8	3½	120	4	15	0
19	0	15	0½	62	2	9	1	130	5	2	11
20	0	15	10	63	2	9	10½	132	5	4	6
21	0	16	7½	64	2	10	8	140	5	10	10
22	0	17	5	65	2	11	5½	144	5	14	0
23	0	18	2½	66	2	12	3	150	5	18	9
24	0	19	0	67	2	13	0½	175	6	18	6½
25	0	19	9½	68	2	13	10	200	7	18	4
26	1	0	7	69	2	14	7½	250	9	17	11
27	1	1	4½	70	2	15	5	300	11	17	6
28	1	2	2	71	2	16	2½	365	14	8	11½
29	1	2	11½	72	2	17	0	400	15	16	8
30	1	3	9	73	2	17	9½	500	19	15	10
31	1	4	6½	74	2	18	7	600	23	15	0
32	1	5	4	75	2	19	4½	700	27	14	2
33	1	6	1½	76	3	0	2	750	29	13	9
34	1	6	11½	77	3	0	11½	800	31	13	4
35	1	7	8½	78	3	1	9	900	35	12	6
36	1	8	6	79	3	2	6½	1000	39	11	8
37	1	9	3½	80	3	3	4	1250	49	9	7
38	1	10	1	81	3	4	1½	1500	59	7	6
39	1	10	10½	82	3	4	11	1750	69	5	5
40	1	11	8	83	3	5	8½	2000	79	3	4
41	1	12	5½	84	3	6	6	2240	88	13	4
42	1	13	3	85	3	7	3½	3000	118	15	0
43	1	14	0½	86	3	8	1	5000	197	18	4

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	9½	44	1	15	9	87	3	10	8½
2	0	1	7½	45	1	16	6½	88	3	11	6
3	0	2	5½	46	1	17	4½	89	3	12	3½
4	0	3	3	47	1	18	2½	90	3	13	1½
5	0	4	0½	48	1	19	0	91	3	13	11½
6	0	4	10½	49	1	19	9½	92	3	14	9
7	0	5	8½	50	2	0	7½	93	3	15	6½
8	0	6	6	51	2	1	5½	94	3	16	4½
9	0	7	3½	52	2	2	3	95	3	17	2½
10	0	8	1½	53	2	3	0½	96	3	18	0
11	0	8	11½	54	2	3	10½	97	3	18	9½
12	0	9	9	55	2	4	8½	98	3	19	7½
13	0	10	6½	56	2	5	6	99	4	0	5½
14	0	11	4½	57	2	6	3½	100	4	1	3
15	0	12	2½	58	2	7	1½	108	4	7	9
16	0	13	0	59	2	7	11½	110	4	9	4½
17	0	13	9½	60	2	8	9	112	4	11	0
18	0	14	7½	61	2	9	6½	120	4	17	6
19	0	15	5½	62	2	10	4	130	5	5	7½
20	0	16	3	63	2	11	2½	132	5	7	3
21	0	17	0½	64	2	12	0	140	5	13	9
22	0	17	10½	65	2	12	9½	144	5	17	0
23	0	18	8	66	2	13	7½	150	6	1	10½
24	0	19	6	67	2	14	5½	175	7	2	2½
25	1	0	3½	68	2	15	3	200	8	2	6
26	1	1	1½	69	2	16	0½	250	10	3	1½
27	1	1	11½	70	2	16	10½	300	12	3	9
28	1	2	9	71	2	17	8	365	14	16	6½
29	1	3	6½	72	2	18	6	400	16	5	0
30	1	4	4½	73	2	19	3½	500	20	6	3
31	1	5	2½	74	3	0	1½	600	24	7	6
32	1	6	0	75	3	0	11½	700	28	8	9
33	1	6	9½	76	3	1	9	750	30	9	4½
34	1	7	7½	77	3	2	6½	800	32	10	0
35	1	8	5½	78	3	3	4½	900	36	11	3
36	1	9	3	79	3	4	2½	1000	40	12	6
37	1	10	0½	80	3	5	0	1250	50	15	7½
38	1	10	10½	81	3	5	9½	1500	60	18	9
39	1	11	8	82	3	6	7½	1750	71	1	10½
40	1	12	6	83	3	7	5½	2000	81	5	0
41	1	13	3½	84	3	8	3	2240	91	0	0
42	1	14	1½	85	3	9	0½	3000	121	17	6
43	1	14	11½	86	3	9	10½	5000	203	2	6

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	0	10	44	1	16	8	87	3	12	6
2	0	1	8	45	1	17	6	88	3	13	4
3	0	2	6	46	1	18	4	89	3	14	2
4	0	3	4	47	1	19	2	90	3	15	0
5	0	4	2	48	2	0	0	91	3	15	10
6	0	5	0	49	2	0	10	92	3	16	8
7	0	5	10	50	2	1	8	93	3	17	6
8	0	6	8	51	2	2	6	94	3	18	4
9	0	7	6	52	2	3	4	95	3	19	2
10	0	8	4	53	2	4	2	96	4	0	0
11	0	9	2	54	2	5	0	97	4	0	10
12	0	10	0	55	2	5	10	98	4	1	8
13	0	10	10	56	2	6	8	99	4	2	6
14	0	11	8	57	2	7	6	100	4	3	4
15	0	12	6	58	2	8	4	108	4	10	0
16	0	13	4	59	2	9	2	110	4	11	8
17	0	14	2	60	2	10	0	112	4	13	4
18	0	15	0	61	2	10	10	120	5	0	0
19	0	15	10	62	2	11	8	130	5	8	4
20	0	16	8	63	2	12	6	132	5	10	0
21	0	17	6	64	2	13	4	140	5	16	8
22	0	18	4	65	2	14	2	144	6	0	0
23	0	19	2	66	2	15	0	150	6	5	0
24	1	0	0	67	2	15	10	175	7	5	10
25	1	0	10	68	2	16	8	200	8	6	8
26	1	1	8	69	2	17	6	250	10	8	4
27	1	2	6	70	2	18	4	300	12	10	0
28	1	3	4	71	2	19	2	365	15	4	2
29	1	4	2	72	3	0	0	400	16	13	4
30	1	5	0	73	3	0	10	500	20	16	8
31	1	5	10	74	3	1	8	600	25	0	0
32	1	6	8	75	3	2	6	700	29	3	4
33	1	7	6	76	3	3	4	750	31	5	0
34	1	8	4	77	3	4	2	800	33	6	8
35	1	9	2	78	3	5	0	900	37	10	0
36	1	10	0	79	3	5	10	1000	41	13	4
37	1	10	10	80	3	6	8	1250	52	1	8
38	1	11	8	81	3	7	6	1500	62	10	0
39	1	12	6	82	3	8	4	1750	72	18	4
40	1	13	4	83	3	9	2	2000	83	6	8
41	1	14	2	84	3	10	0	2240	93	6	8
42	1	15	0	85	3	10	10	3000	125	0	0
43	1	15	10	86	3	11	8	5000	208	6	8

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	10½	44	1	17	7	87	3	14	3½
2	0	1	8½	45	1	18	5½	88	3	15	2
3	0	2	6½	46	1	19	3½	89	3	16	0½
4	0	3	5	47	2	0	3½	90	3	16	10½
5	0	4	3½	48	2	1	0	91	3	17	8½
6	0	5	1½	49	2	2	10½	92	3	18	7
7	0	6	11½	50	2	2	8½	93	3	19	5½
8	0	6	10	51	2	3	6½	94	4	0	3½
9	0	7	8½	52	2	4	5	95	4	1	1½
10	0	8	6½	53	2	5	3½	96	4	2	0
11	0	9	4½	54	2	6	1½	97	4	2	10½
12	0	10	3	55	2	6	11½	98	4	3	8½
13	0	11	1½	56	2	7	10	99	4	4	6½
14	0	11	11½	57	2	8	8½	100	4	5	5
15	0	12	9½	58	2	9	6½	108	4	12	3
16	0	13	8	59	2	10	4½	110	4	13	11½
17	0	14	6½	60	2	11	3	112	4	15	8
18	0	15	4½	61	2	12	1½	120	5	2	6
19	0	16	2½	62	2	12	11½	130	5	11	0½
20	0	17	1	63	2	13	9½	132	5	12	9
21	0	17	11½	64	2	14	8	140	5	19	7
22	0	18	9½	65	2	15	6½	144	6	3	0
23	0	19	7½	66	2	16	4½	150	6	8	1½
24	1	0	6	67	2	17	2½	175	7	9	5½
25	1	1	4½	68	2	18	1	200	8	10	10
26	1	2	2½	69	2	18	11½	250	10	13	6½
27	1	3	0½	70	2	19	9½	300	12	16	3
28	1	3	11	71	3	0	7½	365	15	11	9½
29	1	4	9½	72	3	1	6	400	17	1	8
30	1	5	7½	73	3	2	4½	500	21	7	1
31	1	6	5½	74	3	3	2½	600	25	12	6
32	1	7	4	75	3	4	0½	700	29	17	11
33	1	8	2½	76	3	4	11	750	32	0	7½
34	1	9	0½	77	3	5	9	800	34	3	4
35	1	9	10½	78	3	6	7½	900	38	8	9
36	1	10	9	79	3	7	5½	1000	42	14	2
37	1	11	7½	80	3	8	4	1250	53	7	8½
38	1	12	5½	81	3	9	2½	1500	64	1	3
39	1	13	3½	82	3	10	0	1750	74	14	9½
40	1	14	2	83	3	10	10½	2000	85	8	4
41	1	15	0½	84	3	11	9	2240	95	13	4
42	1	15	10½	85	3	12	7½	3000	128	2	6
43	1	16	8½	86	3	13	5½	5000	213	10	10

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	10½	44	1	19	5	87	3	17	11½	87	3	17	11½
2	0	1	9½	45	2	0	3½	88	3	18	10	88	3	18	10
3	0	2	8½	46	2	1	2½	89	3	19	8½	89	3	19	8½
4	0	3	7	47	2	2	1½	90	4	0	7½	90	4	0	7½
5	0	4	5½	48	2	3	0	91	4	1	6½	91	4	1	6½
6	0	5	4½	49	2	4	10½	92	4	2	5	92	4	2	5
7	0	6	3½	50	2	4	9½	93	4	3	3½	93	4	3	3½
8	0	7	2	51	2	5	8½	94	4	4	2½	94	4	4	2½
9	0	8	0½	52	2	6	7	95	4	5	1½	95	4	5	1½
10	0	8	11½	53	2	7	5½	96	4	6	0	96	4	6	0
11	0	9	10½	54	2	8	4½	97	4	6	10½	97	4	6	10½
12	0	10	9	55	2	9	3½	98	4	7	9½	98	4	7	9½
13	0	11	7½	56	2	10	2	99	4	8	8½	99	4	8	8½
14	0	12	6½	57	2	11	0½	100	4	9	7	100	4	9	7
15	0	13	5½	58	2	11	11½	108	4	16	9	108	4	16	9
16	0	14	4	59	2	12	10½	110	4	18	6½	110	4	18	6½
17	0	15	2½	60	2	13	9	112	5	0	4	112	5	0	4
18	0	16	1½	61	2	14	7½	120	5	7	6	120	5	7	6
19	0	17	0½	62	2	15	6½	130	5	16	5½	130	5	16	5½
20	0	17	11	63	2	16	5½	132	5	18	3	132	5	18	3
21	0	18	9½	64	2	17	4	140	6	5	5	140	6	5	5
22	0	19	8½	65	2	18	2½	144	6	9	0	144	6	9	0
23	1	0	7½	66	2	19	1½	150	6	14	4½	150	6	14	4½
24	1	1	6	67	3	0	11	175	7	16	9½	175	7	16	9½
25	1	2	4½	68	3	0	0	200	8	19	2	200	8	19	2
26	1	3	3	69	3	1	9½	250	11	3	11½	250	11	3	11½
27	1	4	2½	70	3	2	8½	300	13	8	9	300	13	8	9
28	1	5	1	71	3	3	7½	365	16	6	11½	365	16	6	11½
29	1	5	11½	72	3	4	6	400	17	18	4	400	17	18	4
30	1	6	10½	73	3	5	4½	500	22	7	11	500	22	7	11
31	1	7	9½	74	3	6	3½	600	26	17	6	600	26	17	6
32	1	8	8	75	3	7	2½	700	31	7	1	700	31	7	1
33	1	9	6½	76	3	8	1	750	33	11	10½	750	33	11	10½
34	1	10	5½	77	3	8	11½	800	35	16	8	800	35	16	8
35	1	11	4½	78	3	9	10½	900	40	6	3	900	40	6	3
36	1	12	3	79	3	10	9½	1000	44	15	10	1000	44	15	10
37	1	13	1½	80	3	11	8	1250	55	19	9½	1250	55	19	9½
38	1	14	0½	81	3	12	6½	1500	67	3	9	1500	67	3	9
39	1	14	11½	82	3	13	5½	1750	78	7	8½	1750	78	7	8½
40	1	15	10	83	3	14	4½	2000	89	11	8	2000	89	11	8
41	1	16	8½	84	3	15	3	2240	100	6	8	2240	100	6	8
42	1	17	7½	85	3	16	1½	3000	134	7	6	3000	134	7	6
43	1	18	6½	86	3	17	0½	5000	223	19	2	5000	223	19	2

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	10½	44	1	18	6	87	3	16	1½	87	3	16	1½
2	0	1	9	45	1	19	4½	88	3	17	0	88	3	17	0
3	0	2	7½	46	2	0	3	89	3	17	10½	89	3	17	10½
4	0	3	6½	47	2	1	1½	90	3	18	9	90	3	18	9
5	0	4	4½	48	2	2	0	91	3	19	7½	91	3	19	7½
6	0	5	3	49	2	2	10½	92	4	0	6	92	4	0	6
7	0	6	1½	50	2	3	9	93	4	1	4½	93	4	1	4½
8	0	7	0	51	2	4	7½	94	4	2	3	94	4	2	3
9	0	7	10½	52	2	5	6	95	4	3	1½	95	4	3	1½
10	0	8	9	53	2	6	4½	96	4	4	0	96	4	4	0
11	0	9	7½	54	2	7	3	97	4	4	10½	97	4	4	10½
12	0	10	6	55	2	8	1½	98	4	5	9	98	4	5	9
13	0	11	4½	56	2	9	0	99	4	6	7½	99	4	6	7½
14	0	12	3	57	2	9	10½	100	4	7	6	100	4	7	6
15	0	13	1½	58	2	10	9	108	4	14	6	108	4	14	6
16	0	14	0	59	2	11	7½	110	4	16	3	110	4	16	3
17	0	14	10½	60	2	12	6	112	4	18	0	112	4	18	0
18	0	15	9	61	2	13	4½	120	5	5	0	120	5	5	0
19	0	16	7½	62	2	14	3	130	5	13	9	130	5	13	9
20	0	17	6	63	2	15	1½	132	5	15	6	132	5	15	6
21	0	18	4½	64	2	16	0	140	6	2	6	140	6	2	6
22	0	19	3	65	2	16	10½	144	6	6	0	144	6	6	0
23	1	0	1½	66	2	17	9	150	6	11	3	150	6	11	3
24	1	1	0	67	2	18	7½	175	7	13	1½	175	7	13	1½
25	1	1	10½	68	2	19	6	200	8	15	0	200	8	15	0
26	1	2	9	69	3	0	4½	250	10	18	9	250	10	18	9
27	1	3	7½	70	3	1	3	300	13	2	6	300	13	2	6
28	1	4	6	71	3	2	1½	365	15	19	4½	365	15	19	4½
29	1	5	4½	72	3	3	0	400	17	10	0	400	17	10	0
30	1	6	3	73	3	3	10½	500	21	17	6	500	21	17	6
31	1	7	1½	74	3	4	9	600	26	5	0	600	26	5	0
32	1	8	0	75	3	5	7½	700	30	12	6	700	30	12	6
33	1	8	10½	76	3	6	6	750	32	16	3	750	32	16	3
34	1	9	9	77	3	7	4½	800	35	0	0	800	35	0	0
35	1	10	7½	78	3	8	3	900	39	7	6	900	39	7	6
36	1	11	6	79	3	9	1½	1000	43	15	0	1000	43	15	0
37	1	12	4½	80	3	10	0	1250	54	13	9	1250	54	13	9
38	1	13	3	81	3	10	10½	1500	65	12	6	1500	65	12	6
39	1	14	1½	82	3	11	9	1750	76	11	3	1750	76	11	3
40	1	15	0	83	3	12	7½	2000	87	10	0	2000	87	10	0
41	1	15	10½	84	3	13	6	2240	98	0	0	2240	98	0	0
42	1	16	9	85	3	14	4½	3000	131	5	0	3000	131	5	0
43	1	17	7½	86	3	15	3	5000	218	15	0	5000	218	15	0



No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	11½	44	2	1	3	87	4	1	6½
2	0	1	10½	45	2	2	2½	88	4	2	6
3	0	2	9½	46	2	3	1½	89	4	3	5½
4	0	3	9	47	2	4	0	90	4	4	4½
5	0	4	8½	48	2	5	0	91	4	5	3½
6	0	5	7½	49	2	6	11½	92	4	6	3
7	0	6	6½	50	2	7	11	93	4	7	2½
8	0	7	6	51	2	8	9½	94	4	8	1½
9	0	8	5½	52	2	9	10	95	4	9	0½
10	0	9	4½	53	2	10	9½	96	4	10	0
11	0	10	3½	54	2	11	7½	97	4	11	11½
12	0	11	3	55	2	12	6½	98	4	12	9½
13	0	12	2½	56	2	13	6	99	4	13	9
14	0	13	1½	57	2	14	5½	100	5	1	3
15	0	14	0½	58	2	15	3½	108	5	3	1½
16	0	15	0	59	2	16	3	110	5	5	6
17	0	16	11½	60	2	17	2½	112	5	7	6
18	0	17	9½	61	2	18	1½	120	6	1	10½
19	0	18	9	62	2	19	0	130	6	3	9
20	0	19	8½	63	2	20	0	140	6	11	3
21	0	19	8	64	3	0	0	144	6	15	0
22	1	0	7½	65	3	0	11½	150	7	0	7½
23	1	1	6½	66	3	1	10½	175	8	4	0½
24	1	2	5½	67	3	2	9½	200	9	7	6
25	1	3	5	68	3	3	9	250	11	14	4½
26	1	4	4½	69	3	4	8½	300	14	1	3
27	1	5	3½	70	3	5	7½	365	17	2	2½
28	1	6	3	71	3	6	6½	400	18	15	0
29	1	7	2½	72	3	7	6	500	23	8	9
30	1	8	1½	73	3	8	5½	600	32	16	3
31	1	9	0½	74	3	9	4½	700	35	3	1½
32	1	10	0	75	3	10	3½	800	42	3	9
33	1	10	11½	76	3	11	3	1000	58	11	10½
34	1	11	10½	77	3	12	2½	1500	70	6	3
35	1	12	9½	78	3	13	1½	1750	82	0	7½
36	1	13	9	79	3	14	0½	2000	93	15	0
37	1	14	8½	80	3	15	0	2240	105	0	0
38	1	15	7½	81	3	16	11½	3000	140	12	6
39	1	16	6½	82	3	17	9½	5000	234	7	6
40	1	17	6	83	3	18	9				
41	1	18	5½	84	3	19	8½				
42	1	19	4½	85	4	0	7½				
43	2	0	3½	86	4	0	7				

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	11½	44	2	3	1	87	4	5	2½
2	0	1	11½	45	2	4	0½	88	4	6	2½
3	0	2	11½	46	2	5	0	89	4	7	1½
4	0	3	11	47	2	6	0½	90	4	8	1½
5	0	4	10½	48	2	7	0	91	4	9	1½
6	0	5	10½	49	2	7	11½	92	4	10	1
7	0	6	10½	50	2	8	11½	93	4	11	0½
8	0	7	10	51	2	9	11½	94	4	12	0½
9	0	8	9½	52	2	10	11	95	4	13	0½
10	0	9	9½	53	2	11	10½	96	4	14	0
11	0	10	9½	54	2	12	10½	97	4	15	11½
12	0	11	9	55	2	13	10½	98	4	16	11½
13	0	12	8½	56	2	14	10	99	4	17	11½
14	0	13	8½	57	2	15	9½	100	5	1	11
15	0	14	8½	58	2	16	9½	108	5	5	9
16	0	15	8	59	2	17	9½	110	5	7	8½
17	0	16	7½	60	2	18	9	112	5	9	8
18	0	17	7½	61	2	19	8½	120	5	17	6
19	0	18	7½	62	3	0	8½	130	6	7	3½
20	0	19	7	63	3	1	8½	132	6	9	3
21	0	19	6½	64	3	2	8	140	6	17	1
22	1	1	6½	65	3	3	7½	144	7	1	0
23	1	2	6½	66	3	4	7½	150	7	6	10½
24	1	3	6	67	3	5	7½	175	8	11	4½
25	1	4	5½	68	3	6	7	200	9	15	10
26	1	5	5½	69	3	7	6½	250	12	4	9½
27	1	6	5	70	3	8	6½	300	14	13	9
28	1	7	5	71	3	9	6	365	17	17	4½
29	1	8	4½	72	3	10	6	400	19	11	8
30	1	9	4½	73	3	11	5½	500	24	9	7
31	1	10	4½	74	3	12	5½	600	29	7	6
32	1	11	4	75	3	13	5½	700	34	5	5
33	1	12	3½	76	3	14	5	750	36	14	4½
34	1	13	3½	77	3	15	4½	800	39	3	4
35	1	14	3½	78	3	16	4½	900	44	1	3
36	1	15	3	79	3	17	4½	1000	48	19	2
37	1	16	2½	80	3	18	4	1250	61	3	11½
38	1	17	2½	81	3	19	3½	1500	73	8	9
39	1	18	2	82	4	0	3½	1750	85	13	6½
40	1	19	2	83	4	1	3½	2000	97	18	4
41	2	0	1½	84	4	2	3	2240	100	13	4
42	2	1	1½	85	4	3	2½	3000	146	17	6
43	2	2	1½	86	4	4	2½	5000	244	15	10

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	11½	44	2	2	2	87	4	3	4½
2	0	1	11	45	2	3	1½	88	4	4	4
3	0	2	10½	46	2	4	1	89	4	5	3½
4	0	3	10	47	2	5	0½	90	4	6	3
5	0	4	9½	48	2	6	0	91	4	7	2½
6	0	5	9	49	2	7	11½	92	4	8	2
7	0	6	8½	50	2	8	11	93	4	9	1½
8	0	7	8	51	2	9	10½	94	4	10	1
9	0	8	7½	52	2	10	10	95	4	11	0½
10	0	9	7	53	2	11	9½	96	4	12	0
11	0	10	6½	54	2	12	9	97	4	13	11½
12	0	11	6	55	2	13	8½	98	4	14	11
13	0	12	5½	56	2	14	7½	99	4	15	10½
14	0	13	5	57	2	15	7	100	4	16	10
15	0	14	4½	58	2	16	6½	108	5	3	6
16	0	15	4	59	2	17	6	110	5	5	5
17	0	16	3½	60	2	18	5½	112	5	7	4
18	0	17	3	61	2	19	5	120	5	15	0
19	0	18	2½	62	3	0	4½	130	6	4	7
20	0	19	2	63	3	1	4	132	6	6	6
21	1	0	1½	64	3	2	3½	140	6	14	2
22	1	1	1	65	3	3	3	150	7	3	9
23	1	2	0½	66	3	4	2½	175	8	7	8½
24	1	3	0	67	3	5	2	200	9	11	8
25	1	3	11½	68	3	6	1½	250	11	19	7
26	1	4	10½	69	3	7	1	300	14	7	6
27	1	5	10	70	3	8	0½	365	17	9	9½
28	1	6	9½	71	3	9	0	400	19	3	4
29	1	7	9	72	3	10	11½	500	23	19	2
30	1	8	9	73	3	11	10½	600	28	15	0
31	1	9	8½	74	3	12	10	700	33	10	10
32	1	10	8	75	3	13	9½	750	35	18	9
33	1	11	7½	76	3	14	9	800	38	6	8
34	1	12	7	77	3	15	8½	900	43	2	6
35	1	13	6½	78	3	16	8	1000	47	18	4
36	1	14	6	79	3	17	7½	1250	59	17	11
37	1	15	5½	80	3	18	7	1500	71	17	6
38	1	16	5	81	3	19	6½	1750	83	17	1
39	1	17	4½	82	3	20	6	2000	95	16	8
40	1	18	4	83	3	21	5½	2240	107	6	8
41	1	19	3½	84	4	0	6	3000	143	15	0
42	2	0	3	85	4	1	5½	5000	230	11	8
43	2	1	2½	86	4	2	5				

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	1	0	44	2	4	0	87	4	7	0
2	0	2	0	45	2	5	0	88	4	8	0
3	0	3	0	46	2	6	0	89	4	9	0
4	0	4	0	47	2	7	0	90	4	10	0
5	0	5	0	48	2	8	0	91	4	11	0
6	0	6	0	49	2	9	0	92	4	12	0
7	0	7	0	50	2	10	0	93	4	13	0
8	0	8	0	51	2	11	0	94	4	14	0
9	0	9	0	52	2	12	0	95	4	15	0
10	0	10	0	53	2	13	0	96	4	16	0
11	0	11	0	54	2	14	0	97	4	17	0
12	0	12	0	55	2	15	0	98	4	18	0
13	0	13	0	56	2	16	0	99	4	19	0
14	0	14	0	57	2	17	0	100	5	0	0
15	0	15	0	58	2	18	0	108	5	8	0
16	0	16	0	59	2	19	0	110	5	10	0
17	0	17	0	60	3	0	0	112	5	12	0
18	0	18	0	61	3	1	0	120	6	0	0
19	0	19	0	62	3	2	0	130	6	10	0
20	1	0	0	63	3	3	0	132	6	12	0
21	1	1	0	64	3	4	0	140	7	0	0
22	1	2	0	65	3	5	0	144	7	4	0
23	1	3	0	66	3	6	0	150	7	10	0
24	1	4	0	67	3	7	0	175	8	15	0
25	1	5	0	68	3	8	0	200	10	0	0
26	1	6	0	69	3	9	0	250	12	10	0
27	1	7	0	70	3	10	0	300	15	0	0
28	1	8	0	71	3	11	0	365	18	5	0
29	1	9	0	72	3	12	0	400	20	0	0
30	1	10	0	73	3	13	0	500	25	0	0
31	1	11	0	74	3	14	0	600	30	0	0
32	1	12	0	75	3	15	0	700	35	0	0
33	1	13	0	76	3	16	0	750	37	10	0
34	1	14	0	77	3	17	0	800	40	0	0
35	1	15	0	78	3	18	0	900	45	0	0
36	1	16	0	79	3	19	0	1000	50	0	0
37	1	17	0	80	4	0	0	1250	62	10	0
38	1	18	0	81	4	1	0	1500	75	0	0
39	1	19	0	82	4	2	0	1750	87	10	0
40	2	0	0	83	4	3	0	2000	100	0	0
41	2	1	0	84	4	4	0	2240	112	0	0
42	2	2	0	85	4	5	0	3000	150	0	0
43	2	3	0	86	4	6	0	5000	250	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	0	0	44	4	10	0	87	8	14	0
2	0	4	0	45	4	12	0	88	8	16	0
3	0	8	0	46	4	14	0	89	8	18	0
4	0	10	0	47	4	16	0	90	9	0	0
5	0	12	0	48	4	18	0	91	9	2	0
6	0	14	0	49	4	20	0	92	9	4	0
7	0	16	0	50	5	0	0	93	9	6	0
8	0	18	0	51	5	2	0	94	9	8	0
9	0	20	0	52	5	4	0	95	9	10	0
10	1	0	0	53	5	6	0	96	9	12	0
11	1	2	0	54	5	8	0	97	9	14	0
12	1	4	0	55	5	10	0	98	9	16	0
13	1	6	0	56	5	12	0	99	9	18	0
14	1	8	0	57	5	14	0	100	10	0	0
15	1	10	0	58	5	16	0	108	10	16	0
16	1	12	0	59	5	18	0	110	11	0	0
17	1	14	0	60	6	0	0	112	11	4	0
18	1	16	0	61	6	2	0	120	12	0	0
19	1	18	0	62	6	4	0	130	13	0	0
20	2	0	0	63	6	6	0	132	13	4	0
21	2	2	0	64	6	8	0	140	14	0	0
22	2	4	0	65	6	10	0	144	14	8	0
23	2	6	0	66	6	12	0	150	15	0	0
24	2	8	0	67	6	14	0	175	17	10	0
25	2	10	0	68	6	16	0	200	20	0	0
26	2	12	0	69	6	18	0	250	25	0	0
27	2	14	0	70	7	0	0	300	30	0	0
28	2	16	0	71	7	2	0	365	36	10	0
29	2	18	0	72	7	4	0	400	40	0	0
30	3	0	0	73	7	6	0	500	50	0	0
31	3	2	0	74	7	8	0	600	60	0	0
32	3	4	0	75	7	10	0	700	70	0	0
33	3	6	0	76	7	12	0	750	75	0	0
34	3	8	0	77	7	14	0	800	80	0	0
35	3	10	0	78	7	16	0	900	90	0	0
36	3	12	0	79	7	18	0	1000	100	0	0
37	3	14	0	80	8	0	0	1250	125	0	0
38	3	16	0	81	8	2	0	1500	150	0	0
39	3	18	0	82	8	4	0	1750	175	0	0
40	4	0	0	83	8	6	0	2000	200	0	0
41	4	2	0	84	8	8	0	2240	224	0	0
42	4	4	0	85	8	10	0	3000	300	0	0
43	4	6	0	86	8	12	0	5000	500	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	4	0	44	8	16	0	87	17	8	0
2	0	8	0	45	9	0	0	88	17	12	0
3	0	12	0	46	9	4	0	89	17	16	0
4	0	16	0	47	9	8	0	90	18	0	0
5	1	0	0	48	9	12	0	91	18	4	0
6	1	4	0	49	9	16	0	92	18	8	0
7	1	8	0	50	10	0	0	93	18	12	0
8	1	12	0	51	10	4	0	94	18	16	0
9	1	16	0	52	10	8	0	95	19	0	0
10	2	0	0	53	10	12	0	96	19	4	0
11	2	4	0	54	10	16	0	97	19	8	0
12	2	8	0	55	11	0	0	98	19	12	0
13	2	12	0	56	11	4	0	99	19	16	0
14	2	16	0	57	11	8	0	100	20	0	0
15	3	0	0	58	11	12	0	108	21	12	0
16	3	4	0	59	11	16	0	110	22	0	0
17	3	8	0	60	12	0	0	112	22	8	0
18	3	12	0	61	12	4	0	120	24	0	0
19	3	16	0	62	12	8	0	130	26	0	0
20	4	0	0	63	12	12	0	132	26	8	0
21	4	4	0	64	12	16	0	140	28	0	0
22	4	8	0	65	13	0	0	144	28	16	0
23	4	12	0	66	13	4	0	150	30	0	0
24	4	16	0	67	13	8	0	175	35	0	0
25	5	0	0	68	13	12	0	200	40	0	0
26	5	4	0	69	13	16	0	250	50	0	0
27	5	8	0	70	14	0	0	300	60	0	0
28	5	12	0	71	14	4	0	365	73	0	0
29	5	16	0	72	14	8	0	400	80	0	0
30	6	0	0	73	14	12	0	500	100	0	0
31	6	4	0	74	14	16	0	600	120	0	0
32	6	8	0	75	15	0	0	700	140	0	0
33	6	12	0	76	15	4	0	750	150	0	0
34	6	16	0	77	15	8	0	800	160	0	0
35	7	0	0	78	15	12	0	900	180	0	0
36	7	4	0	79	15	16	0	1000	200	0	0
37	7	8	0	80	16	0	0	1250	250	0	0
38	7	12	0	81	16	4	0	1500	300	0	0
39	7	16	0	82	16	8	0	1750	350	0	0
40	8	0	0	83	16	12	0	2000	400	0	0
41	8	4	0	84	16	16	0	2240	448	0	0
42	8	8	0	85	17	0	0	3000	600	0	0
43	8	12	0	86	17	4	0	5000	1000	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	3	0	44	6	12	0	87	13	1	0
2	0	6	0	45	6	15	0	88	13	4	0
3	0	9	0	46	6	18	0	89	13	7	0
4	0	12	0	47	7	1	0	90	13	10	0
5	0	15	0	48	7	4	0	91	13	13	0
6	0	18	0	49	7	7	0	92	13	16	0
7	1	1	0	50	7	10	0	93	13	19	0
8	1	4	0	51	7	13	0	94	14	2	0
9	1	7	0	52	7	16	0	95	14	5	0
10	1	10	0	53	7	19	0	96	14	8	0
11	1	13	0	54	8	2	0	97	14	11	0
12	1	16	0	55	8	5	0	98	14	14	0
13	1	19	0	56	8	8	0	99	14	17	0
14	2	2	0	57	8	11	0	100	15	0	0
15	2	5	0	58	8	14	0	108	16	4	0
16	2	8	0	59	8	17	0	110	16	10	0
17	2	11	0	60	9	0	0	112	16	16	0
18	2	14	0	61	9	3	0	120	18	0	0
19	2	17	0	62	9	6	0	130	19	10	0
20	3	0	0	63	9	9	0	132	19	16	0
21	3	3	0	64	9	12	0	140	21	0	0
22	3	6	0	65	9	15	0	144	21	12	0
23	3	9	0	66	9	18	0	150	22	10	0
24	3	12	0	67	10	1	0	175	26	5	0
25	3	15	0	68	10	4	0	200	30	0	0
26	3	18	0	69	10	7	0	250	37	10	0
27	4	1	0	70	10	10	0	300	45	0	0
28	4	4	0	71	10	13	0	365	54	15	0
29	4	7	0	72	10	16	0	400	60	0	0
30	4	10	0	73	10	19	0	500	75	0	0
31	4	13	0	74	11	2	0	600	90	0	0
32	4	16	0	75	11	5	0	700	105	0	0
33	4	19	0	76	11	8	0	750	112	10	0
34	5	2	0	77	11	11	0	800	120	0	0
35	5	5	0	78	11	14	0	900	135	0	0
36	5	8	0	79	11	17	0	1000	150	0	0
37	5	11	0	80	12	0	0	1250	187	10	0
38	5	14	0	81	12	3	0	1500	225	0	0
39	5	17	0	82	12	6	0	1750	262	10	0
40	6	0	0	83	12	9	0	2000	300	0	0
41	6	3	0	84	12	12	0	2240	336	0	0
42	6	6	0	85	12	15	0	3000	450	0	0
43	6	9	0	86	12	18	0	5000	750	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	5	0	44	11	0	0	87	21	15	0
2	0	10	0	45	11	5	0	88	22	0	0
3	0	15	0	46	11	10	0	89	22	5	0
4	1	0	0	47	11	15	0	90	22	10	0
5	1	5	0	48	12	0	0	91	22	15	0
6	1	10	0	49	12	5	0	92	23	0	0
7	1	15	0	50	12	10	0	93	23	5	0
8	2	0	0	51	12	15	0	94	23	10	0
9	2	5	0	52	13	0	0	95	23	15	0
10	2	10	0	53	13	5	0	96	24	0	0
11	2	15	0	54	13	10	0	97	24	5	0
12	3	0	0	55	13	15	0	98	24	10	0
13	3	5	0	56	14	0	0	99	24	15	0
14	3	10	0	57	14	5	0	100	25	0	0
15	3	15	0	58	14	10	0	108	27	0	0
16	4	0	0	59	14	15	0	110	27	10	0
17	4	5	0	60	15	0	0	112	28	0	0
18	4	10	0	61	15	5	0	120	30	0	0
19	4	15	0	62	15	10	0	130	32	10	0
20	5	0	0	63	15	15	0	182	33	0	0
21	5	5	0	64	16	0	0	140	35	0	0
22	5	10	0	65	16	5	0	144	36	0	0
23	5	15	0	66	16	10	0	150	37	10	0
24	6	0	0	67	16	15	0	175	43	15	0
25	6	5	0	68	17	0	0	200	50	0	0
26	6	10	0	69	17	5	0	250	62	10	0
27	6	15	0	70	17	10	0	300	75	0	0
28	7	0	0	71	17	15	0	365	91	5	0
29	7	5	0	72	18	0	0	400	100	0	0
30	7	10	0	73	18	5	0	500	125	0	0
31	7	15	0	74	18	10	0	600	150	0	0
32	8	0	0	75	18	15	0	700	175	0	0
33	8	5	0	76	19	0	0	750	187	10	0
34	8	10	0	77	19	5	0	800	200	0	0
35	8	15	0	78	19	10	0	900	225	0	0
36	9	0	0	79	19	15	0	1000	250	0	0
37	9	5	0	80	20	0	0	1250	312	10	0
38	9	10	0	81	20	5	0	1500	375	0	0
39	9	15	0	82	20	10	0	1750	437	10	0
40	10	0	0	83	20	15	0	2000	500	0	0
41	10	5	0	84	21	0	0	2240	560	0	0
42	10	10	0	85	21	5	0	3000	750	0	0
43	10	15	0	86	21	10	0	5000	1250	0	0



No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	6	0	44	13	4	0	87	26	2	0
2	0	12	0	45	13	10	0	88	26	8	0
3	0	18	0	46	13	16	0	89	26	14	0
4	1	4	0	47	14	2	0	90	27	0	0
5	1	10	0	48	14	8	0	91	27	6	0
6	1	16	0	49	14	14	0	92	27	12	0
7	2	2	0	50	15	0	0	93	27	18	0
8	2	8	0	51	15	6	0	94	28	4	0
9	2	14	0	52	15	12	0	95	28	10	0
10	3	0	0	53	15	18	0	96	28	16	0
11	3	6	0	54	16	4	0	97	29	2	0
12	3	12	0	55	16	10	0	98	29	8	0
13	3	18	0	56	16	16	0	99	29	14	0
14	4	4	0	57	17	2	0	100	30	0	0
15	4	10	0	58	17	8	0	108	32	8	0
16	4	16	0	59	17	14	0	110	33	0	0
17	5	2	0	60	18	0	0	112	33	12	0
18	5	8	0	61	18	6	0	120	36	0	0
19	5	14	0	62	18	12	0	130	39	0	0
20	6	0	0	63	18	18	0	132	39	12	0
21	6	6	0	64	19	4	0	140	42	0	0
22	6	12	0	65	19	10	0	144	43	0	0
23	6	18	0	66	19	16	0	150	45	0	0
24	7	4	0	67	20	2	0	175	52	10	0
25	7	10	0	68	20	8	0	200	60	0	0
26	7	16	0	69	20	14	0	250	75	0	0
27	8	2	0	70	21	0	0	300	90	0	0
28	8	8	0	71	21	6	0	365	109	10	0
29	8	14	0	72	21	12	0	400	120	0	0
30	9	0	0	73	21	18	0	500	150	0	0
31	9	6	0	74	22	4	0	600	180	0	0
32	9	12	0	75	22	10	0	700	210	0	0
33	9	18	0	76	22	16	0	750	225	0	0
34	10	4	0	77	23	2	0	800	240	0	0
35	10	10	0	78	23	8	0	900	270	0	0
36	10	16	0	79	23	14	0	1000	300	0	0
37	11	2	0	80	24	0	0	1250	375	0	0
38	11	8	0	81	24	6	0	1500	450	0	0
39	11	14	0	82	24	12	0	1750	525	0	0
40	12	0	0	83	24	18	0	2000	600	0	0
41	12	6	0	84	25	4	0	2240	672	0	0
42	12	12	0	85	25	10	0	3000	900	0	0
43	12	18	0	86	25	16	0	5000	1500	0	0

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	8	0	44	17	12	0	87	34	16	0
2	0	16	0	45	18	0	0	88	35	4	0
3	1	4	0	46	18	8	0	89	35	12	0
4	1	12	0	47	18	16	0	90	36	0	0
5	2	0	0	48	19	4	0	91	36	8	0
6	2	8	0	49	19	12	0	92	36	16	0
7	2	16	0	50	20	0	0	93	37	4	0
8	3	4	0	51	20	8	0	94	37	12	0
9	3	12	0	52	20	16	0	95	38	0	0
10	4	0	0	53	21	4	0	96	38	8	0
11	4	8	0	54	21	12	0	97	38	16	0
12	4	16	0	55	22	0	0	98	39	4	0
13	5	4	0	56	22	8	0	99	39	12	0
14	5	12	0	57	22	16	0	100	40	0	0
15	6	0	0	58	23	4	0	108	43	4	0
16	6	8	0	59	23	12	0	110	44	0	0
17	6	16	0	60	24	0	0	112	44	16	0
18	7	4	0	61	24	8	0	120	48	0	0
19	7	12	0	62	24	16	0	130	52	0	0
20	8	0	0	63	25	4	0	132	52	16	0
21	8	8	0	64	25	12	0	140	56	0	0
22	8	16	0	65	26	0	0	144	57	12	0
23	9	4	0	66	26	8	0	150	60	0	0
24	9	12	0	67	26	16	0	175	70	0	0
25	10	0	0	68	27	4	0	200	80	0	0
26	10	8	0	69	27	12	0	250	100	0	0
27	10	16	0	70	28	0	0	300	120	0	0
28	11	4	0	71	28	8	0	365	148	0	0
29	11	12	0	72	28	16	0	400	160	0	0
30	12	0	0	73	29	4	0	500	200	0	0
31	12	8	0	74	29	12	0	600	240	0	0
32	12	16	0	75	30	0	0	700	280	0	0
33	13	4	0	76	30	8	0	750	300	0	0
34	13	12	0	77	30	16	0	800	320	0	0
35	14	0	0	78	31	4	0	900	360	0	0
36	14	8	0	79	31	12	0	1000	400	0	0
37	14	16	0	80	32	0	0	1250	500	0	0
38	15	4	0	81	32	8	0	1500	600	0	0
39	15	12	0	82	32	16	0	1750	700	0	0
40	16	0	0	83	33	4	0	2000	800	0	0
41	16	8	0	84	33	12	0	2240	896	0	0
42	16	16	0	85	34	0	0	3000	1200	0	0
43	17	4	0	86	34	8	0	5000	2000	0	0

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	7	0	44	15	8	0	87	30	9	0
2	0	14	0	45	15	15	0	88	30	16	0
3	1	1	0	46	16	2	0	89	31	3	0
4	1	8	0	47	16	9	0	90	31	10	0
5	1	15	0	48	16	16	0	91	31	17	0
6	2	2	0	49	17	3	0	92	32	4	0
7	2	9	0	50	17	10	0	93	32	11	0
8	2	16	0	51	17	17	0	94	32	18	0
9	3	3	0	52	18	4	0	95	33	5	0
10	3	10	0	53	18	11	0	96	33	12	0
11	3	17	0	54	18	18	0	97	33	19	0
12	4	4	0	55	19	5	0	98	34	6	0
13	4	11	0	56	19	12	0	99	34	13	0
14	4	18	0	57	19	19	0	100	35	0	0
15	5	5	0	58	20	6	0	108	37	16	0
16	5	12	0	59	20	13	0	110	38	10	0
17	5	19	0	60	21	0	0	112	39	4	0
18	6	6	0	61	21	7	0	120	42	0	0
19	6	13	0	62	21	14	0	130	45	10	0
20	7	0	0	63	22	1	0	132	46	4	0
21	7	7	0	64	22	8	0	140	49	0	0
22	7	14	0	65	22	15	0	144	50	8	0
23	8	1	0	66	23	2	0	150	52	10	0
24	8	8	0	67	23	9	0	175	61	5	0
25	8	15	0	68	23	16	0	200	70	0	0
26	9	2	0	69	24	3	0	250	87	10	0
27	9	9	0	70	24	10	0	300	105	0	0
28	9	16	0	71	24	17	0	365	127	15	0
29	10	3	0	72	25	4	0	400	140	0	0
30	10	10	0	73	25	11	0	500	175	0	0
31	10	17	0	74	25	18	0	600	210	0	0
32	11	4	0	75	26	5	0	700	245	0	0
33	11	11	0	76	26	12	0	750	262	10	0
34	11	18	0	77	26	19	0	800	280	0	0
35	12	5	0	78	27	6	0	900	315	0	0
36	12	12	0	79	27	13	0	1000	350	0	0
37	12	19	0	80	28	0	0	1250	437	10	0
38	13	6	0	81	28	7	0	1500	525	0	0
39	13	13	0	82	28	14	0	1750	612	10	0
40	14	0	0	83	29	1	0	2000	700	0	0
41	14	7	0	84	29	8	0	2240	784	0	0
42	14	14	0	85	29	15	0	3000	1050	0	0
43	15	1	0	86	30	2	0	5000	1750	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	9	0	44	19	16	0	87	39	3	0
2	0	18	0	45	20	5	0	88	39	12	0
3	1	7	0	46	20	14	0	89	40	1	0
4	1	16	0	47	21	3	0	90	40	10	0
5	2	5	0	48	21	12	0	91	40	19	0
6	2	14	0	49	22	1	0	92	41	8	0
7	3	3	0	50	22	10	0	93	41	17	0
8	3	12	0	51	22	19	0	94	42	6	0
9	4	1	0	52	23	8	0	95	42	15	0
10	4	10	0	53	23	17	0	96	43	4	0
11	4	19	0	54	24	6	0	97	43	13	0
12	5	8	0	55	24	15	0	98	44	2	0
13	5	17	0	56	25	4	0	99	44	11	0
14	6	6	0	57	25	13	0	100	45	0	0
15	6	15	0	58	26	2	0	108	48	12	0
16	7	4	0	59	26	11	0	110	49	10	0
17	7	13	0	60	27	0	0	112	50	8	0
18	8	2	0	61	27	9	0	120	54	0	0
19	8	11	0	62	27	18	0	130	58	10	0
20	9	0	0	63	28	7	0	132	59	8	0
21	9	9	0	64	28	16	0	140	63	0	0
22	9	18	0	65	29	5	0	144	64	16	0
23	10	7	0	66	29	14	0	150	67	10	0
24	10	16	0	67	30	3	0	175	78	15	0
25	11	5	0	68	30	12	0	200	90	0	0
26	11	14	0	69	31	1	0	250	112	10	0
27	12	3	0	70	31	10	0	300	135	0	0
28	12	12	0	71	31	19	0	365	164	5	0
29	13	1	0	72	32	8	0	400	180	0	0
30	13	10	0	73	32	17	0	500	225	0	0
31	13	19	0	74	33	6	0	600	270	0	0
32	14	8	0	75	33	15	0	700	315	0	0
33	14	17	0	76	34	4	0	750	337	10	0
34	15	6	0	77	34	13	0	800	360	0	0
35	15	15	0	78	35	2	0	900	405	0	0
36	16	4	0	79	35	11	0	1000	450	0	0
37	16	13	0	80	36	0	0	1250	562	10	0
38	17	2	0	81	36	9	0	1500	675	0	0
39	17	11	0	82	36	18	0	1750	787	10	0
40	18	0	0	83	37	7	0	2000	900	0	0
41	18	9	0	84	37	16	0	2240	1008	0	0
42	18	18	0	85	38	5	0	3000	1350	0	0
43	19	7	0	86	38	14	0	5000	2250	0	0

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	10	0	44	22	0	0	87	43	10	0
2	1	0	0	45	22	10	0	88	44	0	0
3	1	10	0	46	23	0	0	89	44	10	0
4	2	0	0	47	23	10	0	90	45	0	0
5	2	10	0	48	24	0	0	91	45	10	0
6	3	0	0	49	24	10	0	92	46	0	0
7	3	10	0	50	25	0	0	93	46	10	0
8	4	0	0	51	25	10	0	94	47	0	0
9	4	10	0	52	26	0	0	95	47	10	0
10	5	0	0	53	26	10	0	96	48	0	0
11	5	10	0	54	27	0	0	97	48	10	0
12	6	0	0	55	27	10	0	98	49	0	0
13	6	10	0	56	28	0	0	99	49	10	0
14	7	0	0	57	28	10	0	100	50	0	0
15	7	10	0	58	29	0	0	108	54	0	0
16	8	0	0	59	29	10	0	110	55	0	0
17	8	10	0	60	30	0	0	112	56	0	0
18	9	0	0	61	30	10	0	120	60	0	0
19	9	10	0	62	31	0	0	130	65	0	0
20	10	0	0	63	31	10	0	132	66	0	0
21	10	10	0	64	32	0	0	140	70	0	0
22	11	0	0	65	32	10	0	144	72	0	0
23	11	10	0	66	33	0	0	150	75	0	0
24	12	0	0	67	33	10	0	175	87	10	0
25	12	10	0	68	34	0	0	200	100	0	0
26	13	0	0	69	34	10	0	250	125	0	0
27	13	10	0	70	35	0	0	300	150	0	0
28	14	0	0	71	35	10	0	365	182	10	0
29	14	10	0	72	36	0	0	400	200	0	0
30	15	0	0	73	36	10	0	500	250	0	0
31	15	10	0	74	37	0	0	600	300	0	0
32	16	0	0	75	37	10	0	700	350	0	0
33	16	10	0	76	38	0	0	750	375	0	0
34	17	0	0	77	38	10	0	800	400	0	0
35	17	10	0	78	39	0	0	900	450	0	0
36	18	0	0	79	39	10	0	1000	500	0	0
37	18	10	0	80	40	0	0	1250	625	0	0
38	19	0	0	81	40	10	0	1500	750	0	0
39	19	10	0	82	41	0	0	1750	875	0	0
40	20	0	0	83	41	10	0	2000	1000	0	0
41	20	10	0	84	42	0	0	2240	1120	0	0
42	21	0	0	85	42	10	0	3000	1500	0	0
43	21	10	0	86	43	0	0	5000	2500	0	0

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	11	0	44	24	4	0	87	47	17	0
2	1	2	0	45	24	15	0	88	48	8	0
3	1	13	0	46	25	6	0	89	48	19	0
4	2	4	0	47	25	17	0	90	49	10	0
5	2	15	0	48	26	8	0	91	50	1	0
6	3	6	0	49	26	19	0	92	50	12	0
7	3	17	0	50	27	10	0	93	51	3	0
8	4	8	0	51	28	1	0	94	51	14	0
9	4	19	0	52	28	12	0	95	52	5	0
10	5	10	0	53	29	3	0	96	52	16	0
11	6	1	0	54	29	14	0	97	53	7	0
12	6	12	0	55	30	5	0	98	53	18	0
13	7	3	0	56	30	16	0	99	54	9	0
14	7	14	0	57	31	7	0	100	55	0	0
15	8	5	0	58	31	18	0	108	59	8	0
16	8	16	0	59	32	9	0	110	60	10	0
17	9	7	0	60	33	0	0	112	61	12	0
18	9	18	0	61	33	11	0	120	66	0	0
19	10	9	0	62	34	2	0	130	71	10	0
20	11	0	0	63	34	13	0	132	72	12	0
21	11	11	0	64	35	4	0	140	77	0	0
22	12	2	0	65	35	15	0	144	79	4	0
23	12	13	0	66	36	6	0	150	82	10	0
24	13	4	0	67	36	17	0	175	96	5	0
25	13	15	0	68	37	8	0	200	110	0	0
26	14	6	0	69	37	19	0	250	137	10	0
27	14	17	0	70	38	10	0	300	165	0	0
28	15	8	0	71	39	1	0	365	200	15	0
29	15	19	0	72	39	12	0	400	220	0	0
30	16	10	0	73	40	3	0	500	275	0	0
31	17	1	0	74	40	14	0	600	330	0	0
32	17	12	0	75	41	5	0	700	385	0	0
33	18	3	0	76	41	16	0	750	412	10	0
34	18	14	0	77	42	7	0	800	440	0	0
35	19	5	0	78	42	18	0	900	495	0	0
36	19	16	0	79	43	9	0	1000	550	0	0
37	20	7	0	80	44	0	0	1250	687	10	0
38	20	18	0	81	44	11	0	1500	825	0	0
39	21	9	0	82	45	2	0	1750	962	10	0
40	22	0	0	83	45	13	0	2000	1100	0	0
41	22	11	0	84	46	4	0	2240	1232	0	0
42	23	2	0	85	46	15	0	3000	1650	0	0
43	23	13	0	86	47	6	0	5000	2750	0	0

## 10s. 6d.

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	10	6	44	23	2	0	87	45	13	6
2	1	1	0	45	23	12	6	88	46	4	0
3	1	11	6	46	24	3	0	89	46	14	6
4	2	2	0	47	24	13	6	90	47	5	0
5	2	12	6	48	25	4	0	91	47	15	6
6	3	3	0	49	25	14	6	92	48	6	0
7	3	13	6	50	26	5	0	93	48	16	6
8	4	4	0	51	26	15	6	94	49	7	0
9	4	14	6	52	27	6	0	95	49	17	6
10	5	5	0	53	27	16	6	96	50	8	0
11	5	16	6	54	28	7	0	97	50	18	6
12	6	6	0	55	28	17	6	98	51	9	0
13	6	16	6	56	29	8	0	99	51	19	6
14	7	7	0	57	29	18	6	100	52	10	0
15	7	17	6	58	30	9	0	108	56	14	0
16	8	8	0	59	30	19	6	110	57	15	0
17	8	18	6	60	31	10	0	112	58	16	0
18	9	9	0	61	32	0	0	120	63	0	0
19	9	19	6	62	32	11	0	130	68	5	0
20	10	10	0	63	33	1	6	132	69	6	0
21	11	1	0	64	33	12	0	140	73	10	0
22	11	11	0	65	34	2	6	144	75	12	0
23	12	1	6	66	34	13	0	150	78	15	0
24	12	12	0	67	35	3	6	175	91	17	6
25	13	2	6	68	35	14	0	200	105	0	0
26	13	13	0	69	36	4	6	250	131	5	0
27	14	3	6	70	36	15	0	300	157	10	0
28	14	14	0	71	37	5	6	365	191	12	6
29	15	4	6	72	37	16	0	400	210	0	0
30	15	15	0	73	38	6	6	500	262	10	0
31	16	5	6	74	38	17	0	600	315	0	0
32	16	16	0	75	39	7	6	700	367	10	0
33	17	6	6	76	39	18	0	750	393	15	0
34	17	17	0	77	40	8	6	800	420	0	0
35	18	7	6	78	40	19	0	900	472	10	0
36	18	18	0	79	41	9	6	1000	525	0	0
37	19	8	6	80	42	0	0	1250	656	5	0
38	19	19	0	81	42	10	6	1500	787	10	0
39	20	9	6	82	43	1	0	1750	918	15	0
40	21	0	0	83	43	11	6	2000	1050	0	0
41	21	10	6	84	44	2	0	2240	1176	0	0
42	22	1	0	85	44	12	6	3000	1575	0	0
43	22	11	6	86	45	3	0	5000	2625	0	0

## 12s.

No.	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.
1	0	12	0	44	26	8	0	87	52	4	0
2	1	4	0	45	27	0	0	88	52	16	0
3	1	16	0	46	27	12	0	89	53	8	0
4	2	8	0	47	28	4	0	90	54	0	0
5	3	0	0	48	28	16	0	91	54	12	0
6	3	12	0	49	29	8	0	92	55	4	0
7	4	4	0	50	30	0	0	93	55	16	0
8	4	16	0	51	30	12	0	94	56	8	0
9	5	8	0	52	31	4	0	95	57	0	0
10	6	0	0	53	31	16	0	96	57	12	0
11	6	12	0	54	32	8	0	97	58	4	0
12	7	4	0	55	33	0	0	98	58	16	0
13	7	16	0	56	33	12	0	99	59	8	0
14	8	8	0	57	34	4	0	100	60	0	0
15	9	0	0	58	34	16	0	108	64	16	0
16	9	12	0	59	35	8	0	110	66	0	0
17	10	4	0	60	36	0	0	112	67	4	0
18	10	16	0	61	36	12	0	120	72	0	0
19	11	8	0	62	37	4	0	130	78	0	0
20	12	0	0	63	37	16	0	132	79	4	0
21	12	12	0	64	38	8	0	140	84	0	0
22	13	4	0	65	39	0	0	144	86	8	0
23	13	16	0	66	39	12	0	150	90	0	0
24	14	8	0	67	40	4	0	175	105	0	0
25	15	0	0	68	40	16	0	200	120	0	0
26	15	12	0	69	41	8	0	250	150	0	0
27	16	4	0	70	42	0	0	300	180	0	0
28	16	16	0	71	42	12	0	365	219	0	0
29	17	8	0	72	43	4	0	400	240	0	0
30	18	0	0	73	43	16	0	500	300	0	0
31	18	12	0	74	44	8	0	600	360	0	0
32	19	4	0	75	45	0	0	700	420	0	0
33	19	16	0	76	45	12	0	750	450	0	0
34	20	8	0	77	46	4	0	800	480	0	0
35	21	0	0	78	46	16	0	900	540	0	0
36	21	12	0	79	47	8	0	1000	600	0	0
37	22	4	0	80	48	0	0	1250	750	0	0
38	22	16	0	81	48	12	0	1500	900	0	0
39	23	8	0	82	49	4	0	1750	1050	0	0
40	24	0	0	83	49	16	0	2000	1200	0	0
41	24	12	0	84	50	8	0	2240	1344	0	0
42	25	4	0	85	51	0	0	3000	1800	0	0
43	25	16	0	86	51	12	0	5000	3000	0	0



No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	13	0	44	28	12	0	87	56	11	0
2	1	6	0	45	31	10	0	88	57	4	0
3	1	19	0	46	29	18	0	89	57	17	0
4	2	12	0	47	30	11	0	90	58	10	0
5	3	5	0	48	31	4	0	91	59	3	0
6	3	18	0	49	31	17	0	92	59	16	0
7	4	11	0	50	32	10	0	93	60	9	0
8	5	4	0	51	33	3	0	94	61	2	0
9	5	17	0	52	33	16	0	95	61	15	0
10	6	10	0	53	34	9	0	96	62	8	0
11	7	3	0	54	35	2	0	97	63	1	0
12	7	16	0	55	35	15	0	98	63	14	0
13	8	9	0	56	36	8	0	99	64	7	0
14	9	2	0	57	37	1	0	100	65	0	0
15	9	15	0	58	37	14	0	108	70	4	0
16	10	8	0	59	38	7	0	110	71	10	0
17	11	1	0	60	39	0	0	112	72	16	0
18	11	14	0	61	39	13	0	120	78	0	0
19	12	7	0	62	40	6	0	130	84	10	0
20	13	0	0	63	40	19	0	132	85	16	0
21	13	13	0	64	41	12	0	140	91	0	0
22	14	6	0	65	42	5	0	144	93	12	0
23	14	19	0	66	42	18	0	150	97	10	0
24	15	12	0	67	43	11	0	175	113	15	0
25	16	5	0	68	44	4	0	200	130	0	0
26	16	18	0	69	44	17	0	250	162	10	0
27	17	11	0	70	45	10	0	300	195	0	0
28	18	4	0	71	46	3	0	365	237	5	0
29	18	17	0	72	46	16	0	400	260	0	0
30	19	10	0	73	47	9	0	500	325	0	0
31	20	3	0	74	48	2	0	600	390	0	0
32	20	16	0	75	48	15	0	700	455	0	0
33	21	9	0	76	49	8	0	750	487	10	0
34	22	2	0	77	50	1	0	800	520	0	0
35	22	15	0	78	50	14	0	900	585	0	0
36	23	8	0	79	51	7	0	1000	650	0	0
37	24	1	0	80	52	0	0	1250	812	10	0
38	24	14	0	81	52	13	0	1500	975	0	0
39	25	7	0	82	53	6	0	1750	1137	10	0
40	26	0	0	83	53	19	0	2000	1300	0	0
41	26	13	0	84	54	12	0	2240	1456	0	0
42	27	6	0	85	55	5	0	3000	1950	0	0
43	27	19	0	86	55	18	0	5000	3250	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	15	0	44	33	0	0	87	65	5	0
2	1	10	0	45	33	15	0	88	66	0	0
3	2	5	0	46	34	10	0	89	66	15	0
4	3	0	0	47	35	5	0	90	67	10	0
5	3	15	0	48	36	0	0	91	68	5	0
6	4	10	0	49	36	15	0	92	69	0	0
7	5	5	0	50	37	10	0	93	69	15	0
8	6	0	0	51	38	5	0	94	70	10	0
9	6	15	0	52	39	0	0	95	71	5	0
10	7	10	0	53	39	15	0	96	72	0	0
11	8	5	0	54	40	10	0	97	72	15	0
12	9	0	0	55	41	5	0	98	73	10	0
13	9	15	0	56	42	0	0	99	74	5	0
14	10	10	0	57	42	15	0	100	75	0	0
15	11	5	0	58	43	10	0	108	81	0	0
16	12	0	0	59	44	5	0	110	82	10	0
17	12	15	0	60	45	0	0	112	84	0	0
18	13	10	0	61	45	15	0	120	90	0	0
19	14	5	0	62	46	10	0	130	97	10	0
20	15	0	0	63	47	5	0	132	99	0	0
21	15	15	0	64	48	0	0	140	105	0	0
22	16	10	0	65	48	15	0	144	108	0	0
23	17	5	0	66	49	10	0	150	112	10	0
24	18	0	0	67	50	5	0	175	131	5	0
25	18	15	0	68	51	0	0	200	150	0	0
26	19	10	0	69	51	15	0	250	187	10	0
27	20	5	0	70	52	10	0	300	225	0	0
28	21	0	0	71	53	5	0	365	273	15	0
29	21	15	0	72	54	0	0	400	300	0	0
30	22	10	0	73	54	15	0	500	375	0	0
31	23	5	0	74	55	10	0	600	450	0	0
32	24	0	0	75	56	5	0	700	525	0	0
33	24	15	0	76	57	0	0	750	562	10	0
34	25	10	0	77	57	15	0	800	600	0	0
35	26	5	0	78	58	10	0	900	675	0	0
36	27	0	0	79	59	5	0	1000	750	0	0
37	27	15	0	80	60	0	0	1250	937	10	0
38	28	10	0	81	60	15	0	1500	1125	0	0
39	29	5	0	82	61	10	0	1750	1312	10	0
40	30	0	0	83	62	5	0	2000	1500	0	0
41	30	15	0	84	63	0	0	2240	1680	0	0
42	31	10	0	85	63	15	0	3000	2250	0	0
43	32	5	0	86	64	10	0	5000	3750	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	14	0	44	30	16	0	87	60	18	0
2	1	8	0	45	31	10	0	88	61	12	0
3	2	2	0	46	32	4	0	89	62	6	0
4	2	16	0	47	32	18	0	90	63	0	0
5	3	10	0	48	33	12	0	91	63	14	0
6	4	4	0	49	34	6	0	92	64	8	0
7	4	18	0	50	35	0	0	93	65	2	0
8	5	12	0	51	35	14	0	94	65	16	0
9	6	6	0	52	36	8	0	95	66	10	0
10	7	0	0	53	37	2	0	96	67	4	0
11	7	14	0	54	37	16	0	97	67	18	0
12	8	8	0	55	38	10	0	98	68	12	0
13	9	2	0	56	39	4	0	99	69	6	0
14	9	16	0	57	39	18	0	100	70	0	0
15	10	10	0	58	40	12	0	108	75	12	0
16	11	4	0	59	41	6	0	110	77	0	0
17	11	18	0	60	42	0	0	112	78	8	0
18	12	12	0	61	42	14	0	120	84	0	0
19	13	6	0	62	43	8	0	130	91	0	0
20	14	0	0	63	44	2	0	132	92	8	0
21	14	14	0	64	44	16	0	140	98	0	0
22	15	8	0	65	45	10	0	144	100	16	0
23	16	2	0	66	46	4	0	150	105	0	0
24	16	16	0	67	46	18	0	175	122	10	0
25	17	10	0	68	47	12	0	200	140	0	0
26	18	4	0	69	48	6	0	250	175	0	0
27	18	18	0	70	49	0	0	300	210	0	0
28	19	12	0	71	49	14	0	365	255	10	0
29	20	6	0	72	50	8	0	400	280	0	0
30	21	0	0	73	51	2	0	500	350	0	0
31	21	14	0	74	51	16	0	600	420	0	0
32	22	8	0	75	52	10	0	700	490	0	0
33	23	2	0	76	53	4	0	750	525	0	0
34	23	16	0	77	53	18	0	800	560	0	0
35	24	10	0	78	54	12	0	900	630	0	0
36	25	4	0	79	55	6	0	1000	700	0	0
37	25	18	0	80	56	0	0	1250	875	0	0
38	26	12	0	81	56	14	0	1500	1050	0	0
39	27	6	0	82	57	8	0	1750	1225	0	0
40	28	0	0	83	58	2	0	2000	1400	0	0
41	28	14	0	84	58	16	0	2240	1568	0	0
42	29	8	0	85	59	10	0	3000	2100	0	0
43	30	2	0	86	60	4	0	5000	3500	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	16	0	44	35	4	0	87	69	12	0
2	1	12	0	45	36	0	0	88	70	8	0
3	2	8	0	46	36	16	0	89	71	4	0
4	3	4	0	47	37	12	0	90	72	0	0
5	4	0	0	48	38	8	0	91	72	16	0
6	4	16	0	49	39	4	0	92	73	12	0
7	5	12	0	50	40	0	0	93	74	8	0
8	6	8	0	51	40	16	0	94	75	4	0
9	7	4	0	52	41	12	0	95	76	0	0
10	8	0	0	53	42	8	0	96	76	16	0
11	8	16	0	54	43	4	0	97	77	12	0
12	9	12	0	55	44	0	0	98	78	8	0
13	10	8	0	56	44	16	0	99	79	4	0
14	11	4	0	57	45	12	0	100	80	0	0
15	12	0	0	58	46	8	0	108	86	8	0
16	12	16	0	59	47	4	0	110	88	0	0
17	13	12	0	60	48	0	0	112	89	12	0
18	14	8	0	61	48	16	0	120	96	0	0
19	15	4	0	62	49	12	0	134	104	0	0
20	16	0	0	63	50	8	0	132	105	12	0
21	16	16	0	64	51	4	0	140	112	0	0
22	17	12	0	65	52	0	0	144	115	4	0
23	18	8	0	66	52	16	0	150	120	0	0
24	19	4	0	67	53	12	0	175	140	0	0
25	20	0	0	68	54	8	0	200	160	0	0
26	20	16	0	69	55	4	0	250	200	0	0
27	21	12	0	70	56	0	0	300	240	0	0
28	22	8	0	71	56	16	0	365	292	0	0
29	23	4	0	72	57	12	0	400	320	0	0
30	24	0	0	73	58	8	0	500	400	0	0
31	24	16	0	74	59	4	0	600	480	0	0
32	25	12	0	75	60	0	0	700	560	0	0
33	26	8	0	76	60	16	0	750	600	0	0
34	27	4	0	77	61	12	0	800	640	0	0
35	28	0	0	78	62	8	0	900	720	0	0
36	28	16	0	79	63	4	0	1000	800	0	0
37	29	12	0	80	64	0	0	1250	1000	0	0
38	30	8	0	81	64	16	0	1500	1200	0	0
39	31	4	0	82	65	12	0	1750	1400	0	0
40	32	0	0	83	66	8	0	2000	1600	0	0
41	32	16	0	84	67	4	0	2240	1792	0	0
42	33	12	0	85	68	0	0	3000	2400	0	0
43	34	8	0	86	68	16	0	5000	4000	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	17	0	44	37	8	0	87	73	19	0
2	1	14	0	45	38	5	0	88	74	16	0
3	2	11	0	46	39	2	0	89	75	13	0
4	3	8	0	47	39	19	0	90	76	10	0
5	4	5	0	48	40	16	0	91	77	7	0
6	5	2	0	49	41	13	0	92	78	4	0
7	5	19	0	50	42	10	0	93	79	1	0
8	6	16	0	51	43	7	0	94	79	18	0
9	7	13	0	52	44	4	0	95	80	15	0
10	8	10	0	53	45	1	0	96	81	12	0
11	9	7	0	54	45	18	0	97	82	9	0
12	10	4	0	55	46	15	0	98	83	6	0
13	11	1	0	56	47	12	0	99	84	3	0
14	11	18	0	57	48	9	0	100	85	0	0
15	12	15	0	58	49	6	0	108	91	16	0
16	13	12	0	59	50	3	0	110	93	10	0
17	14	9	0	60	51	0	0	112	95	4	0
18	15	6	0	61	51	17	0	120	102	0	0
19	16	3	0	62	52	14	0	130	110	10	0
20	17	0	0	63	53	11	0	132	112	4	0
21	17	17	0	64	54	8	0	140	119	0	0
22	18	14	0	65	55	5	0	144	122	8	0
23	19	11	0	66	56	2	0	150	127	10	0
24	20	8	0	67	56	19	0	175	148	15	0
25	21	5	0	68	57	16	0	200	170	0	0
26	22	2	0	69	58	13	0	250	212	10	0
27	22	19	0	70	59	10	0	300	255	0	0
28	23	16	0	71	60	7	0	365	310	5	0
29	24	13	0	72	61	4	0	400	340	0	0
30	25	10	0	73	62	1	0	500	425	0	0
31	26	7	0	74	62	18	0	600	510	0	0
32	27	4	0	75	63	15	0	700	595	0	0
33	28	1	0	76	64	12	0	750	637	10	0
34	28	18	0	77	65	9	0	800	680	0	0
35	29	15	0	78	66	6	0	900	765	0	0
36	30	12	0	79	67	3	0	1000	850	0	0
37	31	9	0	80	68	0	0	1250	1062	10	0
38	32	6	0	81	68	17	0	1500	1275	0	0
39	33	3	0	82	69	14	0	1750	1487	10	0
40	34	0	0	83	70	11	0	2000	1700	0	0
41	34	17	0	84	71	8	0	2240	1904	0	0
42	35	14	0	85	72	5	0	3000	2550	0	0
43	36	11	0	86	73	2	0	5000	4250	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	19	0	44	41	16	0	87	82	13	0
2	1	18	0	45	42	15	0	88	83	12	0
3	2	17	0	46	43	14	0	89	84	11	0
4	3	16	0	47	44	13	0	90	85	10	0
5	4	15	0	48	45	12	0	91	86	9	0
6	5	14	0	49	46	11	0	92	87	8	0
7	6	13	0	50	47	10	0	93	88	7	0
8	7	12	0	51	48	9	0	94	89	6	0
9	8	11	0	52	49	8	0	95	90	5	0
10	9	10	0	53	50	7	0	96	91	4	0
11	10	9	0	54	51	6	0	97	92	3	0
12	11	8	0	55	52	5	0	98	93	2	0
13	12	7	0	56	53	4	0	99	94	1	0
14	13	6	0	57	54	3	0	100	95	0	0
15	14	5	0	58	55	2	0	108	102	12	0
16	15	4	0	59	56	1	0	110	104	10	0
17	16	3	0	60	57	0	0	112	106	8	0
18	17	2	0	61	57	19	0	120	114	0	0
19	18	1	0	62	58	18	0	130	123	10	0
20	19	0	0	63	59	17	0	132	125	8	0
21	19	19	0	64	60	16	0	140	133	0	0
22	20	18	0	65	61	15	0	144	136	16	0
23	21	17	0	66	62	14	0	150	142	10	0
24	22	16	0	67	63	13	0	175	166	5	0
25	23	15	0	68	64	12	0	200	190	0	0
26	24	14	0	69	65	11	0	250	237	10	0
27	25	13	0	70	66	10	0	300	285	0	0
28	26	12	0	71	67	9	0	365	346	15	0
29	27	11	0	72	68	8	0	400	380	0	0
30	28	10	0	73	69	7	0	500	475	0	0
31	29	9	0	74	70	6	0	600	570	0	0
32	30	8	0	75	71	5	0	700	665	0	0
33	31	7	0	76	72	4	0	750	712	10	0
34	32	6	0	77	73	3	0	800	760	0	0
35	33	5	0	78	74	2	0	900	855	0	0
36	34	4	0	79	75	1	0	1000	950	0	0
37	35	3	0	80	76	0	0	1250	1187	10	0
38	36	2	0	81	76	19	0	1500	1425	0	0
39	37	1	0	82	77	18	0	1750	1662	10	0
40	38	0	0	83	78	17	0	2000	1900	0	0
41	38	19	0	84	79	16	0	2240	2128	0	0
42	39	18	0	85	80	15	0	3000	2850	0	0
43	40	17	0	86	81	14	0	5000	4750	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	0	18	0	44	39	12	0	87	78	6	0
2	1	16	0	45	40	10	0	88	79	4	0
3	2	14	0	46	41	8	0	89	80	2	0
4	3	12	0	47	42	6	0	90	81	0	0
5	4	10	0	48	43	4	0	91	81	18	0
6	5	8	0	49	44	2	0	92	82	18	0
7	6	6	0	50	45	0	0	93	83	14	0
8	7	4	0	51	45	18	0	94	84	12	0
9	8	2	0	52	46	16	0	95	85	10	0
10	9	0	0	53	47	14	0	96	86	8	0
11	9	18	0	54	48	12	0	97	87	6	0
12	10	16	0	55	49	10	0	98	88	4	0
13	11	14	0	56	50	8	0	99	89	2	0
14	12	12	0	57	51	6	0	100	90	0	0
15	13	10	0	58	52	4	0	108	97	4	0
16	14	8	0	59	53	2	0	110	99	0	0
17	15	6	0	60	54	0	0	112	100	16	0
18	16	4	0	61	54	18	0	120	108	0	0
19	17	2	0	62	55	16	0	130	117	0	0
20	18	0	0	63	56	14	0	132	118	16	0
21	18	18	0	64	57	12	0	140	126	0	0
22	19	16	0	65	58	10	0	144	129	12	0
23	20	14	0	66	59	8	0	150	135	0	0
24	21	12	0	67	60	6	0	175	157	10	0
25	22	10	0	68	61	4	0	200	180	0	0
26	23	8	0	69	62	2	0	250	225	0	0
27	24	6	0	70	63	0	0	300	270	0	0
28	25	4	0	71	63	18	0	365	328	10	0
29	26	2	0	72	64	16	0	400	360	0	0
30	27	0	0	73	65	14	0	500	450	0	0
31	27	18	0	74	66	12	0	600	540	0	0
32	28	16	0	75	67	10	0	700	630	0	0
33	29	14	0	76	68	8	0	750	675	0	0
34	30	12	0	77	69	6	0	800	720	0	0
35	31	10	0	78	70	4	0	900	810	0	0
36	32	8	0	79	71	2	0	1000	900	0	0
37	33	6	0	80	72	0	0	1250	1125	0	0
38	34	4	0	81	72	18	0	1500	1350	0	0
39	35	2	0	82	73	16	0	1750	1575	0	0
40	36	0	0	83	74	14	0	2000	1800	0	0
41	36	18	0	84	75	12	0	2240	2016	0	0
42	37	16	0	85	76	10	0	3000	2700	0	0
43	38	14	0	86	77	8	0	5000	4500	0	0

No	£	s.	d.	No	£	s.	d.	No	£	s.	d.
1	1	1	0	44	46	4	0	87	91	7	0
2	2	2	0	45	47	5	0	88	92	8	0
3	3	3	0	46	48	6	0	89	93	9	0
4	4	4	0	47	49	7	0	90	94	10	0
5	5	5	0	48	50	8	0	91	95	11	0
6	6	6	0	49	51	9	0	92	96	12	0
7	7	7	0	50	52	10	0	93	97	13	0
8	8	8	0	51	53	11	0	94	98	14	0
9	9	9	0	52	54	12	0	95	99	15	0
10	10	10	0	53	55	13	0	96	100	16	0
11	11	11	0	54	56	14	0	97	101	17	0
12	12	12	0	55	57	15	0	98	102	18	0
13	13	13	0	56	58	16	0	99	103	19	0
14	14	14	0	57	59	17	0	100	105	0	0
15	15	15	0	58	60	18	0	108	113	8	0
16	16	16	0	59	61	19	0	110	115	10	0
17	17	17	0	60	63	0	0	112	117	12	0
18	18	18	0	61	64	1	0	120	126	0	0
19	19	19	0	62	65	2	0	130	136	10	0
20	21	0	0	63	66	3	0	132	138	12	0
21	22	1	0	64	67	4	0	140	147	0	0
22	23	2	0	65	68	5	0	144	151	4	0
23	24	3	0	66	69	6	0	150	157	10	0
24	25	4	0	67	70	7	0	175	183	15	0
25	26	5	0	68	71	8	0	200	210	0	0
26	27	6	0	69	72	9	0	250	262	16	0
27	28	7	0	70	73	10	0	300	315	0	0
28	29	8	0	71	74	11	0	365	388	5	0
29	30	9	0	72	75	12	0	400	420	0	0
30	31	10	0	73	76	13	0	500	525	0	0
31	32	11	0	74	77	14	0	600	630	0	0
32	33	12	0	75	78	15	0	700	735	0	0
33	34	13	0	76	79	16	0	750	787	10	0
34	35	14	0	77	80	17	0	800	840	0	0
35	36	15	0	78	81	18	0	900	945	0	0
36	37	16	0	79	82	19	0	1000	1050	0	0
37	38	17	0	80	84	0	0	1250	1312	10	0
38	39	18	0	81	85	1	0	1500	1575	0	0
39	40	19	0	82	86	2	0	1750	1837	16	0
40	42	0	0	83	87	3	0	2000	2100	0	0
41	43	1	0	84	88	4	0	2240	2352	0	0
42	44	2	0	85	89	5	0	3000	3150	0	0
43	45	3	0	86	90	6	0	5000	5250	0	0



January							February							March							April							May							June						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
						1			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	13	14							
2	3	4	5	6	7	8	6	7	8	9	10	11	12	13	14	15	16	17	18	19	10	11	12	13	14	15	16	17	18	19	20	21	22								
9	10	11	12	13	14	15	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8								
16	17	18	19	20	21	22	20	21	22	23	24	25	26	27	28	29	30	31			24	25	26	27	28	29	30	31													
23	24	25	26	27	28	29	27	28													24	25	26	27	28	29	30	31													
30	31																																								

July							August							September							October							November							December						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
						1			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26							
3	4	5	6	7	8	9	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31										
10	11	12	13	14	15	16	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31																	
17	18	19	20	21	22	23	21	22	23	24	25	26	27	28	29	30	31				25	26	27	28	29	30	31														
24	25	26	27	28	29	30	28	29	30	31											25	26	27	28	29	30	31														
31																																									

**CALENDAR FOR 1956.**

January							February							March							April							May							June						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
1	2	3	4	5	6	7	.	.	.	1	2	3	4	.	.	1	2	3	4	5	6	7	.	.	1	2	3	4	5	6	7	8	9	10	11	12					
8	9	10	11	12	13	14	5	6	7	8	9	10	11	4	5	6	7	8	9	10	11	12	13	14	6	7	8	9	10	11	12	13	14	15	16						
15	16	17	18	19	20	21	12	13	14	15	16	17	18	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2						
22	23	24	25	26	27	28	19	20	21	22	23	24	25	18	19	20	21	22	23	24	25	26	27	28	29	30	31	.	.	.	.	.	.	.	.						
29	30	31	.	.	.	.	26	27	28	29	.	.	.	25	26	27	28	29	30	31	29	30	.	.	.	.	.	27	28	29	30	31	.	.	.						

July							August							September							October							November							December						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
1	2	3	4	5	6	7	.	.	.	1	2	3	4	.	.	1	2	3	4	5	6	7	.	.	1	2	3	4	5	6	7	8	9	10	11	12					
8	9	10	11	12	13	14	5	6	7	8	9	10	11	4	5	6	7	8	9	10	11	12	13	14	6	7	8	9	10	11	12	13	14	15	16						
15	16	17	18	19	20	21	12	13	14	15	16	17	18	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2						
22	23	24	25	26	27	28	19	20	21	22	23	24	25	18	19	20	21	22	23	24	25	26	27	28	29	30	31	.	.	.	.	.	.	.	.						
29	30	31	.	.	.	.	26	27	28	29	30	31	.	25	26	27	28	29	30	31	28	29	30	31	.	.	.	25	26	27	28	29	30	31	1						

**CALENDAR FOR 1957.**

January							February							March							April							May							June						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
6	7	8	9	3	4	5	3	4	5	6	7	8	9	3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11							
13	14	15	16	17	18	19	10	11	12	13	14	15	16	10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18							
20	21	22	23	24	25	26	17	18	19	20	21	22	23	17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25							
27	28	29	30	31	.	.	24	25	26	27	28	.	.	24	25	26	27	28	29	30	28	29	30	.	.	.	26	27	28	29	30	31	.	.							
July							August							September							October							November							December						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
7	8	9	10	11	12	13	4	5	6	7	8	9	10	1	2	3	4	5	6	7	6	7	8	9	10	11	12	3	4	5	6	7	8	9							
14	15	16	17	18	19	20	11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16							
21	22	23	24	25	26	27	18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23							
28	29	30	31	.	.	.	25	26	27	28	29	30	31	29	30	.	.	.	.	.	27	28	29	30	31	.	.	24	25	26	27	28	29	30							

**CALENDAR FOR 1958.**

January							February							March							April							May							June								
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S									
				1	2	3							1				1	2	3	4	5				1	2	3	4				1	2	3	4	5	6	7					
5	6	7	8	9	10	11	2	3	4	5	6	7	8	2	3	4	5	6	7	8	6	7	8	9	10	11	12	4	5	6	7	8	9	10	11	12	13	14					
12	13	14	15	16	17	18	9	10	11	12	13	14	15	9	10	11	12	13	14	15	13	14	15	16	17	18	19	11	12	13	14	15	16	17	18	19	20	21					
19	20	21	22	23	24	25	16	17	18	19	20	21	22	17	18	19	20	21	22	23	15	16	17	18	19	20	21	18	19	20	21	22	23	24	25	26	27	28					
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				1	2	3							1	2		1	2	3	4	5	6				1	2	3	4				1	2	3	4	5	6	7	8	9	10	11	12
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# DECORATIONS FOR VALOUR AND GALLANTRY



**THE VICTORIA CROSS (V.C.)**  
Symbol of the highest acts of bravery in the face of the enemy. Instituted in 1856.



**THE GEORGE CROSS (G.C.)**  
Awarded to men and women for acts of great heroism in circumstances of extreme danger. Instituted in 1940.



**THE DISTINGUISHED SERVICE ORDER (D.S.O.)**  
Awarded only to an officer in any of the three Services as a reward for distinguished service in war. Instituted in 1886.



**THE DISTINGUISHED SERVICE CROSS (D.S.C.)**  
Awarded to naval and marine officers of the relative rank of commander and below for distinguished service in the face of the enemy.



**THE MILITARY CROSS (M.C.)**  
Awarded for distinguished service in war by officers of the rank of Captain and below. Instituted in 1914.



**THE DISTINGUISHED FLYING CROSS (D.F.C.)**  
Awarded for acts of valour and devotion to duty to officers and warrant officers of the R.A.F. whilst flying on active operations against the enemy. Instituted in 1919.



**THE AIR FORCE CROSS (A.F.C.)**  
Awarded to officers and warrant officers of the R.A.F. for acts of valour and devotion to duty whilst flying though not on active operations against the enemy. Instituted in 1919.



**THE ALBERT MEDAL (A.M.)**  
Awarded for heroic acts in saving, or endeavouring to save, life at sea. Instituted in 1866. Two classes: 1st class Gold, 2nd class Bronze.



**THE ALBERT MEDAL (A.M.)**  
Awarded for heroic acts in saving, or endeavouring to save, life on land. Instituted in 1877. Two classes: 1st class Gold, 2nd class Bronze.



**THE DISTINGUISHED CONDUCT MEDAL (D.C.M.)**  
Awarded to N.C.O.s and men of the army for distinguished conduct in the field. Instituted in 1854.



**THE CONSPICUOUS GALLANTRY MEDAL (C.G.M.)**  
Awarded to petty officers and men of the R.N. and N.C.O.s and men of the R.M. for acts of conspicuous gallantry in the face of the enemy. Originated for the Crimean war only, and reinstituted in 1874.



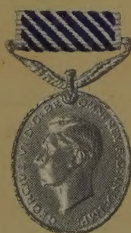
**THE GEORGE MEDAL (G.M.)**  
Awarded, for acts of great heroism, to men and women. Instituted in 1940.



**THE DISTINGUISHED SERVICE MEDAL (D.S.M.)**  
Awarded to petty officers and men of the R.N. and N.C.O.s and men of the R.M. for courageous service in war. Instituted in 1914.



**THE MILITARY MEDAL (M.M.)**  
Awarded to N.C.O.s and men of the army for individual acts of bravery. It may be awarded to women for devotion to duty under fire. Instituted in 1916.



**THE DISTINGUISHED FLYING MEDAL (D.F.M.)**  
Awarded to N.C.O.s and men of the R.A.F. for acts of valour or devotion to duty whilst flying in active operations against the enemy. Instituted in 1919.



**THE AIR FORCE MEDAL (A.F.M.)**  
Awarded to N.C.O.s and men of the R.A.F. for acts of valour or devotion to duty when flying, not on active operations against the enemy. Instituted in 1919.



# Date Due

MOST NOBLE ORDER OF THE GARTER

MOST NOBLE AND MOST ANCIENT ORDER OF THE THISTLE

MOST ILLUSTRIOUS ORDER OF ST. PATRICK

MOST HONOURABLE  
ORDER OF THE BATH

ORDER OF MERIT

MOST EXALTED ORDER OF  
THE STAR OF INDIA

ORDER OF ST. MICHAEL  
AND ST. GEORGE

ORDER OF THE INDIAN  
EMPIRE

ORDER OF THE CROWN  
OF INDIA

ROYAL VICTORIAN  
ORDER

ORDER OF BRITISH EMPIRE  
MILITARY  
(B.E.M. same, but narrower)

ORDER OF BRITISH EMPIRE  
CIVIL  
(B.E.M. same, but narrower)

ORDER OF THE  
COMPANIONS OF HONOUR

DISTINGUISHED  
SERVICE ORDER

IMPERIAL SERVICE ORDER  
(Imperial Service Medal, same  
Ribbon)

ROYAL RED CROSS

DISTINGUISHED  
SERVICE CROSS

MILITARY CROSS

DISTINGUISHED  
FLYING CROSS

AIR FORCE CROSS

VENERABLE ORDER OF  
ST. JOHN OF JERUSALEM

ALBERT MEDAL  
in Gold (Land)

DISTINGUISHED  
CONDUCT MEDAL

CONSPICUOUS GALLANTRY  
MEDAL (Navy)

CONSPICUOUS GALLANTRY  
MEDAL (Army and R.A.F.)

GEORGE MEDAL

KING'S POLICE AND FIRE  
SERVICE MEDAL (Gallantry)

DISTINGUISHED  
SERVICE MEDAL

MILITARY MEDAL

DISTINGUISHED  
FLYING MEDAL

AIR FORCE MEDAL

CANADA MEDAL

KING'S POLICE AND FIRE  
SERVICE MEDAL  
(Distinguished Service)

NAVAL GENERAL SERVICE  
MEDAL 1915-1951

1914-15 STAR

BRITISH WAR MEDAL  
1914-18

MERCANTILE MARINE  
1914-18

VICTORY MEDAL 1914-19  
Oak Leaf denotes Mentioned  
in Despatches

In showing precedence of Orders, only the highest Class is considered.

The Class of an Order affects the precedence considerably, for example, the 1st, 2nd and 3rd Class of the Order of the British Empire come before the D.S.O., whereas the 4th Class (O.B.E.) and the 5th Class (M.B.E.) follow the D.S.O.

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THE UNIVERSITY OF ILLINOIS AT CHICAGO



TERRITORIAL WAR MEDAL



GENERAL SERVICE MEDAL  
(Army and R.A.F.)

INDIAN GENERAL SERVICE  
1936

1939-45 STAR



ATLANTIC STAR  
Silver Rose denotes Clasp



AIR CREW EUROPE STAR



AFRICA STAR  
Figure 8 denotes Eighth Army  
Clasp



PACIFIC STAR



BURMA STAR



ITALY STAR



FRANCE AND  
GERMANY STAR



DEFENCE MEDAL



VOLUNTARY SERVICE  
MEDAL CANADA  
Maple Leaf denotes Clasp



WAR MEDAL 1939-45



AFRICA SERVICE MEDAL  
UNION OF S.A.



INDIA SERVICE MEDAL



NEW ZEALAND  
WAR SERVICE MEDAL



SOUTHERN RHODESIAN  
SERVICE MEDAL



AUSTRALIAN  
SERVICE MEDAL



KOREA MEDAL—  
COMMONWEALTH



UNITED NATIONS  
SERVICE MEDAL



KING GEORGE V'S  
CORONATION MEDAL AND  
DURBAR 1911



KING GEORGE V'S  
CORONATION POLICE  
MEDAL 1911



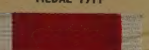
KING GEORGE V'S SILVER  
JUBILEE MEDAL 1935



KING GEORGE VI'S  
CORONATION MEDAL 1937



CORONATION E.I.I.R.  
(Queen Elizabeth 1953)



LONG SERVICE AND GOOD  
CONDUCT MEDAL (Army)



LONG SERVICE AND GOOD  
CONDUCT MEDAL (Navy)



MERITORIOUS  
SERVICE MEDAL



R.A.F. LONG SERVICE AND  
GOOD CONDUCT MEDAL



POLICE LONG SERVICE AND  
GOOD CONDUCT MEDAL



ARMY EMERGENCY  
RESERVE DECORATION



TERRITORIAL AND  
EFFICIENCY DECORATION



TERRITORIAL AND  
EFFICIENCY MEDAL



R.N.R. DECORATION



R.N.V.R. DECORATION



R.N.R. LONG SERVICE AND  
GOOD CONDUCT MEDAL



R.N.V.R. LONG SERVICE AND  
GOOD CONDUCT MEDAL



R. FLEET RES. LONG SERVICE  
AND GOOD CONDUCT MEDAL



AIR EFFICIENCY AWARD



CADET FORCES MEDAL



SPECIAL CONSTABULARY  
LONG SERVICE MEDAL



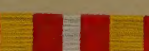
CANADIAN FORCES  
DECORATION



ROYAL OBSERVER  
CORPS MEDAL



ORDER OF ST. JOHN  
SERVICE MEDAL



VOLUNTARY MEDICAL  
SERVICE MEDAL

REFERENCE

FOR READING ROOM

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